

Validity and reliability of the Persian version of the oral health impact profile (OHIP)-14

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Abstract

Background: The need for assessment of oral health related quality of life has been increased over the last decades. The aim of this study was to develop a Persian version of the Oral Health Impact Profile (OHIP)-14 and to evaluate its reliability and validity for its use in Persian-speaking communities.

Methods: The original version of the OHIP-14 was translated into the Persian language using the back-translation technique. To establish the reliability of the translated instrument, internal consistency and test-retest reliability trials were performed on 20 subjects (at 4-week intervals); Cronbach's alpha was used. One hundred sixty adults over 50 years of age who attended Health Care Centers in Sari and Babol were recruited to fill out the questionnaires and received a clinical examination by a single dentist. The socio-demographic and oral health information was also collected.

Results: The test-retest reliability was excellent (Cronbach's alpha = 0.095). In the main study, Cronbach's reliability coefficient for all 14 questions in each dimension was more than 70%. The individuals in need of dental treatment showed significantly higher OHIP scores than the individuals not requiring treatment. The individuals with hopeless teeth, negative self-perceived oral had significantly higher OHIP scores.

Conclusion: The Persian version of the OHIP-14 is a comprehensive and accurate instrument with acceptable reliability and validity for measuring oral health-related quality of life.

Key words: Quality of life, QOL questionnaire, OHIP-14.

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In the past, research about quality of life (QOL) in Medical and Dental Sciences has drawn a significant amount of attention. Undoubtedly, oral health is directly related to QOL, and the role of QOL questionnaire in assessing oral-health-related factors is undeniable. Epidemiological studies have shown that factors such as age, sex, tooth loss, socioeconomic status, cultural background, anxiety about dental treatments and smoking all contribute to the quality of life (1-3). According to these studies, evaluating the correlation between these factors and oral health with a QOL questionnaire is possible. The OHIP is an accurate and valuable questionnaire that was first used by Gary Slade in 1994 (4). The OHIP has been used in many countries for evaluating the quality of life related to oral health. Because of problems associated with many of the questions on the OHIP, a shorter version, called the OHIP-14, which includes 14 questions, was prepared by Slade in 1997 (5). The objective of the OHIP is to present certain types of numerical data for different situations in terms of health and treatment consequences. The basic form of this questionnaire contains 49 questions. It covers seven dimensions, with seven questions in each dimension. The subjects covered are the following: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap.

Slade showed that this questionnaire is sensitive to change and is a reliable tool. The OHIP has been translated into Chinese, Japanese, German, Arabic, Croatian, Spanish, Malaysian, Dutch, Brazilian, Portuguese, Hungarian and Korean (16, 17). The OHIP-14, like the original version, includes seven dimensions. Each dimension contains two questions. The shortened version has a reliability and validity similar to those of the original version and an appropriate tool for statistical analyses related to the effect of oral health on an individual's quality of life. The OHIP-14, like the original version, is sensitive to change and has been translated into different languages, such as Malaysian, Hebrew, Sinhalese, Chinese, Swedish, Japanese, Croatian, Brazilian and German (18-28). Its validity has also been assessed in different situations, such as for TMD and edentulous patients (29, 30). Among the advantages of the OHIP is the comprehensive nature of the questions; its seven different dimensions attempt to cover and pinpoint all the associated circumstances that influence the quality of life of individuals. The questions are designed in a usable way for all people in different levels of society. The results obtained in the majority of studies were similar for the OHIP-14 and the original OHIP (30). The OHIP-14 has been used extensively. Because there is no Persian version of this valuable instrument, the aim of this study was to prepare a Persian version of the OHIP-14 for the Persian-speaking community to use for research purposes.

Methods

The project was approved by the Research and Ethics Committee of Babol University of Medical Sciences. All the participants signed the written informed consent. The evaluation process was conducted first by performing the translation to Persian, and then a pilot study was carried out. Finally, the main study was conducted.

Persian translation: The back-translation method was used to perform the translation. The translations were done by two bilingual translators. First, the original English version was translated into Persian by a native Iranian bilingual translator competent in both languages. Then, the translated copy was back-translated to English by an American, native-English-speaking bilingual translator competent in both languages and who had never seen the original questionnaire. These three copies (original English, Persian and back-translated English copies) were assessed by three specialists in the

dentistry field. The contradictions and inconsistencies between the back translation (OHIP-Pr) and the original version were compared and corrected, making sure that the translation was conceptually equivalent to the original version. The final OHIP-Pr was used for the pilot study.

