

VALIDITY AND RELIABILITY TESTS FOR ADMINISTRATION OF KIDNEY DISEASE QUALITY OF LIFE-SHORT FORM IN INDONESIAN VERSION

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ABSTRACT

Objective: This study aims to adapt the KDQOL-SF questionnaire into Indonesian and to evaluate the reliability and validity of the questionnaire in healthy subjects in Indonesia. **Material & Methods:** Previously translated (into Indonesian) KDQOL-SF questionnaire was given to 33 healthy subjects at Cipto Mangunkusumo General Hospital. Respondents were over 18 years old and were able to speak Indonesian orally and in written form. Reliability was measured using Alpha Cronbach's intraclass correlation coefficient and internal consistency reliability. Validity was evaluated using Pearson's correlation test. **Results:** Out of 33 respondents, the majority of subjects were male (81%) with mean age 47.4 ± 13.7 years old. The highest score was in social support aspects with mean score 99.48 ± 2.95 , while the lowest score was vitality aspect with mean score 63.28 ± 11.61 . Alpha Cronbach's score was between 0.580-0.999 and Pearson's correlation coefficient between 0.405-0.976 with $P < 0.05$. **Conclusion:** KDQOL-SF questionnaire, which was translated into Indonesian, was valid and reliable to be used in evaluating patients' quality of life before kidney transplantation in Indonesia.

Keywords: Validity, reliability, kidney disease, quality of life, KDQOL-SF.

ABSTRAK

Tujuan: Penelitian ini bertujuan untuk mengadaptasi kuesioner KDQOL-SF ke dalam bahasa Indonesia dan mengevaluasi reliabilitas dan validitas kuesioner pada subyek yang sehat di Indonesia. **Bahan & Cara:** Kuesioner KDQOL-SF yang diterjemahkan sebelumnya (ke dalam bahasa Indonesia) diberikan kepada 33 subyek sehat di RSU Dr. Cipto Mangunkusumo. Responden berusia di atas 18 tahun dan mampu berbahasa Indonesia secara lisan dan tertulis. Reliabilitas diukur menggunakan koefisien korelasi intraclass Alpha Cronbach dan reliabilitas konsistensi internal. Validitas dievaluasi dengan menggunakan uji korelasi Pearson. **Hasil:** Dari 33 responden, sebagian besar subyek berjenis kelamin laki-laki (81%) dengan rerata umur 47.4 ± 13.7 tahun. Skor tertinggi pada aspek dukungan sosial dengan skor rata-rata 99.48 ± 2.95 , sedangkan skor terendah adalah aspek vitalitas dengan skor rata-rata 63.28 ± 11.61 . Skor Alpha Cronbach antara 0.580-0.999 dan koefisien korelasi Pearson antara 0.405-0.976 dengan $P < 0.05$. **Simpulan:** Kuesioner KDQOL-SF yang diterjemahkan ke dalam bahasa Indonesia valid dan reliabel untuk digunakan dalam mengevaluasi kualitas pasien sebelum transplantasi ginjal di Indonesia.

Kata Kunci: Validitas, reliabilitas, penyakit ginjal, kualitas hidup, KDQOL-SF.

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INTRODUCTION

Chronic kidney disease is defined as progressive decrease of renal function that leads to chronic renal failure and requires renal replacement therapies such as renal transplantation. The prevalence of chronic kidney disease is increasing, especially in developing countries, including Indonesia. The diagnosis and management process of chronic kidney disease needs considerable cost and this would eventually be a burden economically and socially.¹ Patient with chronic kidney disease,

will experience various stressor in daily living activities, physically, emotionally, psychosocially, etc., which eventually will decrease patients' quality of life. Meanwhile, few researches reported that poor quality of life is correlated with increased morbidity and mortality. Therefore, it is important to measure patients' quality of life as disease progresses. Improved patients' quality of life is the main goal of chronic kidney disease management.²⁻³

The Kidney Disease Quality of Life-Short Form (KDQOL-SF) questionnaire is an instrument

used to evaluate the quality of life of patients diagnosed with kidney disease. This questionnaire was originally written in English and consisted of 43 questions as well as an overall health-rating item. It roughly takes 16 minutes to fill in the questionnaire. Even though this questionnaire has been commonly used in many researches globally and has also been translated and validated in various languages with pretty good results, this questionnaire has not been translated and validated into Indonesian or implemented in post-renal transplantation patients.³

OBJECTIVE

This study aims to adapt the KDQOL-SF questionnaire into Indonesian and to determine the reliability as well as validity of the questionnaire implementation in healthy subjects in Indonesia.

