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Psychometric Evaluation of the Filipino Versions of the Duke University Religion Index and the Spiritual Coping Strategies Scale in Filipino Hemodialysis Patients

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Abstract This study evaluated the psychometric properties of the Filipino versions of the Duke University Religion Index (DUREL-F) and the Spiritual Coping Strategies scale (SCS-F) for hemodialysis (HD) patients in the Philippines. A convenient sample of 162 HD patients was included in this descriptive, cross-sectional study. The DUREL-F and SCS-F exhibited acceptable internal consistency and stability reliability, as well as excellent content and construct validity. The findings confirmed the soundness of the psychometric properties of the two scales. Thus, they can be used for timely and accurate assessment of religiosity and spiritual coping utilization among Filipino patients receiving HD.

Keywords Hemodialysis patients · Philippines · Psychometric properties · Religiosity · Spirituality

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Introduction

The study of religion and spirituality and their relationship to health is expanding rapidly (Koenig and Büssing 2010; Cruz et al. 2016d). The relationship of religion and health has been examined in many studies (Koenig et al. 2012). Several studies support the positive influence of religion and spirituality to patients' health and longevity, specifically to psychological, social and health behavior (Koenig 2012). Therefore, healthcare providers should take into consideration the religious and spiritual aspect of patients in assessing, planning, implementing care for every patient and evaluating its effectiveness in terms of health-positive outcomes. Despite all research in the last decades about the importance of spirituality in health and the evolution of the healthcare paradigm, in terms of patient centered care or the World Health Organization definition of health, patients' spiritual dimension and needs are often neglected in the care process by healthcare providers, including nurses (Baldacchino and Buhagiar 2003; Cruz et al. 2016b). Educational aspects have been highlighted as the most important barriers for both nurses and doctors but personal maturity and professional experiences may help nurses to develop competence in spirituality and spiritual care toward a higher level of specialized competencies (Best et al. 2015; Giske and Cone 2015).

Patients who are receiving hemodialysis (HD) often suffer from serious physical and mental health problems, which resulted from stress, fears, physical discomforts, and family and financial burdens (Al Zaben et al. 2015). In addition, challenges on coping are also experienced by these patients living with a chronic health condition, which could further lead to more complicated problems (Al Zaben et al. 2015; Chilcot et al. 2011; Cruz et al. 2016c). Aside from medical interventions, these patients often turn to religious rituals and other spiritual activities to cope with the physical and mental challenges brought about by their current conditions (Amjad and Bokharey 2014; Cruz et al. 2016e; Wachholtz and Sambamoorthi 2011). Thus, the significance of the spiritual aspect of care should be re-emphasized in order to achieve better health outcomes and patients' satisfaction.

Because of this, it becomes necessary to have valid and reliable tools that are culturally appropriate, for assessing religiosity and spiritual coping in HD patients. The Duke University Religion Index (DUREL) and the Spiritual Coping Strategies Scale (SCS), with Judeo-Christian orientation, are two of the existing tools that are capable of measuring an individual's religiosity and use of spiritual coping, respectively. Both scales have been culturally adapted and used in various studies including HD patients elsewhere (Cruz et al. 2016c, d; Hafizi et al. 2013; Saffari et al. 2013b, 2014). Establishing the validity and reliability of the Filipino versions of the two scales will facilitate proper assessment of the religiosity and spiritual coping among Filipino HD patients. This study, therefore, was conducted to evaluate the psychometric properties of the Filipino versions of the Duke University Religion Index (DUREL-F) and the Spiritual Coping Strategies Scale (SCS-F) in Filipino patients receiving HD treatment.

Background of the Study

Chronic kidney disease (CKD) remains to be a serious health concern in the Philippines. The Department of Health (DOH) in the country recently reported soaring cases of this disease due to unhealthy lifestyle. According to the data released by the DOH, approximately 130 per million population are getting sick of kidney failure every year. In 2013, about 120,000 cases were registered and nearly 23,000 patients were receiving dialysis

treatment, which represents 10–15% increase a year (Crisostomo 2014). In a global perspective, the Global Burden of Disease study in 2010 ranked CKD as the top 27th cause of deaths worldwide in 1990, but rose to 18th in 2010 (Jha et al. 2013). More than 2 million patients worldwide are currently receiving dialysis treatment or a kidney transplant; however, this figure may only represent 10% of the actual number of patients who need treatment for survival (Couser et al. 2011).

