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ORIGINAL RESEARCH

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VALIDITY AND RELIABILITY OF SHORTENED GENERAL COMFORT QUESTIONNAIRE IN INDONESIAN VERSION

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Abstract

Background: Comfort is one of nurses' concerns in each of nursing care activity. There are several different instruments to measure patient's comfort. Tools regarding comfort however, have not been developed and tested in Indonesian.

Objectives: This study aimed to assess the validity and reliability of the Shortened General Comfort Questionnaire (SGCQ) in Indonesian version.

Methods: SGCQ was translated and back translated to Indonesian before it was used for this study. Three experts (two lecturers and one clinician) were recruited to measure the content validity of SGCQ in Indonesian version. S-CVI and I-CVI analyses were used to measure the content validity of this instrument, and Pearson correlation was used for the construct validity. Content validity of instruments consists of relevance, accuracy, clarity, credibility and equivalency. Reliability analysis of this instrument was performed using Cronbach's alpha in 71 patients undergoing hemodialysis.

Results: Result show that an I-CVI score was 1, which implies that each item of relevance, accuracy, clarity, credibility, and equivalency was acceptable. In addition, the S-CVI score was also 1, which implies that the validity of this instrument was acceptable. Cronbach's alpha score was also showed 0.769 means that the SGCQ instrument in the Indonesian language is reliable because the score was in the range of 0.7–0.95.

Conclusion: SGCQ in Indonesian version has acceptable validity and reliability and it can be used to measure patient's comfort level in Indonesian.

Keywords: validity; reliability; comfort; dialysis

INTRODUCTION

Comfort is a fundamental concept that has been studied in nursing fields, such as oncology, maternity, intensive care, and nephrology ([Derya & Pasinlioğlu, 2015](#); [Gonçalves, Brandão, & Duran, 2016](#); [March & McCormack, 2009](#)). Achieving comfort is one of the objectives of health care services that can be achieved through patient-centered care

([Kolcaba, 2003](#)). In addition, comfort is a holistic concept that needs to be implemented by multidisciplinary health care teams ([Kolcaba, 2003](#); [March & McCormack, 2009](#)).

Comfort theory was first stated by Katherine Kolcaba in 1998. Based on this theory, the comfort state needs to be assessed, and if the

patient experiences discomfort, the nurse needs to apply intervention and evaluate the comfort score before and after the intervention. This process is called comfort care ([Kolcaba, 2003](#)). Patients undergoing hemodialysis may experience different levels of comfort compared with other patient populations. Several conditions may affect the comfort level of patients who undergo hemodialysis, including clinical manifestations of diseases such as uremic pruritus, which leads to itching, insomnia, pain, nausea, fatigue, or psychosociospiritual disturbance ([Al-Jahdali et al., 2010](#); [Asgari et al., 2017](#); [Kimata et al., 2014](#); [Lynch, Abate, Suh, & Wadhawa, 2014](#); [White & McDonnell, 2014](#)).

Generally, the patient comfort score can be measured using the General Comfort Questionnaire ([Kolcaba, 2003](#)). However, in 2006, this instrument was modified from 48 to 28 questions including a new title: Shortened General Comfort Questionnaire (SGCQ). This instrument has three measurement times for reliability: 0.86, 0.83, and 0.82 in 60 elderly patients who experience weakness ([Kolcaba, Schirm, & Steiner, 2006](#)). However, the validity of this instrument has never been reported. Moreover, this instrument has never been used in the Indonesian language. This study aimed to measure the content validity and consistency reliability of SGCQ in Indonesian version.

METHODS

Study design

This was a descriptive study to measure the validity and reliability of SGCQ, involving 71 patients undergoing hemodialysis.

Setting

Research was carried out at the hemodialysis unit, at one central hospital in Yogyakarta, Indonesia. Data collection for content validity was performed from January 12–18, 2017, and data was analyzed to measure I-CVI and S-CVI scores. Based on Waltz et al., cited in Polit and Beck ([2006](#)); Lynn cited in Polit and Beck ([2006](#)), I-CVI shows validity of each

item and S-CVI shows proportion value from total item which can get score 3 or 4 (item relevance) from expert's measurement. Instrument to be used in this study was SGCQ. This instrument was translated and back translated by sworn translator. Three experts were involved in the process for content validity measurement. Two were lecturers with qualification one as master degree in nursing and the second was PhD degree in nursing. One nurse expert (clinician) was willing to participate to measure content validity.

