

Validity and Reliability of the Timor Leste Version Instruments for Measuring Oral Health-Related Quality of Life

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Abstract

Oral health significantly impacts quality of life. The Oral Health Impact Profile (OHIP) is a self-rating, patient-centered tool used to evaluate oral health-related quality of life.

This study aims to adapt and validate the OHIP-14 by Slade and Spencer into the OHIP-24 version for Timor-Leste (OHIPTL-24). The adaptation process includes five phases: translation, synthesis, back translation, expert review, and pilot testing. Additional culture-specific questions were incorporated into each domain to reflect Timor-Leste habits.

Validity was assessed through correlation analysis of each item's score against the total score, while reliability was evaluated using Cronbach's Alpha. All items showed validity with scores above the critical value (0.159), and the questionnaire demonstrated high reliability with a Cronbach's Alpha of 0.903. Therefore, OHIPTL-24 is a valid and reliable tool for measuring the impact of oral health on quality of life in Timor-Leste.

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Introduction

Oral health is crucial for the physical, mental, social, and general well-being of individuals and populations.¹ It is an essential component that significantly affects quality of life. The World Health Organization (WHO) defines quality of life as an individual's perception of their position in life, within the cultural and value systems they inhabit, and relative to their goals, expectations, standards, and concerns.² Quality of life consists of many related domains or dimensions, making it multidimensional and influenced by various factors.³ Oral Health-Related Quality of Life (OHRQoL) refers to how individuals perceive their oral health, functional and emotional well-being, expectations, satisfaction with care, and self-perception.^{4,5}

The Oral Health Impact Profile (OHIP) is a widely used tool for measuring oral health-

related quality of life. The OHIP is vastly used and developed in a variety of research populations. Created by Slade and Spencer in 1994, the OHIP originally had 49 questions with seven domains. In 1997, it was shortened to 14 questions (OHIP-14) while retaining the same domain concepts.⁶ According to Skośkiewicz-Malinowska, the OHIP-14 is effective for various populations and measures the quality of life-related to oral health based on WHO's classification of incapacity, disability, and handicap.⁷

Indigenous Psychology is an approach in the context of instrument constructions. It focuses on studying the behavior and thoughts of Indigenous people within their cultural context.⁸ This approach helps researchers understand individuals' behavior and thinking based on their culture. Culture significantly influences the quality of life, affecting a person's self-fulfillment both positively and negatively in various settings like organizations, societies, or countries.⁹

Timor-Leste, a new state in the Asia Pacific region, separated from Indonesia on September 4, 1999, and regained its independence on May 20, 2002. In addition to

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becoming a sovereign nation, Timor-Leste is now a member of the United Nations. The culture in Timor-Leste is largely collective, focusing on group goals, harmony, cohesion, and cooperation, in contrast to the more individualistic nature of Western cultures.¹⁰⁻¹³ One notable tradition in Timor-Leste is betel chewing, widely accepted and customary for certain occasions. This practice is done individually and in social settings such as engagements, weddings, or funerals. These cultural practices and traditions are integral to the people of Timor-Leste.¹⁵

A national survey on oral health in Timor-Leste shows that betel chewing is prevalent, with 97% of women and 80% of men participating in the practice. In addition, 66% of respondents reported chewing betel with areca nut, betel leaves, lime, and sometimes tobacco. Among those who chew betel, 43% view it as a traditional Timor Leste practice.¹⁶ Combined consumption of alcohol, smoking, and betel nuts is linked to an increased cumulative risk of developing cancers of the larynx (46.2%), esophagus (47.5%), pharynx (53.5%), and oral cavity, with the risk ranging from 60.5% to 71%. Over 68% of this risk was found among those who began drinking before age 20.^{17,18}

The OHIP questionnaires have been adapted and tested for validity and reliability in various languages, including Indonesian, Spanish, Malay, Brazilian Portuguese, and others.¹⁰⁻¹³

Testing reliability and validity is crucial for ensuring the effectiveness of research instruments. Any adaptation process must follow a sound methodology to ensure that the results are culturally relevant, valid, and reliable. This process is known as cross-cultural adaptation.¹⁹ In Timor-Leste, there has been no development of a valid and reliable instrument to measure quality of life. Therefore, it is necessary to create such tools that reflect Timor-Leste's cultural values. This study aims to adapt and develop a Timor-Leste version of the OHIP, ensuring its validity and reliability.