Patients undergoing HD are often confronted with challenges related to their health condition and course of treatment (Lingerfelt and Thornton 2011). In order to accommodate their current conditions, patients need to modify their way of living. As a result of these modifications, patients experience significant effect on their social functioning which can impact their beliefs and sense of personal control, leading to stress, anxiety or depression, inhibiting coping and adjustment (Ng et al. 2015). These problems can be caused by biochemical imbalance, physiological changes, neurological disturbances, cognitive impairment and sexual dysfunction (Finnegan-John and Thomas 2013). Furthermore, coping problems and impaired health-related quality of life are very common to these patients (Abraham et al. 2012; Chilcot et al. 2011; Couser et al. 2011). In addition to the need of the patients to cope with their disease, dialysis as a mode of treatment is very inflexible (Parvan et al. 2015). This makes it more difficult for these patients to cope with their condition-related stress. Coping with chronic illness such as CKD is always a very challenging process for the patient. Among the various strategies that were suggested to be used by patients for coping, spirituality tends to be used frequently. It is the most available resource for coping for many and may help to reduce the negative effects of stress brought by their CKD (Cruz et al. 2016b). As reported in previous studies, reliance on a Supreme Being for strength is often used as strategy to cope with dialysis-related stressors. Furthermore, faith in God and religion assists patients to accept their difficult situations and guides them in the healing process (Al Nazly et al. 2013; Cinar et al. 2009).

Numerous studies have focused on spirituality and health among patients receiving HD treatment (Al Zaben et al. 2015; Cruz et al. 2016b, d; Saffari et al. 2013a, 2014). Cruz et al. (2016e) reported that participation in organizational religious activities, such as attending church activities, was related to better family functioning, while non-organizational religious activities, such as performing prayers, meditations or Bible studies, was associated with better psychological and spiritual dimension of the quality of life among Filipino Christian HD patients. Moreover, having stronger intrinsic religious belief was associated with better quality of life among the same population group. In other studies conducted among Muslim HD patients, religious coping and organized religiosity play a significant role in both quality of life and health status of the patients (Saffari et al. 2013a; Cruz et al. 2016b).

Assessment of religiosity and use of spiritual coping among these patients is an important aspect of providing holistic care. Proper assessment of the needs of the patients, including their spiritual needs, can ensure holistic care rendered to these patients (Cruz et al. 2016c). Nurses who have the most contact with patients during their hospitalization should be equipped with necessary knowledge and skill in assessing spirituality, spiritual needs and the use of spiritual coping of their patients. With this premise, valid and reliable tool should be readily available to be used by any healthcare providers in accomplishing such important task. The DUREL has become an important tool in assessing religiosity. This measure is brief and very easy to administer with only five items which can measure three domains of religiosity. It was developed for use in large cross-sectional and longitudinal observational studies, with more than 100 published studies conducted around the world, employing this measure. The scale measures the three major areas of religious involvement identified at a National Institute on Aging and the Fetzer Institute conference

(16–17 March 1995) on Methodological Approaches to the Study of Religion, Aging and Health, which included organizational, non-organizational and intrinsic or subjective religiosity. The tool had been translated in various languages to cater populations from other countries with different tongue (Koenig and Büssing 2010). On the other hand, the SCS has a Judeo-Christian orientation and was a product of a rigorous nursing, psychological, sociological, philosophical and theological literature search. This scale can measure the utilization of religious coping strategies, which are mainly on the individuals' attitude toward religion and belief in God and the non-religious coping strategies, which are composed of humanistic coping strategies, oriented toward relationship to self and others and nature (Baldacchino and Buhagiar 2003). The SCS was originally constructed in English and then translated to Maltese language. Previous studies have also culturally adapted the scale into various languages, such as Arabic, Farsi, Spanish and Brazilian Portuguese which further supported the validity and reliability of the tool (Cruz et al. 2016a, c; Hawthorne et al. 2011; Lucchetti et al. 2012; Saffari et al. 2014).

Study Aim

This study sought to evaluate the psychometric properties of the DUREL-F and the SCS-F in patients receiving HD treatment in the Philippines.

