VOJNOSANITETSKI PREGLED
VOJNOMEDICINSKA AKADEMIJA
Crnotravska 17, 11 000 Beograd, Srbija
Tel/faks: +381 11 2669689
vsp@vma.mod.gov.rs

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PREVOD NA SRPSKI JEZIK I KULTUROLOŠKA ADAPTACIJA INSTRUMENTA ZA MERENJE KVALITETA ŽIVOTA VEZANOG ZA ORALNO ZDRAVLJE (OHQOL-UK[W])

Authors Marija Milosevic, Suzana Zivanovic, Slobodan M. Jankovic, Vojnosanitetski pregled (2019); Online First May, 2019.

UDC:

DOI: https://doi.org/10.2298/VSP161212052M

When the final article is assigned to volumes/issues of the Journal, the Article in Press version will be removed and the final version appear in the associated published volumes/issues of the Journal. The date the article was made available online first will be carried over.
TRANSLATION TO SERBIAN AND TRANSCULTURAL ADAPTATION OF THE ORAL HEALTH RELATED QUALITY OF LIFE (OHQOL-UK[W]) INSTRUMENT

PREVOD NA SRPSKI JEZIK I KULTUROLOŠKA ADAPTACIJA INSTRUMENTA ZA MERENJE KVALITETA ŽIVOTA VEZANOG ZA ORALNO ZDRAVLJE (OHQOL-UK[W])

Marija Milosevic, Suzana Zivanovic and Slobodan M. Jankovic

Faculty of Medical Sciences, University of Kragujevac

Short title: ORAL HEALTH RELATED QUALITY OF LIFE

Address all correspondence to:

Prof. Slobodan M. Jankovic, MD, MSc, DSc, Prim

Faculty of Medical Sciences, University of Kragujevac

Svetozara Markovica Street, 69

34000, Kragujevac, Serbia

slobnera@gmail.com
Abstract

Background / Aim. Measuring health-related quality of life is of great help to clinicians when they have to choose optimal therapy in concordance with their patients and estimate its effects. The aim of this study was to translate the oral health related quality of life-OHQoL-UK(W) questionnaire from English to Serbian, to make necessary cultural adaptations of the translation, and to test its reliability in a sample of adult Serbian patients.

Methods. After obtaining permission from the authors, translation and cultural adaptation of the OHQoL-UK(W) was made according to the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) guidelines. Reliability of the Serbian translation was tested on a sample of 250 patients through calculation of Cronbach’s alpha, as a measure of internal consistency.

Results. Serbian translation of the OHQoL-UK(W) had very similar degree of internal consistency (Cronbach’s alpha 0.947), and correlated satisfactorily with the VAS score and inversely with the Decay-missing-filled teeth (DMFT) index. Factorial analysis revealed only one factor, as in the original scale.

Conclusions. Serbian translation of the OHQoL-UK(W) is reliable instrument for measuring oral health related quality of life in adult dentistry patients.

Key words: oral health; health-related quality of life; translation and transcultural adaptation.

Apstrakt


Metode. Pošto je dobijena dozvola od autora za prevođenje i kulturološku adaptaciju OHQoL-UK(W) instrumenta, to je učinjeno prema vodiču Međunarodnog društva za farmakoekonomiju i proučavanje ishoda lečenja (ISPOR). Pouzdanost prevoda na srpski jezik ispitan je na uzorku od 250 stomatoloških pacijenata kroz izračunavanje Cronbachove alfe, kao mere unutrašnje saglasnosti. Rezultati. Prevod OHQoL-UK(W) instrumenta na srpski jezik imao je veoma sličnu vrednost Kronbahove alfe (0.947) kao original, a vrednosti prevedenog instrumenta su dobro korelirale sa vrednostima na vizuelnoj analognoj skali i sa vrednostima KEP indeksa(DMFT – negativna korelacija). Faktorska
analiza je otkrila samo jedan faktor, kao što je pokazano kod originalnog upitnika. 

**Zaključak.** Prevod OHQoL-UK(W) upitnika na srpski jezik pouzdan je instrument za merenje kvaliteta života povezanog sa oralnim zdravljem kod odraslih stomatoloških pacijenata.

