

Adaptation of the Indonesian quality of life-5 questionnaire

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Abstract

The QoL5 questionnaire is five items self-report to measure the quality of life, based on the integrated quality of life (IQoL) theory by S. Ventegodt. The validation test aims to determine the psychometric properties of the questionnaire. The translation and adaptation stages are carried out based on the International Test Committee (ITC) manual. The sample consisted of 217 people obtained a convenience sampling. Data analysis showed that the questionnaire was reliable ($\alpha=.78$). Item discrimination ranges from .41-.74 (very good item). Confirmatory factor analysis (CFA) shows that the unidimensional model QoL5 has a good fit to the data (RMSEA=.07, CFI=.99, and SRMR=.05). The factor loading significance test shows a value of .5 or above means all items are valid. Tests of content validity (CVI=.87), convergent validity (AVE=.55), and criterion validity ($r=.399-.581$) showed that all items were valid. The results of the analysis indicate that the QoL-5 questionnaire is a reliable and valid instrument for measuring the quality of life.

Keywords

Adaptation, iqol theory, QoL-5 questionnaire, quality of life

Introduction

The quality of life concept has become one of the most discussed topic in the field of health, social welfare, and politics (Ventegodt *et al.*, 2011). In this regard, it is necessary to measure one's quality of life when facing obstacles based on proper theoretical foundation and methods. The absence of holistic understanding of quality of life (QoL) theory, it is difficult to determine which aspects to measure and how to measure it (Ventegodt *et al.*, 2003). Many QoL measures were developed without a robust philosophical foundation. Therefore, the integrative quality of life (IQoL) theory is developed to bridge various QoL measures based on more holistic and robust philosophical foundation (Lindholt *et al.*, 2002).

Ventegodt views IQoL as a metatheory covering eight indicators of QoL, categorized into three dimensions: subjective, existential, and objective dimensions. These three dimensions are depicted within a spectrum moving from subjective to objective dimensions, with existential dimension emerges in the middle of the spectrum as the bridge of the other two dimensions (Ventegodt *et al.*, 2003b).

The subjective denotes the extent to which an individual perceives a good life. From personal perspectives, individuals evaluate how they see various matters, feelings, and thoughts. One's satisfaction and happiness may reflect individuals' subjective quality of life. Subjective dimension consists of four indicators: well-being, satisfaction of life, happiness, and meaning in life (Quagraine & Enim, 2015).

The second dimension, i.e., the existential dimension, denotes one's inner self feelings, or unexpressed feelings. These feelings are commonly found in irrational, spontaneous experiences, shown through philosophical, mystical, or religious expressions. The existential dimensions consists of

two indicators: spiritual belief and balance between physical, mental, and spiritual aspects (Quagraine & Enim, 2015).

The third dimensions, i.e., the objective dimension, shows how one's life is perceived by their surroundings. This aspect is heavily affected by the cultural factors around individuals. It comprises four indicators: biological order, realizing life potential, fulfillment of needs, and objective factors (Quagraine & Enim, 2015).

Implementing the theory, a questionnaire called the Quality of Life-5 (QoL5) was developed to measure one's quality of life in rational, brief, general, and global manner, which can be used to meet clinical database needs and other needs (Lindholt *et al.*, 2002).

Currently, studies on QoL are mostly done in the field of healthcare service, particularly in medical aspects (e.g., patients with certain diseases or illicit drug users) (Muller & Bukten, 2019). Meanwhile, An optimal QoL measure supposes not to depend on certain diseases due to its global and general nature and is comparable to the patient population and the population background (Lindholt *et al.*, 2002).

The existing measure such as the health-related quality of life (HRQOL) (Purba *et al.*, 2018) contains quite numerous items, requiring more efforts to finish when compared to QoL5. The QoL5 can serve as an alternative measures as it offers quick and concise evaluation (Muller *et al.*, 2016; Muller & Bukten, 2019), thanks to its disease-nonspecific (Pasareanu *et al.*, 2015; Vederhus *et al.*, 2016), global, generic natures, fewer items, simpler administration and scoring

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methods, and minimal burden for both administrators and participants. With its characteristics, QoL5 can be used as a valid and reliable screening measure (Vederhus *et al.*, 2016) as it is useful for measuring the overall QoL, both in general population or in different disease domains (Birkeland *et al.*, 2017).