Methods

Study Design

This study used a descriptive, cross-sectional design to explore the reliability and validity of the DUREL-F and SCS-F when applied to a sample of Filipino HD patients.

Sample and Settings

The study was conducted in two hospitals situated in the province of La Union, Philippines. A convenient sample of 162 patients receiving HD was included in this study. The sample size was calculated using the recommended ratio of number of samples per variable in the tool. A minimum ratio of five individuals per variable and a total of no fewer than 100 individuals for a factor analysis were recommended (Costello and Osborne 2005; Gorsuch 1983; Hair et al. 1998). The DUREL has 5 items (32 samples per 1 item ratio), while the SCS has 20 items (8 samples per 1 item ratio). Thus, the sample size was sufficient based on a criterion for performing exploratory factor analysis (EFA). The respondents were included if they have met the following inclusion criteria: (1) Filipino national, (2) self-identified Christian in any denomination, (3) at least 18 years old, (4) both males and females, (5) can understand and speak Filipino language, (6) receiving HD for at least 3 months, (7) conscious, coherent and oriented, (8) with no other serious health problems and (9) voluntarily expressed his or her participation.

Ethical Consideration

The study protocol was approved by the Research Committee of Ilocos Training and Regional Medical Center. Permission to conduct the study was also sought from each hospital authorities. Permission for the translation and use of the instruments were granted

by the copyright holders via email. An explanation on the significant information regarding the study was provided to each participant. The respondents were also informed about their right to terminate their participation any time without any consequences in their part. An informed consent was solicited to each respondent to signify their voluntary participation. Confidentiality was upheld throughout the research process. There was no compensation provided for participation.

Measures

Respondents' Characteristics

Data collected on respondent characteristics included: (1) age, (2) gender, (3) marital status, (4) employment status, (5) educational attainment and (6) duration of undergoing HD.

Duke University Religion Index

The Duke University Religion Index by Koenig and Büssing (2010) has five questions consisting of three parts, which assesses the religious beliefs and practices of a person. The first and second parts of the scale consist of an item each that measures organizational religious activity and the non-organizational religious activity of the respondents, respectively. The third part has of three items that measure intrinsic religiosity. Items in this section include experiencing the presence of God, religious belief as the foundation of one's life and trying to apply religion in all aspects of life. Parts 1 and 2 consist of a 6-level response option reflecting the frequency of activities, while part 3 has a 5-level response from 1 (definitely true of me) to 5 (definitely not true). Scores were computed separately for each part by reversing the scores. For parts 1 and 2, scores may range from 1 to 6, while for part 3, scores may range from 3 to 15. Higher scores indicate higher religiosity. Previous studies have reported the validity and reliability of the tool (Koenig and Büssing 2010; Lucchetti et al. 2012; Storch et al. 2004).

Spiritual Coping Strategies Scale

Spiritual coping strategy utilization by the respondents was measured using the SCS (Baldacchino and Buhagiar 2003). It is a self-administered, 20-item questionnaire that measures the frequency of use of the various coping strategies. The scale has two sub-scales, the 9-item religious coping strategies (RCS) and the 11-item non-religious coping strategies (NRCS). The scale is responded using a 4-point response scale from 0 (never used) to 3 (often used). A total score of 0–60 can be achieved from all the items, while scores of 0–27 and 0–33 can be obtained for RCS and NRCS, respectively. Higher scores indicate more frequent utilization of the spiritual coping strategies. The SCS scale is a valid and reliable tool, with computed Cronbach's alpha ranges from 0.73 to 0.82 (Baldacchino and Buhagiar 2003).

Cross-Cultural Adaptation of the DUREL-F and the SCS-F

The cross-cultural adaptation of the two scales followed the guideline for translation of self-report measures (Beaton et al. 2000). This guideline suggests five stages: (1) translation, (2) synthesis, (3) back translation, (4) expert committee review and (5) pretesting.