**Ključne reči:** oralno zdravlje; kvalitet života povezan sa zdravljem; prevodi kulturološko prilagođavanje.

**Introduction**

Measuring health-related quality of life is of great help to clinicians when they have to choose optimal therapy in concordance with their patients and estimate its effects[1]. During the last few decades several instruments for measuring oral health-related quality of life were developed in English language, like the General Oral Health Assessment Index (GOHAI) and the Oral Health Impact Profile (OHIP) [2] One of such instruments is oral health related quality of life-OHQoL-UK(W) questionnaire with 16 items, constructed and validated in adult population of Great Britain[3]. The OHQoL-UK(W) has high internal consistency (Cronbach’s alpha 0.94) and each item ask about opinion of patients about “effect” (good, bad or none) of oral health on certain aspect of quality of life and “impact” or extent of this effect (none, little, moderate, great or extreme impact on quality of life) [4,5].

There are a few instruments for measuring oral health related quality of life available in Serbian language (e.g. translation of Orthognatic Quality of Life Questionnaire (OQLQ) and Oral Impacts on Daily Performance (OIDP))[6,7]. While the first instrument had very good psychometric results, the latter showed minimal internal consistency (Cronbach’s alpha was only 0.75), and was tested on small sample with 44 patients only. Besides, the OIDP instrument lacks questions about effect of oral health on professional and financial aspects of quality of life, as well as on self-confidence of the patients [8].

Increasing number of instruments for measuring oral health related quality of life available in Serbian language would help clinicians to estimate this important outcome with more precision and adjust their treatment plans accordingly. The aim of this study was to translate the oral health related quality of life-OHQoL-UK(W) questionnaire from English to Serbian, to make necessary cultural adaptations of the translation, and to test its reliability in a sample of adult Serbian patients.
Methods

*The Instrument*

Oral health related quality of life-OHQoL-UK(W) questionnaire is a 16-item questionnaire, and each item asks about the opinion of patients about “effect” of oral health on certain aspect of quality of life and “impact” or extent of this effect [4,5]. The items are rated on a scale from 1 to 9 (1 = extreme bad effect, 9 = extreme good effect). There are no items with reversed scoring within the scale, and total score is calculated by simple summation of scores on individual items, ranging from 16 to 144.

*OHQoL-UK(W) Translation*

Translation and cultural adaptation of the OHQoL-UK(W) was made according to the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) guidelines [9]. Permission for translation of the OHQoL-UK(W) from English into Serbian was granted by the authors of the original scale (Drs. R. Bedi and C. McGrath). The original scale was first translated into Serbian by two independent translators, authors of this article. The final Serbian version was derived from combination of the two independent translations at the meeting of the study investigators. The Serbian version was then translated back into English by Ron Strauss, native English speaker and also fluent speaker of Serbian, citizen of USA and Real Estate Agent, who had not read the original English version of the OHQoL-UK(W).

Back-translation in English was then compared with original English version by the study investigators, and the final Serbian version of the OHQoL-UK(W) was agreed at a new meeting of the investigators. The final OHQoL-UK(W) translation was then tested on 8 local dentistry patients (at Oral health primary care facility in Kragujevac, Serbia) for clarity and comprehension. A few minor changes (only punctuation) were made after this preliminary administration and the final Serbian version of the OHQoL-UK(W) was prepared for reliability testing. The whole process of translation was also in accordance with recommendations by Streiner and Norman[10].

*Patients*

Final Serbian version of the OHQoL-UK(W) was tested for reliability on patients of the Oral health primary care facility in Kragujevac, Serbia, on one occasion, between the November the 1st 2015, and November the 1st, 2016. The sample was composed of
250 participants (167 females, 83 males; average age 37.3 ± 17.6 years), as it was minimum number to achieve sufficient statistical power, and it was consecutive, i.e. all patients who visited the facility and satisfied inclusion and exclusion criteria were included. The inclusion criteria were: being in need of a dental intervention (treatment of dental caries), preserved cognitive capacity and sufficient literacy. The exclusion criteria were age below 18 or above 75 years[11] and diagnosis of a major mental disease (major depression, schizophrenia or bipolar disorder).

