

# Validation of a Latvian and a Russian version of the Oral Health Impact Profile for use among adults

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## SUMMARY

**Background.** The need for appraisal of oral health-related quality of life has been increasingly recognized over the last decades. The aim of this study was to develop a Latvian and a Russian version and test the validity of the Oral Health Impact Profile (OHIP-49) for use among adults in Latvia.

**Methods.** The original English version of the OHIP-49 was translated using the forward-backward technique, pilot-tested, and then applied to 60 adults aged 18 years and above. The questionnaire was filled out during face-to-face interviews conducted by one specialist.

The internal consistency of the questionnaire was evaluated using Cronbach's alpha ( $\alpha$ ) coefficient and inter-item and item-total correlations. Discriminant and convergent validities were assessed.

**Results.** Cronbach's  $\alpha$  was estimated to be 0.96. Inter-item correlations coefficients ranged from 0.19 to 0.91, with average value 0.35, while item-total correlations coefficients from 0.14 to 0.86.

**Conclusions.** The OHIP-49 is a reliable and valid questionnaire for the assessment of OHRQoL among adults in Latvia.

**Key words:** oral health impact profile, validation, OHRQoL.

## INTRODUCTION

Oral health-related quality of life (OHRQoL) is an important patient-centered endpoint to consider when assessing the impact of oral diseases in populations and evaluating the professional interventions used in attempt to improve oral health (1, 2). The Oral Health Impact Profile (OHIP) is a questionnaire designed to measure self-reported dysfunction, discomfort and disability attributed to oral conditions (3), and is based on a conceptual oral health model outlined by Locker in 1988. The original instrument has 49 items representing 7 domains (functional limitation, physical pain, psychological discomfort,

physical disability, psychological disability, social disability, and handicap) and has been shown to be reliable (4, 5), sensitive to changes and to exhibit suitable cross-cultural consistency (6, 7). The OHIP is available in several languages (German, Swedish, Korean, French, Malaysian, Persian, Sinhalese, Spanish and Chinese), but there are no Latvian and Russian translations available and also no suitable alternative OHRQoL tools developed in Latvia. The aims of this study were to develop Latvian and Russian version of the Oral Health Impact Profile and to evaluate its convergent and discriminative validity, and its internal consistency for use among adult population of Latvia.

Health-Related Quality of Life (HRQoL) is a multi-dimensional concept, which refers to patients' physical, psychological and social well-being, and is widely recognised for the assessment of healthcare outcomes. A factor, however, that can significantly impact on the construct of HRQoL is the oral health of the individual. Oral Health-Related Quality of Life (OHRQoL) measures have been widely used in the evaluation of oral health needs and combined with clinical indicators in order to better identify not only patients' symptoms due to oral diseases

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but also patients' ability to perform their daily activities (7-9).

One of the most widely known OHRQoL instruments is the short form of the Oral Health Impact Profile consisting of 14 items (OHIP-14), which is derived from the original 49-item version developed by Slade and Spenser, for the measurement of disability and discomfort due to oral conditions. This instrument has been translated and validated in many languages in different regions of the world.

The objective of this study was to translate the original English version of the OHIP-49 into Latvian and Russian, and test its validity and reliability for use among adults in Latvia.

**METHODS**

A Latvian and Russian version of the OHIP- 49 was developed and its psychometric properties were tested in 2 stages: 1) a linguistic translation of the original OHIP-49 into Latvian and Russian and 2) to evaluate the construct's validity.

For the OHIP-49 to be translated, four independent translations were conducted: two forward and two backward translations. Following comparison of these two forward translations, to ensure the best interpretation of the original version, the preliminary Latvian and Russian version of the OHIP-49 was generated. Afterwards, two independent bilingual individuals unfamiliar with the original version, whose first language was English, were asked to conduct the backward translations compared to the original English version to check the similarity of their structure. The final version of the Latvian and Russian OHIP-49 was produced after minor modifications were made according the results of a pilot study. The participants consisted of a convenience sample of 60 adult patients undergoing a dental and orthodontic check-up or accompanying parents in the Institute of Stomatology. This was selected based on the availability of an appropriate middle-age group of the population in one place.

Those presenting with acute dental problems were excluded.

All subjects were acquainted with the purpose of the study, which was ethically approved by the Research Committee of the Riga Stradiņš University.

Out of 67 approached individuals, 60 agreed to participate in the study (a response rate of 89 %), all of who provided informed consent.

A self-administrated questionnaire was designed and one specialist in OHRQoL terms conducted face-to-face interviews.

Participants were asked to evaluate on a 5- point Likert scale (0=never, 1=hardly ever, 2=occasionally, 3=fairly often and 4=very often) how frequently during the last year had experienced any of the problems assessed by the 49-item OHIP.

**Scoring Method and Data Analysis**

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) v.19.

To assess the reliability of the OHIP-49, Cronbach's  $\alpha$  coefficient was used. In addition, the impact on the alpha value by the removal of OHIP-49 items (alpha if item deleted) was evaluated, as well as inter-item and item-rest correlations.

**RESULTS**

The comparison between the original OHIP questionnaire and the back translated English version did not reveal conceptual content differences. The participation rate was acceptable (89%) . The mean age in study group was 33.5 years (Table 1).

