

Psychometric Properties of the Albanian Language Version of the OHIP-ALB49 Questionnaire in the Republic of Kosovo

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ABSTRACT

The aim of the study was to develop and to test psychometric properties of the Albanian language version of the Oral Health Impact Questionnaire (OHIP-ALB49) in the new typical cultural context. The construct validity was tested: the convergent validity was tested on 389 subjects (general population (n=119), removable prosthodontic patients (n=213) and students (n=57)), and the discriminative validity was tested in edentulous patients wearing dentures (CDWs) (n=180) and edentulous patients having no dentures at all (n=33). The test-retest reliability was tested on 57 subjects (27 dental students and 30 complete denture wearers), the internal consistency on 389 subjects, and the responsiveness on 33 patients with a treatment demand (complete dentures). The significant association between the OHIP summary scores and the self-reported oral health ($p < 0.001$) confirmed the convergent validity. The discriminative validity was confirmed by significant difference between the CDWs and the edentulous subjects without any dentures. The test-retest reliability was confirmed by high intraclass correlation coefficients and no significant differences between the two administrations ($p > 0.05$). The internal consistency showed high Cronbach's alpha (0.94 in general population and in prosthodontic patients, 0.96 in the student group). The responsiveness was confirmed by the statistically significant difference between the mean OHIP score at the baseline and the follow-up ($p < 0.001$) and by the high effect size (2.19 for the OHIP Summary Score) in the edentulous patients with a treatment demand). The psychometric properties of the OHIP-ALB49 prove that the instrument is suitable for the assessment of the Oral Health Related Quality of Life in Kosovo.

Key words: oral health, quality of life, psychometric properties, reliability, validity, responsiveness, Kosovo, Albanian language

Introduction

The goal of the contemporary dentistry is not only to improve oral health but also to improve overall quality of patients' life. When assessing the outcomes of a dental treatment, it is important to consider the clinicians' as well as the patients' point of view¹⁻⁹. Psychosocial factors have become a focus of interest in many studies over the last two decades¹⁰.

Therefore, the concept of Oral health-related quality of life (OHRQoL) has been created as a comprehensive assessment of the impact of oral diseases and evaluation of professional interventions¹¹⁻¹⁴. The OHRQoL is a mul-

tidimensional construct that has been assessed by various questionnaires that collect data not only focused to oral health status, but also to other dimensions of oral health that affect quality of life.

Among the questionnaires developed with the aim of measuring the impact of the OHRQoL, the questionnaire Oral Health Impact Profile (OHIP) should be highlighted as one of the most sophisticated and widely accepted instruments^{4,5,12,15-18}. The English language version of the OHIP questionnaire was originally developed in Australia¹. It was designed to measure a self-reported

disfunction, discomfort and disability attributed to oral conditions. It was, however, based on the conceptual framework proposed by the World Health Organization²⁰ and the oral health model outlined by Locker³.

The original instrument consists of 49 items representing 7 domains (functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap). The OHIP questionnaire has been proved to be reliable and sensitive to changes of the OHRQoL^{17–19}. Moreover the OHIP questionnaire exhibits suitable cross-cultural consistency^{21–30}.

The measurements of the patients' perceived oral health have been increasingly in demand for epidemiological, clinical and/or longitudinal studies in south-east Europe and Kosovo, as a complementary outcome dimension to the traditional use of clinical oral disease indicators. Although the OHIP-49 is available in several languages worldwide and also in several languages in the south-east Europe (Croatia, Serbia, Romania, Hungary, Greece, Turkey and Macedonia)^{15,23–28}, yet there has been no Albanian language version of the OHIP questionnaire with psychometric validation of the questionnaire.

The aims of this study were to develop Albanian language version of the OHIP-49 instrument and to evaluate the psychometric properties of the OHIP-49 questionnaire in a new cultural context in typical Kosovo populations.

Material and Methods

Translation

The original English language version of the OHIP-49 was translated into Albanian language according to the accepted techniques¹, following the procedure already used in previous validation studies in other countries^{4,15,25,28}.