All of the included participants (250) agreed to fill in the questionnaire. Besides the OHQol-UK(W) scale, the patients were offered to estimate their oral health on the visual analogue scale (VAS), 10 cm long, with marked millimeters, from 1 to 100. At the same time, values of their decay-missing-filled teeth (DMFT) index was recorded by the dentists (the authors). The study was approved by the Ethics Committee of the Oral health primary care facility in Kragujevac, Serbia, including the written informed consent forms.

Reliability Testing

Reliability of the Serbian translation of the OHQol-UK(W) was tested by two methods. Firstly, internal consistency was determined through calculation of Cronbach’s alpha for the questionnaire as a whole. Secondly, the questionnaire was divided by split-half method to two parts with the same number of questions (8 each), and Cronbach’s alpha for each of the parts was calculated. Using the alphas for both parts, number of questions in each part and average correlation between questions in both parts of the original questionnaire, the Spearman-Brown coefficient for the questionnaire as a whole was calculated by the Spearman-Brown “prediction” formula[10].

Factorial Analysis

Factorial analysis is used to reveal whether certain phenomenon (in this case quality of life) has only one or more facets (domains). Confirmatory factorial analysis of the Serbian translation of the OHQol-UK(W) was made by the principal components method [12]. First, suitability of the questionnaire and sample for factorial analysis was tested by Kaiser-Meyer-Olkin measure of sampling adequacy and by the Bartlett’s test of sphericity. Then, the factors were extracted at first without rotation, with conditions that Eigenvalues had to be greater than 1, and using Scree-plot (the extracted factors were above the “elbow” of the graph). Second, referent axes were rotated orthogonally, by the Varimax method, and another extraction of the factors was made, using the same criteria as for the non-rotated
solution. Extracted factors were then compared with the factors of the original OHQoL-UK(W) scale, and named accordingly.

Validity

Criterion validity of the Serbian translation of the OHQoL-UK(W) was tested by correlation of its total scores with total scores of the same study participants on VAS and with the Decay-missing-filled teeth (DMFT) index values. The scores and index values were correlated by the Spearman’s method, since they did not follow normal distribution. All calculations were made in Statistical Program for Social Sciences (SPSS), version 18.

Results

Characteristics of the participants are presented in the Table 1.

Reliability

Results of the OHQoL Serbian translation among participants showed high internal consistency, with Cronbach’s alpha being 0.947. When the OHQoL-UK(W) scale was divided by the split-half method to two parts, with the same number of questions, Cronbach’s alphas were 0.950 and 0.868, for the both parts respectively; the value of Spearman-Brown coefficient for the OHQoL-UK(W) as a whole calculated from the split-half method by the Spearman-Brown “prediction” formula was 0.918. The mean total score (± standard deviation) of the scale was 109.4 ± 25.2. Translated questions to Serbian, mean values and standard deviations of responses for each question, as well as skewness and kurtosis of distributions, are shown in the Table 2.

Factorial Analysis

Kaiser-Meyer-Olkin test confirmed sampling adequacy with its value of 0.958 and the Bartlett’s test of sphericity was highly significant ($\chi^2 = 4,174.508; \text{df} = 120; p = 0.000$). The orthogonal rotation could not be performed, because only one factor was extracted in the first place (with loading of 10.847, which explains 67.8% of variance). Our results confirmed the factor analysis of the original scale, where only one factor was extracted, too [1].

Validity
The total score of the OHQoL-UK(W) correlated significantly with the VAS score (Spearman’s correlation coefficient 0.221, p = 0.000), and with the value of DMFT index (Spearman’s correlation coefficient -0.372, p = 0.000)(see Table 1 for absolute values of VAS score and DMFT index).

**Discussion**

The concept of OHQoL-UK(W) scale is based on assumption that oral health affects quality of life, and it was indeed shown in the studies where large proportion of respondents perceived oral health as important predictor of their quality of life[13]. Positive influence of good oral health on quality of life is especially present in younger, more educated persons who more frequently visit their dentists [14, 15]. This effect was captured in our sample, too, since it consisted of whole spectrum of participants in regard to education and age.