The development and validation study involving general population reports that each QoL5 item exhibits an inter item correlation of higher than .58, a good correlation with self-estimated QoL ($r = .68-.80$), and test-retest correlation score of higher than .80, indicating an acceptable reproducibility (Lindholt *et al.*, 2002). The QoL5 validation conducted by Muller & Bukten (2019) in prisoner population asserts that QoL5 is an unidimensional questionnaire with acceptable internal consistency ($\alpha = .76$) and low missing rate (Muller & Bukten, 2019).

The QoL5 was initially developed in Denmark and continues to be developed by the Quality-of-Life Research Center, Copenhagen, Denmark. This research center is quite popular in Denmark and nordic countries. Hundreds of published scientific articles and tens of popular books makes this topic accessible for public. Since 1990, this research center has hosted around ten national and international conferences on QoL and holistic health (Ventegodt, 2016). The QoL5 questionnaire is also used in other studies, such as the large national cohort study on Norwegian offenders, i.e., the Norwegian Offender Mental Health and Addiction (NorMA) (Muller & Bukten, 2019) and the Chronic Whiplash-Associated Disorders (WAD) in Denmark (Ventegodt *et al.*, 2004).

The QoL5 can be used for various purposes: depicting quality of life of a population or a group of patient; formulating the purpose for supports, treatment, or therapy; screening or identifying individuals requiring treatment; evaluating a therapy or treatment systems; facilitating doctor-patient communication; involving patients in decision-making process; allocating resources; investigating causal relationship between QoL and poor health in a prospective study; developing awareness of QoL and promoting health; and assisting practitioners gather QoL-related knowledge (Ventegodt *et al.*, 2003a).

To our knowledge, no studies validate the QoL5 in Indonesian context. Lindholt *et al.* (2002) suggest conducting further studies to evaluate the QoL5's psychometric properties to see its usefulness in different populations. In addition, the QoL5 is developed based on an integrative theory covering different previous theories, offering more comprehensive QoL measurement. In this regard, the present study aims to adapt QoL5 into Indonesian version.

Method

Participant

The participants of the study were 217 adult Indonesian citizens (18-65 years of age), recruited using convenience sampling technique. The data processing result displays their characteristics, as shown in table 1. Most participants were female (78.8%) and were Civil State Apparatus (35%) with Associate's or Bachelor's degree (65%), married (58%), and a Muslim (90.3%).

Data Collection

The data were collected online using Google forms, distributed through social media and messaging applications. The form contained informed consent form, participants' demographics, and the questionnaire to be tested.

Instrument

The instrument used is QoL5 questionnaire (Lindholt *et al.*, 2002). The QoL5 consists of five items followed with five response options: 1 (Excellent), 2 (Good), 3 (Neutral), 4 (bad), 5 (very bad). Items 1 and 2 represent the objective dimension, items 3 and 4 represents the existential dimension, while item 5 represents the subjective dimension. In order to test the criteria validity, we also administer WHOQOL-BREF, the gold standard questionnaire to measure individuals' quality of life.

Procedure

We referred to the International Test Committee (ITC) Guidelines for Translating and Adapting Test (Bartram *et al.*, 2018) to adapt the QoL5. The following stages were done:

- (a) Precondition test, asking permission from the original owner. We have been officially allowed to adapt the QoL. The original format of QoL5 was obtained from the official website of Quality of Life Research Center (<https://qualityoflife.dk>).
- (b) Forward and backward translation was performed through a collaboration with an accredited translation service and three translators who have psychology education background, English education background, have adequate understanding of QoL construct and English proficiency, and are Indonesian native speakers.
- (c) The translation result was peer reviewed by two Indonesian native speaker with Psychology education background, adequate understanding of QoL construct, adequate English proficiency. The next step was performing the expert review, involving three subject-matter experts. In this stage, the grammar and word choice of each translated item was adjusted to Indonesian culture. Each subject-matter expert were asked to judge the relevance of each item using the following scale: R (Relevant), RV (Revision), and TR (Irrelevant).
- (d) Cognitive interview was performed to see the presence of response error in each QoL5's translated item. The interview involves two female participants in early and middle adulthood (Indonesian citizen, 18-65 years of age). We performed a verbal probing by asking a specific information related to an item they responded in order to reveal the foundation of their responses.
- (e) Data Collection Once the translation, proofreading, and CI stages were done, the data were collected using Google Form. The form also contains an informed consent form, participants' identity, and instruction.

