TRANSLATION AND PSYCHOMETRIC TESTING OF THE INDONESIAN VERSION OF THE PREPAREDNESS FOR CAREGIVING SCALE

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ABSTRACT

Many previous studies have used the Preparedness for Caregiving Scale (PCS), however it has not been translated and validated in Indonesia. This study aimed to translate and evaluate the PCS's psychometric adequacy among family caregiver of non-communicable disease (NCD) patients in Indonesia. The linguistic of the PCS was validated using a standard forward-backward process. The Indonesian version was approved with Content Validity Index (CVI). Then a cross-sectional survey was conducted to establish the construct validity of the PCS to measure caregiver preparedness. A purposive sampling approach was used to recruit 40 consenting family caregivers of NCD patients. The PCS sum score was correlated with each item using Pearson product-moment. The internal consistency of the Indonesian version of the PCS (I-PCS) was assessed using Cronbach's alpha. The Item-CVI (I-CVI) and Scale-level CVI (S-CVI) of the I-PCS were 1.00. It showed the high content validity of the I-PCS. The I-PCS revealed a Cronbach's alpha of 0.933 for the total score. The Pearson-r was more than 0.320 indicated that the item valid. The I-PCS is appeared to be valid and reliable for measuring the caregiver preparedness of NCD patients in Indonesia.

BACKGROUND

Cancer, diabetes, and chronic kidney disease (CKD) contributed to the increase of non-communicable diseases (NCD)'s mortality (Wang et al., 2016). Cancer has a prevalence of 1.8% per 1000 population and has increased by 0.4% from 2013 (Ministry of Health Republic of Indonesia, 2018). Diabetes globally occupies the top six positions (International Diabetes Federation, 2017). At the same time, CKD has increased by 1.8% from 2013 to 2018 (Ministry of Health Republic of Indonesia, 2018).

Cancer, diabetes, and CKD patients have symptoms both physically and psychologically with long-term care.

The caring process went from being initially intended for healing to treatments aimed at comfort and improving the quality of life or known as palliative care. This process is a challenge in caring for family members suffering from NCD (Wolff & Jacobs, 2015). In this case, the most responsible person is their family caregiver (Rha et al., 2015). A family caregiver is an individual whose job is to extend the role of professionals who provide voluntary care and assistance related to health conditions to family members suffering from an illness (Given, Given, & Sherwood, 2012).

Family caregiver accompanies patients 24 hours a day to help with care (Machado, Dahdah, & Kebbe, 2018; Effendy et al., 2014) and assists patients with financial, autonomous, and psychosocial problems (Effendy et al., 2014). The burden was higher for family caregivers who spend a more considerable amount of time spent on caring for their patients a day (Sari, Warsini, Effendy, 2018). All the problems are often not matched by adequate caregiver preparedness (Maheshwari & Mahal, 2016). Such preparedness includes the preparedness

to provide physical care, provide emotional support, prepare support services at home, and compensate for the burden of responsibility in caring for family members who suffer from certain diseases (Petruzzo et al., 2017). If the preparedness can be optimized by increasing care skills and understanding the values of care they provide in the care process, then this is predicted to improve the quality of life of family caregivers, both physical and emotional (Shyu et al., 2010).

Caregiver preparedness refers to how ready the family caregiver sees himself for tasks and role demands in providing physical care and emotional support and dealing with the stresses of the care process (Gonzales et al., 2014). The Preparedness for Caregiving Scale (PCS) (Archbold et al., 1990) is a caregiver self-rated instrument that consists of eight items that ask caregivers how well prepared they believe they are for multiple domains of caregiving. The original version was developed in the English The original version was developed in the English version. It has been used before in other countries to measure the caregiver preparedness in other populations such as coronary artery disease in the American caregivers (Kneeshaw et al., 1999), stroke (Puchiarelli et al., 2014) and heart failure (Petruzzo et al., 2017) survivors in the Italian population, and life-threatening illness among Swedish family members (Henriksson et al., 2012). Internal consistency was moderate to high with Cronbach's alpha of 0.88 to 0.93 (Carter et al., 1998; Hudson & Hayman-White, 2006). In caregivers of stroke survivors, the Cronbach's alpha was 0.94, and test-retest reliability 0.92 (Pucciarelli et al., 2014).

