

IAI SPECIAL ISSUE

RESEARCH ARTICLE

Translation, validation, and reliability of the Indonesian version of the Assessment of Quality of Life-4 Dimensions (AQoL-4D)

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Keywords

AQoL-4D
Indonesia
Mental health
Reliability
Validity

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Abstract

Background: The Assessment of Quality of Life-4 Dimensions (AQoL-4D) instrument is a general instrument used to measure quality of life; it was developed by Australian researchers using psychometric techniques. AQoL-4D measures four dimensions: independent living, relationships, senses, and mental health, where the health dimension represents the domain of health-related quality of life. Each dimension has three questions, so in total AQoL-4D has 12 questions. **Objective:** To translate, validate and test the reliability of the Indonesian version of the AQoL-4D instrument. **Method:** The process of translating and adopting AQoL-4D from English to Indonesian is divided into four stages: forward translation, expert panel, backward translation, cognitive interviewing and pre-testing. The visual validity test was carried out during the cognitive interviewing and pre-testing stages. The final version of the Indonesian AQoL-4D was tested for construct validity and reliability by comparing the product-moment correlation coefficient, the value of r -count, with the value of r -table (α ; df). Furthermore, the instrument was tested for reliability using an internal consistency test with alpha coefficients (Cronbach's Alpha). **Result:** Respondents came from several health centers in Surabaya and totaled to 142 respondents. The results of the construct validity test obtained an r -count ranging from 0.347 to 0.595. The reliability test results showed that the total value of Cronbach's alpha was 0.669. **Conclusion:** The Indonesian version of AQoL-4D has moderate validity and reliability.

Introduction

The concept of quality of life refers to an individual's perception of life in the context of culture and social norms, and quality of life is a component of a person's overall quality of life that represents the functional effects of the disease as well as the side effects of therapy that patients experience and it is related to their goals, expectations, and living standards. Quality of life encompasses health and non-health factors such as economics, politics, and culture (WHO, 1998).

There are two instruments to measure the quality of life: disease-specific and generic. The choice between generic and specific measures depends on the research purpose, studied subject, and investigated critical aspects (Shofany, 2017). Specific disease instruments

were helpful for the clinician to monitor the effect of the treatment as well as the progress of the disease (Hyland, 2003). However, the generic measures can capture general health dimensions and functions based on the patient's experiences to be more sensitive to comorbid conditions (Megari, 2013; Seow *et al.*, 2019).

The Assessment of Quality of Life (AQoL) is a general instrument used to measure the quality of life developed by Australian researchers using psychometric techniques, which have been tested for validity and reliability (Hawthorne, Richardson, & Osborne, 1999). The AQoL instrument has several types depending on the measured dimensions: AQoL-4D, AQoL-6D, AQoL-7D, and AQoL-8D. This study chose AQoL-4D, consisting of 12 questions, proved valid,

reliable, and sensitive to various health conditions, and has correlations with other instruments such as EQ-5D, HUI3, 15D, and SF6D (Hawthorne, Richardson, & Osborne, 2001). Currently, the AQoL-4D is not available in Bahasa Indonesia. This study aimed to translate AQoL-4D initially in English into Bahasa Indonesia and determine the validity and reliability of the AQoL-4D.

Methods

The research conducted was a cross-sectional study. Participants in this study were patients with chronic diseases, aged 18 years old and above, who visited one of the 15 selected primary healthcare centres in Surabaya, East Java province-Indonesia. Participants should be able to read and communicate well in Bahasa, Indonesia. The Health Research Ethics Committee Faculty of Public Health Airlangga University approved the study protocol (No. 423-KEPK-2018).

The AQoL-4D was originally in English and consisted of four dimensions of quality of life: independent living, relationships, senses, and mental health. Each dimension has three questions, so the total number of questions in the AQoL-4D questionnaire is 12. AQoL-4D scoring for psychometric measurements uses a four base Likert scale, namely never = 1; rarely = 2; multiple times = 3; and often = 4. The lowest total score is 12, which reflects a good quality of life, while the highest score is 48, which reflects poor quality of life (Hawthorne, Richardson, & Osborne, 2001).

The AQoL-4D questionnaire was translated into Bahasa Indonesia after the researcher contacted the original author and got permission by e-mail. The translation and adaptation instrument method consist of four stages: forward translation, expert panel, backward translation, and cognitive interviewing and pre-testing (WHO, 2018). The translation was carried out by two translators compliant with World Health Organization requirements.