A content validity score of >0.78 is considered valid. However, in this case, because there were < 5 experts (3 experts), an I-CVI score of 1 was considered acceptable and valid ([Polit & Beck, 2006](#)), and a S-CVI score of >0.8 was considered reliable ([Peterson, 2013](#); [Tavakol & Dennick, 2011](#)). After SGCQ was analyzed for the CVI score, it was tested in the 71 patients undergoing hemodialysis to measure its construct validity using Pearson's correlation. The corrected item-total correlation score should be higher than its Pearson correlation coefficient ($r > 0.2303$). A range between -1 and 1 demonstrates the correlation between item and total scores. A negative score implies that the correlation between the item and total scores is negative, and a positive score indicates a positive correlation between the item and total scores; a zero score ($r = 0$) indicates no correlation between the item and total scores ([Godwin, Pike, Bethune, Kirby, & Pike, 2013](#)).

Research subject

As per the estimated sample size for simple random sampling, the reliability measurement was performed in 71 patients undergoing hemodialysis in the Dialysis unit of a central hospital in Yogyakarta, Indonesia. Inclusion criteria were patients routinely undergoing hemodialysis therapy (two times a week) for more than 3 months, the ability to communicate, using AV shunt access, and age more than 18 years. Data collection was done from January to February 2017 using semi structured interviews. Cronbach's alpha was used to measure the internal consistency of the instrument. The instrument was considered

reliable if the value was between 0.7–0.95 (Peterson, 2013; Tavakol & Dennick, 2011).

Instrument

The SGCQ instrument was designed by Kolcaba, Schirm, and Steiner in 2006 (Kolcaba et al., 2006). In the present study, the SGCQ instrument was translated into the Indonesian language and then back-translated. This instrument gives the description of a

person's comfort by adding all Likert scores from 28 items. Likert scores range from 1 (strongly disagree) to 6 (strongly agree). In this instrument, there are 19 items comprising negative statements in which the score reverses from 6 to 1 in the process of adding the total score. A higher score indicates greater comfort. The maximum possible score is 168, and the minimum possible score is 28.

Table 1 Criteria for measuring content validity for each item on the questionnaire

Aspect	1	2	3	4
Relevance	Not relevant	Somewhat relevant	quite relevant	Highly relevant
Accuracy	Need to	Need major	Need minor	good
Clarity	changed	modification/revision	modification/rev	
Credibility	completely		ision	
Equivalency				

Ethical consideration

Ethical approval was obtained from the Ethics Committee of the Faculty of Medicine, Universitas Gadjah Mada, 13th December, 2016, number KE/FK/1328/EC/2016. SGCQ was translated and back-translated before this instrument was used.

Data analysis

The content validity of this instrument was measured by three experts. The criteria of experts were a master's degree in nursing, publications in the areas of hemodialysis and medical surgical nursing, and experience in hemodialysis care of patients. Content validity analysis was performed by calculating the content validity index (CVI). The experts were asked to measure content validity components, which are relevance, accuracy, clarity, credibility, and equivalency. Equivalency was the measurement of similarity between this instrument and the original SGCQ. Although there are several items available for the

measurement of content validity, Lynn stated that the focus on content validity is only related to relevance (Emmanuel & Clow, 2017). Polit and Beck (2006) also stated that relevance can be measured using an ordinal scale (1–4), as shown in Table 1. In the present study, the other components of content validity, such as accuracy, clarity, credibility, and equivalency, were also measured using this four-ordinal scale.

RESULTS

The average age of respondents was 48.74 years, with the youngest respondent aged 20 years old and the oldest aged 74 years old. The number of males (59.15%) was higher than the number of females (40.58%), and 63% of the respondents had been undergoing hemodialysis for ≥ 1 year. All the respondents had stage 5 chronic kidney disease (Table 2).

Table 2 The characteristic of respondent (n=71)

Characteristic	Mean \pm SD	Frequency (f)	Percentage (%)
Age	48.80 \pm 13.04		
20-27		5	7
28-35		9	13
36-43		10	14
44-51		16	23
52-59		15	21
60-67		11	15
68-75		5	7
Total		71	100

We found an I-CVI score of 1, which implies that each item of relevance, accuracy, clarity, credibility, and equivalency was acceptable. In addition, the S-CVI score was also 1, which implies that the validity of this instrument was acceptable (Polit & Beck, 2006).