**Table 1.** Mean age of the study groups

Questionary language Latvian				
n	Mean age	Std. Dev.	Max age	Min age
30	32.87	13.32	60	19
Questionary language Russian				
n	Mean age	Std. Dev.	Max age	Min age
30	36.2	12.42	68	20

**Table 2.** Mean age comparison between Latvian and Russian groups

Group	n	Mean	Std. error	Std. deviation	95% Conf. Interval	
Lv	30	32.87	2.43	13.32	27.89	37.84
Ru	30	36.20	2.27	12.42	31.56	40.83
Combined	60	34.53	1.66	12.88	31.20	37.86
Diff.		-3.33	3.32		-9.99	3.32

**Table 3.** Gender differences of the study group

Gender	Language		Total
	L/n	R/n	
M	9 (30%)	9 (30%)	18
F	21 (70%)	21 (70%)	42
Total	30	30	60 (100%)

Mean age differences were not statistically significant.

There were no differences between different ages in understanding OHIP questions (Table 2).

The gender differences for both Latvian and Russian groups showed female prevalence – 70% of all participants (Table 3).

Reliability analysis was carried out based on the OHIP inter-item correlation for Latvian and Russian groups. Internal consistency was calculated for OHIP for Latvian group (Table 4). Cronbach's alpha coefficient was 0.96. Interitem correlation average value 0.35 for each of 7 dimensions and for all together.

Internal consistency for OHIP for Russian group (Table 5). Cronbach's alpha coefficient was 0.97. Interitem correlation average value 0.44 for each of 7 dimensions and for all together.

**Table 4.** Internal consistency for OHIP for Latvian group, n=30

Internal consistency for OHIP – and its 7 domains				
Dimensions	Item-test correlation	Item-rest correlation	Average inter-item correlation	Cronbach's $\alpha$
Functional limitation	0.46	0.37	0.35	0.96
Physical pain	0.41	0.38	0.35	0.96
Psychological discomfort	0.83	0.81	0.34	0.96
Physical disability	0.55	0.53	0.35	0.96
Psychological disability	0.82	0.81	0.34	0.96
Social disability	0.54	0.53	0.35	0.96
Handicap	0.78	0.77	0.43	0.96

**Table 5.** Internal consistency for OHIP for Russian group, n=30

Internal consistency for OHIP – and its 7 domains				
Dimensions	Item-test correlation	Item-rest correlation	Average inter-item correlation	Cronbach's $\alpha$
Functional limitation	0.49	0.46	0.44	0.97
Physical pain	0.58	0.56	0.44	0.97
Psychological discomfort	0.68	0.64	0.44	0.97
Physical disability	0.71	0.61	0.44	0.97
Psychological disability	0.78	0.77	0.44	0.97
Social disability	0.79	0.78	0.44	0.97
Handicap	0.81	0.78	0.44	0.97

### Reliability

The Cronbach's alpha value of the OHIP-49 was estimated to be 0.96 for Latvian group and 0.97 for Russian, representing an excellent internal consistency. The removal of one item at a time resulted in lower alpha values than the original one, supporting the inclusion of all items. By analyzing the matrix of inter-item correlations a positive correlation between all items was found.

### DISCUSSION

This study aimed to generate and evaluate the Latvian and Russian version of the OHIP-49, in terms of validity and reliability, for use among adult population. To this effect, the original English version of the OHIP-49 was translated using the forward-backward technique, pilot-tested in a convenience group of adults and then applied to a sample of the Latvian population having approximately the same socio-demographic and oral health conditions, in order for its validity and reliability to be tested. The translation process from English to Latvian and Russian was straightforward and the comparison between the original OHIP questionnaire and the back translated English version did not reveal conceptual content differences.

The findings of our study, which is the first using the OHIP-49 in Latvia confirm that the OHIP-49 is a reliable and valid instrument for the measurement of OHRQoL among adults in Latvia.

The internal consistency of the Latvian and Russian OHIP-49 (0.96 and 0.97) was found to be excellent, with the Cronbach's alpha coefficient greatly exceeding the minimum recommended value of 0.7.

The Cronbach's alpha coefficient reported in our study was slightly better than those reported by Slade in the original English version, but the same with that found for Swedish adults (10) and Dutch population (11). The substantial internal consistency of the instrument was also supported by the findings regarding inter-item and item-total correlations. Specifically, all the inter-item correlations were positive, and none was high enough

for any item to be redundant, while the item-total correlations coefficients were above the recommended threshold for including an item in a scale. Similar results have been observed in the Spanish (12) and the Sinhalese version (13) of the OHIP-14, both evaluating the reliability of the instrument among adults. The mean score values in this study suggest a relatively low impact of oral health in the population studied, similar to the impact reported among Myanmar adolescents (14) with low levels of dental disease and considerably lower than the

medically compromised elderly people (5) and than the oral health impact reported in studies comprising minority adolescent populations with higher oral disease burden and adult populations (15-18).

## CONCLUSIONS

The present findings indicate that the OHIP-49 proved to be a valid and reliable measure to be used in studies focusing on the measurement of adults' OHRQoL in Latvian adults.

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