The first step was forward translation. Two independent forward translations were made from English to Filipino by two bilingual Filipino nationals, who are professor in nursing and with specialization in mental health nursing. After the translations have been done, a university lecturer with specialization in languages synthesized the two translations for both scales to form a single tentative Filipino version of the scales. Thereafter, the two Filipino versions were independently back-translated to English by two non-medically inclined translators, who were unaware of the concept as well as the purpose of the scales. The translated and back-translated versions of the scales were then presented to a five-member panel of experts. The compositions of the panel are: a Catholic priest, a Protestant hospital chaplain, a born-again Christian pastor, a nurse lecturer of spiritual nursing and a dialysis nurse. The panel decided for the cultural and religious equivalence of each items in the scale. They also evaluated the content validity of the two scales. At the endpoint, no revisions have been suggested to the original version of the scale. After, the two scales were subjected to psychometric assessment in dialysis patients.

Data Collection

Data collection was performed between December 2015 and February 2016 during the scheduled dialysis of the participants. Prior to the start of data collection, the researchers visited the HD units to review the scheduled dialysis of each participant and plan for the data collection. The questionnaires were provided with unique codes for each respondent to be able to compare the questionnaires of the test and retest. The respondents were given enough time to complete the questionnaire. After answering the questionnaire, the respondents were instructed to put the questionnaire in the white envelope and seal it themselves, before returning it to the researchers. Two weeks after the first data collection, the questionnaires were redistributed following the codes. The same procedure was applied in the second data collection.

Statistical Analysis

Statistical analyses were conducted using statistical software, SPSS version 22.0. The demographic characteristics of the respondents were expressed in frequency counts and percentages. Mean and standard deviations were computed to examine the religiosity and spiritual coping utilization.

Reliability of the DUREL-F and SCS-F

The reliability of the two scales was supported by the computation of the Cronbach's alpha for internal consistency and the intraclass correlation coefficient (ICC) for test–retest reliability. A computed Cronbach's alpha value ≥ 0.70 and an ICC value ≥ 0.80 indicated good internal consistency and stability reliability, respectively (Nunnally and Bernstein 1994; Vincent 1999). For the DUREL-F, the z-score for each item was used in calculating the Cronbach's alpha for the entire scale.

Validity of the DUREL-F and SCS-F

Content validity for both scales was established using the item-level content validity index (I-CVI) and scale-level content validity index, averaging method (S-CVI/Ave). I-CVI of 1

and S-CVI/Ave of ≥ 0.90 were considered acceptable for a panel with five members (Lynn 1986; Polit and Beck 2006). The content validity was computed based on the responses of the five experts on a 4-point scale from 1 (not relevant) to 4 (highly relevant).

For construct validity, corrected item-total correlation (ITC) was calculated for the scales' internal construct validity. Items with corrected ITC value from 0.30 to 0.80 and items that did not cause $\geq 10\%$ drop in the computed Cronbach's alpha of the scale if the item is deleted were retained. Exploratory factor analysis (EFA) using the principal component analysis (PCA) with varimax rotation was performed to support the construct validity of the two scales. Factors with an eigenvalue greater than 1 and factor loading of greater than 0.40 indicated good construct validity (DeVellis 2003). Kaiser–Meyer–Olkin (KMO) and Barlett's test of sphericity were computed to determine the sample size adequacy (KMO value ≥ 0.60) and the appropriateness of the factor model ($p < 0.05$), respectively, before factor analysis was conducted.

The association between the respondents' demographic characteristics and their religiosity and spiritual coping utilization was examined using Pearson's product moment correlation, independent samples t tests (for two groups) and one-way ANOVA (for more than two groups). A Tukey HSD test was performed if significant difference is revealed by the ANOVA. P values <0.05 were considered significant in all analyses.

Results

Sample Characteristics

From the 200 questionnaires distributed, 162 were completed and returned to the researchers giving a response rate of 81.0%. The mean age of the respondents was 43.01 ± 14.89 years. The majority were female (58.0%), married (58.0%) and unemployed (66.7%). Nearly half were high school graduates (48.1%) and receiving HD treatment from 3 to 10 months (48.8%; Table 1).

Reliability of the DUREL-F and SCS-F

The results of the reliability tests are presented in Table 2. The Cronbach's alphas of the DUREL-F and the SCS-F and their subscales ranged from 0.72 to 0.87 and 0.90 to 0.95, respectively. The ICC's of the two-week test–retest scores of the DUREL-F and the SCS-F ranged from 0.84 to 0.86 and 0.91 to 0.94, respectively.