Almost all the items of this instrument showed positive scores in Pearson item total correlation coefficient, except item 25 ($r = -0.057$). However, only nine items (item 1 with $r = 0.244$, $p < 0.05$; item 4 with $r = 0.294$, $p < 0.05$; item 5 with $r = 0.291$, $p < 0.05$; item 6 with $r = 0.244$, $p < 0.05$; item 15 with $r = 0.246$, $p < 0.05$; item 24 with $r = 0.249$, $p < 0.05$; item 26 with $r = 0.282$, $p < 0.05$; item 28 with $r = 0.254$, $p < 0.05$; and item 17 with $r = 0.354$, $p < 0.01$) showed Pearson item total correlation coefficient to be acceptable with Pearson's Correlation (Table 3).

Table 3 Pearson item total correlation coefficient

Item	Pearson item total correlation coefficient
i1	Pearson Correlation .244
	Sig. (2-tailed) .041
i2	Pearson Correlation .231
	Sig. (2-tailed) .053
i3	Pearson Correlation .087
	Sig. (2-tailed) .472
i4	Pearson Correlation .294
	Sig. (2-tailed) .013
i5	Pearson Correlation .291
	Sig. (2-tailed) .014
i6	Pearson Correlation .244
	Sig. (2-tailed) .040
i7	Pearson Correlation .150
	Sig. (2-tailed) .212
i8	Pearson Correlation .089
	Sig. (2-tailed) .461
i9	Pearson Correlation .188
	Sig. (2-tailed) .116
i10	Pearson Correlation .099
	Sig. (2-tailed) .410
i11	Pearson Correlation .037
	Sig. (2-tailed) .757
i12	Pearson Correlation .064
	Sig. (2-tailed) .597
i13	Pearson Correlation .157
	Sig. (2-tailed) .191
i14	Pearson Correlation .213

	Sig. (2-tailed)	.075
i15	Pearson Correlation	.246
	Sig. (2-tailed)	.039
i16	Pearson Correlation	.170
	Sig. (2-tailed)	.156
i17	Pearson Correlation	.354
	Sig. (2-tailed)	.002
i18	Pearson Correlation	.176
	Sig. (2-tailed)	.143
i19	Pearson Correlation	.112
	Sig. (2-tailed)	.351
i20	Pearson Correlation	.068
	Sig. (2-tailed)	.573
i21	Pearson Correlation	.157
	Sig. (2-tailed)	.192
i22	Pearson Correlation	.065
	Sig. (2-tailed)	.593
i23	Pearson Correlation	.092
	Sig. (2-tailed)	.443
i24	Pearson Correlation	.249
	Sig. (2-tailed)	.036
i25	Pearson Correlation	-.057
	Sig. (2-tailed)	.640
i26	Pearson Correlation	.282
	Sig. (2-tailed)	.017
i27	Pearson Correlation	.218
	Sig. (2-tailed)	.067
i28	Pearson Correlation	.254
	Sig. (2-tailed)	.033
Total	Pearson Correlation	1
	Sig. (2-tailed)	

In the reliability measurement, Cronbach's alpha was 0.7699 (Table 4), which proved that the SGCQ instrument in the Indonesian language is reliable because the score was in the range of 0.7–0.95 (Peterson, 2013; Tavakol & Dennick, 2011). In the reliability measurement, we found 15 items (item 1, 2, 4, 5, 7, 8, 9, 10, 11, 12, 13, 20, 22, 23, and 25) with corrected item-total correlation scores < 0.3 (Table 5).

Table 4 Reliability statistic

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	n of Items
.769	.811	28

Table 5 Item-Total Statistics

	Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	There are those I can depend on when I need help	128.63	175.378	.048	.771
2	I don't want to exercise	129.28	179.262	-.105	.787
3	My condition gets me down	129.25	159.706	.439	.753
4	I feel confident	129.06	169.082	.260	.763
5	I feel my life is worthwhile right now	128.87	171.855	.214	.765
6	I am inspired by knowing that I am loved	128.51	170.825	.407	.761
7	The sounds keep me from resting	128.89	167.816	.276	.762
8	No one understands me	128.94	164.568	.290	.762
9	My pain is difficult to endure	128.77	170.034	.255	.764
10	I am unhappy when I am alone	129.80	162.332	.260	.765
11	I do not like it here	130.06	168.082	.150	.772
12	I am constipated right now	128.93	170.581	.168	.768
13	I do not feel healthy right now	129.97	161.885	.291	.762
14	My room makes me feel scared	128.70	163.440	.596	.751
15	I am afraid of what is next	129.38	155.468	.560	.745
16	I am very tired	129.28	159.262	.446	.752
17	I am content	129.28	160.577	.537	.750
18	This chair (bed) makes me hurt	128.69	162.331	.566	.751
19	The views are soothing	129.56	162.249	.367	.757
20	My personal belongings are not here	130.04	169.527	.079	.780
21	I feel out of place here	128.63	161.435	.644	.749
22	My friends remember me with their cards and phone calls	129.76	164.899	.210	.768
23	I need to be better informed about my health	132.51	177.625	-.048	.776
24	I don't have many choices	129.63	160.150	.372	.757
25	This room smells bad	129.03	167.313	.264	.763
26	I feel peaceful	128.77	166.520	.393	.758
27	I am depressed	128.41	167.445	.557	.756
28	I have found meaning in my life	128.86	167.094	.421	.758

