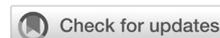


Reliability and validity of the Indonesian version of the World Health Organization quality of life-old (WHOQOL-OLD): a Rasch modeling

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ABSTRACT

BACKGROUND The World Health Organization (WHO) has developed the WHOQOL-OLD instrument, specifically measuring the quality of life (QoL) of the elderly, but the Indonesian version of the WHOQOL-OLD has not been available.

METHODS This study was conducted in 2 steps. First, the instrument was translated and pre-tested to 8 elderly respondents from 2 villages in Lembang, West Java, Indonesia. Second, Rasch modeling was used as implemented by the Winstep version 3.73 software to analyze the reliability, validity, value of separation, Wright map analysis, item-fit order, and differential item functioning in elderly respondents (aged ≥ 60 years old and did not have dementia) from 6 community health centers in Bangka Regency, Bangka Belitung, Indonesia from July to December 2018.

RESULTS Overall, the Indonesian version of the WHOQOL-OLD demonstrated good reliability and validity tests in 175 respondents. The overall value of the person reliability was 0.73 with the Cronbach's alpha of 0.75, and the value of the item reliability was 0.97. A misconception and bias occurred in the death and dying facet, especially in the demographic categories of age, gender, and marital status.

CONCLUSIONS The Indonesian version of the WHOQOL-OLD module has good psychometric properties to measure the QoL of the Indonesian older population. However, further studies involving various ethnicities, religious groups, and districts in Indonesia should be carried out before the module can be used throughout the country.

KEYWORDS elderly, quality of life, reliability and validity, WHOQOL-OLD

The number of elderly people is increasing worldwide, including in Indonesia. The World Health Organization (WHO) estimates that the proportion of elderly in Indonesia will increase by 100% in the 2015–2050 period (from 8.5% to 19.2%).¹ Most of the Indonesian elderly live in villages with a low level of education.² Age increases the risk of many health disorders, such as physical, sensory, mental, and cognitive disorders.³ Moreover, multimorbidity is common in the older adult population.^{4–7} However, the presence of diseases in the older adults does not automatically affect their chance of achieving an optimal quality of life (QoL).⁸ The WHO

defines QoL as “an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns”.⁹

The WHO developed instruments to measure the QoL, namely WHOQOL-100 and WHOQOL-BREF, for some reasons. First, many health instruments merely measure the impact of a disease and concern with the symptoms and eradication of a disease.¹⁰ Second, most health status measurements developed in some countries do not consider the person's well-being that the WHO defined as “a state of physical,

mental and social well-being, not merely the absence of disease and infirmity".¹⁰ Third, the development of the WHOQOL instruments might be used in several settings and cross-cultural approaches.¹⁰ These generic instruments were developed for the younger adult population and might not validly accommodate the older population.¹¹ In 1999, the older adults WHOQOL module, namely WHOQOL-OLD, was specifically developed and used as a supplementary module that can be added to the existing WHOQOL instruments.¹¹ Similar to the WHOQOL-100 and WHOQOL-BREF, the WHOQOL-OLD can be used in a wide variety of studies, including community epidemiology, impact of service provision, cross-cultural comparison, clinical intervention trials, service development, and health monitoring.¹¹

The WHOQOL-OLD has been translated into various languages¹²⁻¹⁴ but has never been officially translated into Indonesian. The Indonesian version of the WHOQOL-OLD may assess the QoL on different cultures and health conditions among the elderly in Indonesia. This assessment was conducted at the community health centers so that the health providers may take actions to enhance the QoL of the elderly, not solely treat the disease. Thus, this study was aimed to analyze the reliability and validity of the Indonesian version of the WHOQOL-OLD.

METHODS

This study was conducted in two steps. Firstly, the English version of the WHOQOL-OLD was translated to Indonesian according to the WHO's standard of translation. Secondly, the reliability and validity of the Indonesian version of the WHOQOL-OLD were tested using Rasch modeling. This study was approved by the Research Ethics Committee, Universitas Padjadjaran, Indonesia (No: 890/UN6.KEP/EC/2018).