Validity of the DUREL-F and SCS-F

The computed I-CVI's for the DUREL-F were 1, and the computed S-CVI/Ave was also 1. The ITC's for the 5 items of the DUREL-F ranged from 0.315 to 0.611. All the 5 items were entered in a PCA with varimax rotation to extract the components of the scale. A KMO value of 0.659 was calculated, and the Barlett's test of sphericity was highly significant ($p < 0.001$). As reflected in Table 3, the analysis revealed two dominant factors with eigenvalues >1 and a cumulative contribution rate of 79.4%. All factor loadings were adequate for each factor. Factor 1, with 3 items, was labeled "Intrinsic religiosity (IR)," while Factor 2, with 2 items, was labeled "Religious practices (RP)."

Table 1 Demographic characteristics of the respondents (N = 162)

Characteristics		n	%
Age (mean ± SD)	43.01 ± 14.89		
Gender	Male	68	42.0
	Female	94	58.0
Marital status	Single	48	29.6
	Married	94	58.0
	Widow/er or separated	20	12.3
Educational attainment	Elementary	13	8.0
	High school	78	48.1
	College	71	43.8
Employment status	Employed	24	14.8
	Self-employed	30	18.5
	Unemployed	108	66.7
Length undergoing HD	3–10 months	79	48.8
	11–18 months	42	25.9
	≥19 months	41	25.3
Religion	Roman Catholic	127	78.4
	Non-Roman Catholic	35	21.6

Table 2 Reliability of the DUREL-F and the SCS-F (N = 162)

Scale	Cronbach's α coefficient	Intraclass correlation coefficient of the two-week test–retest scores
DUREL-F		
Religious practices	0.72	0.84
Intrinsic religiosity	0.87	0.86
Entire scale	0.73	0.85
SCS-F		
Religious coping strategies	0.90	0.91
Non-religious coping strategies	0.95	0.93
Entire scale	0.90	0.94

DUREL-F Duke University Religion Index Filipino version, *SCS-F* Spiritual Coping Strategies scale Filipino version

For the SCS-F, the computed I-CVIs and S-CVI/Ave were 1. The computed ITCs of the 20 items ranged from 0.311 to 0.737. A KMO index of 0.885 was computed, and the Bartlett's test of sphericity was significant ($p < 0.001$). The PCA with varimax rotation revealed 2 dominant factors with eigenvalues greater than 1 and sufficient factor loadings (range 0.698–0.883). The two factors reached a cumulative contribution rate of 62.5%. Consistent with the original scale, Factor 1 (11 items) was labeled "Non-religious coping strategies (NRCS)" and Factor 2 (9 items) was named "Religious coping strategies (RCS)" (Table 4).

Table 3 Factor loadings of the Duke University Religion Index Filipino version ($N = 162$)

Items	Factor 1 Intrinsic religiosity	Factor 2 Religious practices
4. My religious beliefs are what really lie behind my whole approach to life	0.938	
5. I try hard to carry my religion over into all other dealings in life	0.911	
3. In my life, I experience the presence of the Divine	0.811	
2. How often do you spend time in private religious activities, such as prayer, meditation or Bible study?		0.882
1. How often do you attend church or other religious meetings?		0.876

Table 4 Factor loadings of the Spiritual Coping Strategies scale Filipino version ($N = 162$)

Items	Factor 1 Non-religious coping strategies	Factor 2 Religious coping strategies
3. Build, maintain relationships with relatives and friends	0.883	
11. Accepting illness	0.854	
9. Living day by day hoping things will get better	0.839	
13. Appreciating the beauty of arts, e.g., music, paintings and handcrafts	0.838	
5. Discuss difficulties with one with same illness	0.835	
7. Seeing positive side of situation	0.828	
12. Finding meaning and purpose to live through illness	0.822	
14. Relating and confiding in relatives and friends	0.791	
20. Appreciating nature, e.g., sea, sun, plants and flowers	0.780	
16. Self-reflection as a means of identifying your potentials and strengths	0.766	
17. Helping others as a means of giving love/peace to others	0.759	
2. Relationship with God		0.827
4. Pray with others/group		0.775
15. Attending church for religious practices		0.764
1. Personal prayer		0.762
8. Religious music/program on radio/TV		0.749
18. Trusting in God, hoping that things will get better		0.736
10. Reading spiritual inspirational texts		0.727
6. Spiritual/religious objects		0.727
19. Receiving communion		0.698

