VALIDATION OF THE THAI VERSION OF THE 14- ITEM ORAL HEALTH IMPACT PROFILE (THAI OHIP-14) AMONGST THE GENERAL THAI ADULT POPULATION IN A COMMUNITY SETTING

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ABSTRACT:

Background: Oral health related quality of life has been widely used to evaluate oral health outcomes over the past two decades. The Oral Health Impact Profile (OHIP) has been mostly used to measure the impact of oral disorders or problems regarding daily function and ability. However, the original 14- item short version has not been validated in Thailand.

Methods: The study was carried out to test the validity and reliability of the Thai version of the 14- Item Oral Health Impact Profile (Thai OHIP-14) evaluating oral health related quality of life in Thai adults in a community setting. This cross-sectional study was conducted in the samples of 685 adults with the mean age of 56.80±11.65 years old who lived in KhonKaen province, Thailand. Data included demographic and oral clinical data. Oral health related quality of life (OHRQoL) was measured using the Thai-Oral Health Impact Profile (Thai OHIP-14). Overall quality of life and general oral heath ratings were also obtained. Descriptive statistics and spearman rank correlation coefficients were used for data analyses.

Results: The reliability of the Thai OHIP-14 was excellent ($\alpha = 0.88$). Face, content, and construct validity of the questionnaires were examined and showed acceptable properties. The total scores of Thai OHIP-14 were associated with overall quality of life ($r_{rho}= 0.60$; $p < 0.001$) and general oral heath rating ($r_{rho}= 0.47$; $p < 0.001$), supporting the criterion and construct validity.

Conclusion: The Thai version of 14- Item Oral Health Impact Profile (OHIP-14) has been successfully validated following the psychometric properties of the questionnaire. It offers a valid and reliable instrument for the measures of social impact of oral diseases or disorders on individuals in community settings.

Keywords: Oral Health Impact Profile; Oral health related quality of life; Reliability; Validity

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INTRODUCTION

Oral health related quality of life is an essential oral health outcome that has been increasingly used to evaluate the impact of oral health/disorders on functional status and daily life of individuals over the past two decades. Oral health related quality of life (OHRQoL) is defined as "*the impact of oral disease and disorders on aspects of everyday life that a patients or person values, that are of sufficient magnitude, in terms of frequency, severity or duration to affect their experience and perception of their life overall*" [1]. It has been employed to supplement clinical indicators to evaluate oral health. Wilson and Cleary proposed the model that links clinical status and quality of life. The classifications consist of difference measures of health and are divided into five levels: biological and physiological variables, symptoms, functional status, general health perception and overall quality of life. Individual and environmental factors are considered to be the important factors that improve

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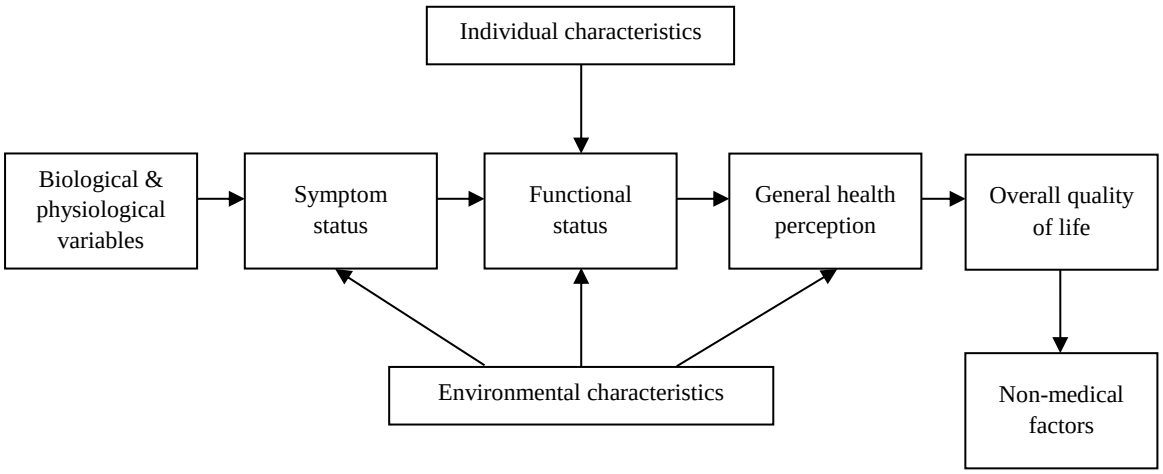


Figure 1 The Wilson and Cleary model [2]

or minimize what happened in each level [2]. This model helps researcher to understand relationships among the concepts and learn more about conditions with major impacts on patients' well being [3, 4].

One of measure instruments which are widely used is oral health impact profile. The Oral Health Impact Profile (OHIP-14) is a 14-item questionnaire developed by Slade [5]. It was derived from an original version of 49 items [6]. It is based on a theoretical model developed by the World Health Organization and adapted by Locker for oral health (See Figure 1) [7]. In this model, oral health is linked from a biological level (impairment) to a behavioral level (functional limitation, discomfort and disability) and lastly to the social level (handicap). The OHIP-14 is one of the most socio-dental instruments used to measure oral health related quality of life (OHRQoL). It is available in several languages such as Chinese [8], German [9] , Spanish [10], Malaysian [11] , Persian [12] and Brazilian [13]. However, it has still never been applied among Thai population in community setting. Only the original version with 49 items was used in the clinical patients [14]. The aim of this study was to test the reliability and validity of the Thai version of 14- Item Oral Health Impact Profile (Thai OHIP-14) in general Thai adults in community setting.