MATERIAL & METHODS

The questionnaire used in this research was the KDQOL-SF questionnaire, which has been previously translated into Indonesian. The translation process was conducted by two persons, one was the author and the other one was a certified translator. Translation results then compared and adjusted. After that, the final translation was re-translated into English by another translator and matched to original questionnaire. The questionnaire consisted of two main parts, which were SF-36 and the part regarding kidney disease. The first part consisted of 8 dimensions with 36 questions, while the second part consisted of 11 dimensions and 43 questions.

The ethical clearance for this study was approved by the Cipto Mangunkusumo Hospital ethics committee and conjoined with study titled. The improvements of Patient's Quality of Life After Kidney Transplantation in Cipto Mangunkusumo Hospital, Indonesia (Prospective Study). This questionnaire was given to healthy people. Respondents were 18 years old and able to converse in Indonesian properly, either oral or in written form. All respondents had been given information and were willing to participate in this research. After informed consent were acquired, respondents were explained the mechanism of the filling process and started to fill the forms personally. The duration of filling the questionnaire was also recorded.

All of the results from the questionnaire were converted into scores ranging from 0

(worst/lowest score) to 100 (best/highest score). The reliability test aimed to evaluate the consistency of the questionnaire when filled by the same respondent in a similar situation. The questionnaire was given to all respondents for the second time after two weeks. To assess reliability, Alpha Cronbach's intraclass correlation coefficient and internal consistency reliability were used. The interpretations for intraclass correlation coefficient score were ≤ 0.4 low; $> 0.4 - < 0.75$ well; ≥ 0.75 very well. Meanwhile, an Alpha Cronbach's score of 0.7 or higher showed good internal consistency reliability. Validity showed how well a questionnaire result can represent the real situation. Validity was evaluated by conducting a Pearson's correlation test between each dimension and the overall health rating. All analysis was conducted using the statistical software SPSS version 20.0. Two-tailed tests and P-score were considered significant if the result was < 0.05 .

RESULTS

There were 33 participants eligible in this study with baseline characteristics as shown in Table 1. The majority of subjects were male (81%) with mean age 47.4 ± 13.7 years old. The duration of filling the questionnaire was 17 ± 2.7 minutes.

The mean score acquired from the subjects varied from 77.01 (for patients' satisfaction) to 99.48 (for social supports) in ESDR-targeted area group. Meanwhile, in SF-36 group, the lowest mean score was acquired for vitality aspect, which was 63.28 and the highest score for pain aspect, with mean score of 98.45. The minimum score was 0 and the maximum score was 100. In ESDR-targeted area group, almost all components reached 100, except for patient satisfaction, which was only 83.33. Meanwhile, in SF-36 group, there was vitality aspect that did not reach 100, which was only 80.

To evaluate the reliability of the questionnaire, intraclass correlation coefficient and internal consistency reliability tests were conducted using Alpha Cronbach. From 33 respondents who filled the questionnaire, in the next 14 days, the intraclass correlation coefficient of ESDR-targeted area part ranged from 0.633 (for patient satisfaction) to 0.865 (effect of kidney disease). Meanwhile, the Alpha Cronbach score ranged from 0.580 to 0.870. There were two aspects which correlation cannot be determined: sexual function and social support, as all respondents answered with the score 100, which

Table 1. Characteristics of Healthy Subjects.

Patients Characteristics (n=33)	
Age (years)	47.4 ±13.7
Sex (%)	
Male	27 (81%)
Female	6 (19%)
Marital status	
Unmarried	5 (15%)
Married	28 (85%)
Education	
Junior high	2 (6%)
Senior high	8 (24%)
Diploma	3 (9%)
Bachelor degree	16 (49%)
Masters degree	4 (12%)
Employment	
Doctor	1 (3%)
Government employee	2 (6%)
College student	2 (6%)
Private employee	7 (21%)
Self-employed	14 (42%)
Housewife	6 (18%)
Transplant coverage	
BPJS	6 (18%)
Private	18 (55%)
Insurance	9 (27%)
Medicine coverage	
BPJS	6 (18%)
Private	15 (45%)
Insurance	12 (37%)

Table 3. Reliability measurement of each dimension with interval of 14 days between fillings.

Scale	Intraclass correlation coefficient (n=33)	Cronbach's alpha
ESDR-targeted area		
Symptom/problem list	0.678	0.580
Effect of kidney disease	0.865	0.870
Burden of kidney disease	0.835	0.776
Work status	0.820	0.859
Cognitive function	0.815	0.843
Quality of social interaction	0.645	0.645
Sexual function	-	-
Sleep	0.776	0.756
Social support	-	-
Dialysis staff encouragement	0.678	0.674
Patient satisfaction	0.633	0.673
SF-36		
Physical functioning	0.934	0.954
Role-physical	0.965	0.934
Pain	0.897	0.876
General health	0.884	0.886
Emotional well-being	0.914	0.954
Role-emotional	0.999	0.999
Social function	0.755	0.747
Vitality	0.897	0.902

Table 2. Mean Results of Respondents' Answers for Each Aspect.