The translation process

The translation process began with appointing two English translators accompanied by a supervisory team of public health experts, consisted of one chairman and two members. The supervisory team was assigned to provide input and explanation of the questionnaire to the translators. Next, they translated the English version of the WHOQOL-OLD instruments into Indonesian by referring to the grammatical aspect of the target language. During the translation process,

a discussion with the supervisory team was conducted to obtain a construct validity. After the Indonesian version of the WHOQOL-OLD was compiled, a pre-testing of the instrument to the target population was then designed. This pre-testing was aimed to obtain information of the target population's understanding and comprehension on all aspects and items of the instrument without changing the initial meaning of the corresponding questions in the English version, as well as identifying the possible suggestions to improve the question phrase.

The Indonesian Central Bureau of Statistics reported that the percentage of elderly who live in rural areas is higher than in urban areas, thus determining the location for the meetings with monolingual groups. According to the WHO's standard of translation, pre-test respondents should be 10 respondents in minimum. The team decided to perform the pre-testing twice. Each pre-testing process consisted of five respondents. The inclusion criteria were aged ≥ 60 years, the mini-mental state examination test (MMSE) score of ≥ 22 considered as not having dementia, and able to read and speak in Indonesian. Any inputs from the first round that did not change the meaning of the questions would be revised and repeated in the second round. These five respondents were selected from two villages purposively, namely Langensari and Gunung Putri villages in Lembang subdistrict, near the capital city of West Java Province. The process of the meeting was led by one of the translators.

The first meeting with the first monolingual group was conducted at the village office of Langensari, Lembang subdistrict, West Java Province, on January 24, 2018. After the first meeting, the translator team conducted discussions with the supervisory team who worked on the input from the elderly to prepare the second instrument design. Next, the second meeting was held with the second monolingual group, whose location and members were different from the first group. The second meeting was expected to reassure that the questions in the instrument were understood and could be answered easily. It was conducted at the early childhood education center (PAUD) at Gunung Putri village, Lembang subdistrict, West Java Province, on January 30, 2018. The input or proposed draft of the Indonesian version of the WHOQOL-OLD was discussed further by the translators and supervisory team to obtain the final module.

Reliability and validity test

The reliability and validity testing was conducted in one district in Indonesia, namely Bangka Regency, Bangka Belitung Province. A total of 175 respondents from six community health centers were selected according to the inclusion criteria, namely: aged ≥ 60 years, do not have dementia after being tested by MMSE, able to read and speak in Indonesian, and willing to participate in the study. The study was conducted from June to July 2018. Every community health center had a different number of the total elderly. The number of the elderly selected from each community health center was calculated proportionately.

A total of six interviewers were trained to collect the data from the six community health centers. Every respondent who met the inclusion criteria was selected until the required sample size was achieved.

Demographic data were also collected, consisted of age, gender, education level, and marital status. The age category was divided into two categories, namely 60–69 years and ≥ 70 years; education level was divided into three categories, namely junior high school and below, high school or equivalent, and higher education; and marital status was divided into four categories, namely unmarried, married, widow/widower divorced, and widow/widower partner had died.

WHOQOL-OLD module

The WHOQOL-OLD module consisted of 24 items.¹⁵ The 24 items were divided into six facets (four items each): sensory abilities; autonomy; past, present, and future activities; social participation; death and dying; and intimacy. Each item was scored with a Likert scale from 1 to 5 (not at all, a little, a moderate amount, very much, and an extreme amount).¹⁵ The items in every facet were summed, which called the raw facet score. The raw score lies between the lowest and highest possible values (ranged from 4 to 20). The total score (QoL score) lies from 24 to 120. The higher the scores, the higher the QoL is.¹⁶

Statistical analysis

The collected data were processed and tested using SPSS software version 22.0 (IBM Corp., USA). The characteristics of the respondents were presented in percentages. Kolmogorov-Smirnov test was used to test the normality data, and the numerical data were presented in the form of

medians with minimum and maximum values since the data distribution was not normal.

