Urdu Version of Modified P-CPQ Analysis in North Bhopal City

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Abstract

Background: Parental/Caregiver Perception Questionnaire (P-CPQ) is a beneficial instrument to measure parental/caregivers' perceptions and its impact on childrens' oral health related quality of life (CHRQoL). The aim of our study was to evaluate the psychometric properties of modified Urdu parental/caregiver perception questionnaire in North Bhopal.

Method: The original 31 item P-CPQ was modified to include additional 20 items and was subsequently translated into Urdu language. Our modified P-CPQ with 51 item questionnaire was divided into four subscales and phased out- motivational and educational children's dental treatment camps were conducted in different areas of North Bhopal.

Results: The mean (SD) P-CPQ score was 49.23 (27.76). Internal consistency was confirmed by Cronbach's alpha value of 0.824. The test-retest reliability revealed that the responses to items had excellent reliability (ICC-0.91).

The EFA showed 82.19% of variance for the questionnaire.

Conclusion: The modified 51 item P-CPQ showed reliability and validity comparable to the previous versions. However, the cross-cultural structure of the subscales should be further evaluated.

Keywords: Urdu version, psychometric analysis, P-CPQ, OHRQoL, impact on children.

Introduction

Oral health is a part of overall health and can affect daily quality of life.[1] WHO recognized Oral Health related Quality of Life (OHRQoL) as a component of general health which is now a part of the global oral health program.[2] Children health needs have been reported by their parents/caregivers, and decision for them including choice of treatment are taken according to their perception. Recent studies have shown a specific interest towards Oral Health Related Quality of Life which could help in the evaluation of treatment needs, prioritization of

care and the evaluation of treatment results.[3,4] Thus, it is imperative for establishing the psychometric properties of an instrument for its easier application and continued clinical practice and research.[5]

The Parental Caregiver Perception Questionnaire (P-CPQ) is one of the instruments for the Child Oral Health Quality of life Questionnaire (COHRQoL). The P-CPQ was initially developed in English for the USA, which was then translated in Canada (in English),[6] China,[4] Brazil,[7-9] Peru,[1] UK,[10] New Zealand,[11] USA.[12] Oral Health Related Quality of life (OHRQoL) is a multidimensional concept that includes signs and oral symptoms (SOS), functional limitation (FL), emotional well-being (EWB) and social well-being (SWB).[13] These studies have demonstrated ethical psychometric properties. According to Gulliemin et al.[14] if the questionnaire is to be used in different country or region with different cultural etiquette, both translation and cultural adaptation is essential. Further impetus has been shown towards the importance of such questionnaires in both research and clinical settings, which do help in the planned treatment process, and the lack of basic treatment for certain chronic oral diseases which require long term treatment.

Previous studies have conducted their research based on 31 item Questionnaire and correlated it with ECOHIS (Early Childhood Oral Health Impact Scale), FIS (Family Impact Scale) [11]. Therefore, there was a huge lacunae on many factors which were not elicited in the 31 item questionnaire. Therefore our study was undertaken to involve all the excluded items for greater clinical significance; where we have elaborated and modified to include 51 item questionnaire for evaluation of Parental-Caregiver Perception of children aged between 7-11 years and correlating it with WHO Oral Health Assessment Form for Children (2013).

Material And Methods

The questionnaire

The present study is a modified P-CPQ and is composed of 51 items to elicit the Childrens' Oral Health Related Quality of Life COHRQoL. To make the questionnaire easily understandable, we have translated the same in Urdu language for proper elicitation of the questionnaire (Annexure I- Urdu Questionnaire).

Our modified P-CPQ had 51 items which were divided into four sub-scales including: Oral symptoms (8 items), Functional Limitation (16 items), Emotional well-being (13 items), Social well-being (14 items). A five point Likert-like scale was used with the following options of response: 'Never' (score 0), 'Once or Twice' (score 1), 'Sometimes' (score 2),'Often' (score 3), 'Nearly every day' (score 4)

Study setting

This cross-sectional study was conducted among school children aged 7-11 years old in North Bhopal city, Madhya Pradesh, India. A cluster sampling technique was used, where a list of schools with Urdu as a medium of instruction was first obtained. All the children aged between 7-11 years were included in the study and a motivational educational program was held in the respective schools. Ethical approval was obtained from the ethical committee of R.K.D.F. Dental College & Research Centre, Bhopal and permission was sought from school authorities. Written informed consent was obtained from parents/caregivers of the participants.