While kurtosis for majority of the OHQoL-UK(W) items was within the acceptable range for normal distribution, responses of the participants were significantly skewed to the left, i.e. majority of the participants tended to score higher on the scale from 1 to 9 (mostly about 7). Responses to the item about influence of breath on quality of life were skewed the most, and they peaked much above the responses to other items. Similar phenomenon was observed in Serbian population of elderly patients with another instrument for measuring health-related quality of life (Geriatric Oral Health Assessment Index) [16], probably reflecting cultural specificities in Serbia, where patients are not that demanding when oral health is in question, i.e. their estimate is over-optimistic. Concerns about oral health and periodontal condition are below average in Serbian patients, as compared to patients from other countries [17], which could explain why their estimate regarding own oral health related quality of life was unrealistically high.

Although the OHQoL-UK(W) has questions that aim to capture physical, social and psychological aspects of quality of life separately, it actually measures one phenomenon (as confirmed by factor analysis) because these aspects of oral health related quality of life are interconnected and dependent one on another. Oral cavity is not only essential for feeding, but it is an instrument of interpersonal and social communication, so it is not surprising that all aspects of quality of life are simultaneously affected by the oral health status [18, 19].

Recent systematic review found 18 different instruments for measuring oral health-related quality of life, and the best psychometric properties were demonstrated for Early
Childhood Oral Health Impact Scale and Child Perceptions Questionnaire 11-14 [20]. Specific instruments showed worse properties than instruments generic for oral health in total. Our translated questionnaire is generic, and it showed high reliability and validity, within the range of other generic instruments. However, its responsiveness (temporal stability) was not measured, and better interpretation of scores (e.g. estimating the minimal important difference) remains to be explored in future studies.

Our study showed that Serbian translation of the OHQoL-UK(W) is as reliable as the original instrument in English, since it has very similar degree of internal consistency, and correlates satisfactorily with the VAS score and inversely with the DMFT index. Also, there is only one factor which is composed of all items of the Serbian translation of the scale, which corresponds to the factorial structure of the original scale (also only one factor) [1]. Therefore, Serbian translation of the OHQoL-UK(W) is reliable instrument for measuring oral health related quality of life in adult dentistry patients, which could be of great help in clinical practice when dentists evaluate effects of therapy and prepare future treatment plans.

Acknowledgements

This study was financially supported by Grant No 175007 given by the Serbian Ministry of Education.

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Table 1.

Characteristics of the study participants (n = 250).

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age ± standard deviation</td>
<td>37.3 ± 17.6 years</td>
</tr>
<tr>
<td>Median (max - min)</td>
<td>29.0 (74-18)</td>
</tr>
<tr>
<td>Male/female</td>
<td>83/167 (33.2% / 66.8%)*</td>
</tr>
<tr>
<td>Having at least one chronic, non-contagious, systemic disease:</td>
<td>49/201 (19.6% / 80.4%)*</td>
</tr>
<tr>
<td>yes/no</td>
<td></td>
</tr>
<tr>
<td>Having allergy of any kind: yes/no</td>
<td>34/216 (13.6% / 86.4%)*</td>
</tr>
<tr>
<td>Smoking cigarettes: yes/no</td>
<td>70/180 (28.0% / 72.0%)*</td>
</tr>
<tr>
<td>Drinking alcohol every day: yes/no</td>
<td>8/242 (3.2% / 96.8%)*</td>
</tr>
<tr>
<td>Had major surgery in the past: yes/no</td>
<td>80/170 (32.0% / 68.0%)*</td>
</tr>
<tr>
<td>Mean DMFT index ± standard deviation</td>
<td>13.1 ± 7.1</td>
</tr>
<tr>
<td>Median (max-min)</td>
<td>12 (28-1)</td>
</tr>
<tr>
<td>Mean VAS score ± standard deviation</td>
<td>51.9 ± 35.8</td>
</tr>
<tr>
<td>Median (max-min)</td>
<td>51 (100-0)</td>
</tr>
</tbody>
</table>

* - n - number of participants; % - percent of participants
Table 2.

Descriptive statistics for each of the translated items of the OHQoL-UK(W).