The Rasch modeling was used to analyze the reliability and validity of the Indonesian version of the WHOQOL-OLD. The Rasch modeling views the attribute data as a measurement and transforms the categorical data into interval data through logit transformation. The result score is not a raw score but a real score. Moreover, it is resistant to missing data, making it flexible to various forms of data structure. In other words, an item response is the result of an interaction between an individual's ability and the degree of difficulty of the item.¹⁷ The reliability and validity testing with Rasch modeling used Winsteps software version 3.73 (Winsteps®, USA).

The person reliability, item reliability, and Cronbach's alpha value were measured for reliability. The value of the person and item reliability showed the consistency of the respondents' answers and the quality of each statement in the instrument. The Cronbach's alpha value is used to measure the instrument reliability. A person or item reliability value of 0.67 or higher and Cronbach's alpha value of 0.60 or higher indicate a reliable set of items.^{17,18}

Unidimensional testing was carried out to measure validity. This testing uses principal component analysis, which measures how the diversity of instruments measures the QoL. The fulfillment of the unidimensional instrument criteria contains at least 20% of the raw variance explained by measure. Furthermore, the raw variance value unexplained by measure does not exceed 15%.¹⁷

The analysis of the value of separation, the Wright map analysis (person-item map), and differential item functioning (DIF) were measured in this study. The value of separation indicates the quality of the instrument. The greater the value of separation, the better the quality of the instrument in terms of the answer's choice of respondents and the better the quality of the statement are.¹⁷

The Wright map analysis (person-item map) illustrates the distribution of respondents' abilities and statement difficulty levels.¹⁷ The conformity level of the statements (item-fit order) determines the eligibility of each statement. A misconception of the statements occurs when there is a mismatch in the item-fit order. The item-fit level was analyzed from the value of the outfit mean-square (MNSQ), outfit z-standardized (ZSTD), and point-measure correlation (Pt-Measure

Corr). The statement items are misfit if it does not meet those three criteria. The accepted values of those measurements are $0.5 < \text{MNSQ} < 1.5$, $-2.0 < \text{ZSTD} < +2.0$, and $0.4 < \text{Pt-Measure corr} < 0.85$. A ZSTD value of < 0.5 indicates a too predictable statement, while a value of > 1.5 indicates a hard to predict statement. The ZSTD shows whether the data are in accordance with the model.¹⁷

The DIF testing is useful for finding out whether statements containing bias based on the respondent's category, such as age, gender, education level, and marital status. A statement contains a bias if the probability value is below 5% (0.05).¹⁷

RESULTS

On the first translation process, only four of five respondents attended the meeting. This group consisted of four elderly, aged 60–70 years (three females and one male), elementary school education level, three were housewives, and one man was a retired civil servant who became the head of the hamlet (*Ketua Rukun Warga/RW*). At this meeting, the participants were expected to read the questionnaire by themselves, but several statements raised confusion among them. Those statements were: 1) impairment of sensory abilities; 2) daily life; 3) ability to participate; 4) freedom to make decisions; 5) control of the future; 6) death and dying; 7) fear of pain; 8) interactions with others; 9) independent to do things you like; 10) recognition; 11) use of time and level of activity; 12) intimate relationship/partner; and 13) opportunity to love and be loved. Further explanation was given to clear up the confusion before the participants gave their final answers. Therefore, the translator spent more time explaining and guiding them to answer each question to obtain a similar perception. The team decided to develop additional guidelines to explain the misconception found in the first meeting.