Reliability

The questionnaire reliability was determined based on the Cronbach's alpha (α) and composite reliability (CR), where $\alpha \geq .70$ indicates that the questionnaire is reliable (Hair *et al.*, 2010; Kaplan & Saccuzzo, 2018). The item-rest correlation was calculated using JASP 0.16.2 to see each item's discriminating power (JASP-Team, 2022). According to Ebel & Frisbie (1991), a good item should exhibit an item-rest correlation $\geq .30$ (Ebel & Frisbie, 1991).

Validity

The convergent test was performed by estimating the average variance extracted (AVE), an item is considered valid when it exhibits an AVE $\geq .5$ (Hair *et al.*, 2014). The criteria validity in this study refers to the correlation value between QoL5 and each domain of WHOQOL-BREF. Three correlation coefficient criteria were used: weak ($r = -.3$ to $.3$); moderate ($r = \pm .3$ to $\pm .7$), and strong ($r < -.7$ to $> .7$) (SAGE-Team, 2015). The content validity of QoL5 was judged by the three subject-matter experts. The validity test was performed by calculating the content validity ratio (CVR) of each item and content validity index, which picture the overall item value. The CVR and CVI calculation was done following Lawshe's suggestion, i.e., CVR value ranges from -1 (perfect disagreement) to +1 (perfect agreement), and an item is considered essential when it has an agreement value of ≥ 0 , given by more than half of total SME (Lawshe, 1975). The determination test was done to the participants' sociodemographic data to see whether certain factors affect the variance of QoL score. Difference test was performed using JASP 0.16.2.

The structural validity of QoL5 was determined by performing Confirmatory Analysis Factor and seeing the factor loading of each item. A factor loading is deemed significant if its value $\geq .5$, and this value applies to achieve unidimensionality of the measurement model (Awang, 2014). We also tested the QoL5 unidimensional model to see the item homogeneity (AERA, APA, & NCME, 2014). It was done based on the goodness of fit tests that result in Chi-Square, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Standardized Root Mean Square Residual (SRMR) values. In this study, Chi-square value was not used as a criterion due to its sample-sensitivity. The present study applied another model fitness criteria proposed by (Kline, 2021), namely the RMSEA value between $.05$ and $.08$, indicating reasonable error of approximation, CFI value $\geq .9$, indicating a good fit, and the SRMR value $< .1$, indicating that it is favorable favorable (Carvalho & Chima, 2014). The parameter estimation used was done using diagonally weighted least squares (DWLS) in JASP 0.16.2 (JASP-Team, 2022).

Result

The proofreading result shows that most translated items are relevant. Based on the peer reviewer and SME's recommendation, a basic change in item 3 (How is your relationship with your partner at the moment?) was made. Previous studies conducted by Muller & Bukten (2019) report a missing value as many participants did not have a partner. Hence, two suggestions were given: First, by broadening

Table 1. Participants' Demographics

Characteristics	N	%
Gender		
Female	171	78.8
Male	46	21.2
Ethnic		
Java	70	32.3
Sunda	56	25.8
Others	91	41.9
Employment Status		
Civil State Apparatus	77	35.5
Student	51	23.5
State-Owned Enterprise/Private	48	22.1
Entrepreneur	17	7.8
Housewife	16	7.4
Unemployed	8	3.7
Domicile		
West Java	85	39.2
South Sumatera	53	24.4
Jakarta	16	7.4
East Java	14	6.5
Banten	10	4.6
Central Java	9	4.2
Others	30	13.8
Education		
Bachelor's Degree	148	68.2
Senior High School	31	14.3
Master Degree	30	13.8
Associate's Degree	3	1.4
Doctorate	3	1.4
Junior High School	1	0.5
Diploma I	1	0.5
Marital Status		
Married	126	58
Not married	88	40.6
Widow/widower	3	1.4
Religion		
Islam	196	90.3
Protestant	15	6.9
Catholic	3	1.4
Hinduism	2	0.9
Buddhism	1	0.5

its scope, i.e., changing it to the family context, which also covers a partner, or second, by dividing it into two items, one item measuring the satisfaction of those with partner, and another one measuring the satisfaction of those who do not have partner. We preferred the first suggestion, by using the word family (Indonesian = keluarga) which also covers one's partner. The term partner has a broad meaning in Bahasa Indonesia (i.e., a person who work together with other persons due to mutual needs) (KBBI Daring, 2020). In addition, Indonesia's collectivist culture makes most individuals see their family as the main source of social support. Thus, individuals without partner can still attribute their satisfaction with their family relationship.

