

## Development of the Indonesian version of the Oral Health Impact Profile in Edentulous Prosthodontic Patients

Muslita Indrasari<sup>1\*</sup>, Lindawati S. Kusdhany<sup>2</sup>, Diah Ayu Maharani<sup>3</sup>, R. Irawati Ismail<sup>4</sup>

1. Lecturer of Prosthodontics Department of, Faculty of Dentistry, Universitas Indonesia, Jakarta 10430, Indonesia.

2. Professor of Prosthodontics Department, Faculty of Dentistry, Universitas Indonesia, Jakarta 10430, Indonesia.

3. Professor of Preventive and Public Health Dentistry Department, Faculty of Dentistry, Universitas Indonesia, Jakarta 10430, Indonesia.

4. Professor of Psychiatrics Department, Faculty of Medicine, Universitas Indonesia, Jakarta 10430, Indonesia.

### Abstract

Oral Health Impact Profile in Edentulous (OHIP-EDENT) is an instrument that measures several aspects of oral health-related quality of life as it relates to edentulous patients. Numerous studies have shown that edentulous has an impact on an individual's quality of life. This instrument aids in detecting the impact of oral health on the quality of life of patients who wear prostheses.

The purpose of this study was to develop the OHIP-EDENT in Indonesian version for edentulous patients. The questionnaire was translated into Indonesian, back-translated, pre-tested, and cross-culturally adapted. The qualitative interviews were carried out of 12 subjects, 46-77 years old, with diverse levels of formal education. All subjects were undergoing complete or single complete denture treatments at Dental Hospital Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia. Since an expert committee agreed upon the original version, the questionnaire was translated, back-translated, and the outcomes of the qualitative interviews were used to finalize the revised instrument. After the pretesting, the adapted Indonesian OHIP-EDENT can be used as an instrument that is easy to use by edentulous patients undergoing complete or single denture treatments. Further analyses of the questionnaire's psychometric properties are needed to confirm its validity and reliability in target settings.

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### Introduction

A problem in a new set of adaptation of a questionnaire is time-consuming and costly. A self-report questionnaire permit efforts of collecting data to be the same in cross-national studies or to prevent selection bias. This questionnaire is associated with studies that must exclude all respondents, for example, who were unable to complete a form in English because there are no translated versions of the questionnaire.<sup>1</sup>

The term "cross-cultural adaptation" is

used to explain a process that considers both languages (translation) and cultural adaptation issues in the process of formulating a questionnaire for use in another setting. The process involves adapting individual items, the instructions for the questionnaire, and the response options. The process of cross-cultural adaptation aimed to produce similarity between source and target based on content. An imperfect translation process may lead to an instrument that is not similar to the original questionnaire.<sup>2,3</sup> The lack of similarity limits the comparability of responses across populations divided by language or by culture. The key learning point is that the translation does not automatically present a valid measure of another culture's health. According to Guyatt, careful translation

#### \*Corresponding author:

Muslita Indrasari  
Department of Prosthodontics, Faculty of Dentistry,  
Universitas Indonesia, Jakarta 10430, Indonesia.  
E-mail: [muslita.indrasari@ui.ac.id](mailto:muslita.indrasari@ui.ac.id)

verification should be done as long as the process and in the final testing.<sup>4</sup>

This study developed an instrument for assessing the quality of life among Indonesians using a cross-culturally adapted version of the OHIP-EDENT as a primary instrument for the assessment of edentulous patients undergoing complete or single complete denture treatments.

The Oral Health Impact Profile for Edentulous (OHIP-EDENT)<sup>5</sup> is an OHIP-49 adapted version, retaining the essential questions from each original subscale because this is considered too long for epidemiological research.<sup>6</sup> However, the instrument comprises 49 questions, which are divided into seven subscales, which made it comprehensive and challenging at the same time. The need for its short version was thus considered without affecting its scope of application.