The second monolingual group also consisted of four elderly. The participants were aged 60–70 years, elementary school education level, and housewives (all were widows). Their daily occupations were milking cows, cutting grass for the cows, and cultivating vegetables and fruits (horticulture) in their garden. Before the participants filled in the questionnaire, one of the translators read out the additional explanations for several particular questions. This method made the

Table 1. Demographic characteristics of the study population

Characteristics	n (%) (N = 175)
Age group (years)	
60–69	144 (82.3)
≥70	31 (17.7)
Male	81 (46.3)
Education level	
Junior high school and below	132 (75.4)
Senior high school	32 (18.3)
Higher education	11 (6.3)
Marital status	
Single	1 (0.6)
Married	122 (69.7)
Widow/widower (divorced)	7 (4.0)
Widow/widower (died)	45 (25.7)

participants understood the questions more easily. The time needed for this process was less than 2 hours, without any comments from the participants. By this experience, assistance should be provided while filling in the questionnaire in the future study.

The validity and reliability study involved 175 respondents with demographic characteristics, as shown in Table 1. Out of the 175 respondents, 82.3% were 60–69 years old, 75.4% had a low level of education, and 69.7% were married. The ratio between the female and male respondents was almost equal.

The median overall QoL score reached 87.0 (Table 2). From the six facets, the intimacy had the highest score compared with other facets, and the autonomy had the lowest score. Approximately 58.3% of the respondents felt extremely scared of dying, and 65.7% felt that they were happy with things to look forward to.

This study found that the person reliability and item reliability showed values between 0.67 and 0.99, with the Cronbach's alpha showed values between 0.62 and 0.86 (Table 3). The smallest Cronbach's alpha value was found in the autonomy facet. The person reliability of the overall WHOQOL-OLD was 0.73, with the Cronbach's alpha of 0.75, and the value of the item reliability was 0.97.

The raw variance value explained by measures for six facets of the Indonesian version of the WHOQOL-OLD was 24.6%, and the highest was in the intimacy facet (60.0%). However, the raw unexplained variance value of more than 15% were still discovered in each facet, although it was not found in all facets and statements.

Table 2. The score of each QoL item using the Indonesian version of the WHOQOL-OLD