MATERIALS AND METHODS

The short Thai version of Oral health impact profile (Thai OHIP-14)

The short Thai version of oral health impact profile (Thai OHIP-14)is a self reported questionnaire comprising seven domains including functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap). Participants were asked to respond to the frequency of impact on a 5-point Likert scale ranging from 0 (never) to 4 (very often).

Validation process

The process of evaluating the Thai version of 14- Item Oral health impact profile for Thai adults (Thai OHIP-14) comprised three main steps: linguistic and cultural adaptation, pilot study to assess face and content validity and main study to assess reliability and construct validity. The study period was between March 2014 and April 2015.

Linguistic and cultural adaptation

The OHIP-14 was translated into Thai by the researcher (ON) and back-translated into English by a Thai linguist, conversant in both languages, who had not seen the original English versions. The original and back-translated versions were compared and minor amendments made [15].

Pilot study

The pilot study was carried out in 30 convenient samples that were similar to target population in order to assess the face and content validity. All changes required were made before the pilot started. The overview of the questionnaire was assessed by asking about the understanding of the items or frequencies in order to optimize the face and content validity.

Main study

The Thai OHIP-14 was used to measure OHRQoL in Thai adult in the community setting. General oral health rating was obtained by the used of one single question 'Would you say that the health of your teeth, lips jaws or mouth is….?. This

Table 1 Demographic data of participants (n=685)

Characteristics	Mean±SD	n	%
Gender			
female		426	62.2
male		259	37.8
Age(years) min-max 35-85	56.80±11.65		
Marital status			
Married		563	82.2
Single		37	5.4
Divorced/separated		85	12.4
Level of education			
Below Primary school		5	0.7
Primary school		561	81.9
Secondary school or equal		95	13.8
Under graduated		24	3.6
Post graduated		0	0
Mean DMFT	5.05±4.02		

global rating had a five-point response phrase ranging from 'Excellent' (0) to 'Poor' (4). The extent to which the condition affected each individual overall well-being was also obtained by the use of a question 'How much of the condition of your teeth, lips jaws or mouth affect your life overall?. This question had a five-point response format ranging from 'Not at all' (0) to 'Very much' (4). The participants were asked to complete the questionnaires as well as having oral clinical examination.

Clinical variables

The number of decayed, missing and filled teeth (DMFT), gingival health (CPI=0; CPI>0) and the number of tooth loss of each participant were collected by two calibrated dentists according to the WHO diagnostic criteria [16].

Ethical approval

Informed written consents were signed and obtained from participants before the study. The project was approved by the Ethical Review Committee for Research in Human Subjects, Sirindhorn College of Public Health, Khon Kaen (Ethical approval code SCPHKK 2014-001)

Samples

The participants of the study were 685 Thai males and females aged between 35-85 who lived in Khon Kaen province, Thailand. A consecutive sampling was employed in the study to obtain the calculated sample size. Those with severe medical problems (e.g.strokes, brain injury and other conditions that cause memory problems) and could not answer the questionnaire due to their difficulty of understanding were excluded from the study.

Data analysis

The psychometric properties of the instrument for measuring oral health related quality of life were tested by assessing its reliability and validity. The reliability represented by the internal consistency or homogeneity of the scale was calculated using Cronbach's alpha. Alpha if item deleted, Corrected Item-Total Correlation coefficients were also considered. Face and content validity were evaluated in the pilot study. Criterion and construct validity were evaluated by using Spearman's Rank correlation coefficients. The statistical package for social sciences was used for the statistical analyses taking the cut off level for statistical significant at 0.05.

RESULTS

The sample was 685 adults who lived in Muang district, Khon Kaen. The mean age of participants was 56.80±11.65 years old, ranging from 35-85). About 62.2 % (n=426) were females. The mean number of decayed, missing and filled teeth was 5.05±4.02 (Table 1). The validity in terms of face and content validity was evaluated. Information from discussion with the participants disclosed a significant point of the questionnaires. Some samples forgot that the responses should concern their teeth, lips, jaws or mouth. Periodic reminding was necessary. The internal consistency indicating reliability of the Thai OHIP-14 represented by Cronbach's alpha was excellent at 0.88. The internal consistency amongst subscales ranged from 0.84-0.86 (Table 2). Test-retest reliability was performed and accounted for 0.78. Corrected item-total correlations were also reported and accounted for

Table 2 Internal consistency of individual subscales

Subscales of Thai OHIP-14	Internal consistency (Cronbach's alpha)
Functional limitation	0.86
Physical pain	0.84
Psychological discomfort	0.85
Physical disability	0.84
Psychological disability	0.85
Social disability	0.84
Handicap	0.85
Thai-OHIP-14	0.88