Among the available short versions, the OHIP-EDENT has been deemed the most appropriate instrument for the edentulous patients, as it presented a set of specific questions. The instrument detects the impact of oral health on patients' quality of life with complete denture dentures before and after they have received them,<sup>5</sup> it could detect oral health-related QOL changes in edentulous patients with new or different dentures.<sup>7</sup> The instrument was successfully employed to evaluate patient satisfaction regarding the use of complete dentures.<sup>8</sup> The OHIP-EDENT was specifically made for edentulous subjects and has been widely used in many studies to evaluated oral health-related quality of life (OHQoL).<sup>5,9</sup>

### Materials and methods

The subscale of OHIP-EDENT, as shown in Table 1, consists of 7 dimensions: functional limitation (3 items), physical pain (4 items), psychological discomfort (2 items), physical disability (3 items), psychological disability (2 items), social disability, and handicap (5 items). The OHIP-EDENT has good validity and reliability and has also been translated into

several languages.<sup>10</sup> It is indicated to be used for OHRQoL evaluation with the elderly or patients after replacing missing teeth,<sup>11</sup> but some authors state there were missing properties in post-treatment evaluations.<sup>5</sup> It is specific to edentulous patients and presents questions addressing masticatory capacity, pleasure in eating, comfort and confidence while wearing the dentures, and relationship problems.

Dimension	No	Item
Functional limitation	1	Have you had difficulty chewing any foods because of problems with your teeth, mouth, or dentures?
	2	Have you had food catching in your teeth or dentures?
	3	Have you felt that your dentures have not been fitting properly?
Physical pain	4	Have you had painful aching in your mouth?
	5	Have you found it uncomfortable to eat any foods because of problems with your teeth, mouth, or dentures?
	6	Have you had sore spots in your mouth?
	7	Have you had uncomfortable dentures?
Psychologic discomfort	8	Have you been worried by dental problems?
	9	Have you been self-conscious because of your teeth, mouth, or dentures?
Physical disability	10	Have you had to avoid eating some foods because of problems with your teeth, mouth, or dentures?
	11	Have you had to interrupt meals because of problems with your teeth, mouth, or dentures?
	12	Have you been unable to eat with your dentures because of problems with them?
Psychologic disability	13	Have you been upset because of problems with your teeth, mouth, or dentures?
	14	Have you been a bit embarrassed because of problems with your teeth, mouth, or dentures?
Social disability	15	Have you been less tolerant of your partner or family because of problems with your teeth, mouth, or dentures?
	16	Have you been a bit irritable with other people because of problems with your teeth, mouth, or dentures?
	17	Have you avoided going out because of problems with your teeth, mouth, or dentures?
Handicap	18	Have you been unable to enjoy other people's company as much because of problems with your teeth, mouth, or dentures?
	19	Have you felt that life, in general, was less satisfying because of problems with your teeth, mouth, or dentures?

**Table 1.** The original version of OHIP-EDENT<sup>8</sup>.

This self-administered questionnaire requires the respondent to indicate each item on a 5-point Likert scale. A simple score was calculated by adding the responses to all the questions. The numerical values were 0 = never, 1 = seldom, 2 = sometimes, 3 = often, 4 = very

often. It ranges from 0 to 76. The lowest score represents a satisfactory perception of an individual's oral status, higher satisfaction, and better quality of life.<sup>10</sup>

#### Formation of the Indonesian version of OHIP-EDENT

Even though there are well-established methodological approaches for translating, adapting, and validating instruments for use in cross-cultural health care research, a significant variation in the use of these approaches continues to prevail in the health care literature.<sup>1</sup> There was no clear agreement among researchers on how the approaches should be used or combined, significant diversity of translators' qualifications, and a lack of detailed information about the translation, back-translation, validation, testing, and revision and refinement of the instruments. A comprehensive process that involves the translation of an instrument and a careful evaluation of its adaptation and cross-cultural validation should have consisted in the procedure.<sup>12</sup>

A bilingual professional translator translated the English version of the OHIP-EDENT according to the standard guidelines for cross-cultural adaptation.<sup>1</sup> The translation and back-translation were evaluated and revised by an expert panel comprising bilingual dentists. As the representative of a lay-speaking language were a psychologist and public health researcher.