Study population and sampling

Parents/caregivers of children aged between 7-11 years were included in this study. 1200 school children were selected based on inclusion and exclusion criteria.

Inclusion criteria

- Participants must be able to read, write and self-administer the questionnaire

- School children, aged 7-11 years irrespective of sex, race, and socioeconomic status who are residents of Bhopal
- Children who have not visited dentist in last 6 months
- Children with no systemic disease

Exclusion criteria

- Participants who are not able to read, write and self-administer the questionnaire
- Children who had migrated from some other place or who were not the permanent residents of Bhopal
- Children seeking any dental treatment before being part of this study
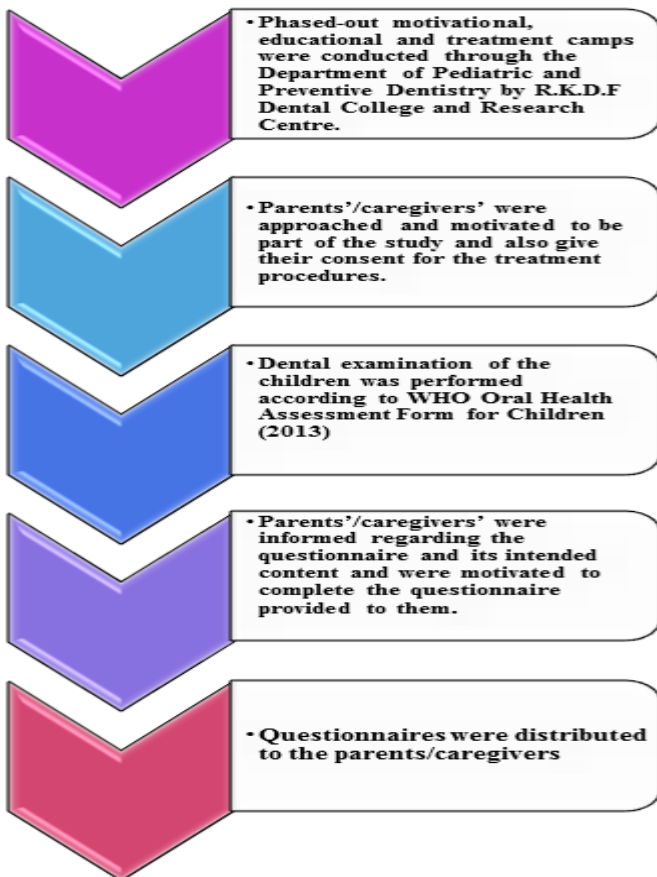- Children with any systemic disease

Procedural plan

- Phased-out motivational, educational and treatment camps were conducted through the Department of Pediatric and Preventive Dentistry by R.K.D.F Dental College and Research Centre.
- Parents'/caregivers' were approached and motivated to be part of the study and also give their consent for the treatment procedures.
- Dental examination of the children was performed according to WHO Oral Health Assessment Form for Children (2013)
- Parents'/caregivers' were informed regarding the questionnaire and its intended content and were motivated to complete the questionnaire provided to them.
- Questionnaires were distributed to the parents/caregivers

Fig.1: Procedural Plan

Statistical Analysis

Descriptive statistics were used to assess the frequency distribution of oral impacts and measures of central tendency (Mean and Standard Deviation). An Exploratory Factor Analysis (EFA) was conducted to assess the factor structure of the modified Urdu P-CPQ. Extraction was done for 7 factors to align the dimensionality of the modified instrument. A significant Barlett's test of sphericity and KMO score of >0.8 were considered as good indicators for factorability. [15] Internal consistency of the subscales and the overall scale was evaluated using Cronbach's alpha while the Intraclass correlation coefficient was used to assess the reliability of the modified 51 item P-CPQ. Reliability was considered acceptable if the ICC was higher than 0.7 and if the 95% confident interval of an ICC estimate0.83-0.94, the level of reliability can be regarded as "good" to "excellent". [16]

Results

Demographic characteristics

Out of 1200 participants 1020 (85%) population filled and submitted the questionnaire, while 61 (5.08%) submitted but not answered and 119 (9.92%) not submitted the questionnaire (Table 1). From 1020 participants 628 (61.57%) questionnaire was filled by mother, 371 (36.37%) filled by father and 21 (2.06%) by others (Table 2).