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
<th>SKEWNESS</th>
<th>KURTOSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating (Kakav uticaj ima stanje Vaše usne duplje na to kako se hranite i uživate u hrani?)</td>
<td>6.90</td>
<td>1.890</td>
<td>-.817</td>
<td>.390</td>
</tr>
<tr>
<td>Appearance (Kakav uticaj ima stanje Vaše usne duplje na Vaš izgled?)</td>
<td>6.84</td>
<td>1.890</td>
<td>-.616</td>
<td>-.219</td>
</tr>
<tr>
<td>Speech (Kakav uticaj ima stanje Vaše usne duplje na Vaš govor?)</td>
<td>7.08</td>
<td>1.791</td>
<td>-.586</td>
<td>-.202</td>
</tr>
<tr>
<td>General health (Kakav uticaj ima stanje Vaše usne duplje na Vaše opšte zdravstveno stanje?)</td>
<td>6.95</td>
<td>1.792</td>
<td>-.628</td>
<td>.160</td>
</tr>
<tr>
<td>Sleep (Kakav uticaj ima stanje Vaše usne duplje na Vašu sposobnost da se opustite i spavate?)</td>
<td>6.80</td>
<td>1.882</td>
<td>-.498</td>
<td>-.263</td>
</tr>
<tr>
<td>Social life (Kakav uticaj ima stanje Vaše usne duplje na Vaš društveni život?)</td>
<td>6.98</td>
<td>1.765</td>
<td>-.408</td>
<td>-.598</td>
</tr>
<tr>
<td>Romantic relationship (Kakav uticaj ima stanje Vaše usne duplje na Vaše ljubavne veze?)</td>
<td>6.97</td>
<td>1.783</td>
<td>-.277</td>
<td>-.910</td>
</tr>
<tr>
<td>Smiling (Kakav uticaj ima stanje Vaše usne duplje Vaš osmeh i smejanje?)</td>
<td>6.98</td>
<td>2.020</td>
<td>-.786</td>
<td>-.065</td>
</tr>
<tr>
<td>Self-confidence (Kakav uticaj ima stanje Vaše usne duplje na Vaše samopuzdanje?)</td>
<td>6.96</td>
<td>1.884</td>
<td>-.512</td>
<td>-.611</td>
</tr>
<tr>
<td>Worry (Kakav uticaj ima stanje Vaše usne duplje na Vašu bezbrižnost (nedostatak zabrinutosti)?)</td>
<td>6.63</td>
<td>1.916</td>
<td>-.344</td>
<td>-.493</td>
</tr>
<tr>
<td>Mood (Kakav uticaj ima stanje Vaše usne duplje na Vaše raspoloženje?)</td>
<td>6.76</td>
<td>1.932</td>
<td>-.458</td>
<td>-.434</td>
</tr>
<tr>
<td>Work (Kakav uticaj ima stanje Vaše usne duplje na Vaš posao ili sposobnost obavljanja svakodnevnih poslova?)</td>
<td>6.61</td>
<td>1.781</td>
<td>.017</td>
<td>-.945</td>
</tr>
<tr>
<td>Finance (Kakav uticaj ima stanje Vaše)</td>
<td>6.50</td>
<td>1.842</td>
<td>-.069</td>
<td>-.564</td>
</tr>
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<td>-----------------------------------------------------------------</td>
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<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>usne duplite na Vaše prihode?</td>
<td>6.70</td>
<td>1.763</td>
<td>-.238</td>
<td>-.465</td>
</tr>
<tr>
<td>Personality (Kakav uticaj ima stanje Vaše usne duplje na Vašu ličnost?)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comfort (Kakav uticaj ima stanje Vaše usne duplje na Vašu udobnost?)</td>
<td>6.59</td>
<td>1.878</td>
<td>-.406</td>
<td>-.175</td>
</tr>
<tr>
<td>Breath (Kakav uticaj ima stanje Vaše usne duplje na Vaš zadah?)</td>
<td>7.01</td>
<td>4.401</td>
<td>7.280</td>
<td>68.962</td>
</tr>
</tbody>
</table>

Received on December 12, 2016.
Revised on October 25, 2018.
Accepted April 30, 2019.
Online First May, 2019.