The first translation was translated back into English by another bilingual professional translator, who had not learned the original form of the questionnaire.<sup>13,14</sup> The synthesized version was developed after a discussion between the translator and researchers. The synthesized versions of the translation and back translation were compared. The independent translators and back translators assessed the translation literally and determined if both translated and back-translated versions held equivalent meaning and were suitable for later use to the patients.<sup>15,16</sup>

The translated version in the Indonesian language was pilot tested on five respondents to determine semantic equivalence, assess their understanding of each item, its sensitivity to Indonesian culture, and the application of proper wording. They were a convenience sample consisting of males aged 64–86 years, with different levels of formal education. All respondents were complete edentulous or edentulous in maxilla or mandible, seeking

treatment at Dental Hospital Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia. All respondents completed the questionnaire by Google form and were interviewed by phone considering the Covid-19 pandemic. They were asked to answer the questionnaire following their prior condition with the available answer choices and comment on words or sentences that were difficult to understand. Then the researcher interviewed each respondent to explore the confusing items and asked them about other factors that affect their lives related to their denture. Researchers wrote the respondents' comments.

The expert committee consisted of one methodologist and a psychiatrist, dental health professionals, and translators were discussed and confirmed that all items were translated correctly from the original version and equivalent in four aspects: conceptual, semantic, item, and operational.<sup>1</sup> They have compared the original version of OHIP-EDENT, the pretested translated version, and the back-translated version. Feedback from the pretest was discussed to identify the relevant psychosocial impact of functional concerns of prosthodontic patients. The instrument format, instructions, mode of administration, and measurement methods were assessed to adapt usage to the Indonesian setting. A revised version was set as the final iteration of the instrument.

The second pretest was performed on another 12 respondents, consisting of 3 females and 9 males, aged 46 to 77. This stage was conducted to examine the use of semantic equivalence, item equivalence, and operational equivalence use. The respondents were patients recruited as a convenience sample from the Dental Hospital Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia. Respondents were asked to complete the adapted questionnaire via Google form and then interviewed by phone about what they thought on each questionnaire item and response option meaning. After reporting the outcomes of the second pretest, the final version was generated. Final adjustments were made after the agreement among all expert committee members was reached.

This research was approved by the Ethics Committee of the Faculty of Dentistry, Universitas Indonesia, No. 2/ Ethical Approval/FGUI/2020 No. Protocol 070010120.

Before their enrolment, all respondents were asked to complete written informed consent.

### Results

Throughout the process of the questionnaire translation, there was a few difficulties were found. We identified an inefficient process of the forward-backward translation system. When the translators were aware that back translators would evaluate their work, they tended to generate literal translations. Hence several problems emerged from this process. The translators experienced difficulties in finding an equivalent Indonesian word to explain various English concepts. There were several choices of equivalent words in many cases because the exact translated word was unfamiliar to the Indonesian language.

We found the words and phrases “self-conscious” and “a bit irritable” describing internal feelings that do not have identical meanings in Indonesian. For example, the word equivalent of “self-conscious” could be “canggung” (“awkward”) or “pemalu” (shy); therefore, the literally translated word was “rendah diri” (“inferiority”). However, when this was back-translated to English, the word “self-conscious” did not show up; instead, it translated as “felt inferior.” These issues were clarified, and the expert committee discussed recommended adjustments after the first pretest was completed.

Some respondents had difficulty understanding the values they could select on each scale because the response choices are not commonly used in Indonesia. The word “seldom” (“jarang”), “sometimes” (“kadang-kadang”), and “often” (“sering”) were not very often used when translated to Indonesian. These words are confusing because of their similar meaning. The respondents also questioned the time queried by the questionnaire whether to respond according to how they felt now, before, or after wearing dentures?

The expert committee discussed several words with a similar meaning in English while reviewing the original and back-translated versions. The backward translated version was then carefully reviewed to determine whether it appropriately reflected the original version and to find any possible problematic items or discrepancies with the original version. As shown in Table 2, these similar words have been agreed

to would not change the meaning of the original version of the questionnaire by the expert committee.