Translated with kind permission of Katherin Kolcaba, RN., MSN., Ph.D

Our study results show that the content validity of SGCQ can be considered acceptable. Although it has good validity, researchers acknowledge that the ideal number of experts to measure the content validity should be > 3 . However, Lynn, cited from Polit and Beck (2006), stated that the I-CVI score should be 1 for content validity to be accepted, if the number of experts is < 5 . In addition, no major modification for SGCQ was suggested by the experts. This shows that our SGCQ can cover relevance, accuracy, clarity, credibility, and equivalency.

Furthermore, only nine items of this instrument were considered valid with the Pearson correlation test. Godwin et al (2013) categorized an r value of 0–0.25 to represent a weak relationship, 0.26–0.50 to represent a moderate relationship, and 0.51–0.75 a strong

relationship. In the present study, the correlation coefficient ranged from 0.037 to 0.354 (except item 25, which had a negative score). This range of corrected item-total correlation scores can be interpreted as weak-to-moderate relationship categories. In the present study, item 25 had a negative score ($r = -0.057$; this room smells bad). This indicates that when the rooms smell bad, the comfort score increases. Although it may be contradictory, olfactory senses may adapt to the bad smell and become neutral for a specific period of time. This may explain why an increased total comfort score is observed when the rooms smell bad. Godwin et al (2013) eliminated the negative scores of Pearson's correlation coefficient during their study about the validity of the simple Lifestyle Indicator Questionnaire. In the present study, we decided not to delete those items because an

instrument can be considered valid if the reliability score is acceptable, and reliability does not depend on the validity score of the instrument ([Tavakol & Dennick, 2011](#)).

Moreover, two statements, “I am unhappy when I am alone” (back-translation version) and “I need more information about my health” (back-translation version), could have been positive or negative, and their status was unclear. The unclear status of these two statements would have an effect on the scoring (from 1 to 6 or from 6 to 1). We then asked the owner of these two items, and the decision, based on personal communication with Katherine Kolcaba on March 14th, 2017, to consider both items negative was made.

In the reliability measurement, Cronbach’s alpha was found to be 0.769, which indicated that SGCQ was a reliable instrument. Our results show that there are several items that have corrected item-total correlation scores < 0.3, but no negative scores, such as “I feel confident” (item 4), “I feel my life is worthwhile right now” (item 5), “The sounds keep me from resting” (item 7), “no one understands me” (item 8), “my pain is difficult to endure” (item 9), “I am unhappy when I am alone” (item 10), “I am constipated right now” (item 12), “I do not feel healthy right now” (item 13), “My friends remember me with their cards and phone” (item 22), and “This room smells bad” (item 25). Field ([2009](#)) suggested that items with corrected item-total correlation scores < 0.3 can be deleted; however, when these items were deleted in our study, it did not increase the reliability score above 0.769 (Table 5).

On the other hand, items such as “There are those I can depend on when I need help” (item 1), “I don’t want to exercise” (item 2), “I do not like it here” (item 11), “My personal belongings are not here” (item 20), and “I need to be better informed about my health” (item 23) also showed corrected item-total correlation scores < 0.3 ([Field, 2009](#)). Researchers have tried deleting these two items to find out whether it would influence the reliability score, and it was found that the

reliability increased to 0.771, 0.787, 0.773, 0.780, and 0.776. In researchers’ opinions, even if no items are deleted, the total score is still reliable (>0.7).

CONCLUSION

The SGCQ instrument in the Indonesian language can be considered a valid and reliable tool to measure the comfort level of patients undergoing hemodialysis in an Indonesian setting.

Declaration of Conflicting Interest

None declared.

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Author Contribution

All authors contributed equally in this study.

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