No evidence provides the translation and validation of PCS for use in Bahasa Indonesia. It is essential to have translated and validated this tool to assess the caregiver preparedness among family caregivers caring for NCD patients. So, this study aims to turn and to test an Indonesian version of PCS as a measure of caregiving preparedness among NCD patients.

METHODS

The questionnaire used in this study included a demographic section and the PCS. The questionnaire's demographic part included questions about participant's age, gender, marital status, religion, education level, income, relationship with the patient, health status, length of providing care, and health education experience. The original nine-item of PCS consists of eight subjects with five answer choices using a Likert scale from range 0 (not at all prepared) to 4 (very well prepared) and one open question about specific preparedness desirable in the caregiving process (see Table 1). The scale is scored by calculating the mean of all items answered with the average score in the range 0-4. The higher the rating, the more prepared the caregiver feels for caregiving.

The study used the adapted Brislin model, as suggested by Jones et al. (2001). The PCS was translated using forward-translation and back-translation methods (Maneesriwongul & Dixon, 2004). In this study, two translators turn the tool from English into Indonesian independently. One translator was a freelance of English private study, and the other was a legal translating agency in Yogyakarta, Indonesia. Neither of them has a medical background. The transNeither of them has a medical background. The translation was reviewed by a bilingual Indonesian Ph.D. student of nursing to assess the suitability of the two translation results' content and culture. The agreement of the two bilingual people resulted in a draft of the Bahasa Indonesia instrument. The second step was back-translated the Indonesian version of PCS (I-PCS) into English by native English speaker that did not know about the tool. The results of the back-translation were compared with the original version of the PCS. The discussion was held between the author, a native English speaker, and Indonesian Ph.D. nursing student to examined the differences and similarities between the original and the back-translated instrument. This third step of translation is recommended for cross-cultural studies to ensure the translation retains the purpose of the measurement (Brislin et al., 1973).

The I-PCS was reviewed by four experts who are considered to understand about the PCS. The experts were three lecturers of the School of Nursing, Faculty of Health, Universitas Jenderal Achmad Yani Yogyakarta, and one nurse from Rumah Achmad Yani Yogyakarta, and one nurse from Rumah Sakit Umum Daerah Wates, Kulonprogo Yogyakarta, who has experienced more than ten years. Each item was evaluated and assessed using four ordinal scales (1 = irrelevant, 2 = slightly relevant, 3 = quite relevant, 4 = very relevant) as a result of the content validity test. Based on Lynn's (1986) criteria, the items with an I-CVI value of less than 1.00 and an S-CVI value less than 0.90 with 3 to 5 experts will be considered for revision (Polit & Beck, 2006). There are two methods to calculate the S-CVI, one is the universal agreement (UA) among experts (S-CVA/UA), and the second, the average (Ave) CVI (S-CVI/Ave)

(Zamanzadeh et al., 2015).

The pilot study was conducted on 15 family caregivers of NCD patients, who where different from the main samples, in the oncological clinic, and hemodialysis wards Rumah Sakit Panembahan Senopati Bantul, Yogyakarta. The respondents were selected using convenience sampling. They were asked for their opinions regarding confusing stateasked for their opinions regarding confusing statements, input was requested regarding these statements, readability, and estimated length of time needed to complete filling instruments (Nunnally & Bernstein, 1994). For all respondents said that all items have the clearly statement. The average time required for respondents to fill the I-PCS was 2-3 minutes.

The last stage was to construct validity on the 40 family caregivers of NCD patients. This is based on the assumption that every 1 item in the instrument need 5 respondents (1:5) (Nunnally & Bernstein, 1994). The PCS has 8 items that must be filled by respondent so the final samples was 40 respondents. The trial was conducted to test the I-PCS's validity and reliability. In this cross-sectional study, on July 2020, a questionnaire was administered to 15 family caregivers of cancer patients in the oncological clinic Rumah Sakit Panembahan Senopati Bantul, Yogyakarta, 15 family caregivers of CKD patients in hemodialysis wards Rumah Sakit Panembahan Senopati Bantul, Yogyakarta, and ten family caregivers Senopati Bantul, Yogyakarta, and ten family caregivers of diabetes patients in the Candibinangun village, area of Puskesmas Pakem, Sleman, Yogyakarta. Four research assistants (a nurse, a nursing student, and two health cadres who had previously received a briefing about research ethics, data collection procedures, and the study itself) were involved in the data collection process. This study invited family caregivers of patients with NCD to participate. Inclusion criteria were: 1) the spouse, parent, adult child, or relative looking after a patient with NCD; 2) a family caregiver for at least two months; 3) living with the patient or delivering care for at least 3 hours per day; 4) confirmed as the primary caregiver by the patient; 5) adults (18 years or older); and 6) willing to consent to participate in the study. The research assistants checked for the eligibility criteria. If the family caregiver met the inclusion criteria, they were invited caregiver met the inclusion criteria, they were invited to participate, receive the complete information about the study, and sign the informed consent.

