

Validation of the Indonesian Version of the Asian Diabetes Quality of Life Questionnaire

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ABSTRAK

Latar belakang: kualitas hidup telah menjadi salah satu parameter keberhasilan terapi, antara lain pada penderita diabetes melitus tipe 2, dan untuk menilai kualitas hidup diperlukan instrumen yang sesuai dengan latar belakang sosio-budaya populasi yang dinilai. Tujuan dari penelitian ini adalah untuk mengadaptasi kuesioner Asian Diabetes Quality of Life agar dapat digunakan di Indonesia dengan valid dan reliabel. **Metode:** kuesioner Asian Diabetes Quality of Life diterjemahkan dan diadaptasi ke dalam Bahasa Indonesia oleh tim ahli lalu dilakukan uji validitas dan reliabilitas pada pasien diabetes melitus tipe 2 di RSUP Dr. Hasan Sadikin Bandung. Validitas konstruk dianalisis dengan uji korelasi antara skor skala Likert setiap pertanyaan dengan skor total. Reliabilitas dianalisis dengan test-retest dan konsistensi internal menggunakan Cronbach's alpha. **Hasil:** uji validitas menunjukkan korelasi bermakna ($p\text{-value} \leq 0,05$) antara skor setiap pertanyaan dengan skor total pada semua domain dengan rentang korelasi sedang sampai sangat kuat ($r: 0,496\text{-}0,956$). Uji reliabilitas test-retest menunjukkan tidak ada perbedaan bermakna antara hasil tes I dan II ($p\text{-value} > 0,05$) dengan korelasi sangat kuat ($r: 0,830\text{-}0,975$) serta konsistensi internal menghasilkan Cronbach's alpha $\geq 0,70$ untuk seluruh domain. **Kesimpulan:** kuesioner Asian DQOL versi bahasa Indonesia memiliki validitas dan reliabilitas yang baik dalam menilai kualitas hidup pasien diabetes melitus tipe 2.

Kata kunci: kuesioner, validitas, reliabilitas, kualitas hidup, diabetes mellitus.

ABSTRACT

Background: quality of life has been identified as the goal of therapy especially in patient with chronic disease such as type 2 diabetes mellitus. Quality of life measurement requires an instrument that was specifically developed in accordance with socio-cultural background of the measured population. The aim of this study was to adapt Asian Diabetes Quality of Life Questionnaire so it can be used in Indonesia as valid and reliable tool. **Methods:** Asian Diabetes Quality of Life Questionnaire was translated and adapted by group of experts, then validity and reliability tests were conducted on type 2 diabetes mellitus patients at Dr. Hasan Sadikin General Hospital, Bandung. Construct validity was analyzed using correlation test between score of each item and total score. Reliability was measured using test-retest method and internal consistency represented in Cronbach's alpha score. **Results:** validity test showed significant correlation ($p\text{-value} \leq 0.05$) between score of each item and total score across all domains with moderate to very strong correlation ($r: 0.496\text{-}0.956$). Reliability test using test-retest method showed no significant difference between Test I and II results ($p\text{-value} > 0.05$) with very strong correlation ($r: 0.830\text{-}0.975$) and internal consistency yielded Cronbach's alpha scores of ≥ 0.07 for all domains. **Conclusion:** Indonesian version of Asian DQOL is a valid and reliable tool to measure quality of life of type 2 diabetes mellitus patients.

Keywords: questionnaire, validity, reliability, quality of life, diabetes mellitus.