Facet (item)	Item code	Median (min-max)	Frequency distribution in Likert scale for each item (%)					
			1	2	3	4	5	MV
Sensory ability		14.0 (7.0-20.0)						
Impairments to senses affect daily life	SA01	4.0 (1.0-5.0)	0.6	13.1	26.3	40.0	20.0	-
Loss of sensory abilities affect participation in activities	SA02	4.0 (2.0-5.0)	0.0	12.0	29.7	27.4	30.9	-
Problems with sensory functioning affect ability to interact	SA10	4.0 (1.0-5.0)	0.6	12.0	26.3	35.4	25.1	0.6
Rate sensory functioning	SA20	3.0 (1.0-5.0)	2.9	9.7	43.4	38.3	4.6	1.1
Autonomy		13.0 (5.0-19.0)						
Freedom to make own decisions	A03	3.0 (1.0-5.0)	5.1	10.9	50.3	28.6	5.1	-
Feel in control of your future	A04	3.0 (1.0-5.0)	5.1	18.3	52.0	19.4	4.0	1.1
People around you are respectful of your freedom	A05	4.0 (1.0-5.0)	2.9	6.9	33.7	41.1	14.9	0.6
Able to do things you'd like	A11	3.0 (1.0-5.0)	2.9	16.0	48.6	24.6	6.9	1.1
Past, present, and future activities		14.0 (7.0-20.0)						
Satisfied with opportunities to continue achieving	P12	3.0 (1.0-5.0)	3.4	21.1	38.9	29.7	5.7	1.1
Received the recognition you deserve in life	P13	3.0 (1.0-5.0)	0.6	4.6	48.6	40.6	5.1	0.6
Satisfied with what you've achieved in life	P15	4.0 (1.0-5.0)	1.1	2.3	29.7	57.7	9.1	-
Happy with things to look forward to	P19	4.0 (1.0-5.0)	0.6	1.1	23.4	65.7	8.6	0.6
Social participation		15.0 (7.0-20.0)						
Have enough to do each day	SP14	3.0 (1.0-5.0)	0.6	11.4	53.1	28.6	5.7	0.6
Satisfied with the way you use your time	SP16	4.0 (1.0-5.0)	1.7	1.7	29.1	59.4	8.0	-
Satisfied with level of activity	SP17	4.0 (1.0-5.0)	0.6	4.6	28.0	58.3	6.9	1.7
Satisfied with opportunity to participate in community	SP18	4.0 (1.0-5.0)	0.6	4.6	33.1	53.1	7.4	1.1
Death and dying		15.0 (5.0-20.0)						
Concerned about the way you will die	D06	3.0 (1.0-5.0)	11.4	32.0	28.0	23.4	4.6	0.6
Afraid of not being able to control death	D07	4.0 (1.0-5.0)	5.7	9.7	18.3	22.3	42.9	1.1
Scared of dying	D08	5.0 (1.0-5.0)	2.9	8.0	7.4	21.1	58.3	2.3
Fear pain before death	D09	4.0 (1.0-5.0)	4.6	18.9	16.0	29.1	30.9	0.6
Intimacy		16.0 (5.0-20.0)						
Feel a sense of companionship in life	I21	4.0 (2.0-5.0)	0.0	4.0	32.6	48.6	14.3	0.6
Experience love in your life	I22	4.0 (1.0-5.0)	1.7	3.4	21.1	51.4	21.1	1.1
Opportunities to love	I23	4.0 (1.0-5.0)	0.6	1.7	13.7	64.0	19.4	0.6
Opportunities to be loved	I24	4.0 (1.0-5.0)	0.6	1.7	22.3	58.9	16.6	-
Total score QoL (overall)		87.0 (58.0-108.0)						

MV=missing value; QoL=quality of life; WHOQOL-OLD=World Health Organization quality of life-old. The higher the scores, the higher the QoL is

The Wright map analysis (person-item map) illustrated that three or six respondents had a high ability to answer the statements, and three or six respondents had a low ability to answer the statements (Figure 1). The statement with the highest difficulty to answer was in D06's item "concern about the way you will die", and the easiest was in D08's item "scared of dying".

The item-fit order measurement produced three items on death and dying, namely afraid of not being able to control death (D07), scared of dying (D08),

and fear pain before death (D09), and one item in the sensory ability facet which was loss of sensory abilities affects participation in activities (SA02) that did not fit. Thus, it indicated that a misconception occurred among respondents on those items.

The four demographic categories were analyzed using the DIF. Based on the DIF analysis, the education category had a probability over 5%, as shown in Table 4. The probability below 5% was found in age, gender, and marital status. The items in the age category were fear pain before death (D09) and experience love in your

Table 3. Reliability and validity of six facets and total score of WHOQOL-OLD

Reliability and validity	Sensory abilities	Autonomy	Past, present, and future activities	Social participation	Death and dying	Intimacy	Total score QoL (overall)
Person reliability							
Nonextreme	0.77	0.70	0.69	0.69	0.67	0.78	0.73
Separation	2.75	2.37	2.31	2.31	2.25	2.84	2.56
Extreme and nonextreme	0.77	-	0.71	0.70	0.67	0.81	-
Separation	2.79	-	2.4	2.39	2.25	3.07	-
Cronbach's alpha	0.74	0.62	0.69	0.73	0.69	0.86	0.75
Item reliability (nonextreme)							
Separation	0.93	0.95	0.97	0.94	0.99	0.88	0.97
Separation	5.08	6.07	8.39	5.67	11.23	3.87	7.39
<i>p</i>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Validity (%)							
Raw variance explained by measures	54.3	49.9	52.4	48.5	57.6	60.0	24.6
Raw unexplained variance (total)	2 (17.1 and 16)	3 (18.3, 16.7, and 15.1)	2 (18.2 and 16.5)	2 (21.3 and 17.9)	1 (15.6)	1 (16.0)	None