The Statistical Package for Social Sciences (SPSS) version 21 software package (IBM SPSS, Chicago, IL, USA) was used for data entry and analysis. Descriptive statistics were used to summarize the demographic characteristics of the respondents. The tool's validity and reliability were analyzed using the Pearson Product-Moment and Internal Consistency (Cronbach's alpha coefficient). If the item has the Pearson-r more than the r-table for 40 respondents (0.321), it can be concluded that it is valid. Furthermore, the Cronbach's alpha coefficient of more than 0.7 indicates that the item was reliable.

This study was approved by The Health Research Ethics Committee, Faculty of Health, Universitas Jenderal Achmad Yani Yogyakarta (Skep/05/KEPK/II/2020). Each respondent received complete information about the study and signed informed consent before involvement. Participation was voluntary, and data were collected, analyzed, and stored anonymously, according to the rules of good clinical practice and the Declaration of Helsinki.

RESULTS

Demographic Characteristics of the Sample

The sample's characteristics showed in Table 2. There were forty consenting family caregivers included in the final analysis. The mean age of family caregivers was 42.71 14.12 years old. The majority of family caregivers were female (52.5%), Moslem (97.5%), married (87.5%), and spouse (47.5%). Most of them had senior high school education (67.5%), low-income level (77.5%), ever received health education about the disease (57.5%), functional health status (97.5%), and approximately taking care of the patients for minimum two months until two years.

Content Validity Index Results

The result of the ratings on I-PCS by four experts with item rated 3 or 4 on a 4-point relevance scale was summarized in Table 3. All items were marked as relevant, and the I-CVI was 1.00. The S-CVI/UA was 1.00. The UA is calculated by adding all I-CVI equal to 1.00 (8 items of 1.00 point) divided by eight I-PCS items. Overall shows high content validity index of I-PCS.

Construct Validity and Reliability Results

The result of the Pearson product-moment correlation and internal consistency analysis summarized in Table 4. The PCS sum score was correlated with each item using Pearson product-moment. If Pearson-r value higher than 0.320, it can be concluded that the item valid. The studies showed that all items of the I-PCS were valid because they have Pearson-

Table 1. Original Version of the Preparedness for Caregiving Scale

Item	Not at all prepared	Not too well prepared	Somewhat well prepared	Pretty well prepared	Very well prepared
1. How well prepared do you think you are to take care of your family member's physical needs?	0	1	2	3	4
2. How well prepared do you think you are to take care of his or her emotional needs?	0	1	2	3	4
3. How well prepared do you think you are to find out about and set up services for him or her?	0	1	2	3	4
4. How well prepared do you think you are for the stress of caregiving?	0	1	2	3	4
5. How well prepared do you think you are to make caregiving activities pleasant for both you and your family member?	0	1	2	3	4
6. How well prepared do you think you are to respond to and handle emergencies that involve him or her?	0	1	2	3	4
7. How well prepared do you think you are to get the help and information you need from the health care system?	0	1	2	3	4
8. Overall, how well prepared do you think you are to care for your family member?	0	1	2	3	4
9. Is there anything specific you would like to be better prepared for? ………………					

r higher than 0.320. Also, if the Cronbach's alpha coefficient, more than 0.7 indicates that the item was reliable. The result showed that Cronbach's alpha coefficient was 0.933, so all items were reliable.