INTRODUCTION

Quality of life (QOL) is a multidimensional concept perceived by an individual based on his/her culture and value systems, whether in good health or having disabilities/ chronic diseases, such as diabetes mellitus (DM).¹ The prevalence of DM was estimated to increase worldwide, including in Indonesia. International Diabetes Federation (IDF) estimated Indonesia will place seventh in 2045, with 16.7 million people estimated to have DM.² Previous studies showed that type 2 diabetes mellitus (T2DM) patients with symptoms and/ or complications had lower QOL compared to healthy individuals.^{3,4}

The ultimate goal of T2DM management is to improve or preserve good QOL by maintaining adequate blood glucose control and managing comorbidities and complications.⁵ Clinicians often use laboratory parameters to evaluate target of therapy, while parameters from patients' point of view, such as QOL, have not been elaborated much into management strategy even though current guidelines have emphasized tailored therapy and patient's role in diabetes management.^{5,6}

Quality of life is very subjective; therefore, socio-cultural background, demography, and ethnicities play major part in perceiving QOL.^{7,8} Instruments to measure QOL have been developed as interest in this field grows, to name a few; WHO Quality of Life (WHOQOL), Short Form -36 (SF-36), Nottingham Health Profile (NHP), which measure QOL in general, and some instruments have been developed for specific disease such as Diabetes Quality of Life (DQOL) and Asian Diabetes Quality of Life (Asian DQOL).^{7,9}

The development of Asian Diabetes Quality of Life (Asian DQOL) was first intended to overcome the issue of different cultural backgrounds and multi ethnicity in Malaysia, which were not conveyed by available quality of life measurement tools that were mostly developed based on Western population.⁹ In line with this background, therefore this study selected Asian DQOL, which was considered to be the most relevant tools for Indonesian population, to be adapted into Indonesian language.

METHODS

Written permission to translate Asian Diabetes Quality of Life into Indonesian language was approved by the developer. Ethical approval was granted by Hasan Sadikin Hospital Health Research Ethics Committee (LB.02.01/K6.5/342/2019). Written informed consent was obtained from all participants. This study consisted of translation and adaptation process followed by validity and reliability tests (Figure 1).

Translation and Adaptation

Translation and adaptation process was conducted in accordance with Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures which included six stages: initial translation, synthesis of the translations, back translation, review by group of experts, testing of pre-final version, and submission of documentation for appraisal of the adaptation process.¹⁰ The initial drafts were translated by medical professionals and a certified linguist and discussed into joint draft. Back translation was done by native English translator. Review was conducted by group of experts consisted of two endocrinologists, two general internists, a general practitioner, and a certified linguist. The pre-final draft was appraised and tested, then the final draft was approved and given to study subjects.

Validity and Reliability Tests

The study was conducted in Endocrinology Clinic, Hasan Sadikin General Hospital, Bandung, Indonesia in November 2019 - January 2020. Out of 71 T2DM patients, using consecutive sampling, 65 patients were enrolled. The inclusion criteria were a patient who has been diagnosed with T2DM and aged 40-60 years, able to read and write, fluent in Indonesian language, and agrees to be enrolled in written consent. The exclusion criteria were a patient with psychiatric condition, hospitalized within 2 weeks, and having undergone routine dialysis. From 65 subjects, 5 were lost to follow up yielding 60 patients as study subjects.

Subjects were asked to fill in the final version of Indonesian Asian Diabetes Quality of Life. The result of the first test was not informed to