Table 1: Description of participants of North Bhopal

	7-8 years n(%)	8-9 years n(%)	9-10 years n(%)	10-11 years n(%)	Totaln(%)
Total questionnaire filled and submitted	255 (21.25)	219 (18.25)	299 (24.92)	247 (2.058)	1020 (85)
Not submitted	29 (2.42)	36 (3)	30 (2.5)	24 (2)	119 (9.92)
Submitted not answered	15 (1.25)	22 (1.83)	13 (1.08)	11 (0.92)	61 (5.08)
Total participants	299 (24.92)	277 (23.08)	342 (28.5)	282 (23.5)	1200 (100)

Descriptive statistics for the P-CPQ

As we have 51 items questionnaire, the final score could vary from (0-204), where 0= no impact and 204= maximum impact. Lowest score indicates no impact and the highest score indicates highest level of negative impact on childrens' oral status. Mean (SD) for total score was 49.23(27.76); for subscales Mean (SD) were SOS 9.36(4.19), FL 11.63(9.25), EWB 14.46(9.89), SWB 13.79(9.06) (Table 3).

3.3 Internal consistency

Cronbach's alpha of the total score was 0.824, indicating good internal consistency. For the subscales SOS (0.804), FL (0.726), EWB (0.830), SWB (0.862) (Table 4). The ICC for the total score was 0.910 which showed excellent reliability (Table 3).

Table 2 - Characteristics of Parents/Caregivers and Children of North Bhopal

Characteristics	N	%
Participants age group 7-8 years 8-9 years 9-10 years 10-11 years	250 228 300 242	24.51 22.35 29.41 23.73
P-CPQ completed by Mother Father Other	628 371 21	61.57 36.37 2.06

Table 3- Descriptive statistics for the P-CPQ total scale of North Bhopal and Internal Consistency Reliability

	Mean	SD	%	Range	ICC	95% CI
Total score (0,204)	49.23	27.76	49.99	123	.910	.90-.91
Subscales						
SOS (0,32)	9.36	4.19	9.51	19	.909	.89-.92
FL (0,64)	11.63	9.25	11.81	48	.948	.94-.95
EWB (0,52)	14.46	9.89	14.68	41	.947	.94-.95
SWB (0,56)	13.79	9.06	14.00	36	.933	.92-.94

Construct validity

An exploratory factor analysis (EFA) was conducted to evaluate the factor ability. The total % of variance was 82.19. First factor consists of total EWB (13/13) and SWB (9/14) (items 39, 41, 43, 44, 45, 48, 49, 50, 51); Second factor consists of FL (6/16) (items 9, 12, 13, 15, 16, 18); Third factor consists of SOS (5/8) (items 1, 3, 4, 7, 8), FL (1/16) (item 14) and SWB (2/14) (item 40, 42) ; Fourth factor consists of FL (1/16) (item 10); Fifth factor consists of FL (4/16) (items 11, 17, 19, 21); Sixth factor consists of FL (4/16) (item 20, 22, 23, 24) and SWB (3/14) (item 38, 46, 47); Seventh factor consists of SOS (3/8) (item 2, 5, 6) (Table 4).

Correlation between the subscale and WHO Oral health Assessment Form for Children (2013)

The results obtained for the discriminant validity of the P-CPQ and the subscale WHO score showed SOS of 0.582** (Dental Caries), 0.476** (Periodontal diseases), 0.070 (Dental Trauma) and 0.492** (Intervention Urgency) for North Bhopal (Table 5).

Discussion

Our objective were to evaluate the psychometric properties of the modified 51 item P-CPQ and correlating it with WHO Oral Health Assessment Form for Children (2013). The process of translation, cultural adaptation and modification was carefully conducted by the criteria described by Guillemin et al. [14] Its reliability is acceptable with a Cronbach's alpha value 0.824 for the total score, whereas Noeline et al. [5] reported Cronbach's alpha value 0.85 for French version, Goursand et al. [9] and Albites et al. [1] reported 0.84 for both Brazilian versions and Spanish versions.

The test-retest shows excellent reliability with ICC 0.910 on the other hand Noeline et at. [10] reported ICC 0.88 and for subscales the ICC values ranged between 0.909 – 0.948 which was similar to the studies of Albites et al. [1] and Santosh Kumar et at [17].