The original English version containing 49 items was translated into the Albanian language. First, it was translated by a professional translator, familiar with dental vocabulary and semantics. To be able to translate several expressions with no exact meaning in Albanian language (painful aching, feeling self-conscious) a dentist with an excellent knowledge of English was included. This translation was revised by four dentists, with an excellent knowledge of English (University of Prishtina, School of Dental Medicine, Department of Prosthodontics). Translators worked independently and four versions were merged into one version. The final version was then back-translated into English language by another professional translator, together with another dentist with an excellent proficiency in English. The back-translation was then evaluated by a native English speaker and two Professors from the Faculty of Dentistry with an excellent proficiency of the English language. There were no substantial differences from the original version to the one that was backtranslated. Since no difference in meaning of the items was observed, the translation was consid-

ered to be adequate. Prior to back translation, a pilot study was performed within 30 patients to test the clearness of the items in the Albanian language.

Participants

A written consent was obtained from each subject. The study was approved by the institutional ethic's committee (University Dental Clinical Center).

Psychometric properties were tested on 389 subjects. The assessment of validity, reliability and responsiveness was performed. Item weights have not been developed, since previous studies provided no evidence of their usefulness^{25,29}.

Besides OHIP-ALB questions the subjects also answered the question referring to the self-reported oral health and they graded their oral health by using an analogue scale ranging from 1 to 5 (1 = unsatisfactory; 5 = excellent).

OHIP-ALB49

The OHIP-ALB consists of 49 questions (items). For each question, subjects were asked how frequently they have experienced the impact in the last month. The five categories of choice *per* item were as follows: never, rarely, occasionally, often, and very often; and were coded from 0 to 4. Zero indicates absence of any problems. Higher scores indicate more impaired oral health. The average time consumption to fill-in the OHIP-ALB49 was approximately 25 minutes. Because all participants were supervised, participation rate was 100% and no missing data occurred.

Validity

Two types of validity were assessed: Convergent and discriminative validity.

Convergent validity

The convergent validity was tested on 389 subjects. A group of 119 subjects represented randomly selected persons from general population (A, Table 1). The other group included 213 edentulous subjects; 180 individuals were already complete denture wearers (CDWs) (Group B1), while 33 individuals had no previous dentures and represented patients with a treatment demand at the University of Prishtina, School of Dental Medicine, Department of Prosthodontics (Group B2, Table 1). The third group comprised 57 students (C, Table 1). Twenty seven students were from the School of Dental Medicine, University of Prishtina (C I^b, Table 1) and additional 30 students were from the Psychology Department – Private College FAMA Prishtina, branch from Mitrovica, who were employed and had a part-time student status (C II^d, Table 1).

Convergent validity refers to the degree to which the constructs should theoretically be related to (or correlated with) other measures of the same construct that are measured at the same time (31). Convergent validity was tested by examining the association between the

self-reported oral health on an analogue scale ranging from 1 to 5 (1 = unsatisfactory, 2 = fair, 3 = good, 4 = very good, and 5 = excellent) and the OHIP summary score (0 – 196) using Spearman rank correlation. A group of dental professionals set up the hypothesis that subjects with better self-reported oral health (higher scores) would have lower OHIP-ALB summary score.

Discriminative validity

The discriminative or predictive validity was tested as well. The discriminative validity measures the constructs that theoretically should not be related to each other. The group of dental professionals set up the hypothesis that edentulous subjects without complete dentures would have higher OHIP-ALB summary scores in comparison to the edentulous subjects already having old dentures (CDWs). Discriminative (predictive) validity was tested between 180 CDWs (B1, Table 1) and 33 edentulous patients without any dentures referred at the Department of Prosthodontics, School of Dental Medicine, University of Prishtina and Family Medical Center – Prosthodontic Polyclinic in Prishtina (B2, Table 1).

Reliability

Two aspects of reliability were evaluated: the internal consistency (the homogeneity of the items) and the test-retest reliability (the stability of the scores over a reasonable period of time).

Test-retest reliability

To test the reliability of the OHIP-ALB49 questionnaire, 27 undergraduate dental students were included (C I^b, Table 1) and a group of 30 CDWs from the group B1 (Table 1). None of the subjects had not been treated considering any oral and/or dental problem within a two-

-week interval between the two different completions of the OHIP-ALB questionnaire.