QoL=quality of life; WHOQOL-OLD=World Health Organization quality of life-old

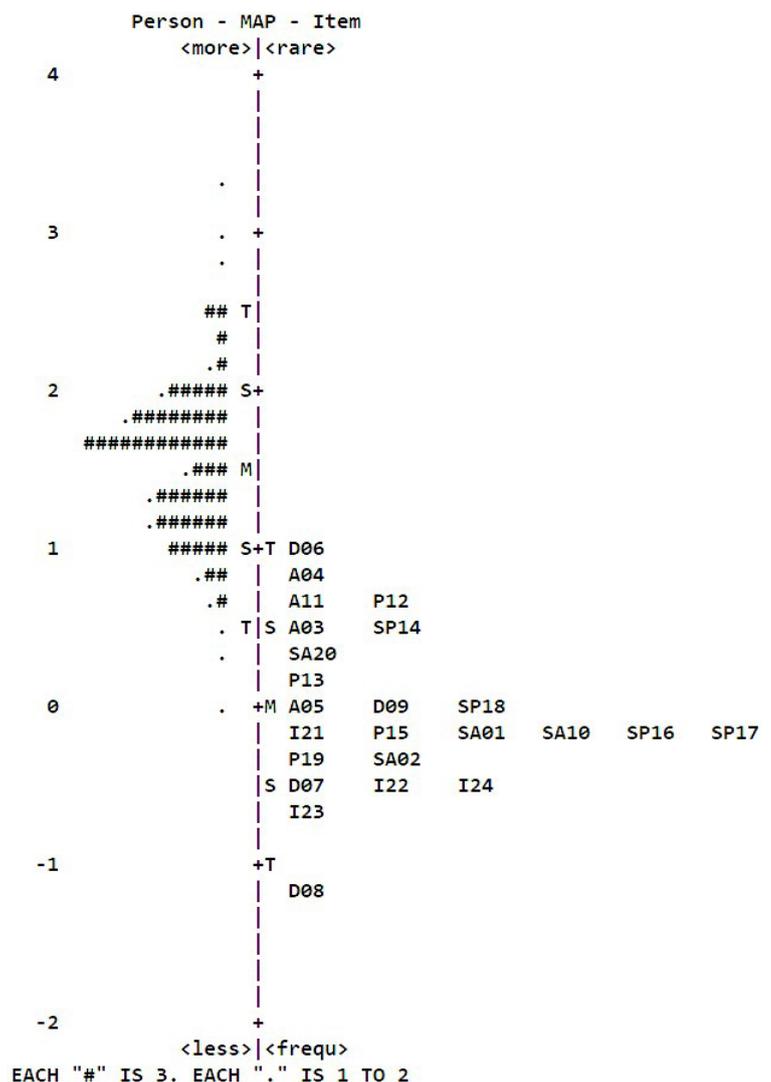


Figure 1. The Wright map analysis (person-item map). Notes: SA01 (impairments to senses affect daily life); SA02 (loss of sensory abilities affect participation in activities); SA10 (problems with sensory functioning affect ability to interact); SA20 (rate sensory functioning); A03 (freedom to make own decisions); A04 (feel in control of your future); A05 (people around you are respectful of your freedom); A11 (able to do things you'd like); P12 (satisfied with opportunities to continue achieving); P13 (received the recognition you deserve in life); P15 (satisfied with what you have achieved in life); P19 (happy with things to look forward to); SP14 (have enough to do each day); SP16 (satisfied with the way you use your time); SP17 (satisfied with level of activity); SP18 (satisfied with opportunity to participate in community); Do6 (concerned about the way you will die); Do7 (afraid of not being able to control death); Do8 (scared of dying); Do9 (fear pain before death); I21 (feel a sense of companionship in life); I22 (experience love in your life); I23 (opportunities to love); I24 (opportunities to be loved)