The forward translation was carried out by a pharmacist who had Bahasa Indonesia as their mother tongue, mastered English, and understood the terms used in the AQoL-4D questionnaire. The expert panel discussion involved three pharmacists who have knowledge in the field being researched and are fluent in English and Indonesian, and local culture. Backward translation was carried out by a professional sworn translator who has English as their mother tongue and masters Indonesian. These translators are non-healthcare professionals and have lived in Indonesia for more than a year; therefore, they also understand the local culture. Furthermore, a comparison was made

between the original AQoL-4D questionnaire and the AQoL-4D questionnaire, which had been back-translated into English by an expert panel to assure conceptual and cultural equivalence. The last stage was the process of pre-testing, cognitive interviews, and face validity testing with the face-to-face method. The panel of experts discussed feedback from the pre-test and cognitive interviews and face validity to create the final version of the Indonesian AQoL-4D questionnaire (Oluwatayo, 2012).

The validity of the AQoL-4D questionnaires was tested with Pearson product-moment correlation to ensure consistency between construct components (Taherdoost, 2016). A correlation coefficient of 0 indicates no correlation, whereas a correlation coefficient of 1 indicates a perfect positive correlation (Schober, Boer, & Schwarte, 2018). The reliability test will be conducted using internal consistency tests with coefficient alpha (Alpha Cronbach's). Cronbach's alpha reliability value has a range of 0 to 1. The closer the number is to one, the greater the internal consistency (Gliem & Gliem, 2003).

Results

A total of 142 respondents agreed to participate in this study with informed consent. The characteristic of the respondent can be seen in Table I. The majority of respondents were female (59.2%), aged 45-59 years (40.1%), had senior high school education (35.2%), had no job or retired (34.5%), and had one chronic condition (72.5%).

The forward translation was conducted by translating the AQoL-4D questionnaire from English into Indonesian, this was done by an Indonesian translator who has lived in an English-speaking country for two years. The result of the forward translation was given to a panel expert to be discussed. Only one question from the total twelve questions, question number one, required rewording.

The draft of the Indonesian AQoL-4D questionnaire was translated back into English by a sworn translator who was born in English speaking country and had been living in Indonesia for more than one year. A panel of experts then discussed the result and concluded that no difference in meaning was obtained for all twelve questions. The pre-testing and cognitive interviewing processes concluded that all questions were easily understood and used, achieving the final Indonesian AQoL-4D questionnaire (see Appendix A).

Table I: Demographic of respondents (n = 142)

Variables	n (%)
Age	
< 29	15 (10.6)
30-44	26 (18.3)
45-59	57 (40.1)
60-69	29 (20.4)
70-79	13 (9.2)
≥80	2 (1.4)
Gender	
Male	58 (40.8)
Female	84 (59.2)
Education	
No formal school	7 (5.0)
Did not complete elementary school	10 (7.0)
Completed elementary school	36 (25.4)
Completed junior high school	29 (20.4)
Completed senior high school	50 (35.2)
Completed higher education	10 (7.0)
Occupation	
Jobless/retired	49 (34.5)
Housewife	38 (23.9)
Private employee	37 (26.1)
Public servant	5 (3.5)
Self-employed	13 (9.2)
Chronic condition	
One chronic condition	103 (72.5)
Two chronic conditions	34 (24.0)
Three chronic conditions	5 (3.5)

The results of the construct validity test using the Pearson product-moment showed that all items were significantly related at the 0.01 level. The correlation coefficient of the questions was 0.347 to 0.595. Meanwhile, the reliability test results showed that the total value of Cronbach's alpha was 0.669. Cronbach's alpha value for each question item ranges from 0.633-0.670. Both the construct validity and reliability test results are shown in Table II.

Discussion

The panel expert suggested changing the word used in question number one. The original sentence read: 'Do you need any help looking after yourself? (For example: dressing, bathing, eating)'. The translator translated it into 'Apakah Anda membutuhkan bantuan orang lain Untuk menjaga Anda?'. The word 'menjaga' was suggested to be replaced with the word 'merawat'. 'Menjaga' was close to the meaning of 'to guard' which usually related to the safety of a person, while 'merawat' is more closely related to the meaning of 'caring'. The same was found in a study that translated AQoL-4D from English to Kannada.