Bivariate Correlations

As shown in Table 5, the age of the respondents has a weak and moderate positive correlation with scores in RP ($r = 0.17$, $p < 0.05$) and IR ($r = 0.43$, $p < 0.001$), respectively. Females had higher attendance to RP ($t = -2.68$, $p < 0.01$) and higher IR ($t = -4.06$, $p < 0.001$). The ANOVA revealed statistically significant findings in IR in

Table 5 Bivariate correlations between demographic characteristics and religiosity among the respondents ($N = 162$)

Characteristics	Religious practices		Intrinsic religiosity	
	Mean ± SD	Statistical test	Mean ± SD	Statistical test
Age		$r = 0.17*$		$r = 0.43***$
Gender				
Male	8.43 ± 1.90	$t = -2.68**$	10.68 ± 3.00	$t = -4.06***$
Female	9.29 ± 2.11		12.50 ± 2.56	
Marital status				
Single	8.50 ± 1.92	$F = 1.66$	10.46 ± 3.01	$F = 7.16**$
Married	9.16 ± 2.03		12.28 ± 2.67	
Widow/er or separated	8.85 ± 2.43		12.25 ± 2.77	
Educational attainment				
Elementary	9.06 ± 1.29	$F = 0.11$	11.69 ± 2.29	$F = 0.30$
High school	8.85 ± 2.11		11.56 ± 3.13	
College	9.00 ± 2.13		11.93 ± 2.74	
Employment status				
Employed	8.08 ± 1.84	$F = 2.42$	10.00 ± 3.40	$F = 12.53***$
Self-employed	9.00 ± 1.74		10.43 ± 2.74	
Unemployed	9.09 ± 2.16		12.48 ± 2.52	
Length undergoing HD				
3–10 months	8.75 ± 2.10	$F = 2.48$	11.70 ± 3.00	$F = 0.07$
11–18 months	8.67 ± 2.18		11.88 ± 2.74	
≥19 months	9.54 ± 1.76		11.66 ± 2.89	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

terms of marital status ($F = 7.16$, $p < 0.01$) and employment status ($F = 12.53$, $p < 0.001$). Tukey HSD test revealed that those who were single reported significantly lower IR compared with those who were married ($p < 0.001$) and widow/er or separated ($p < 0.05$). Furthermore, respondents who were unemployed had higher IR that those employed ($p < 0.001$) and self-employed ($p < 0.01$).

Table 6 shows the relationship between demographics and spiritual coping utilization. The age of the respondents was positively and moderately correlated with the use of RCS ($r = 0.47$, $p < 0.001$). The respondents who were single had significant lower usage of RCS than those who were married ($p < 0.001$) and widow/er or separated ($p < 0.01$).

Discussion

This study evaluated the psychometric properties of two instruments that assessed the religiosity and spiritual coping utilization of Filipino patients receiving HD. The two instruments were found to be valid and reliable in measuring these constructs, demonstrating solid psychometric characteristics for both.

The DUREL-F and SCS-F manifested acceptable internal consistency based on Cronbach's alphas of the entire scale and their subscales. This implies that the items in each

Table 6 Bivariate correlations between demographic characteristics and spiritual coping utilization among the respondents ($N = 162$)

Characteristics	Religious coping strategies		Non-religious coping strategies	
	Mean ± SD	Statistical test	Mean ± SD	Statistical test
Age		$r = 0.47***$		$r = 0.03$
Gender				
Male	21.49 ± 4.29	$t = -1.28$	19.50 ± 7.96	$t = -1.27$
Female	22.40 ± 4.65		21.06 ± 7.51	
Marital status				
Single	19.48 ± 3.75	$F = 12.30***$	19.81 ± 7.97	$F = 0.65$
Married	23.10 ± 4.43		20.34 ± 7.76	
Widow/er or separated	23.05 ± 4.35		22.15 ± 6.93	
Educational attainment				
Elementary	22.31 ± 3.12	$F = 0.36$	19.92 ± 8.59	$F = 0.29$
High school	22.28 ± 5.08		20.88 ± 7.39	
College	21.68 ± 4.08		19.97 ± 7.98	
Employment status				
Employed	20.54 ± 4.66	$F = 1.54$	17.58 ± 8.57	$F = 1.99$
Self-employed	22.43 ± 5.61		21.40 ± 8.72	
Unemployed	22.23 ± 4.11		20.76 ± 7.43	
Length undergoing HD				
3–10 months	22.03 ± 4.53	$F = 0.89$	20.65 ± 7.21	$F = 0.80$
11–18 months	21.36 ± 3.86		21.19 ± 7.80	
≥19 months	22.68 ± 5.09		19.15 ± 8.57	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

