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Testing the Arabic short form versions of the Parental-Caregivers Perceptions Questionnaire and the Family Impact Scale in Oman



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Abstract Short form versions of the Parental-Caregivers Perception Questionnaire (P-CPQ) and Family Impact Scale (FIS) have been developed for use as measures of oral health-related quality of life in dental research.

Objectives: (1) To translate the original English short form versions of the P-CPQ and FIS and examine their validity, and (2) to describe the impact of early childhood caries on oral health-related quality of life in young Omani children and their families.

Methods: Parents/caregivers of children awaiting treatment for early childhood caries completed the P-CPQ and FIS at the Military Dental Center in Oman. Data were obtained from 191 families (representing a 94.1% participation rate). A global Oral Health Quality of Life (OHRQoL) item was used concurrently to examine the scales' validity.

Results: The cross-sectional concurrent validity of the short form version of the P-CPQ was apparent in the significant gradient across the response categories of the global OHRQoL item, but the FIS short form version did not perform as well.

Conclusion: The P-CPQ appears to be valid, but further investigation of the FIS is required, along with examination of the scales' responsiveness to change.

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1. Introduction

Children's oral and oro-facial conditions affect both their quality of life and that of their families. The Child Oral Health Quality of Life (COHQoL) set of scales is the most commonly used instrument for measuring this impact (Locker et al., 2002; Jokovic et al., 2003). Used in a number of important studies to date (reviewed in Gilchrist et al., 2014), the scales include the Child Perceptions Questionnaire (which has age-specific

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versions), the Parental-Caregivers Perceptions Questionnaire (P-CPQ), and the Family Impact Scale (FIS). The reliability and validity of the P-CPQ component have been demonstrated previously (Jokovic et al., 2003; Do and Spencer, 2008), and it and the FIS have been shown to be valid and responsive in longitudinal research (Malden et al., 2008; Gaynor and Thomson, 2012).

Short form versions of the P-CPQ and FIS have recently been developed and validated, and they have been shown to be responsive in longitudinal research (Thomson et al., 2013). The development of short form versions of these instruments is important because of their lower respondent burden. As a result, they are more likely to be used routinely by clinicians and researchers, and there is a lower risk of incomplete data from respondents.

The aim of this study was to translate the original English short form versions of the P-CPQ and FIS into Arabic and to evaluate their properties and validity in a consecutive clinical sample of Omani patients undergoing dental treatment.

2. Methods

In January 2013, the Armed Forces Hospital Ethics Committee gave ethical approval for this study. Data were obtained from people attending the Military Dental Center in Oman. The participants were a consecutive clinical convenience sample of parents/caregivers of children receiving treatment for early childhood caries during a 5-week period. All such parents/caregivers were invited to participate in the study, but those with dental trauma or severe malocclusion as the primary reason for presenting were excluded from the study, along with parents/caregivers who could not read or write. An information sheet containing information on the study was given to potential participants, with further verbal information being provided when it was needed. Written consent was obtained from all participants.

The sample size was determined based on similar data collected in Auckland, New Zealand (Gaynor and Thomson, 2012). It was based on an expected effect size of 0.5 for the difference in mean FIS score between those reporting 'A lot/very much' and those reporting 'Some' in response to the question "How much is your child's overall well-being affected by the condition of his/her teeth, lips, jaws or mouth?" For 95% power to detect such a difference, a total of 176 families was needed. This number was rounded up to 200 to ensure that enough families were included.

The short form versions of the P-CPQ and FIS questionnaires (the P-CPQ-8 and the FIS-8, respectively) were translated to Arabic using standard methods (Beaton et al., 2000). The English short form versions of the P-CPQ and FIS questionnaires were translated into Arabic by asking three professionals—whose native language was Arabic—to independently translate it into Arabic. The three Arabic versions were then compared, and the best translation was chosen. That version was then back-translated into English to check the translation, and a comparison between the original and back-translated forms was undertaken. The final Arabic version was sent to a sample of Omani participants to check its acceptability.

Self-administered questionnaires were used to collect the data. The parents/caregivers completed the Arabic versions

of the C-PCQ and FIS while the child was receiving the dental treatment. If the family failed to complete all of the questions, they were phoned later and asked to respond to the missing items. Each item sought information on the frequency of impacts. For example, the baseline questionnaire asked, "In the past 3 months, how often has your child had...pain in the teeth, lips, jaws or mouth?" The responses were scored using a 5-point Likert scale (response options: 'Never' = 0; 'Once or twice' = 1; 'Sometimes' = 2; 'Often' = 3; 'Every day or almost every day' = 4). A 'Don't know' response option was also provided, and this was scored as 0 to prevent the loss of valuable information, which would occur if complete data from participants with non-responses to some items were deleted. Also included in the questionnaire was the global oral health rating item, "How much is your child's overall wellbeing affected by the conditions of his/her teeth, lips, jaws or mouth?" This response was scored on a 5-point scale ranging from 'Very much' to 'Not at all'.