It was predicted that the OHRQoL would not change during the two week period without any oral treatment in the both groups. Intraclass correlation coefficients (ICC) were calculated for the OHIP-ALB summary score. Mean difference and confidence interval were calculated as well²⁰. The Value <0.40 is considered as poor reliability, 0.40 – 0.75 is considered as fair to good reliability, and ICC values > 0.75 indicate the excellent result³².

Internal consistency

The internal consistency was tested on 389 subjects (groups A, B, and C, Table 1) by using Cronbach's alpha coefficient and the average inter-item correlation²⁵. The Cronbach's alpha coefficient measures how well a set of items measure a single construct. Values higher than 0.70 indicate acceptable results²⁵.

Responsiveness

Responsiveness of the OHIP-ALB was tested on 33 edentulous patients with a treatment demand: new complete dentures (group B2, Table 1). Therefore, they completed the OHIP questionnaire before the treatment had begun and the second time one month after they had received their new complete dentures.

It was assumed that the OHRQoL would improve after the treatment and the one-month period necessary for the patients to get used to their new dentures. The difference in the OHIP-ALB summary score between the baseline and the follow up was tested using the paired t-test and by calculating the effect size and the standardised response mean²¹. According to Cohen the effect size of 0.20 is considered small, 0.50 moderate and >0.80 large^{31–33}.

TABLE 1
OVERVIEW OF SAMPLES (NUMBER, AGE, GENDER), SAMPLING STRATEGIES, DATA-COLLECTION METHODS AND RESEARCH PURPOSE

Sample	Sample type	Data collection	N	Age mean (SD)	Age range	% women	Type of investigation
(A) General population	Random	Questionnaire ^c	119	32.6 (7.2)	20–61	46.2	Convergent validity, internal consistency
(B) Edentulous: (B1) Complete denture wearers (n=180) (B2) Without dentures with a treatment demand (n=33)	Convenience	Questionnaire ^c	213	63.7 (10.7)	41–90	46.5	Convergent validity Discriminate validity, internal consistency, test-retest reliability (n=30) Responsiveness (n=33)
(C) Students I ^b (n=27); Students II ^d (n=30)	Consecutive	Questionnaire ^c	57	27.1 (8.2)	18–42	65	Convergent validity, Internal consistency Test-retest reliability

A General population, TEB Bank

B Department of Prosthodontics, School of Dental Medicine, University of Prishtina, Kosovo and Family Medical Center – Prosthodontic polyclinic in Prishtina (B1 & B2)

C Interview-supervised, self-administered questionnaire; I^b Dental Students, Dental School, Medical Faculty, University of Prishtina and II^d Psychology Department – Private College FAMA Prishtina, branch from Mitrovica, employed and part-time student status

Data analysis

Statistical analysis was made using the SPSS 19 for Windows (SPSS Inc., Chicago, Illinois, USA) and MS Excel (Microsoft Office, Windows 2007, USA).

Results

Validity

The convergent validity was verified by the significant association between the self-reported oral health and the OHIP summary score in general population, in prosthodontic patients, as well as in the group of students ($p < 0.01$, Table 2).

TABLE 2
CONVERGENT VALIDITY: ASSOCIATION BETWEEN SELF-REPORTED ORAL HEALTH AND ALBANIAN LANGUAGE VERSION OF THE ORAL HEALTH IMPACT PROFILE WITH 49 ITEMS (OHIP-ALB).