Factor analysis was examined to evaluate the construct validity of the newly added 20 perceptions along with the original 31 perceptions. The EFA identified 7 factors and corresponded it to the 51 item perceptions giving a total % variance of 82.19. The earlier study reported by Noeline et at. [5] for 31 item French version questionnaire along with 7 factors showed a total variance of 65.23%; while Santosh Kumar [17] for 31 item Hindi version questionnaire along with 4 factors showed a total variance of 38.5%.

Correlation between the subscales and WHO Oral Health Assessment form for Children (2013) was done at 0.01 level (2-tailed) and 0.05 level (2-tailed). Similar correlation evaluation was seen at 0.01 level (2-tailed) in a study by Santosh Kumar et al. [17]

Our study was unique from the previous studies as it not only has an elaborate 51 item questionnaire, but also a larger sample of participants from North Bhopal who elicited responses in the Urdu version of the questionnaire. The positives of our study was the increased number of participants which were found short in the earlier studies and also the additional 20 parameters which were easily understood and interpreted by most of the participants. Our study *further* evaluated the WHO Performa for children and there was a direct correlation of it with our study questionnaire.

Table 4: Exploratory factor analysis of the P-CPQ factor loadings from the structure

Item Wording	Components						
	Factor 1 Relation ship	Factor 2 Eating Difficulties	Factor 3 Oral/ Dental pain	Factor 4 Oral symptoms and discomfort	Factor 5 Functional Limitation	Factor 6 Social discomfort	Factor 7 Oral Hygiene
SOS (8 items) 1. Pain in teeth			0.008				
2. Bleeding gums							.515
3. Sore throat			1.000				
4. Bad breath			.427				
5. Food lodgment							.235
6. Food impaction							.428
7. Intraoral Swelling			.195				
8. Pus & sinus drainage			.118				
FL (16 Items) 9. Difficulty biting, chewing firm foods		0.088					
10. Trouble sleeping				.255			
11. Unclear speech					.422		
12. Slow eating		.290					
13. Difficulty in swallowing food		.329					
14. Difficulty drinking/ eating hot/cold foods			.282				
15. Difficulty eating foods would like to eat		.267					
16. Difficulty with liquid food		.496					
17.Breathing through mouth					.445		

18. Restricted diet	.333						
19. Restricted mouth opening					.185		
20. Injuries to chin /mandible						.1000	
21. Deviation in mouth opening					.149		
22. Cleft lip/palate						.383	
23. Microtia/ absence of one ear						.421	
24. Abnormalities of lip/nose/tongue						.334	
Emotional Well-Being (13 Items) 25. Upset	.340						
26. Irritable/ frustrated	.373						
27. Anxious/fearful	.278						
28. Worried that is different from other people	.458						
29. Worried he/she is less attractive than other	.382						
30.Shy/ embarrassed	.105						
31. Worried having fewer friends	.048						
32. Happy	.007						
33. Affectionate	.332						
34. Lesser or fewer feelings of hostility	.199						
35. Lesser feeling of loneliness	.333						
36. Self-esteem	.263						
37. Trust/	.210						

Empathetic						
Social Well-Being (14 Items) 38. Missed school						.093	
39. Hard time paying attention in school	.234						
40. Not wanted to speak/read aloud in class			.209				
41. Not wanted to talk to other children	.280						
42. Avoided smiling when around other children			.221				
43. Teased/ called name by other children	.118						
44. Left out by other children	.089						
45. Not wanted/ unable to be with other children	.129						
46. Not wanted/unable to take part in activities (sport, ... clubs)						.162	
47. Asked by other children about condition						.088	
48. Openness (creative/ imaginative/curiosit	.218						

y of child)						
49.Extroversion of the child (lively/active/talkative)	.259					
50.Conscientiou-sness (organized/ responsible/ hard working)	.160					
51. Agree-ableness (helpful/ caring/ sympathetic)	.265					
% of Variance (82.19)	39.12	11.91	8.53	8.31	6.64	4.81	2.87

Conclusions

1. The modified version of P-CPQ demonstrated reliability and validity comparable to the previous versions.

2. All the subscales and the overall scale demonstrated acceptable internal consistency and reliability.

3. All the 20 added perceptions with the original 31 item perceptions exhibited acceptable psychometric properties.

4. The modified P-CPQ can be used to assess Parental/Caregivers perceptions on children's Oral Health Related Quality of Life (OHRQoL).

Further studies may be required for different populations' to establish the instrument's technical properties including the EFA derived model.

Funding

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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