Scale	Mean score (± standard deviation)	Minimum score	Maximum score
ESDR-targeted area			
Symptom/problem list	95.87 ± 4.49	50	100
Effect of kidney disease	97.48 ± 9.76	25	100
Burden of kidney disease	91.01 ± 15.65	25	100
Work status	81.25 ± 32.99	0	100
Cognitive function	98.54 ± 5.28	60	100
Quality of social interaction	97.58 ± 5.65	60	100
Sexual function	99.29 ± 4.97	75	100
Sleep	82.87 ± 12.82	0	100
Social support	99.48 ± 2.95	66.66	100
Dialysis staff encouragement	86.28 ± 10.72	75	100
Patient satisfaction	77.01 ± 10.36	50	83.33
SF-36			
Physical functioning	94.24 ± 16.51	0	100
Role-physical	92.65 ± 19.65	0	100
Pain	98.45 ± 16.45	0	100
General health	85.43 ± 13.97	0	100
Mental health	77.45 ± 10.25	0	100
Role-emotional	96.87 ± 17.38	0	100
Social function	92.56 ± 17.53	0	100
Vitality	63.28 ± 11.61	0	80

Table 4. Validity test using Pearson correlation of each dimension with overall health rating.

Scale	N	Correlation Coefficient (n=33)	P-value
ESDR-targeted area			
Symptom/problem list	33	0.405	0.037
Effect of kidney disease	33	0.787	<0.001
Burden of kidney disease	33	0.834	<0.001
Work status	33	0.624	<0.001
Cognitive function	33	0.777	<0.001
Quality of social interaction	33	0.715	<0.001
Sexual function	26	0.598	0.036
Sleep	33	0.423	0.017
Social support	29	0.667	<0.001
Dialysis staff encouragement	29	0.532	0.005
Patient satisfaction	33	0.476	0.047
SF-36			
Physical functioning	33	0.976	<0.001
Role-physical	33	0.914	<0.001
Pain	33	0.922	<0.001
General health	33	0.745	<0.001
Emotional well-being	33	0.898	<0.001
Role-emotional	33	0.932	<0.001
Social function	33	0.688	<0.001
Vitality	33	0.843	<0.001

made data variance unable to be counted. On the other hand, in the SF-36 group, the intraclass correlation coefficient ranged from 0.755 (social function) to 0.999 (role-emotional) with Alpha Cronbach's score ranging from 0.747 to 0.999.

To evaluate the validity of the questionnaire, a correlation test was conducted between each dimension with an overall health rating. In ESDR-targeted area group, all aspects had significant correlation with the overall health rating ($P < 0.05$). The correlation coefficient varied from 0.405 (symptom/problem list) to 0.834 (burden of kidney disease). Meanwhile, in the SF-36 group, all dimensions had significant correlation with the overall health rating ($P < 0.05$). All correlation coefficient had positive value, ranging from 0.688 (social function) to 0.976 (physical functioning) (Table 4).

DISCUSSION

KDQOL-SF questionnaire is considered an instrument to be used in evaluating the quality of life of patients diagnosed with kidney disease. This instrument had a few advantages, including the ability to determine patients' quality of life from a

few dimensions, giving more comprehensive assessment results. The questionnaire has also been adapted and implemented in a few different patient population with various degree of kidney disease, as well as adapted, translated, and validated in various languages with adequate results, including Tagalog (Philippines)³, Spanish (Spain)⁴, Thai (Thailand)⁵, Mandarin (China)⁶, Egypt⁷ as well as others.

Dimension of quality of life evaluated in this questionnaire varied a lot, starting from private dimensions such as sexual function to social function as well as health professionals' support (dialysis staff encouragement) for all patients. This surely made a patient's quality of life can be described well from various aspects.

In this research, it was found that it need long enough time for the respondents to fill the questionnaire, which was 17 minutes in average. Moreover, a few adjustments were needed in choosing activities that were done more often in Indonesia. This approach was also used by other researchers when translating the questionnaire into other languages. An example would be the adaptation into Tagalog (Philippines), in which golf playing was substituted with walking for 30 minutes, and using vacuum cleaner was substituted with

sweeping with a broom.³

In this research, the highest mean score was acquired by social support aspect. This result was different with the result of the research in Philippine, in which the highest score was acquired by the cognitive function aspect. Meanwhile, in researches conducted in Japan⁸, Brazil⁹, and the Netherlands¹⁰, the highest score was attained in dialysis staff encouragement aspect. These contrasting results might be due to a few factors. In the Philippines, cognitive function aspect possibly achieved highest score due to younger age of the research population compared to other researchers.³ In this research, the high score for social support aspect was probably because social relationships between individuals were still highly regarded in Indonesia.