Table 4. DIF map according to age, gender, education, and marital status

Item code	Person DIF										
	Age		Gender		Education			Marital status			
	60–69 years old	≥70 years old	Male	Female	Junior high school or below	Senior high school	Higher education	Single	Married	Widow/widower (divorced)	Widow/widower (died)
SA01	-0.09	-0.03	-0.09	-0.09	-0.09	-0.14	-0.09	-2.65	-0.15	0.16	0.07
SA02	-0.34	0.06	-0.27	-0.27	-0.23	-0.34	-0.27	-0.98	-0.33	0.35	-0.19
A03	0.58	0.58	0.60	0.56	0.54	0.73	0.58	0.45	0.64	-0.46	0.56
A04	0.79	0.92	0.86	0.78	0.86	0.73	0.82	-0.98	0.85	-0.04	0.90
A05	0.08	-0.33	0.01	0.01	-0.04	0.22	0.01	-0.98	0.09	-0.24	-0.12
D06	1.08	1.15	1.01	1.15	1.05	1.01	1.08	-0.98	1.08	1.05	1.18
D07	-0.41	-0.60	-0.59	-0.33	-0.44	-0.19	-0.44	-0.98	-0.68	-0.24	0.07
D08	-1.18	-1.09	-1.44	-0.95	-1.25	-0.86	-1.16	-0.98	-1.02	-2.73	-1.37
D09	0.08	-0.71	-0.55	0.33	-0.09	0.01	-0.05	-0.98	-0.18	0.09	0.26
SA10	-0.23	-0.08	-0.26	-0.15	-0.17	-0.15	-0.20	0.45	-0.14	0.16	-0.46
A11	0.55	0.80	0.71	0.49	0.66	0.45	0.59	0.45	0.65	-0.24	0.56
P12	0.58	0.91	0.73	0.56	0.73	0.38	0.64	0.45	0.67	0.88	0.51
P13	0.23	0.07	0.31	0.11	0.16	0.47	0.20	0.45	0.28	0.35	-0.05
SP14	0.45	0.53	0.65	0.26	0.48	0.34	0.45	1.62	0.49	0.16	0.33
P15	-0.18	-0.18	-0.01	-0.33	-0.24	-0.04	-0.18	0.45	-0.13	0.16	-0.40
SP16	-0.21	0.06	-0.08	-0.23	-0.12	-0.29	-0.16	0.45	-0.10	-0.93	-0.22
SP17	-0.13	-0.03	-0.01	-0.20	-0.13	-0.09	-0.11	0.45	0.02	-1.49	-0.31
SP18	-0.05	0.02	-0.13	0.01	-0.10	0.01	-0.05	0.45	-0.01	-0.24	-0.13
P19	-0.32	-0.39	-0.28	-0.37	-0.37	-0.29	-0.32	0.45	-0.32	-0.68	-0.26
SA20	0.36	0.53	0.53	0.26	0.41	0.34	0.39	0.45	0.36	0.88	0.36
I21	-0.21	-0.23	-0.18	-0.24	-0.15	-0.45	-0.21	0.45	-0.34	0.53	-0.02
I22	-0.33	-0.89	-0.52	-0.34	-0.42	-0.42	-0.42	0.45	-0.56	0.70	-0.29
I23	-0.66	-0.74	-0.86	-0.51	-0.68	-0.80	-0.66	0.45	-0.75	0.35	-0.66
I24	-0.41	-0.71	-0.46	-0.46	-0.46	-0.57	-0.46	0.45	-0.53	0.35	-0.46

DIF=differential item functioning

life (I22). In the gender category, the item of scared of dying (D08), fear pain before death (D09), and have enough to do each day (SP14) had a probability below 5%. An item in the marital status category was in afraid of not being able to control death (D07). The DIF analysis of the marital status showed an interesting pattern of difference. This variable needs to be considered in every WHOQOL-OLD measurement.