No	Original questioner	Back-translate
Q1	Denture	False teeth
Q1	Had difficulty	Ever experienced
Q2	Food catching	Food being stuck
Q3	Have not been fitting properly	Not exactly fit
Q4	Painful aching	Throbbing pain
Q6	Sore spot	Ulcer
Q9	Self-conscious	Felt inferior
Q11	To interrupt meals	To stop eating
Q13	Upset	Disturbed
Q14	Have you ever been a bit	Have you ever felt somewhat
Q15	Partner	Spouse
Q17	Going out	Going out of the house
Q18	To enjoy other people company as much	To enjoy being together with other people

**Table 2.** The original version and back-translate.

OHIP EDENT						
	Never (0)	Rarely (1)	Sometimes (2)	Often (3)	Very often (4)	
<b>Functional limitation :</b>						
1	Chewing difficulty	1(8.3%)	2(16.7%)	6(50%)	2(16.7%)	1(8.3%)
2	Food catching	2(16.7%)	1(8.3%)	4(33.3%)	5(41.7%)	0
3	Dentures not fitting	4(33.3%)	2(16.7%)	3(25%)	2(16.7%)	1(8.3%)
<b>Physical pain:</b>						
4	Aching sensation	10(83.3%)	1(8.3%)	1(8.3%)	0	0
5	Discomfort during eating	4(33.3%)	2(16.7%)	2(16.7%)	3(25%)	1(8.3%)
6	Sore spots	4(33.3%)	3(25%)	5(41.7%)	0	0
7	Uncomfortable denture	4(33.3%)	3(25%)	1(8.3%)	4(33.3%)	0
<b>Psychologic discomfort :</b>						
8	Worried	5(41.7%)	0	5(41.7%)	2(16.7%)	0
9	Self-conscious	7(58.3%)	0	3(25%)	2(16.7%)	0
<b>Physical disability :</b>						
10	Avoid eating	2(16.7%)	1(8.3%)	6(50%)	2(16.7%)	1(8.3%)
11	Interrupt meals	2(16.7%)	3(25%)	3(25%)	4(33.3%)	0
12	Unable to eat	4(33.3%)	3(25%)	4(33.3%)	0	1(8.3%)
<b>Psychologic disability :</b>						
13	Upset	5(41.7%)	2(16.7%)	4(33.3%)	1(8.3%)	0
14	Embarrassed	6(50%)	0	5(41.7%)	1(8.3%)	0
<b>Social disability :</b>						
15	Less tolerant	10(83.3%)	0	2(16.7%)	0	0
16	Irritable	11, 91.7%	1(8.3%)	0	0	0
17	Avoided going out	12, 100%	0	0	0	0
<b>Handicap :</b>						
18	Unable to enjoy other people's company	11(91.7%)	0	1(8.3%)	0	0
19	Life in general less satisfying	8(66.7%)	2(16.7%)	2(16.7%)	0	0
<b>Total score</b>						

**Table 3.** OHIP-EDENT items and frequency distribution of the responses.

The expert committee evaluated the translated questionnaire using the original, translated, back-translated version and the result of the first pre-test as references. The second pretest evaluated the functional equivalent of the questionnaire. Respondents were asked about their understanding of the instruction after completing the questionnaire. All respondents clearly understood the entire questionnaire and the content of the individual questions. They

were agreed that the questionnaire format was easy to follow, and the instructions on how to complete the questionnaire were understandable. This agreement concluded that this latest consensus version was appropriate and culturally relevant for prosthodontic patients in Indonesia. The second pretest comprised 12 respondents who fulfill the inclusion and exclusion criteria (9 males and 3 females; mean age 46 – 77 years). Most of the respondents (N=5, 41.7%) were in the group of high school and undergraduate education levels. The mean total expenditure in a month was one million to twenty million rupiahs. Most respondents were edentulous for more than 6 months (N=9, 75%). Six respondents (50%) have dentures and still wearing them, 5 (41.7%) had wearing dentures but currently were not wearing them, and 1 respondent (8.3%) had never wearing dentures. The OHIP-EDENT questionnaire consists of 19 questions, divided into 7 subcomponents with 5 answer choices: never, rarely, sometimes, often, and very often. The frequency distribution of responses to the questionnaire is listed in table 3.