Materials and methods

Study design and respondents. This study employs an exploratory qualitative design to establish a quality-of-life instrument for the people of Timor-Leste concerning their oral

health status. The study identifies key indicators for each domain and develops a draft instrument to measure the quality of life. The research was conducted in the Democratic Republic of Timor-Leste, covering both rural and urban areas. It targeted households, high schools, universities, and medical facilities at central and regional levels. The total sample size was 150 people, divided into three WHO age groups (15-19, 35-44, and 65-74 years), with 50 individuals in each group.

Translation and cross-cultural adaptation. The initial step in this research involved reviewing literature on the OHIP-14 instruments developed by Slade and Spencer in 1994, using these sources to create quality of life instruments for the people of Timor-Leste.⁶

According to Beaton et al., cross-cultural adaptation involves five stages: translation, synthesis, back translation, expert reviews, and trial tests.²⁰ The translation process involved translating the English version into Indonesia-Timor-Leste language by two translators, one of whom had a TOEFL score above 550. The first translator, an expert in Timor-Leste cultures from the Language Center of Public Health Institute of Timor-Leste (INSP-TL: Instituto Nacional de Saúde Pública de Timor-Leste), and the second translator, an expert in dentistry from the University of Dili, Timor-Leste, worked together. Next, the translations were synthesized into one version. Then, the synthesized version was back-translated into English. This process was repeated until the translation matched the original questionnaire. Experts in dentistry reviewed and discussed both the Indonesian and original English versions in a panel, making necessary revisions. The final synthesized version from the translations and back translations was used as a draft for review.¹⁹ The cross-adaptation OHIP-14 instrument featured minor modifications without altering the principles of the questionnaire.

Afterward, the cross-adaptation OHIP-14 instrument that had been formed was thoroughly discussed with experts to assess its relevance. In-depth discussions were held with the experts to determine the impacts of dental and oral health conditions on the quality of life felt by people in Timor-Leste and their understanding of oral health, especially concerning the habits of chewing betel, smoking, and drinking alcohol.

The quality of life instruments were

developed by adding cultural domains and 1-2 questions per domain about the habits of the Timor-Leste people. This development was based on in-depth interviews with the community to understand the impact of dental and oral health on various domains, such as functional limitation, physical pain, psychological discomfort, physical, psychological, and social disability, handicap, and culture.

The interviews explored how changes in dental and oral health affect people's quality of life and their behavior in addressing these health issues.

Validity. A validity test determines if a questionnaire accurately measures what it intends to measure by correlating each question's score with the total questionnaire score. Questions are considered valid if their correlation value (r calculated) is greater than the table value (r table). All questions must show meaningful correlation (construct validity). If the new instrument lacks substantive validity, it must be revised and retested. If it is structurally valid, only minor repairs are needed without retesting.

Reliability. The reliability test, using the Cronbach's Alpha method, measures how accurately and reliably an instrument performs. If the Cronbach's Alpha value is greater than 0.6, the instrument is considered reliable. Scores of 0.6 or higher indicate good to excellent reliability.

This research has passed ethical clearance with reference number 418/KEPK/USU/2024 from Ethic Committee of Universitas Sumatera Utara, Medan, Indonesia.

Results

The Timor-Leste OHIP version. Based on the translation process and qualitative interview results, there are additional questions in each domain, and the addition of 1 domain, namely the cultural domain. This adapted questionnaire is referred to hereafter as the Oral Health Impact Profile Timor-Leste (OHIP-TL 24) which contains 24 questions. The Timor-Leste OHIP version is freely available by request from the corresponding author.

The OHIPTL-24 scores given by the subjects were 0 (never), 1 (hardly ever/once in 2 months), 2 (occasionally/every month), 3 (often/every week), and 4 (very often/every day). The mean score of OHIPTL-24 items ranged from 0.94±1.22 (cultural domain) to 6.32±3.00

(physical discomfort. Table 1 shows the average score value of each domain. OHIPTL-24 total score is 31.86±12.40 (Table 1).