In this research, the lowest mean score was achieved by vitality aspects. This phenomenon might be caused older mean age of respondents, which was 44 years old. This made it more likely for them to answer with a low score. These results contrasted with the research results from studies at Phillipines³, Brazil⁸, The Netherlands⁹, and Japan¹⁰. In the researches, the lowest mean score happened to be acquired by work status aspect.

The patient population evaluated in this research was donor candidates for renal transplantation patients. This choice of subjects differed than other researches, such as researches in Phillipines³ and China⁶, which implemented the KDQOL-SF questionnaire in patients diagnosed with chronic kidney diseases who underwent hemodialysis.

The validity of the questionnaire was counted using correlation test between each dimension with an overall health rating. All aspects in ESDR-targeted area group and SF-36 group had significant correlation with the overall health rating ($P < 0.05$). All correlation coefficient were also higher than 0.4 showing good correlation found. It showed that all the questions in both groups were valid with quite strong correlation coefficients and positive values. Generally, all aspects showed good reliability, even though there were 4 aspects with intraclass correlation coefficient score less than 0.7 but still higher than 0.4. Moreover, there were two aspects which the intraclass correlation coefficient could not be determined, as all patients had the same answer in both the first and second filling.

The Alpha-Cronbach's score were partly above 0.7 but all were over 0.4 so that they were still considered reliable. Similar validation results also

were obtained in other researches. Results for questionnaire validation in Egypt⁷ reported that 7 out of 10 aspects in kidney disease targeted scale section had Alpha-Cronbach's score above 0.7. Meanwhile, in Thailand⁵, all aspects had Alpha-Cronbach's score above 0.7 with correlation coefficient ranging from 0.713-0.999. It showed that the KDQOL-SF questionnaire were already widely used and validated into many populations in the world, especially in non-English speaking country. Validity and reliability tests were very important test before applying this questionnaire into the real populations.

This research had several limitations, including the limited number of respondents, as well as some dialysis staff encouragement, social support, and sexual function aspects questions which were left unanswered or answered not completely. This was because donor patients did not underwent hemodialysis in the last four weeks. Furthermore, not all respondents had built a family or had sexual relationships.

CONCLUSION

The KDQOL-SF questionnaire which has been translated into Indonesian is understandable, was valid, and reliable to be used in evaluating patients' quality of life in Indonesia.

REFERENCES

1. Prodjosudjadi W. Incidence, prevalence, treatment and cost of end-stage renal disease in Indonesia. *Ethn Dis.* 2006; 16(2): S2-14-S2-16.
2. Prodjosudjadi W, Suhardjono A. End-stage renal disease in Indonesia: treatment development. *Ethn Dis.* 2009; 19[Suppl 1]: S1-33-S1-36
3. Bataclan RP, Dial MAD. Cultural adaptation and validation of the Filipino version of Kidney Disease Quality of Life – Short Form (KDQOL-SF version 1.3). *Nephrology.* 2009; 14: 663–8.
4. Ricardo AC, Hacker E, Lora CM, Ackerson L, DeSalvo KB, Go A, et al. Validation of the Kidney Disease Quality of Life Short Form 36 (KDQOL-36) US Spanish and English versions in a cohort of hispanics with chronic kidney disease. *Ethnicity & Disease.* 2013; 23(2): 202–9.
5. Thaweethamcharoen T, Srimongkol W, Noparatayaporn P, Jariyayothin P, Sukthinthai N, Aiyasanon N, et al. Validity and reliability of KDQOL-36 in Thai kidney disease patient. *Value in Health Regional.* 2013; 2: 98-102.
6. Chow SKY, Tam BML. Is the kidney disease quality of life-36 (KDQOL-36) a valid instrument for Chinese

- dialysis patients?. *BMC Nephrology*. 2014; 15:199.
7. Abd ElHafeez S, Sallam SA, Gad ZM, Zoccali C, Torino C, Tripepi G, et al. *BMC Nephrol*. 2012; 13: 170-5
8. Green J, Fukuhara S, Shinzato T et al. Translation, cultural adaptation and initial reliability and multi-trait testing of kidney disease quality of life instrument for use in Japan. *Qual. Life Res*. 2001; 10: 93–100
9. Duarte PS, Ciconelli RM, Sesso R. Cultural adaptation and validation of the 'Kidney Disease and Quality of Life – Short Form (KDQOL-SFTM 1.3)' in Brazil. *Braz. J. Med. Biol. Res*. 2005; 38: 261–70.
10. Korevaar JC, Merkus MP, Jansen MAM, Dekker FW, Boeschoten EW, Krediet J. Validation of KDQOL-SFTM: A dialysis-targeted health measure. *Qual. Life Res*. 2002; 11: 437–47.