Variable	N	OHIP(0–196) summary score: mean (SD)	Correlation coefficient and level of significance
General population (n=119):			
Excellent	59	12.61 (8.42)	
very good	52	46.3 (11.24)	
Good	8	71.5 (10.1)	0.89**
Fair	0		
unsatisfactory	0		
Prosthodontic patients B1 + B2 (n=213)			
Excellent	0		0.85**
very good	58	20.15 (5.1)	
Good	120	44.67 (11.94)	
Fair	30	75.93 (5.5)	
Unsatisfactory	5	92.2 (8.3)	
Students (n=57):			
Excellent	17	13.17 (12.1)	0.56**
very good	29	27.03 (17.90)	
Good	11	55.37 (26.16)	
Fair			
Unsatisfactory			

** $p < 0.001$

The discriminative validity was verified by the significant difference between the OHIP summary scores (including all 6 subscale scores, except Psychological discomfort) between the edentulous patients without any dentures (B2, Table 1) and the group of patients already having complete dentures (CDWs) ($p < 0.01$, Table 3). However, subjects already having complete dentures had significantly lower OHIP scores than those subjects without any dentures.

TABLE 3
PREDICTIVE (DISCRIMINATIVE) VALIDITY FOR THE SCORES OF ALBANIAN LANGUAGE 49-ITEM VERSION OF THE ORAL HEALTH IMPACT PROFILE (OHIP-ALB) QUESTIONNAIRE BETWEEN EDENTULOUS PATIENTS WITH DENTURES (N=180) AND EDENTULOUS PATIENTS WITHOUT DENTURES (N=33)

Scale	Complete denture	x	SD	t	p
Functional limitation	no	13.29	4.01	9.50	<0.001**
	yes	7.39	2.88		
Physical pain	no	10.14	3.69	16.7	<0.001**
	yes	2.87	1.80		
Psychological discomfort	no	9.86	2.74	1.4	0.16 NS
	yes	8.71	4.21		
Physical disability	no	12.14	2.14	6.7	<0.001**
	yes	7.83	3.29		
Psychological disability	no	11.21	4.27	6.6	<0.001**
	yes	5.69	4.09		
Social disability	no	6.71	2.84	10.3	<0.001**
	yes	2.05	2.13		
Handicap	no	11.07	4.08	12.1	<0.001**
	yes	4.17	2.59		
OHIP summary score	no	74.43	15.09	10.3	<0.001**
	yes	38.72	17.45		

** $p < 0.001$

Reliability

The test-retest reliability was tested in the group of students (C, 1^b, Table 1) and in the group of CDWs (30 individuals from B1 group, Table 1). It took at least two-weeks time-interval between the administration of the same OHIP-ALB49 questionnaire. None of the subjects were subjected to any oral and/or dental treatment during the two week period. However, the test-retest reliability was confirmed by no significant difference between the administrations of the same questionnaire ($p > 0.05$). The high intraclass correlation coefficients (ICC) indicated excellent results (Table 4).

The internal consistency was tested on general population, group of students and group of prosthodontic patients (Table 1), by calculating Cronbach’s alpha and the average inter-item correlation for the OHIP-ALB summary scores. The high Cronbach’s alpha values > 0.90 indicated high internal homogeneity (Table 5).

Responsiveness

To test the responsiveness of the OHIP-ALB49 questionnaire, a group of patients with a treatment demand participated (n=33, B2, Table 1). All of the edentulous patients received complete dentures and had to wear them for at least one month. The responsiveness was verified by a significantly lower OHIP subscores and the OHIP summary score after the treatment in comparison to the baseline results ($p < 0.01$). The mean change score

TABLE 4
TEST-RETEST RELIABILITY FOR OHIP SUMMARY SCORE MEASURED BY INTRAClass CORRELATION COEFFICIENTS (ICC) FOR ALBANIAN LANGUAGE 49 ITEMS VERSION (OHIP-ALB)

Sample	ICC	Mean difference	95% confidence interval	p
Students group I (n=27)	0.98	0.65	-0.61–1.90	0.30 NS
Prosthetic patients group B1 (n=30)	0.85	1.02	-1.19–4.66	0.20 NS

TABLE 5
INTERNAL CONSISTENCY FOR OHIP SUMMARY SCORE MEASURED BY CRONBACH'S ALPHA AND AVERAGE INTER-ITEM CORRELATION FOR ALBANIAN LANGUAGE 49 ITEMS VERSION (OHIP-ALB)

Samples	n	Cronbach α	Average inter-item correlation
General population (n=119)	119	0.94	0.27
Students I+II (n=57)	57	0.96	0.34
Prosthetic patients B (B1+B2) (n=213)	213	0.94	0.26

was 37,15 for the OHIP summary score (Table 6). The statistically significant difference between the pre-treatment and the post-treatment scores ($p < 0.001$) verified adequate responsiveness of the OHIP-ALB questionnaire, which was also confirmed by the standardized effect size and the standardized response mean (Table 6).