No	OHIP domain	Mean score
1	Functional limitation	3.90±2.35
	Q1	1.37±0.99
	Q2	1.34±0.93
	Q3	1.19±1.00
2	Physical discomfort	6.32±3.00
	Q4	1.59±1.05
	Q5	1.68±1.05
	Q6	1.47±1.02
	Q7	1.58±1.14
3	Phycological discomfort	4.17±2.01
	Q8	1.46±0.89
	Q9	1.37±1.06
	Q10	1.34±0.93
4	Physical disability	3.92±1.98
	Q11	1.50±1.02
	Q12	1.21±0.91
	Q13	1.21±0.97
5	Phycological disability	3.98±2.20
	Q14	1.29±0.95
	Q15	1.26±1.03
	Q16	1.43±1.03
6	Social disability	5.21±2.80
	Q17	1.17±0.95
	Q18	1.41±0.98
	Q19	1.37±1.01
	Q20	1.27±0.96
7	Handicap	3.42±1.96
	Q21	1.01±0.99
	Q22	1.13±0.93
	Q23	1.27±1.01
8	Cultural (Q24)	0.94±1.22
OHIPTL-24 TOTAL		31.86±12.40

Table 1. Overall Mean OHIP Domain Score.

The following is the OHIPTL-24 data based on category, where 62.7% of research subjects are included in the good category, 30% in the very good category, 6.7% in the fair category, and 0.7% in the poor category (Table 2).

Category of OHIPTL-24	n	%
Very good (score < 23)	45	30
Good (score 24-46)	94	62.7
Fair (score 47-69)	10	6.7
Poor (score > 70)	1	0.7

Table 2. Category of OHIPTL-24.

Validity results

A question item is said to be valid if the

correlation value (calculated *r*) of the question item is higher than the *r* table. From the results of validity tests carried out on 150 respondents in Timor Leste, the obtained value of questions 1-24 is higher than the critical value which is 0.159, this indicates that those questions are valid (Table 3).

No	OHIP domain	Question	r calculated	r table (critical value)	Cronbach's Alpha
1	Functional limitation	Q1	0.602	0.159	0.898
		Q2	0.563		0.899
		Q3	0.683		0.896
2	Physical discomfort	Q4	0.589		0.898
		Q5	0.524		0.899
		Q6	0.560		0.899
		Q7	0.414		0.902
3	Phycological discomfort	Q8	0.365		0.908
		Q9	0.623		0.897
		Q10	0.351		0.904
4	Physical disability	Q11	0.611		0.897
		Q12	0.528		0.899
		Q13	0.382		0.902
5	Phycological disability	Q14	0.587		0.898
		Q15	0.643		0.897
		Q16	0.550		0.899
6	Social disability	Q17	0.660		0.897
		Q18	0.561		0.899
		Q19	0.413		0.902
7	Handicap	Q20	0.519		0.899
		Q21	0.497		0.900
		Q22	0.536		0.899
		Q23	0.414		0.902
8	Cultural	Q24	0.285		0.905

Table 3. The results of the OHIPTL-24 validity test.

Reliability results

The reliability of the questionnaire was assessed using Cronbach's alpha. A value greater than 0.6 indicates reliability. The test results showed a Cronbach's alpha of 0.903, confirming that the questionnaire is reliable.

Discussion

In cross-cultural adaptation of the OHIPTL-24, it is crucial to ensure that the instrument is culturally relevant and valid in the country where the instrument is adapted. The initial process involved following Guillemin et al.'s guidelines, which include translating the instrument into the local language, back-translation into the original language, and assessment by an expert committee. This ensures that the instrument accurately reflects the cultural context and language of Timor-Leste.²¹

The adaptation stages of the OHIP-14 Indonesia-Timor-Leste instrument were carried out using the Guillemin method approach according to WHO cross-adaptation standards.²¹

It is important to ensure that the translation uses language and terminology that is easily understood by the target population in Timor-Leste, taking into account local dialects and idiomatic expressions. Certain concepts or questions required adjustments to accommodate cultural variations, aiming to maintain the questionnaire's integrity while adapting it appropriately to the local culture.