scale were coherent. It has been suggested that Cronbach's alpha should be reported for all scales as it is the most common measure of internal consistency (Nunnally and Bernstein 1994). Cronbach's alpha within acceptable values signifies reliability of the scale (Kimberlin and Winterstein 2008). The present findings are consistent with previous studies that reported the psychometric properties of the translated versions of the two scales. The DUREL was previously culturally adapted in different countries, such as in Iran (Saffari et al. 2013b), in Brazil (Lucchetti et al. 2012) and in China (Wang et al. 2014). Similarly, the SCS was translated and tested for its reliability in various sample groups with different languages, such as in Arabic (Cruz et al. 2016a, b), Farsi (Saffari et al. 2014) and Spanish (Hawthorne et al. 2011). All these studies supported an acceptable internal consistency for both scales. However, Cronbach's alpha has acknowledged limitation, such as its inability to measure the unidimensionality of the scale and may underestimate reliability of multidimensional scales (Schmitt 1996). Because of this, the ICC of the two-week test–retest scores was calculated for both scales to support their stability reliability. As reported earlier, the scales' ICCs exceeded the acceptable value, which imply that the DUREL-F and SCS-F are capable of consistently measuring the religiosity and spiritual coping utilization, respectively, among the Filipino HD patients; thus supporting its stability reliability over time. ICC considers the consistency of the scores from test-to-retest as well as the changes in the average group performance over time, which made it a more desirable and appropriate measure of stability reliability (Bland and Altman 2003). Both the

DUREL-F and SCS-F exhibited good internal consistency and stability reliability, thus supporting their excellent reliability.

The two scales exhibited excellent content validity as reflected by their I-CVI and S-CVI/Ave within the acceptable values. According to Polit and Beck (2006), for a five-member panel of experts, all the I-CVIs should be 1 and S-CVI/Ave should be higher than 0.90 in order to achieve an excellent content validity. In this study, all the items in both scales were rated from 3 (quite relevant) to 4 (highly relevant) which resulted in I-CVIs of 1 and S-CVI/Ave of 1. This implies that each item in DUREL-F and SCS-F were relevant on the construct of religiosity and spiritual coping, respectively, among the study sample.

To further support the validity of each scale, construct validity was assessed using EFA by PCA with varimax rotation. Prior to the analysis, the ITCs for each scale were calculated. As a result, none of the items were modified or removed, based on the criteria set earlier, thus all items in each scale were entered in the analysis. For the DUREL-F, the analysis revealed two distinct factors, which was named "Intrinsic religiosity" and "Religious practices." The two-factor DUREL-F had a contribution rate higher than 50%, implying good construct validity (Brown 2015; Tabachnick and Fidell 2007). Items which loaded with Factor 1 were statements about religious belief or experience. They measure the degree of personal religious commitment or motivation of an individual (Koenig and Büssing 2010). On the other hand, the two items that converged in Factor 2 measure the involvement in organizational religious activities, such as attending religious services or participating in other group-related religious activities, as well as the involvement in non-organizational religious activities, such as praying in private, reading and studying the Scripture, watching religious TV or listening to religious radio. The factor loading in this study is different than previous studies conducted. The original version of the instrument assesses separately the three major dimensions of religiosity, namely organizational religious activity, non-organizational religious activity and intrinsic religiosity (Koenig and Büssing 2010). Other studies had reported the instrument as a unidimensional scale (Nurasikin et al. 2010; Saffari et al. 2013b; Storch et al. 2004). For the factor analysis of the SCS-F, two dominant factors were produced with explained variance of 62.5%, which also signifies good construct validity of the scale (Brown 2015; Tabachnick and Fidell 2007). The two-factor result of this study is consistent with previous related studies conducted among HD patients in different countries (Cruz et al. 2016b; Saffari et al. 2014) as well as with the original version (Baldacchino and Buhagiar 2003). In this study, the NRCS loaded first before the RCS, which is also consistent with those studies conducted among HD patients (Cruz et al. 2016b; Saffari et al. 2014). According to these studies, this may be because the coping mechanisms used by patients with chronic disease, such as those with CKD, may vary from other groups, such as students and healthy individuals (Cruz et al. 2016b; Saffari et al. 2014).