Pilot study: In this study, the questionnaire was given to 20 individuals whose jobs were not related to dentistry. The participants were asked to fill out the questionnaires and to give their opinions about any problems associated with their comprehension of the questions. Then, the questions that were misunderstood were explained, and the new version was given to the same individuals after one month. Finally, all answers were statistically analyzed. The reliability of the questionnaire was analyzed by Pearson's coefficient, and a final copy of the Persian version of the OHIP-14 was prepared for validity assessment.

Main study: A cross-sectional study was performed on a sample of 160 individuals. All 160 participants were over 50 years of age and were literate attending urban Health Care Centres in Sari and Babol. They were invited to take part in the study, and a brief description was given about the topic and objectives of the study. They were asked to fill out the questionnaires; the attached chart that contained personal information was filled out by the examiner. After the questionnaire was completed, a dental examination was carried out to assess the treatment needs. Because there is no accepted gold standard for the evaluation of construct validity for the assessment of quality of life (31), data related to dental treatment needs and oral-problem-related complaints were gathered. The score of each question was ranked from 1 ("never") to 5 ("very often"). Therefore, the total possible score on the OHIP-14 ranges from 14 to 70.

Data analysis: In the pilot study, Spearman's coefficient was used to assess the reliability. In the main study, the internal consistency was analyzed by the standardized Cronbach's alpha, the "alpha if an item is deleted" and the "item-total" correlation coefficient. The degree of usefulness of the Persian version of the OHIP-14 was estimated by different types of validity measures. The OHIP scores in different situations were assessed by Student's t-tests and ANOVA. In the original version of the OHIP-14, the questions were weighted. However, according to the studies in the literature, the weighted questions have no practical superiority over the non-weighted questions. Therefore, the weight of the questions was not considered. A p-value less than 0.05 was considered significant.

Results

The data were gathered from 187 individuals in the main study, and 27 subjects were excluded because of missing data (subjects with more than two missing data points were excluded). The mean age of the participants was 67.5±11 years; 52.5% were males, and the rest were females. The mean number of teeth per individual was 23±12.01. The median number of teeth was 21. The period of the last dental visit was less than a year in 30% of subjects, 1-2 year in 24.4% and more than two years in 45.6% of them. 87.5%

had anterior tooth loss and 95.6% had posterior tooth loss. Among the subjects who wear denture, 43.8% had FPD, 28.8% had RPD, 31.3% had complete denture and 5% had implant supported prosthesis. Self-perceived oral health was good in 45.6%, 47.5% moderate and bad in 6.9% of subjects. Treatment needs of subjects were periodontal needs for 71.9%, endodontic needs for 43.8%, surgical needs for 11.3%, operative needs for 7.5% and prosthetic needs for 60%. The detailed demographic data and oral examination results are shown in table 1.

Table 1. Characteristics of the subjects (n=187)

	Frequency %	OHIP-Pr score mean±SD	P value
Sex^a			
Male	57.5	20.43±9.8	0.004
Female	42.5	25.86±13.7	
Self-perceived oral health^b			
Bad	6.9	37.18±17.9	< 0.0001
Moderate	47.5	24.05±12.1	
Good	45.6	19.78±9.1	
Education^a			
High school		22.62±11.2	0.018
University		18.9±5.9	
Tooth loss^a			
Anterior	Yes	87.5	0.558
	No	12.5	
Posterior	Yes	95.6	0.52
	No	4.4	
Dental treatment needs^a			
Endodontics	Yes	43.8	0.01
	No	33.8	
Surgery	Yes	11.3	< 0.0001
	No	88.7	
Periodontal	Yes	71.9	0.37
	No	28.1	
Restorative	Yes	7.5	< 0.0001
	No	92.5	
Prosthetics	Yes	60	0.02
	No	40	

^aIndependent *t*-test

^bANOVA

Significance level set at *p* < 0.05

Reliability: Spearman’s coefficient for all questions in the pilot study was 61% (table 2) (more than 50% showed reliability). In the main study, Cronbach’s reliability coefficient for all 14 questions was more than 70% which indicated a correlation (table 2). The Cronbach’s reliability coefficient in each dimension was more than 70% (table 3).