DISCUSSION

The PCS has been translated into several languages, but this is the first study on translating and

Table 2. Demographic Characteristics of Family Caregivers, July 2020 (n=40)

Characteristics	
Mean of age (±SD) (years)	42.71±14.12
Gender (n(%))	
Female	21(52.5)
Male	19(47.5)
Religion (n(%))	
Moslem	39(97.5)
Catholic	1(2.5)
Marital status (n(%))	
Single	5(12.5)
Married	35(87.5)
Relationship with patient (n(%))	
Spouse	19(47.5)
Parent	17(42.5)
Child	1(2.5)
Relatives (brother, grandmother)	3(7.5)
Education level (n(%))	
Elementary school	1(2.5)
Junior high school	10(25.0)
Senior high school	27(67.5)
College	2(5.0)
Family income[a] (n(%))	
<Minimum income level	31(77.5)
≥ Minimum income level	9(22.5)
Health education experience (n(%))	
No	17(42.5)
Yes	23(57.5)
Health status (n(%))	
Good	39(97.5)
Have a symptom of a disease	1(2.5)
Patient's treatment (n(%))	
Chemotherapy	2(5.0)
Surgery	1(2.5)
Seek medical treatment	7(17.5)
Hemodialysis	15(37.5)
The oral medication combines with transfusion	5(12.5)
Chemotherapy, surgical cancer, and radiotherapy	1(2.5)
Others (diet, no current treatment)	3(7.5)
Median of the length of care (Min-Max) (months)	12(2.00-120.00)

[a]The minimum income level in Yogyakarta, Indonesia: 1,790,500 IDR; SD. Standard Deviation; Min. Minimum; Max. Maximum

validating into Bahasa Indonesia for the Indonesian population. The current study was undertaken to turn and evaluate the psychometric testing of the Indonesian version of PCS to measure the caregiver preparedness among the family caregiver of NCD's patients. To test the validity and reliability of a tool in a specific population is recommended before use in the clinical population (Varricchio, 2004). Our analysis demonstrated content validity index with I-CVI and S-CVI, construct validity with Pearson product-moment analysis, and reliability tests using internal consistency. The content validity only tested in this current study compared with five other studies (Archbold et al., 1990; Pucciarelli et al., 2014; Hudson &

Table 3. The Ratings on I-PCS for Items Rated 3 or 4 on a 4-Point Relevance Scale

Item	Expert 1	Expert 2	Expert 3	Expert 4	Number in agreement	Item CVI	Interpretation
Q1	x	x	x	x	4	1.00	Valid
Q2	x	x	x	x	4	1.00	Valid
Q3	x	x	x	x	4	1.00	Valid
Q4	x	x	x	x	4	1.00	Valid
Q5	x	x	x	x	4	1.00	Valid
Q6	x	x	x	x	4	1.00	Valid
Q7	x	x	x	x	4	1.00	Valid
Q8	x	x	x	x	4	1.00	Valid
Proportion relevant	1.00	1.00	1.00	1.00	Mean I-CVI=1.00 S-CVI/UA=8.00/8 item=1.00 Mean expert proportion=1.00		

I-PCS. The Indonesian version of The Preparation of Caregiving Scale; x. item rated for 3 or 4 on a 4-point relevance scale by the expert; I-CVI. Item-level Content Validity Index; S-CVI/UA. Scale-level Content Validity Index, Universal Agreement calculation method.

Table 4. The Pearson Product-Moment Analysis Result

Item	Pearson-r	Pearson-r with df=(n-2) and p<0.05	Cronbach's alpha coefficient
Q1	0.844		.
Q2	0.550		
Q3	0.855		
Q4	0.776	0.320	0.933
Q5	0.814		
Q6	0.811		
Q7	0.852		
Q8	0.807		

r. The correlation coefficient of Pearson product-moment

Hayman-White, 2006; Petruzzo et al., 2017; Henriksson et al., 2012).

The core of the translation process is the consensus discussion about the Indonesian translation's best cultural equivalence (Jones et al., 2001). This methodology supported the Caruso et al. (2017) about cultural linguistics and content validity of the study of the Italian version of Dyspnea-12. The PCS translation was precise, and no problematic terms as the tool are easy to understand and have a clear concept elaboration between the original version and the target language. The pilot study also confirmed the clarity of the sentence in the tool.