Having the translation reviewed by experts in the field of dental health and linguists familiar with the Timor-Leste cultural context can help ensure technical accuracy and cultural appropriateness of the translation. Experts in dental health, chosen for their extensive experience and understanding of oral health impacts on quality of life, focus on ensuring that questionnaire items accurately represent dental health concepts without introducing distortions. Similarly, linguists proficient in both the questionnaire's native language and the target language of Timor-Leste assess word choice, sentence structure, and cultural appropriateness in the translation process. Following expert feedback, revisions are made, which may include changing terminology, adjusting phrases for clarity, or modifying content to avoid cultural misunderstandings. After revision, the updated questionnaire will need to be reviewed by an expert to ensure that all issues have been resolved and that the translation is now technically accurate and culturally appropriate.

After completing the cross-adaptation stage, the next step was to develop the OHIP-14 instrument by adding a cultural domain and adding 1-2 questions for each domain related to the habits of the Timor-Leste people. The development of this instrument was obtained from the results of in-depth interviews with the community. These interviews explored the impact of dental and oral health conditions on various domains like functional, emotional, social, and cultural. They also identified relevant variables within these domains and assessed how changes in dental structure affect quality of life. Additionally, the interviews examined community behaviors in managing dental and oral health issues.

At first, there were 13 questions added in the development of the OHIP-14 instrument, so this instrument was called OHIPTL-27. Next, initial validity and reliability tests were carried out. A question is said to be valid if the

calculated R value > R table. If the Cronbach's Alpha value is > 0.6, then the research questionnaire is reliable. The first validity trial on OHIPTL-27 which was carried out on 24 respondents showed that 3 questions were invalid because the calculated r value was <0.3 (r table). After the results were obtained that there were 3 invalid questions, a decision was made to eliminate these 3 questions and call it OHIPTL-24 (Timor-Leste version of the Oral Health Impact Profile containing 24 questions). Then a second validity trial was carried out on 27 respondents and from the results of the OHIPTL-24 trial it was found that all questions were valid because all calculated r values were > 0.4.

The final validity and reliability tests were carried out on the Timor-Leste community in Dili with a total sample of 150 respondents, which was divided into 3 age groups based on WHO, namely the age groups 15-19 years, 35-44 years, and 45-65 years, with each age group consisting of 50 respondents. The results of validity tests carried out on 150 respondents in Timor-Leste found that all calculated r values were > 0.159 (r table). This indicated that the OHIPTL-24 questions are valid. Quality of Life for teenagers, adults, and elderly people in Timor-Leste as a whole is grouped into 4 categories, as follows: very good (score ≤ 24), good (score 25-47), fair (score 48-71), and poor (score ≥ 72). From the research results it was found that OHIPTL-24 total score is 32.12 ± 12.80 , this means that the quality of life related to oral health in Timor-Leste is included in the good category.

The Cronbach alpha reliability test on the OHIPTL-24 questionnaire was 0.903. These results show very good reliability results. This result refers to the range of Cronbach alpha values, namely (1) $0.5 > \alpha$, meaning unacceptable; (2) $0.6 > \alpha > 0.7$ means bad; (3) $0.7 > \alpha > 0.6$ means questionable; (4) $0.8 > \alpha > 0.7$ means accepted; (5) $0.9 > \alpha > 0.8$ means good and (6) $\alpha > 0.9$ means very good. The Cronbach's alpha value in this study has a higher value than the value of similar research conducted in Poland⁷ and in Greek²² with Cronbach alpha was estimated to be 0.90, Spain with 0.89²³, Brazil with 0.87¹², German with 0.74-0.96¹⁴, Malaysia with 0.89¹³, and Indonesia 0.70-0.80¹⁰.

Conclusions

Statistical analysis confirms that the

OHIPTL-24 questionnaire demonstrates strong construct validity and reliability. This study establishes OHIPTL-24 as a valid and reliable tool for assessing the impact of oral health conditions on the quality of life in epidemiological studies in Timor-Leste.

Declaration of Interest

The authors report no conflict of interest.

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