Validity: In the pilot study, the face and content validity were confirmed by the absence of meaningless questions (stated by participants) derived by assessors from the Persian version. In addition, the content validity was achieved because of the instrument’s versatility (because of the seven dimensions) and the merits of using it with various individuals. The criterion validity was evaluated by a

treatment needs assessment. The individuals in need of dental treatment showed significantly higher OHIP scores than the individuals not requiring treatment. The individuals with extraction-prone teeth had significantly higher OHIP scores compared with individuals without these teeth ($p<0.0001$) (table 1).

The OHIP score was significantly higher in patients who had negative feelings regarding their oral health compared with those with a good or fair feeling ($p<0.0001$).

Anterior and posterior edentulousness had no effect on quality of life, but with an increase in academic qualifications, oral-health related quality of life also increased (table 1).

Table 2. Reliability in the pilot study (n=20) and the main study (n=187)

Dimensions	Questions	Spearman's rank correlation coefficients	Cronbach's alpha if item deleted
Functional limitation	Trouble pronouncing any words	0.741	0.952
	Taste worse	0.241	0.949
Physical pain	Painful aching	0.611	0.951
	Uncomfortable to eat	0.601	0.949
Psychological discomfort	Self-conscious	0.465	0.952
	Tense	0.747	0.952
Physical disability	Diet unsatisfactory	0.577	0.952
	Interrupt meals	0.284	0.951
Psychological disability	Difficult to relax	0.629	0.952
	Been embarrassed	0.740	0.951
Social disability	Irritable with others	0.930	0.951
	Difficulty doing jobs	0.577	0.952
Handicap	Life unsatisfactory	0.965	0.951
	Unable to function	0.473	0.951

Table 3. Reliability in each dimension of the main study (n=187)

Dimension	Cronbach's alpha coefficient
Functional limitation	0.871
Physical pain	0.859
Psychological discomfort	0.777
Physical disability	0.780
Psychological disability	0.770
Social disability	0.817
Handicap	0.833
OHIP-Pr total score	0.954

Discussion

The OHIP is a valid and reliable questionnaire that is used in oral-health-related quality of life research; it was first used by Slade in 1994. It has been translated into several languages (6-17). Maintaining the validity and reliability of a questionnaire is an important part of the translation process. The Persian version of the OHIP-14 was prepared according to validity and reliability criteria. The reliability was assessed by estimating the correlation of the questions with Cronbach's alpha coefficient, which was 0.954. For validity evaluation in this study, it was noted that poor oral health correlated with more required dental work and a worse attitude towards oral health, all of which indicated the validity of the instrument. This questionnaire was self completed. Therefore, the participants were asked to choose "don't know" choices, which were excluded from the study. This questionnaire could be used for assessing different psychological health functions and mental conditions in adults and the elderly because it covers seven versatile and conclusive dimensions.

In this study, the translation was straightforward. A comparison between the original version of the OHIP-14 and the back-translated version showed no differences in content or concepts. Finding equivalent and synonymous terms was not difficult because of the simple structure and the universal basis of the questionnaire. In the case of self-perceived oral health and treatment needs, it had a good reliability ($\alpha = 0.954$). The dimensions covered by the questionnaire are critical psychometric criteria for measuring health status (3), which make the OHIP-Pr-14 suitable for use in Persian communities.

The construct validity was generally supported by the subjective criteria (table 1), as in other studies (31-33). In this study, the need for surgical treatment had a significant impact on the quality of life. This impact was not seen for periodontal treatment needs. This difference might be due to a lack of serious symptoms in the early stages of periodontal women significantly reported poorer OHLQoL as it was reported in some studies (34).

This may be caused by more concerns of women about their psychological and social discomforts, and disabilities in the studied population. In spite of the validity that was shown in this cross-sectional study, case control and longitudinal studies should be designed to evaluate the sensitivity of the Persian version of the OHIP-14 in various patients and communities. Because of the limited, conclusive

questions and the self-rating nature, this questionnaire is a cost-effective tool for researches. In this study, a reliable and valid Persian version of the OHIP-14 was developed for use in demographic studies in Persian-speaking countries. In conclusion, the results of this study show that the Persian version of OHIP-14 has an acceptable validity and reliability and is suitable to use in researches in Persian-speaking populations.

Conflict of interests: The authors declare no competing interests.

Authors' contributions: M .M. carried out the study design and managed the clinical process. H.H. carried out the clinical examination and instructions on filling out of questionnaires M.S. for supervising and participating in translating process and H.M. carried out the statistical analysis.

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