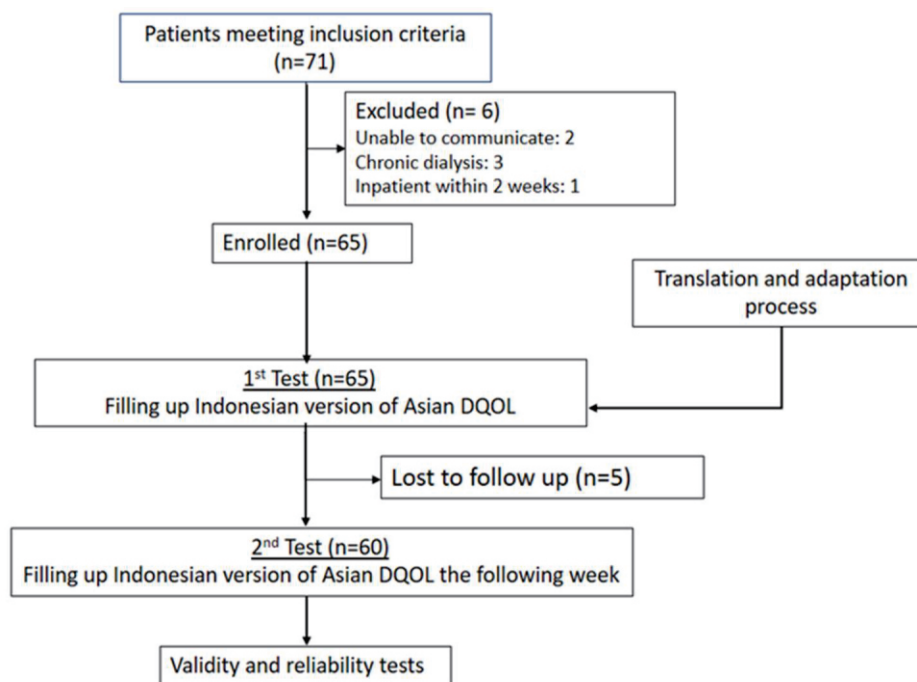


Figure 1. Study flow diagram.

the subjects. Subjects were then contacted to fill in again the questionnaire within 7-10 days. Results from both tests were analyzed to obtain validity and reliability.

Statistical Analysis

The study design was cross-sectional study. Correlation test between Likert scale of each question's answer and total score of all answers was conducted to determine convergent validity. Test-retest and internal consistency (Cronbach's alpha score) were done to determine reliability.^{11,12} All statistical analysis was computed using SPSS version 25.0.

RESULTS

Subjects of this study were between 40-60 years old with median age of 54 years, 42 (70.0%) subjects were female, mainly were married (78.3%), of Sundanese ethnicity (71.6%), unemployed (61.7%), attended higher education (35.0%), and have been diagnosed with T2DM for 1-5 years (50.0%). Most prevalent comorbidities and complications found were peripheral neuropathy (63.3%), hypertension (60.0%), and dyslipidemias (53.3%). Majority of subjects were given insulin therapy (43.4%),

had HbA1c level of 7-9.9% (57.1%), and with estimated glomerular filtration rate of > 60 ml/min/1.73 m² (65.5%).

Result of convergent validity test using Spearman's rank test showed that all questions across 5 domains had significant correlation (p -value < 0.05), therefore considered valid (Figure 2). Five out of six questions in diet domain had strong correlations (r : 0.61-0.75), only one question had moderate correlation (r : 0.50). All three questions in energy domain had very strong correlations (r : 0.85-0.89). Three out of four questions in memory domain had strong correlations (r : 0.65-0.78), and one had very strong correlation (r : 0.85). Financial aspect domain had five questions with three questions showing strong correlations (r : 0.67-0.79) and two had very strong correlations (r : 0.84; 0.86). Interpersonal relationship domain showed strong correlation (r : 0.78) on one question and very strong correlations (r : 0.93; 0.96) on two questions.

Reliability test by comparing the result of first and second test (test-retest) using Wilcoxon signed rank test (CI 95%) showed no difference between the consecutive tests (p -value > 0.05) (Table 1). Correlation test using Spearman's rank test showed that all domains had coefficient