## Discussion

This study aimed to develop an instrument for assessing the quality of life among Indonesians using a cross-culturally adapted version of the OHIP-EDENT as a primary instrument for assessing edentulous patients undergoing complete denture treatments. According to El Osta et al., OHIP-EDENT was able to identify the edentulous respondents based on their oral health and prosthetic status, more effective in identifying edentulous individuals with oral and prosthetic problems, and able to detect the impacts of oral disorders in the population.<sup>17</sup> Possebon et al. state that OHIP-EDENT is a measurement of Oral Health Quality of Life (OHRQoL).<sup>18</sup>

The process of translation and cross adaptation of the questionnaires was built upon standard rules from various literature. In this present study, the translation and cross-cultural adaptation methodology of questionnaires were done based on Beaton et al.<sup>1</sup> and Gjersing et al.<sup>15</sup> There were difficulties during the process of translation. It was challenging to find equivalent Indonesian words to be accurate describe socio-emotional items accurately. Similar challenges were also reported by Saub et al. when

translating OHIP into a Malay version<sup>19</sup> and Mursid et al. when translating The Psychosocial Impact of Dental Aesthetic Questionnaire (PIDAQ) into Indonesian.<sup>20</sup>

In most cases, the impact of prosthetic treatment is observed clinically. However, objective clinical indicators do not present a complete description of oral health because they do not capture the functional and psychosocial aspects. Patients' perceptions of their oral health are significant outcomes in prosthodontics, and the use of validated subjective indicators is crucial to measuring the benefits of prosthodontic treatment as perceived by the patients.<sup>21</sup>

Subjective responses of respondents, influenced by their behavioral and psychological attitudes, became a possible limitation of OHQoL studies. Clinicians should also identify the important role they play in improving patient's quality of life by assessing factors like age, education level, socio-economic status, type of dentures, habits and medical conditions of patients, and smoking and tobacco use habits.<sup>22</sup>

Qualitative interviews with patients at the first pretest to assess concept and item equivalence were performed in this study. The outcomes of the qualitative interviews were discussed to determine the relevant items for use in prosthodontics settings by experts.

In this study, although this cross-cultural adaptation process followed a recommended process, we only reported the content validity of the Indonesian version of the OHIP-EDENT. Averil and Hanin have conducted preliminary research to validate the OHIP-EDENT in Indonesian; however, that research has only been carried out until the preliminary field test stage and has not been included in the validity test phase.<sup>23</sup>

Future research has to be done to include a larger sample, more broadly inclusive of age, gender, and formal education, to achieve construct, discriminant, and convergent validity and determine the reliability of the questionnaire. This cross-culturally adapted OHIP-EDENT might be a valuable addition to clinical settings in Indonesia.

## Conclusions

This present study provides an English version of the OHIP-EDENT translated to Indonesian to assess oral health-related quality

of life edentulous prosthodontics patients. Further studies are needed to confirm its validity and reliability among patients of different socio-demography.

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### Declaration of Interest

The authors report no conflict of interest.