Standard socio-demographic data on the participants and their children were collected, including the child's age, sex, and the status of the responding adult (i.e., mother, father, grandparent, etc.). At the analysis stage, children were allocated by age to one of three groups: 'Pre-school' (2–4 years old), 'Early school' (5–6 years old), or 'Older' (7–9 years old). Parents/caregivers were categorized according to their education level into one of three education level groups: primary only, secondary only, or higher.

2.1. Statistical analyses

The collected data were analyzed in Dunedin (New Zealand) using SPSS for Windows, version 20.0 (SPSS Inc., Chicago, USA). After the generation of descriptive statistics, Chi-square tests and analysis of variance (ANOVA) were used to test the statistical significance of observed differences, with the former being used for categorical dependent variables and the latter for continuous ones. The alpha value was 0.05. The psychometric properties of the Arabic P-CPQ and FIS were evaluated in terms of their cross-sectional construct validity. Construct validity was assessed by examining the association between the mean scale scores and the responses to the global question on oral health and overall wellbeing.

3. Results

The parents/caregivers of 203 children were recruited during the study period and asked to complete questionnaires. Nine completed questionnaires were excluded because they contained many incomplete items. Three of the caregivers/parents were too busy to complete the questionnaires. Therefore, 191 questionnaires with complete data were available, representing a 94.1% participation rate.

Summary data on the participants are presented in Table 1. There were approximately equal proportions of males and females. The children's ages ranged from 2 to 9 years old, with 82.7% being older than 4 years. A high proportion of caregivers/parents had been educated to at least the secondary education level.

The Cronbach's alpha values for the short form versions of the P-CPQ-8 and the FIS-8 were 0.53 and 0.52, respectively. Data on the concurrent validity of the scales are presented in Table 2. There were statistically significant gradients in mean P-CPQ scores across the response categories for the global item, "How much is the child's

Table 1 Sociodemographic characteristics of the sample (data in brackets are percentages).

	Sex of child		All combined
	Male	Female	
<i>Age of child</i>			
2–4	20 (60.6)	13 (39.4)	33 (17.3)
5–6	38 (50.0)	38 (50.0)	76 (39.8)
7–9	37 (45.1)	45 (54.9)	82 (42.9)
<i>Education level of informant</i>			
Elementary	12 (46.2)	14 (53.8)	26 (13.6)
Secondary	54 (50.9)	52 (49.1)	106 (55.5)
Further	29 (49.2)	30 (50.8)	59 (30.9)
All combined	95 (49.7)	96 (50.3)	191 (100.0)

overall well-being affected by his/her teeth, lips, jaw or mouth?" Almost all gradients were consistent, with higher scores among those whose wellbeing was more severely affected. The exception was that the mean scores for those reporting very little impact were slightly lower than for those reporting no impact at all. However, the FIS mean scores did not show statistically significant gradients across the global item's response categories. Although the highest scores were among those whose wellbeing was more severely affected, the mean scores for those reporting 'not at all' and 'some' were the same.

The P-CPQ-8 summary data are presented by sociodemographic characteristics in Table 3. Males had slightly higher P-CPQ-8 mean scores than females. Children aged 5–6 had the highest mean scores and the highest prevalence of impact. Parents/caregivers who had been educated to the secondary education level had the highest mean scores and reported the highest prevalence of impacts, but these observed differences were not statistically significant.

The FIS-8 summary data are presented by sociodemographic characteristics in Table 4. Males and females had approximately equal FIS-8 mean scores. Children aged 5–6 had the highest mean scores and showed the highest impact prevalence. Parents/caregivers who had only an elementary education had the highest mean scores. None of these observed differences were statistically significant.

The 34 children who were suffering toothache had higher mean P-CPQ-8 scores than the 157 children who were not (2.7 and 1.8, respectively; $P = 0.02$). There was no difference in FIS-8 scores

between the children suffering toothache and those who were not (2.8 and 2.2, respectively; $P = 0.10$).

4. Discussion

This study examined the properties and validity of Arabic short form versions of the P-CPQ and FIS using a consecutive clinical sample of children with early childhood caries undergoing dental treatment at the Military Dental Center in Oman. The P-CPQ-8 was found to be valid, but there were some problems with the FIS-8.

The study's weaknesses and strengths should be considered before examining the findings. First, there was no untreated control group in this study because it was not possible to get ethical approval for including such a group. Second, data are from a convenience sample, which is unlikely to represent

Table 3 P-CPQ-8 summary data by sociodemographic characteristics (brackets contain percentages unless otherwise indicated).