The cognitive interview shows that, overall, each item in translated QoL5 is understandable. However, it should be noted that administering the questionnaire to middle adult participants require longer time than to early adult individuals.

The QoL5 exhibits an internal consistency (Cronbach's α) of $.78$ and composite reliability (CR) of $.85$. The data showed

Table 2. Item-rest Correlation

Item	Mean±SD	Median	Modes	r*	Skewness	Kurtosis
QoL1	2.07±0.6			.41	.88	2.19
QoL2	2.40±0.8			.74	.57	0.12
QoL3	1.90±0.8	2	2	.55	.72	0.46
QoL4	2.00±0.7			.44	.52	1.58
QoL5	2.30±0.9			.68	.79	0.49

r= Item-rest correlation

that each item, exhibit a good discriminating power (>.3). Table 2 displays the correlation coefficient value. Meanwhile, the content validity test showed a CVR value ranging between .33-1 and CVI value of .87, meaning that all items in the questionnaire are essential. The content validity test result is displayed in Table 4.

The discrimination test by comparing the chi-square count to the chi square table ($\alpha=.05$) of sociodemographic data showed that gender (χ^2 count (15.276) > χ^2 table (3.841), df=1), job (χ^2 count (16.012) > χ^2 table (11.070), df=5) and marital status (χ^2 count (11.889) > χ^2 table (5.991), df=2) are associated with variance of participants' QoL score. Female participants were reported to have higher QoL score than male participants (M =2.27, SD = 0.57). The QoL score of unmarried participants was significantly different from that of married participants ($t(214)=.00$, $p<.05$), where the former exhibit higher QoL score (M=2.31, SD=0.57). A significant difference was also noticed among private/state enterprise employees, students, entrepreneurs, and civil servant apparatus ($t(211)=.00$, $p<.05$). Unemployed participants report the highest QoL score (M=2.54, SD=.71), followed by students (M=2.33, SD=.65), private/state enterprise employees (M=2.30, SD=0.52), entrepreneurs (M=2.26, SD=.41), and housewife (M=2.11, SD=.45).

The CFA result showed that the model is fit, as RMSEA, CFI, and SRMR value was .07 (reasonable error of approximation), .99 (good fit), and .05 (favorable), respectively (Carvalho & Chima, 2014). The unidimensional model used in this study is presented in Table 4. The factor loading of each item also shows a significant values, ranging between .54 and .95, which indicate an adequate correlation

Table 3. Factor Loading Significance Test

Item	Factor Loading	SE	M Extracted	Composite Reliability
QoL1	.540	.040		
QoL2	.955	.042		
QoL3	.689	.037	.554	.855
QoL4	.555	.037		
QoL5	.886	.039		

Table 4. Content Validity Test

Item	Expert 1	Expert 2	Expert 3	CVR
QoL 1	x	x	x	1
QoL 2	x	x	x	1
QoL 3	x	x	x	1
QoL 4	x		x	0,333
QoL 5	x	x	x	1
CVI				0,867

between the item and the latent variable (i.e., QoL) (Awang, 2014). The significance test result was presented in Table 3.

The convergent validity test showed an AVE value of .55 (categorized as valid) (Hair *et al.*, 2014), while the criteria validity test showed a moderate correlation with the physical ($r=.459$), psychological ($r=.581$), social relationship ($r=.435$), and environmental domains ($r=.399$) (SAGE-Team, 2015).

Discussion

The present study focuses on the QoL5 adaptation process into Bahasa Indonesia based on ITC Guidelines for Translating and Adapting Test. The research and analysis process are presented in systematic and detailed manner to provide information and guide for other researchers who intend to test the usefulness of this questionnaire in different populations in Indonesia. Its integrative theoretical foundation and generic nature allows QoL5 to measure one's quality of life more comprehensively in diverse settings (e.g., education, health, etc).