The DUREL-F and SCS-F were used to examine the relationship between the demographic characteristics and the religiosity and spiritual coping of the current sample. Age was positively associated with the involvement in RP and IR as well as the use RCS among the respondents. This implies that as the respondents get older, their participation in religious practices, such as attending church, Bible study and praying, becomes more frequent and their personal religious commitment and motivation become stronger. Likewise, they utilize RCS more often as they get older. These findings are consistent with those of the previous studies (Cruz et al. in press; Koenig 1995; Moreira-Almeida et al. 2010). Older people often consider religious activities as their most common social activity as well as their most significant factor that support them to cope with physical health problems (Levin et al. 2011). The religious community is their source of social support,

second to their families (Kaplan and Berkman 2011). The findings also show that patients who were unemployed had higher degree of IR as compared with those who were employed and self-employed. Congruent with previous studies, unemployed patients tend to depend on their religious beliefs to generate hope, meaning and purpose in life in spite of their situation of having a chronic disease and at the same time having no source of living (Cruz et al. in press; Ko et al. 2007; Pecha and Ruprah 2015). Furthermore, these findings are consistent with the Utilization of Religion (Mill 2006). According to this, people with established religious beliefs early in life are likely to show a higher level of religiosity as they age; thus, religion becomes more significant as people grow older. Moreover, individuals tend to be less religious as they become wealthier, better educated and freer; thus, better financial and physical security of an individual can cause a decline in religious beliefs (Cruz et al. in press; Norris and Inglehart 2004). In terms of gender, female HD patients reported more frequent involvement in RP and higher IR that the males. Many social scientists support the idea that women are more religious than men (Beit-Hallahmi 2014). According to the Pew Research Center (2016), among Christians, women are more religious than men in all measures of religious practices, commitment and beliefs. These findings, which are consistent with the literature, further strengthen the validity of the scales.

Although this study offers important findings, it has limitations. Although the sample size was adequate for factor analysis, larger sample size should be considered in future studies. The construct validity of the tools was only tested using EFA. Future studies should employ confirmatory factor analysis to confirm the constructs of the tool. Other measures of construct validity, such as convergent and divergent validity tests, should also be conducted to strengthen the current findings. Finally, the tools were only tested for validity and reliability among Christian HD patients. Future studies should attempt to culturally adapt the tools in other religious beliefs in the Philippines in order to facilitate comparative studies of religiosity and spiritual coping between patients from different religious groups.

Conclusions and Implications

This study was conducted to evaluate the psychometric properties of the DUREL-F and SCS-F in a sample of Filipino patients undergoing HD. The findings revealed acceptable validity and reliability of the two tools, thus confirming the soundness of their psychometric properties. The literature supports the significance of religiosity and spirituality to the overall wellbeing of patients. This being said, nurses and other members of the healthcare team should acknowledge the need to include the spiritual dimension in planning and implementing care for patients. Comprehensive assessment of spiritual needs as well as the utilization of spiritual coping strategies should be carried out by nurses when attending to each patient in order to ensure that holistic care is rendered. Providing holistic care is one way of showing respect and compassion to patients. With the establishment of these valid and reliable tools, timely and accurate assessment of religiosity and spiritual coping utilization among Filipino patients receiving HD can be facilitated. These validated tools can be useful for nurses to ensure provision of holistic nursing care to these patients. They can also be used to conduct related studies in the Philippines and will allow cross-cultural comparisons, thus enriching the literature on this area in the country and around the world.

Compliance with Ethical Standards

Conflict of interest The authors declare no potential conflicts of interest with respect to the research, authorship or publication of this article.

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