Discussion

The development of the Albanian language version of the OHIP-49 instrument was reasonable since the OHIP questionnaire has been proved to be one of the most so-

phisticated instruments to measure the impact of oral diseases and professional interventions considering the OHRQoL¹⁻³.

The OHIP instrument has been already widely accepted instrument^{1,4-9,15,25}. Recently it was also accepted in many countries in south-east Europe^{28,13-18}. The Albanian language version of the same questionnaire still does not exist.

However, the OHIP-ALB49 could be useful instrument and it might help dentists in planning treatment options for each patient, in order to improve his/her oral and general health, as well as to monitor the success of a therapy. Therefore the questionnaire might be helpful in research and longitudinal studies.

The OHIP-ALB49 may also allow comparison with other countries in this region and with other countries all over the world, especially to compare OHRQoL of specific groups of patients. To achieve this goal the original English OHIP version had to be adapted into the cultural environment of Kosovo¹. Therefore, the aim of this study was to develop the Albanian language version of the 49 item Oral Health Impact Profile (OHIP-ALB49) and to evaluate its psychometric properties (validity, reliability and responsiveness).

The administration modus of the Croatian, the Hungarian and the Slovenian version was used as a strategy in the development of the Albanian language version of the OHIP-ALB, since they certified a reliable procedure^{4,15,25}. When the subjects had to fill in the questionnaire, they were supervised to reduce the rejection rate and therefore the participation rate was 100%, without missing data.

The convergent validity of the OHIP-ALB was confirmed by the strong correlation between the self-reported oral health (scores ranging from 1–5; 1 = unsatisfactory, 5 = excellent) of the 3 different groups (general population, prosthetic patients and students) and their OHIP summary scores. As has been expected, the subjects with a better self-reported oral health, (assessed on a scale from 1 to 5), had lower OHIP-ALB summary scores. The scale from 1 = unsatisfactory to 5 = excellent) has been applied since the grades in primary and

TABLE 6
RESPONSIVENESS OF ALBANIAN LANGUAGE 49 ITEM VERSION OF THE ORAL HEALTH IMPACT PROFILE (OHIP-ALB) QUESTIONNAIRE TESTED IN PROSTHODONTIC PATIENTS WHO RECEIVED NEW COMPLETE DENTURES (N=33)

OHIP-ALB49	Mean baseline score – mean follow-up score	95% confidence interval	Standardized effect size according to Cohen	Standardized response mean	p
Functional limitation	12.68–6.05	4.78–8.49	1.74	3.64	<0.001
Physical pain	8.74–3.63	3.13–7.08	1.22	2.24	<0.001
Psychological discomfort	9.63–4.79	3.16–6.53	1.81	3.61	<0.001
Physical disability	11.68–5.21	4.89–8.06	2.93	4.06	<0.001
Psychological disability	10.16–4.63	2.62–8.43	1.67	2.68	0.001
Social disability	6.58–2.74	1.97–5.72	1.27	2.95	<0.001
Handicap	10.05–5.32	2.33–7.15	1.06	1.64	0.001
Summary score	69.53–32.37	26.80–47.51	2.19	4.36	<0.001

secondary schools in Kosovo traditionally range from 1 (unsatisfactory) to 5 (excellent).

Furthermore, the discriminative validity was confirmed by the significant difference between the scores of the edentulous patients wearing complete denture (CDWs) and the edentulous patients without any previous complete dentures ($p < 0.01$, Table 3). As expected, subjects without any dentures had higher OHIP scores than those wearing dentures. The only subscale that showed no statistically significant difference between the groups was for the domain: Psychological discomfort. This could be explained by the fact that all edentulous patients were equally psychologically concerned on their own oral status no matter of denture wearing.