DISCUSSION

The WHOQOL-OLD instrument can measure the QoL of the elderly in different cultural contexts. The result of reliability testing showed consistency in the

answers of respondents and adequate quality in each item. This internal consistency showed that the items in each facet measured the same concept and also showed the interrelation of the statements.¹⁹ In this study, a unidimensional test was carried out using principal component analysis. All the facets of the Indonesian version of the WHOQOL-OLD instrument had >20% of the raw variance value and <15% of the raw unexplained variance value. This result proves that the statements in the Indonesian version can consistently measure the same concept, show the interrelation of the statements, and measure the QoL of the elderly. However, it should be noted that Cronbach's alpha measures the value or score produced by the sample

or respondent with certain specifications. Thus, Cronbach's alpha measurement should be measured again when using this instrument.¹⁹

Compared with the Cronbach's alpha value of WHOQOL Group,¹¹ Chinese,¹³ Mexican-Spanish,¹² and Dutch¹⁴ version (0.89, 0.892, 0.88, and 0.88, respectively), the results of this study yielded 0.75. This is likely due to different analytical methods and different respondents' demographics. However, the Indonesian version of the WHOQOL-OLD produces sufficient reliability. Therefore, this instrument can be used to measure the QoL in the Indonesian elderly population.

Some respondents were difficult to answer some facets, particularly in death and dying. Misconceptions occurred and showed bias in the demographic categories of age, gender, and marital status. Every religion and culture has its perception of death. According to Islamic perspectives, death is a part of faith²⁰ and will be experienced by every living creature.²¹ In coping with death, a person's attitude is subjected to their faith, life experience, history of illness, and family support. Muslims believe that only God could determine the time and place of someone's death.²⁰ Thus, the perception of pain before death is still controversial. One party stated that the pain experienced by someone is related to their behavior that they would be rewarded by God.^{20,22} In contrast, others think that someone must be pain-free when facing death. This group is still willing to accept pain management carried out by the health providers.²⁰

The sensory ability facet in the WHOQOL-OLD instrument consists of four statements: impairments to senses affect daily life, loss of sensory abilities affect participation in activities, problems with sensory functioning affect ability to interact, and rate sensory functioning.¹⁰ This facet brought misconceptions among the respondents. Given that most respondents did not experience sensory disturbance, it was difficult to explore the respondents' perceptions.

Although the reliability and validity values of the Indonesian version of the WHOQOL-OLD seem to be satisfactory, there are still various limitations. The respondents in this study only lived in one district in Indonesia. The sample may not appropriately represent the general Indonesian elderly population. Indonesia has many islands, religions, and cultures. Therefore, further and scaling-up studies in various contexts (ethnicity, local languages, and religion) must

be conducted to overcome these limitations. Other limitations include the nonassessment of diseases and comorbidity that may impact the results. There is also an absence of test-retest reliability data. Despite those limitations, the Rasch modeling analysis measures the reliability and validity of the Indonesian version of the WHOQOL-OLD and transforms the raw score into a real score to carry out any quantitative statistical analysis. Moreover, it identifies the degree of the statements (e.g. easy or difficult) and misconceptions among the respondents regarding the meaning of the statements. It can also discover whether there are statements containing bias based on the respondent's demographic status.

In conclusion, the Indonesian version of the WHOQOL-OLD demonstrates a good performance to test reliability and validity using the Rasch modeling. However, since Indonesia is a big country consisted of various ethnicity, religions, and cultures, a study should be conducted to represent those groups. This instrument can be used to measure QoL for the Indonesian elderly population in the community and facility-based setting. Moreover, the results can be used as an input to enhance the QoL of the elderly, set up health care actions, and develop health policies.

Conflict of Interest

The authors affirm no conflict of interest in this study.

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