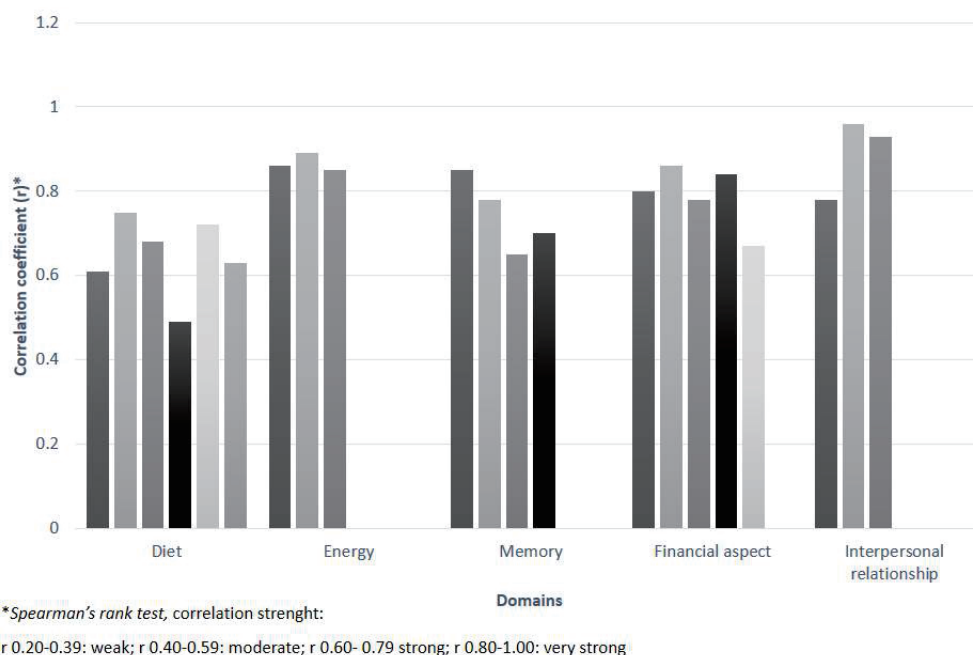


Figure 2. Convergent validity test result.

Table 1. Result of test-retest.

Domain	1 st Test mean (SD)	2 nd Test mean (SD)	p-value*	r**
Diet	22.583 (4.064)	22.917 (4.200)	0.059	0.93
Energy	10.900 (3.085)	11.033 (3.242)	0.591	0.84
Memory	17.483 (2.361)	17.683 (2.480)	0.083	0.91
Financial Aspect	19.367 (5.168)	19.517 (4.993)	0.310	0.98
Interpersonal relationship	9.978 (2.314)	10.085 (2.448)	0.695	0.83

SD = standard deviation, *Wilcoxon Signed Rank Test, **Spearman's rank correlation

Table 2. Internal consistency test result.

Domain	Number of questions (n)	Cronbach's alpha
Diet	6	0.756
Energy	3	0.863
Memory	4	0.793
Financial Aspect	5	0.879
Interpersonal relationship	3	0.906

Cronbach's alpha value:
 ≥ 0.9 : excellent; ≥ 0.8: good; ≥ 0.7: acceptable; ≥ 0.6: questionable; ≥ 0.5: poor;< 0.5: unacceptable.

correlation of more 0.70 (r : 0.83-0.98) surpassing the cut-off for reliability (Table 1). Internal consistency using Cronbach's alpha also showed all domains surpassed the acceptable score ≥ 0.70 (Table 2).

DISCUSSION

The development process of Asian DQOL included subjects from three different major

ethnics in Malaysia (Malay, Chinese, and Indian) and was made in three languages: English, Malay, and Chinese (Mandarin); which were mainly used by this population. Five domains, including diet, energy, memory, financial aspect, and interpersonal relationship were found to have important value that affect quality of life of T2DM patients in Malaysia.⁹ Experts discussion concluded that all five domains were also relevant

and important for Indonesian population.