Table 3 Corrected item total correlations coefficients of 14 items

Subscales of Thai OHIP-14	Items	Corrected item total correlations
Functional limitation	Difficult to pronounce words	0.48
	Worsened taste	0.47
Physical pain	Pain	0.57
	Uncomfortable to eat	0.64
Psychological discomfort	Self-conscious	0.55
	Feel tensed	0.50
Physical disability	Diet unsatisfactory	0.62
	Interrupted meals	0.61
Psychological disability	Difficult to relax	0.59
	Embarrassed	0.53
Social disability	Irritable	0.61
	Difficult to do jobs	0.56
Handicap	Life less satisfying	0.52
	Totally unable to function	0.56

Table 4 Correlations among subscales, the total scores of Thai OHIP-14, general oral health rating and overall quality life

Subscales of Thai OHIP-14	Total scores of Thai OHIP-14	General oral health rating	Overall quality of life
Functional limitation	0.67**	0.24**	0.34**
Physical pain	0.80**	0.42**	0.49**
Psychological discomfort	0.75**	0.38**	0.45**
Physical disability	0.80**	0.33**	0.46**
Psychological disability	0.73**	0.29**	0.46**
Social disability	0.72**	0.35**	0.47**
Handicap	0.68**	0.37**	0.47**
Total Thai OHIP-14		0.47**	0.60**

Note: Spearman's Rank correlation, *p<0.05; **p< 0.01

Table 5 Correlations between clinical status and total scores of Thai OHIP-14

Oral health status	Total scores of Thai OHIP-14
Number of decayed teeth	0.15**
Number of tooth loss	0.28**
Gingival disease (yes/no)	0.13**

Note: Spearman's Rank correlation, *p<0.05; **p< 0.01

0.47 - 0.64 (Table 3). Construct validity was indicated by correlations amongst subscales and total scores of Thai OHIP-14 representing high correlation coefficients ranged from 0.67-0.80 (Table 4). Acceptable criterion validity of the questionnaire was indicated by correlation with global oral health rating and overall quality of life (Table 4).The total scores of Thai OHIP-14 were associated with overall quality of life (r_{rho}= 0.60; $p < 0.001$) and general oral heath rating (r_{rho}= 0.47;

$p < 0.001$), supporting the criterion and construct validity. The associations between clinical status and oral health related quality of life was evaluated. The number of decayed teeth and tooth loss and the presence of gingival disease were significantly associated with the total score of Thai OHIP-14 (Table 5).

DISCUSSION

This study was carried out to test the psychometric properties of the Thai version of 14-Item Oral Health Impact Profile (Thai OHIP-14). The samples were Thai adults in community setting. In Thailand, the original version with 49 items with modification by adding 5 new items (bite cheek, dry mouth, embarrassing joint sound, avoiding eating with others and take longer to complete a meal) (total 54 items) was established and tested in Thai denture patients [14]. To evaluate oral health outcome in the community, the measure instrument that is easy to use and not have too many questions might be the choices. This study was to validate the Thai version of 14-Item Oral Health Impact Profile (Thai OHIP-14) to use in adult Thai general population in community setting. The internal reliability representing by Cronbach's alpha of the questionnaire is .88 similarly to those with English [5], German [9], Swedish [17], Hebrew [18] and Romanian [19] versions. It is slightly better than Polish [20] and lesser than Spanish [10], Persian [12] and Greek [21] versions indicating good reliability of the measure instrument.

The validity of the Thai OHIP-14 may be evaluated in several ways. In this study, the construct validity was analyzed using the relationships between subscales and the total score of the questionnaire. For criterion validity, the association amongst the total score of the questionnaire and global oral health rating and overall quality of life were tested. The result of the study was congruent with previous studies [20, 21]

In our study correlations between the quality of life assessed with the Thai-OHIP-14 scores and oral condition such as the number of tooth decayed, tooth loss and having gingival disease were observed. There was a significant positive association between the number of tooth decayed and tooth loss and oral health related quality of life.

Similar results were obtained by Papagiannopoulou and colleagues [21] who found the correlation between OHIP-14 scores and the experiences of tooth decayed (DMFT). The study in Sudan carried out by Khalifa and colleagues [22] also showed the relationships between higher amount of tooth decayed and higher score of quality of life, representing worse oral health quality of life. Moreover, our research also confirmed the association between worse oral health related quality of life and greater number of tooth loss. This results concordance with the study conducted in Greece [21] Sudan [22]and Japan [23].

This study used single source of data to validate the properties of the questionnaire. It will be important to investigate the validity and reliability of the Thai OHIP-14 in other populations Moreover, it will be necessary to evaluate Thai OHIP-14 using other research design, for example longitudinal study and experimental trials. Nevertheless, these cross-sectional findings suggest that the Thai OHIP-14 has good psychometric properties and validity with the benefit that the data could be collected with less fieldwork effort and burden.

CONCLUSION

This study was carried out to test the psychometric property of the Thai OHIP-14 used in community setting. The results of the Thai OHIP-14 showed good psychometric properties; its construct validity and reliability were satisfactory to measure oral health related quality life in Thai adults in community setting.

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