### References

1. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures. *Spine* 2000;25(24):3186-91.
2. Guillemin F, Bombardier C, Beaton D. Cross-cultural adaptation of health-related quality of life measures: literature review and proposed guidelines. *J Clin Epidemiol* 1993;46:1417-32
3. Herdman M, Fox-Rushby J, Badia X. A model of equivalence in the cultural adaptation of HRQoL instruments: the universalist approach. *Qual Life Res* 1998;7:323-35.
4. Guyatt GH. The philosophy of health-related quality of life translation. *Qual Life Res* 1993;2:461-5.
5. Allen F, Locker D. A modified short version of the oral health impact profile for assessing health-related quality of life in edentulous adults. *Int J Prosthodont* 2002;15: 446-50.
6. Kshetrimayum N, Reddy CV, Siddhana S, Manjunath M, Rudraswamy S, et al. Oral health-related quality of life and nutritional status of institutionalized elderly population aged 60 years and above in Mysore City, India. *Gerodontology* 2012;30: 119-25.
7. Pisani MX, Malheiros-Segundo AD, Balbino KL et al. Oral health-related quality of life of edentulous patients after denture relining with a silicone-based soft liner. *Gerodontology* 2011; 1-7.
8. Stober T, Danner D, Lehmann F, Se'che' AC, Rammelsberg P, Hassel AJ et al. Association between patient satisfaction with complete dentures and oral health-related quality of life: two-year longitudinal assessment. *Clin Oral Investig* 2012; 16:313-318.
9. Duale J, Patel YA, Wu J, and Hyde TP. A systematic review and meta-analysis of baseline ohip-edent scores. *The European Journal of Prosthodontics and Restorative Dentistry*, 2018;26(1), 17-23.
10. Shrestha, B. et al. Reliability and validity of a Nepalese version of the oral health impact profile for edentulous subjects. *J. Prosthodont*. 2018;27:416-20.
11. Slade GD. Derivation and validation of a short-form oral health impact profile. *Community Dent Oral Epidemiol* 1997;25: 284-90.
12. Sousa VD, Rojjanasrirat W. Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: a clear and user-friendly guideline. *Journal of Evaluation in Clinical Practice* 2011;17:268-74.
13. Rebouças AP, Bendo CB, Abreu LG, Lages EMB, Flores-Mir C, and Paiva SM. Cross-cultural adaptation and validation of the Impact of Fixed Appliances Measure questionnaire in Brazil. *Braz Oral Res* 2018;32(e14):1-9
14. Wulandari P, Soeroro Y, Maharani DA, Rahardjo A. Validity and reliability of a modified utian quality of life scale for Indonesian postmenopausal women. *J Int Dent Med Res* 2018;11(1):232-7.
15. Gjersing L, Caplehorn JR, Clausen T. Cross-Cultural Adaptation of Research Instruments: Language, Setting, Time and Statistical Considerations. *BMC Med Res Methodol* 2010;10(1):1-10.
16. Salim S, Yamin M, Alwi I, Setiati S. Validity and Reliability of the Indonesian Version of SF-36 Quality of Life Questionnaire on Patients with Permanent Pacemakers. *Acta Med Indones* 2017; 49(1): 10-6.
17. El Osta N, Haddad E, Fakhouri J, Saad R, El Osta L. Comparison of psychometric properties of GOHAI, OHIP-14, and OHIP-EDENT as measures of oral health in complete edentulous patients aged 60 years and more. *Quality of Life Research* (2021) 30:1199-1213
18. Possebon APR, Faot F, Machado RMM, Nascimento GG, Leite FRM. Exploratory and confirmatory factorial analysis of the OHIP-Edent instrument. *Braz. Oral Res.* 2018;32:e111
19. Saub R, Locker D, Allison P, Disman M. Cross-Cultural Adaptation of the Oral Health Impact Profile (OHIP) for the Malaysian Adult Population. *Community Dent Health* 2007;24(3):166-75.
20. Mursid S, Kusdhany LS, Maharani DA, Ismail RI. Development of the Indonesian version of the Psychosocial Impact of Dental Aesthetic Questionnaire (PIDAQ) in Prosthodontics. *J Int Dent Med Res* 2019; 12(2): 655-62.
21. Locker, D. Oral health and quality of life. *Oral Health & Preventive Dentistry*, 2004;2(Suppl 1), 247-53.
22. Al-Deeb M, Abduljabbar T, Vohra F, Zafar MS, Hussain M. Assessment of factors influencing oral health-related quality of life (OHRQoL) of patients with removable dental prosthesis. *Pak J Med Sci.* 2020;36(2):213-8.
23. Averil K, Hanin I. Validity of Oral Health Impact Profile In Edentulous (OHIP-EDENT) Questionnaire in Indonesian language (Preliminary Research at Dental Hospital Faculty of Dentistry, Trisakti University). Research Report, Faculty of Dentistry, Trisakti University. 2019, 36-9.