The test-retest reliability was satisfactory in the both tested samples. The ICC values were higher than 0.75, indicating excellent results^{32,33}. The Cronbach's alpha coefficient also showed satisfactory results for the internal consistency of the OHIP-ALB. Values for all three sample groups were higher than 0.90². Moreover, the average inter-item correlation also confirmed satisfactory reliability of the Albanian language version of the OHIP questionnaire.

The responsiveness was tested on the group of patients with a treatment need for complete dentures. It was hypothesized that fabrication of dentures would improve OHRQoL after the one-month post-treatment period. The patients completed the questionnaire prior the treatment, while being edentulous without any previous

dentures and one-month after receiving their new complete dentures. A great and statistically significant improvement of the OHIP summary score and all subscale scores confirmed the improvement of the OHRQoL, as expected. The effect size also showed satisfactory changes of the post-treatment OHIP-score.

The results obtained for the psychometric properties of the OHIP-ALB are very similar to the original OHIP-49 version, the OHIP-H49, the OHIP-CRO49 and the OHIP-SVN49^{34,35}.

Some limitations of the present study may be in the fact that the research was carried out in a specific region which presents a vast cultural diversity and diversity of social values. However, in the present study, the questionnaire was applied as the interview trying to comprise all diversities considering the sociocultural heterogeneity of the samples to include as many of them as possible.

Excellent psychometric properties confirm Albanian language version of the OHIP-49 as a reliable instrument. It can therefore be applicable in different kinds of clinical studies³⁶⁻⁴³. Therefore, the OHIP-ALB49 questionnaire can be applied in cross-sectional and longitudinal studies in Kosovo and in Albania and the results can be compared with similar studies all over the world.

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PSIHOMETRIJSKA SVOJSTVA ALBANSKE JEZIČNE VERZIJE OHIP-ALB49 UPITNIKA U REPUBLICI KOSOVO

SAŽETAK

Svrha ovog istraživanja bila je razviti albansku jezičnu verziju »Oral Health Impact Profile« (OHIP49) upitnika i testirati psihometrijske karakteristike upitnika u tipičnom kulturnom okruženju u Republici Kosovo (OHIP-ALB). Testirana je konstruktivna valjanost: konvergentna valjanost testirana je kod 389 ispitanika (opća populacija, nosioci mobilnih proteza i studenti), a diskriminativna valjanost testirana je između bezubih pacijenata koji imaju potpune proteze (CDWs) (n=180) i bezubih pacijenata bez ikakvih proteza (n=33). Test-retest pouzdanost testirana je kod 57 ispitanika (27 studenata stomatologije i 30 pacijenata sa potpunim protezama), a unutarnja konzistencija kod 389 ispitanika. Primjerenost upitnika testirana je kod 33 pacijenata kojima je bila potrebna protetska terapija (totalne proteze). Značajna povezanost između OHIP zbroja bodova i pacijentove vlastite procjene oralnog zdravlja ($p < 0,001$) potvrdila je dobru konvergentnu valjanost OHIP-ALB49 upitnika. Diskriminativna valjanost potvrđena je značajno većim zbrojem bodova OHIP upitnika kod bezubih ispitanika koji nemaju proteze od onih koji imaju potpune proteze. Test-retest pouzdanost pokazala je visoke »intraclass« koeficijente korelacije, a također nije bilo statistički značajne razlike između zbroja bodova istih upitnika koji su ispunjeni u razmaku od 14 dana bez promjene oralnog statusa i u grupi studenata i u grupi od 30 nosilaca potpunih proteze ($p > 0,01$). Visoke vrijednosti Cronbach's alpha potvrdile su dobru unutarnju konzistenciju upitnika (0,94 u općoj populaciji i kod protetskih pacijenata, a 0,96 u populaciji studenata). Primjerenost upitnika potvrđena je statistički značajnom razlikom između aritmetičkih sredina OHIP bodova prije i nakon stomatološkog zahvata (izrada potpunih proteza) ($p < 0,001$), a također i primjerenom »veličinom efekta« (Effect size=2,19). OHIP-ALB49 pokazao se prikladnim za procjenu kvalitete života ovisne o oralnom zdravlju u populaciji Kosova.