All I-PCS items were marked as relevant with the I-CVI 1.00, and S-CVI/UA was 1.00. The UA is calculated by adding all I-CVI equal to 1.00 (8 items of 1.00 point) divided by eight I-PCS items. I-CVI measures the content validity of individual items, while the S-CVI calculates the overall scale's content validity (Polit & Beck, 2006). Most papers report the I-CVI or the S-CVI, but this current study reported both. The number of experts (n = 4) was considered adequate for the content validity because the number of raters ranges from three to ten (Zamanzadeh et al., 2015; Yamada et al., 2010). It was mean that this instrument had a high content validity to measure caregiver preparedness.

This study's internal consistency has a Cronbach's alpha 0.93, which indicates that all items were reliable. There are five studies found in which the psychometric testing was tested in any population. The first validity and reliability testing of PCS were conducted by Archbold et al. (1990) in a sample of 78 US caregivers of older adults who need assistance for the daily activity or for taking medication. Archbold et al. (1990) used exploratory factor analy-

sis (EFA) and Cronbach's alpha for psychometric properties. EFA resulted in a one-factor solution that explained 50% of CPS variance and Cronbach's alpha was 0.72. Cronbach's alpha of this study was 0.93 higher than Archbold et al. (1990) and in line with the study conducted in Italia, which has a Cronbach's alpha 0.94 (Pucciarelli et al., 2014). This current study has differences with Pucciarelli et al. (2014). The construct validity of PCS by Pucciarelli et al. (2014) was evaluated by confirmatory factor analysis (CFA), internal consistency, and test-retest reliability. The other study conducted in Australia in a sample of 106 caregivers of palliative care patients (Hudson & Hayman-White, 2006). In Hudson & Hayman-White (2006), a single factor emerged, explaining 66.7% of the PCS variance and Cronbach's alpha coefficient was 0.93, which has the same number as this current study. In the Italian population, Petruzzo et al. (2017) conducted psychometric testing on 317 heart failure patients. The composite reliability index, Cronbach's alpha, factor score determinacy coefficient, and ICC were 0.89, 0.91, 0.96, 0.91, respectively, supporting reliability. The last study conducted on the Swedish population by Henriksson et al. (2012) also has a similar finding of the reliability test. The factorial structure was tested with CFA on 125 caregivers of patients with a life-threatening illness. The one-factor model solution was supported with a comparative fit index (CFI) and a non-normed fit index of 0.99. Cronbach's alpha was 0.94.

The Pearson product-moment correlation of this study showed that the eight-item of I-PCS was valid because all items have Pearson-r higher than r-table with $p < 0.05$ and df (n - 2) = 38. Before concluding the analysis, we must determine the r-table for comparing with Pearson-r as the result of Pearson product-moment analysis. The r-table was obtained from determining the sample size. The forty family caregivers of this study have been chosen based on Nunnally & Bernstein's recommendation to use the rule 1:5, which means that five respondents represent each item. The r-table was 0.320, and item one to eight were higher than r-table (see Table 4).

Although validity and reliability tests have been carried out in various countries from 1990 to the present on various family caregivers who treat patients with different disease pathologies, this does not change the structural construct of PCS. Caregiving and preparedness are prevalent at various times, countries, and various diseases. The current study proves that this simple tool has a high validity and reliability value that can assess caregiver preparedness. This current psychometric testing has the same powerful validity and reliability as the previous study.

The strength of this study is that the I-PCS performed similarly valid and reliable with the study before (Archbold et al., 1990; Pucciarelli et al., 2014; Hudson & Hayman-White, 2006; Petruzzo et al., 2017; Henriksson et al., 2012). Moreover, the sample was variated with three different family caregivers caring for three different patient diseases. Limitations of this study include small sample size and not carry CFA to perform factor analyses. Moreover, Cronbach's alpha does not reflect the scale's factorial structure underlying correlations between items. As item and composite reliability indices have the advantage of giving estimates of reliability coherent with the factor solutions tested with confirmatory and exploratory approaches (Pucciarelli et al., 2014). This finding supports future research to analyze the CFA with a more number of sample.

CONCLUSION

In conclusion, the Indonesian translated version of the PCS has proven to be a valid and reliable measure for the caregiver preparedness in our sample of family caregivers of NCD patients. The Indonesian version of PCS offers the nurses a valid and reliable tool for use when assessing the caregiver preparedness among family caregivers. The outcomes of the assessment will allow the nurses to identify and implement appropriate nursing interventions and support strategies to the family caregivers in the future setting to improve the quality of care.

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