Table II: AQoL-4D Indonesian Version Validity and Reliability Test Results

Question Item	Significance	Coefficient Pearson Correlation	Cronbach's Alpha
Q1	0.000	0.402	0.654
Q2	0.000	0.479	0.664
Q3	0.000	0.423	0.652
Q4	0.000	0.347	0.661
Q5	0.000	0.521	0.638
Q6	0.000	0.534	0.637
Q7	0.000	0.481	0.653
Q8	0.000	0.486	0.644
Q9	0.000	0.418	0.653
Q10	0.000	0.595	0.636
Q11	0.000	0.436	0.670
Q12	0.000	0.562	0.633

This study found that words related to personal care tasks cannot simply be translated literally (Thammaiah *et al.*, 2016). Choosing the right words is often encountered when translating and adapting the quality of life instruments. The problems encountered include ambiguous meanings, multiple meanings, rhetorical meaning changes, similar words, compound words, grammatical meaning changes, unfamiliar with subjective experiences, words bearing emotional weight, and actions words (Kalfoss, 2019). The right choice of words must consider the figurative words, the meaning of the whole sentence, the experiential, and the conceptual equivalence between the original questionnaire and the research target (Beaton *et al.*, 2000; Schmidt & Bullinger, 2003).

The construct validity test showed a positive correlation between construct items. As seen in Table II, most of the questions had a correlation value of 0.347-0.595, which was a moderate correlation. There was only one question, question number four, which had a correlation value < 0.35, which was interpreted as a weak correlation (Taylor, 1990). Furthermore, the overall construct validity was rated moderate.

The equivalence coefficient (alpha Cronbach coefficient) indicated that the Indonesian version of AQoL-4D had moderate internal consistency with a value between 0.5 and 0.7. This result is lower than the original instruments, which have high internal consistency with $\alpha = 0.81$ (Hawthorne, Richardson, & Osborne, 1999). However, the AQoL-4D Indonesian version showed better internal consistency than the study that translated AQoL-4D into Kannada (Thammaiah *et al.*, 2019). A plausible cause for the low Cronbach's alpha coefficient could be the number of questionnaire items and dimensions involved. The higher the number of

items, the lower the Root Mean Score Error and estimator bias (Aithal & Aithal, 2020).

Conclusion

The AQoL-4D Indonesia version has moderate validity and reliability.

Acknowledgement

Universitas Airlangga funded this research through a Faculty Leading Research grant. This article was presented at the '2022 Annual Scientific Conference of the Indonesian Pharmacist Association'.

Source of funding

Universitas Airlangga funded this research through a Faculty Leading Research grant.

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Appendix:

Appendix A: The Indonesian version AQoL-4D

Beri tanda centang (✓) pada kotak yang menggambarkan situasi yang paling mendekati kondisi anda dalam seminggu terakhir.

HIDUP MANDIRI

Apakah anda membutuhkan bantuan untuk merawat diri sendiri? (contoh: berpakaian, mandi, makan)

- Saya tidak membutuhkan bantuan sama sekali.
- Saya sesekali membutuhkan bantuan untuk aktivitas pribadi.
- Saya membutuhkan bantuan saat melakukan aktivitas pribadi yang lebih sulit.
- Saya membutuhkan bantuan setiap hari untuk sebagian besar atau semua aktivitas pribadi.

Ketika melakukan pekerjaan rumah sehari-hari: (contoh: memasak, membersihkan rumah, mencuci)

- Saya tidak membutuhkan bantuan sama sekali.
- Saya sesekali membutuhkan bantuan untuk pekerjaan rumah.
- Saya membutuhkan bantuan saat melakukan pekerjaan rumah yang lebih sulit.
- Saya membutuhkan bantuan setiap hari untuk sebagian besar atau semua pekerjaan rumah.

Pikirkan tentang seberapa mudah anda berjalan keliling di rumah dan lingkungan sekitar:

- Saya berjalan keliling rumah saya dan lingkungan sekitar tanpa kesulitan.
- Saya mengalami kesulitan berjalan keliling rumah saya dan lingkungan sekitar sendiri.
- Saya tidak bisa berjalan keliling lingkungan sekitar sendiri, namun saya bisa berjalan keliling rumah dengan beberapa kesulitan.
- Saya tidak bisa berjalan keliling rumah maupun lingkungan sekitar sendiri.