The proofreading, peer-reviewing, and SME- process shows that most translated items are relevant. A fundamental change was made in item 3 by replacing the word "partner" with "family" to suit the translated version according to the Great Dictionary of Bahasa Indonesia and the country's collectivism. The cognitive Interview result shows that, in general, the Indonesian version of QoL5 items has suited the original version.

The reliability score indicates that the questionnaire is reliable ($\alpha=.78$) (Kaplan & Saccuzzo, 2018) with a good composite reliability (CR=.85) (Hair *et al.*, 2010). This study is in line with Muller & Bukten (2019) who reported an acceptable reliability value involving offender population ($\alpha=.76$). The item-rest correlation showed that each item matches the total score and can discriminate participants' performance (Muller & Bukten, 2019; Young *et al.*, 2017). This result is in line with Lindholt *et al.* (2002) who report an interitem correlation ranging between .58 and .72, indicating a good validity (Lindholt *et al.*, 2002).

The content validity test result also shows that all items are essential (Ayre & Scally, 2014; Lawshe, 1975). Although QoL5 contains relatively few numbers of items, these items are constructed in a generic and deep questions. This construction can build participants' individually-weighted, subjective, deep evaluation when responding to the questions. In addition, its robust theoretical foundation also accounts for the logical quality of each item (Lindholt *et al.*, 2002).

The convergent and criteria validity, and factor loading significance test results show that each QoL5 items were valid and significantly contributed to the quality-of-life measurement. No modification indices were noticed. The

factor loading of each item shows an adequate correlation between the item and the latent variable (Ertz *et al.*, 2016). In other words, each item is proven to measure one single variable. This finding is in line with Muller & Bukten (2019), who report a factor loading between .38- .89, indicating an adequate correlation between items and the latent variable (Muller & Bukten, 2019).

The confirmatory factor analysis based on the RMSEA, CFI, and SRMR value shows that the QoL5 unidimensionality met the fit model criteria. In other words, the model has been theoretically suits the empirical data (Carvalho & Chima, 2014). This finding is also in line with Muller & Bukten (2019) who confirm the QoL5 unidimensionality in offender population (Muller & Bukten, 2019).

The Indonesian QoL5 administration was quite easily and did not require certain preparation. However, administering this questionnaire to middle adults or older participants require longer time, because middle adult participants appears to need longer time to finish the questionnaire, compared to the young adult participants.

Discrimination test on socio-demographic data shows that gender, job, and marital status is associated with quality of life. This is in line with the study involving general population in Denmark, reporting that QoL5 possesses an acceptable level of sensitivity and is capable of predicting difference in participants' quality of life (Lindholt *et al.*, 2002).

Based on the adaptation process and statistical test results, the Indonesian version of QoL5 possesses a good psychometric properties. The QoL5 is developed based on the theory integrating the existing QoL measures and more robust and holistic philosophical foundation to provide more comprehensive measurements. Furthermore, the QoL5 can serve as an alternative measurement as it offers brief and concise evaluation due to fewer items, simple administration and scoring method, and minimal work burden for both administrators and participants.

The limitation of this study lies in its sampling technique (i.e., non-probability sampling technique), which do not provide equal opportunities to each member of the population to participate in this study, in addition to the absence of test-of-significance of the collected data. The number and diversity of participants in this study are also limited, preventing a generalizable results for general population in Indonesia.

Conclusion

This study adapts the QoL5 to obtain a questionnaire that suits Indonesian population with a good psychometric property. The QoL5 can be used for adult population, offers simple administration and scoring method with minimal burden, allowing quick and concise evaluation process. The questionnaire's psychometric properties shows that the Indonesian version of QoL5 is reliable and valid measure to picture one's quality of life. Future studies are recommended to validate the questionnaire using more diverse population and probability sampling technique to obtain more significant result. It is also recommended to add more criteria validity by linking QoL5 to other scales (e.g., life satisfaction, psychological well-being, etc.) to obtain stronger validity evidence. Future studies can also be conducted in various contexts (health, education, community, etc.) and diverse

subjects (from specific population to a group of patients with certain disease).

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