	Mean score (sd)	Number with impacts ^a
<i>Sex of child</i>		
Male	2.0 (2.0)	18 (18.9)
Female	1.8 (1.8)	24 (25.0)
<i>Age of child</i>		
2–4	1.4 (1.3)	4 (12.1)
5–6	2.2 (2.3)	21 (27.6)
7–9	1.9 (1.7)	17 (20.7)
<i>Education level of informant</i>		
Elementary	1.5 (1.6)	5 (19.2)
Secondary	2.1 (2.1)	22 (20.8)
Further	1.9 (1.7)	15 (25.4)
All combined	2.0 (1.9)	42 (22.0)

^a One or more items rated as 'Often' or 'Every day or almost every day'.

Table 2 Concurrent validity of the short-form P-CPQ and FIS scales (brackets contain percentages unless otherwise indicated).

	How much is your child's overall well-being affected by the condition of his/her teeth, lips, jaw or mouth?			
	Not at all	Very little	Some	A lot/very much
<i>P-CPQ-8</i>				
Mean score (sd)	1.8 (1.9)	1.3 (1.5)	2.2 (1.7)	3.0 (2.9) ^b
Number with impacts ^a	4 (12.5)	6 (11.3)	22 (26.8)	10 (41.7) ^c
<i>FIS-8</i>				
Mean score (sd)	2.4 (2.2)	2.1 (2.0)	2.4 (2.2)	2.5 (2.3)
Number with impacts ^a	9 (28.1)	14 (26.4)	33 (40.2)	10 (41.7)

^a One or more items rated as 'Often' or 'Every day or almost every day'.

^b $P < 0.05$; Oneway ANOVA: 'A lot/Very much' differs significantly from 'Not at all' and 'Some'; 'Very little' differs significantly from 'Some'.

^c $P < 0.05$; 'A lot/Very much' differs significantly from the other three groups.

Table 4 FIS-8 summary data, by sociodemographic characteristics (data in brackets are percentages unless otherwise indicated).

	Mean score (sd)	No with impacts ^a
<i>Sex of child</i>		
Male	2.4 (2.2)	35 (36.8)
Female	2.3 (2.2)	31 (32.3)
<i>Age of child</i>		
2–4	2.1 (1.8)	11 (33.3)
5–6	2.5 (2.1)	29 (38.2)
7–9	2.3 (2.3)	26 (31.7)
<i>Education level of informant</i>		
Elementary	2.5 (2.2)	8 (30.8)
Secondary	2.3 (2.2)	38 (35.8)
Further	2.3 (2.1)	20 (33.9)
All combined	2.3 (2.2)	66 (34.6)

^a One or more items rated as ‘Often’ or ‘Every day or almost every day’.

the general population. The initial plan was to collect data from different health centers; however, due to the short data collection period, we collected data only from Military Dental Center patients. Third, clinical examinations of patients were not undertaken. Turning to the study’s strengths, a formal power study was undertaken before it commenced, unlike the earlier New Zealand studies by [Malden et al. \(2008\)](#) and [Gaynor and Thomson \(2012\)](#). Moreover, the 94.1% participation rate was satisfactory. The questionnaire was relatively short, so most of the parents/caregivers were happy to participate. Only three refused because they were busy with other commitments and did not have time to take part. Finally, the sample comprised a single ethnic group (Omanis).

A similar study in New Zealand concluded that the short form versions of both the P-CPQ and FIS were valid ([Thomson et al., 2013](#)). In contrast, in the current study, the P-CPQ was found to show a degree of concurrent validity, but the FIS did not perform as well. This performance could be due to cultural differences, or it is possible that the validation question was not appropriate for use in this sample. The validation question pertained to the child rather than the family. It is possible that, if a family-oriented one had been used, the FIS might have shown an acceptable score gradient across those response categories. Work is currently underway in New Zealand and Malaysia to develop and test a family-oriented validation item. The Cronbach’s alpha values (representing internal consistency or reliability) for the scales in the study sample were not as high as desired, and certainly not as high as those observed with clinical samples in New Zealand ([Thomson et al., 2013](#)). This finding suggests a need for both caution in interpreting the findings and for further examination of the scales’ performance in Omani samples.

The findings indicate that early childhood caries do have some impact on the day-to-day lives of young Omani children and their families. Although the age difference was not

statistically significant, patients aged 5–6 experienced a slightly higher impact of their poor oral health on their daily lives, and, to a lesser extent, their families did as well. Young female children had a greater impact of early childhood caries on their quality of life. This finding is not surprising, given the cultural background, where females are more likely to express themselves, whereas males are less likely to talk about their issues, even as children.

5. Conclusions

This assessment of the validity of the 8-item short form versions of the P-CPQ and FIS in Oman found that the P-CPQ appeared to be valid in this study sample, but the FIS did not show a good gradient, and therefore it is unlikely to be useful in this sample. However, it is possible that the validation question used was inappropriate, so further validation work should be undertaken.

Ethical statement

The authors confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

Conflict of interest

The authors have no conflict of interest to declare.

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