In Indonesia eating also has high social value just like in other Asian countries where eating and dining play major part in family occasions, celebrations, and other cultural ceremonies or activities. Food has become means of social interactions and leisure, not merely just a necessity.^{13,14} There is still common belief that food should always be finished as an attitude of gratitude and politeness. With this picture, it is understandable that diet restrictions could really affect patient's daily life. Energy and memory domains were considered to represent overall health status, therefore were relevant. Financial aspect still becomes source of worries in Indonesia even though most Indonesians are currently covered by government's health insurance system but there are some expenses not directly related to medical bills, such as transportation and accommodation expenses to reach health facilities, also loss of income when the person is sick or one must attend to sick family member. The topic of sexual life is still viewed as a taboo subject but as improvements of information openness, education, and health status ensue, this topic becomes current. Strong link between DM, erectile dysfunction, and poorer QOL has been found globally.^{15,16}

**Countries with different socio-cultural backgrounds have different perspectives on quality of life; hence, the quality of life instruments used should omit or address different domains and be tailored to target population.⁷ One example of quality of life questionnaire used in United States (US) is Diabetes Quality of Life (DQOL), which was composed by 60 questions, then was shortened into 15 questions. Both versions include four domains, which are satisfaction with treatment, impact of treatment, worry about the future effects of diabetes, and worry about social/vocational issues.¹⁷ Domains selected in this questionnaire show that quality of life of T2DM patients in US is significantly affected by medical treatment of diabetes, while diet, medical expenses, and sexual life are of less concern.

There are numbers of quality of life instruments for T2DM patients in Europe with few variations depending on usage purpose. Most

of the instruments were developed for certain research, therefore they are varied in certain questions with emphasis on different domains in accordance with research objectives. A systematic review by Levterova et al.¹⁸ compared 14 diabetes quality of life instruments used in Europe and found that Audit of Diabetes-dependent quality of life (ADDQoL), Diabetes Care Profile (DCP), and Well-being Questionnaire (WBQ) had the best approach in measuring quality of life of diabetic patients in Europe. Questions in these instruments have several differences compared to Asian DQOL, where in these instruments, items on perception of treatment quality, patients' knowledge about diabetes, worry about pain and complications, limitations or disturbance in social life are addressed. European population perceived that time spent on diabetes treatment affected quality of life, whereas medical expenses were less worrisome. European patients also considered sleep and recreational activities as important parameters of quality of life.

Study by Huang et al.¹⁴ aimed to develop quality of life instrument for diabetic patients in Taiwan, found that fitness and mobility were factors that strongly affect quality of life of diabetic patients in Taiwan. Huang et al. used several quality of life instruments, such as DQOL, D-39S, and RAND-12, that had been translated into Mandarin, as references. Huang et al. later added diet domain considering that eating had high social value and perceived as source of happiness in Taiwan, but omitted sexual life domain due to lack of validity and reliability of this domain. Illustrations above showed that population with different socio-cultural background will have different perception on quality of life.

Convergent validity analysis showed that Indonesian Asian DQOL had correlation coefficient ranges 0.50-0.75 for diet domain, 0.85-0.89 for energy domain, 0.65-0.85 for memory domain, 0.67-0.86 for financial aspect domain, and 0.78-0.95 for interpersonal relationship domain. This result was in line with the English version and Indonesian version. The English version had correlation coefficient ranges of 0.50-0.76, 0.56-0.87, 0.71-0.87, 0.80-0.904, and 0.67-0.88 consecutively. The Indonesian version

had correlation coefficient ranges of 0.52-0.77, 0.68-0.81, 0.95-0.84, 0.66-0.82, and 0.52-0.88 consecutively⁹. Both Indonesian and Bahasa version had the lowest correlation coefficient in diet domain and the strongest in interpersonal relationship domain.

Reliability test using test-retest showed no significant differences (p value < 0.05) and internal consistency showed Cronbach's alpha scores ≥ 0.07 for all domains. This result was consistent with the English version. Internal consistency of Indonesian version had Cronbach's alpha scores ≥ 0.07 for four domains with diet domain having Cronbach's alpha of 0.67⁹, slightly lower than English and Indonesian version.

Limitation of this study was that most subjects had good education background (35.0% attended higher education. Moreover, 31.6% of study participants attended high school. There might be slight difference of interpretation towards Indonesian language in certain regions.

CONCLUSION

Indonesian Asian DQOL is a valid and reliable tool to measure quality of life of T2DM patients.

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