HUBUNGAN

Berkenaan dengan kesehatan anda, secara umum hubungan anda (contoh: dengan teman, pasangan atau orang tua):

- Sangat dekat dan hangat
- Terkadang dekat dan hangat
- Jarang dekat dan hangat
- Saya tidak memiliki hubungan dekat dan hangat

Pikirkan tentang hubungan anda dengan orang lain:

- Saya memiliki banyak teman, dan saya tidak pernah kesepian.
- Meskipun memiliki teman, saya sesekali kesepian.
- Saya memiliki beberapa teman, namun seringkali kesepian untuk teman bicara.
- Saya terisolasi dari masyarakat dan merasa kesepian.

Pikirkan tentang kesehatan anda dan hubungan anda dengan keluarga:

- Peran saya dalam keluarga tidak dipengaruhi oleh kesehatan saya.
- Ada beberapa peran saya dalam keluarga yang tidak bisa saya jalankan.
- Ada banyak peran saya dalam keluarga yang tidak bisa saya jalankan.
- Saya tidak bisa menjalankan satu pun peran saya dalam keluarga.

INDRA

Pikirkan tentang penglihatan anda, termasuk saat menggunakan kacamata atau lensa kontak bila diperlukan:

- Saya melihat secara normal.
- Saya memiliki beberapa kesulitan saat fokus pada sesuatu, atau saya tidak bisa melihat secara tajam.
Contoh: tulisan kecil, koran atau melihat benda di kejauhan.
- Saya memiliki banyak kesulitan melihat sesuatu.

Penglihatan saya kabur. Contoh: saya hanya bisa melihat dengan alat bantu.

- Saya hanya melihat bentuk secara umum, atau saya buta.
Contoh: saya membutuhkan seorang pengarah untuk berpindah tempat.

Pikirkan tentang pendengaran anda, termasuk penggunaan alat bantu dengar bila diperlukan:

- Saya mendengar secara normal.
- Saya memiliki beberapa kesulitan pendengaran, atau saya tidak bisa mendengar secara jelas. Contoh: saya meminta orang berbicara lebih keras, atau membesarkan volume suara TV atau radio.
- Saya memiliki kesulitan mendengar sesuatu dengan jelas.
Contoh: saya seringkali tidak memahami apa yang dikatakan. Saya biasanya tidak melibatkan diri dalam percakapan karena saya tidak bisa mendengar apa yang dikatakan.
- Saya bisa mendengar sangat sedikit.
Contoh: saya sepenuhnya tidak memahami perkataan yang diucapkan langsung dengan suara keras pada saya.

Saat anda berkomunikasi dengan orang lain: (contoh: dengan berbicara, mendengarkan, menulis, atau memberi isyarat)

- Saya tidak memiliki masalah berbicara dengan mereka atau memahami apa yang mereka katakan.
- Saya memiliki beberapa kesulitan untuk dimengerti oleh orang lain yang tidak mengetahui tentang saya. Saya tidak memiliki masalah untuk memahami apa yang dikatakan orang lain pada saya.
- Saya hanya dimengerti oleh orang lain yang mengenal saya dengan baik. Saya memiliki masalah besar untuk memahami apa yang dikatakan orang lain pada saya.
- Saya tidak bisa berkomunikasi cukup baik dengan orang lain.

KESEHATAN MENTAL

Pikirkan tentang bagaimana anda tidur:

- Saya mampu tidur tanpa kesulitan sepanjang waktu.
- Waktu tidur saya beberapa kali terganggu, namun saya biasanya mampu kembali tidur tanpa kesulitan.
- Waktu tidur saya terganggu hampir tiap malam, namun saya biasanya mampu kembali tidur tanpa kesulitan.
- Saya tidur hanya sebentar. Saya terjaga hampir tiap malam.

Pikirkan tentang bagaimana perasaan anda secara umum:

- Saya tidak merasa cemas, khawatir atau tertekan.
- Saya sedikit merasa cemas, khawatir atau tertekan.
- Saya merasa cukup cemas, khawatir atau tertekan.
- Saya sangat merasa cemas, khawatir atau tertekan.

Bagaimana rasa nyeri atau tidak nyaman yang anda alami:

- Saya tidak merasa nyeri sama sekali
- Saya merasa cukup nyeri
- Saya mengalami nyeri berat
- Saya mengalami nyeri tak tertahankan