



Development and validation of a Religious and Spiritual Support Scale in Sri Lanka: A psychometric study

Research Paper

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ABSTRACT

Introduction: Religious and spiritual support reduces distress in patients with cancer. Accurate and reliable data on religious and spiritual support received and perceived by patients with cancer would assist health authorities in planning health promotion strategies targeted at patients with cancer. In this study, a new measurement tool of religious and spiritual support for patients with cancer in Sri Lanka was developed and validated. **Methods:** A new tool, the Religious and Spiritual Support Scale (RSSS) was developed based on the previous questionnaire and evaluated using 40 patients with cancer. Cross-cultural adaptation was made using WHO guidelines. Reliability was checked using Cronbach's alpha. Intra-class correlation coefficient (ICC) was used to examine the test-retest reliability of the tool. Convergent and divergent validity of the tool was examined using the World Health Organization-Quality of Life-Brief scale (WHOQOL-BREF) and the Centre for Epidemiological Studies-Depression scale (CES-D). Exploratory factor analysis (EFA) was performed to test the construct validity of the RSSS. **Results:** The RSSS showed a high internal consistency (Cronbach's alpha-0.874). The test-retest reliability of the scale was good (ICC = 0.981). As expected, the overall RSSS score correlated negatively with CES-D ($r = -0.338, p < 0.05$) and positively with overall QoL scores of the WHOQOL-BREF; ($r = 0.421, p < 0.001$), confirming satisfactory divergent and convergent validity of the RSSS. EFA revealed a structure comprised of two factors: Religious practice and religious support. **Conclusions:** The RSSS is a reliable and valid scale to assess religious and spiritual support received and perceived by patients with cancer in Sri Lanka.

KEYWORDS

Cancer; Reliability; Religion; Spirituality; Validity

INTRODUCTION

Cancer is a leading cause of death globally (Bray et al., 2018; GLOBOCAN, 2020; Siegel et al., 2021). Medical and technological advancements and personalized therapies in cancer management have increased the survival rates of many cancer patients (Arnold et al., 2019; Li et al., 2016; Miller et al., 2019). In Sri Lanka, the incidence and prevalence rates of cancer have increased drastically over the last 20 years. These epidemiological trends of cancer have imposed

severe health, social and economic consequences (e.g., increased cost of medications, long-term pain chronic/dependent roles of family members, decreased income due to disease conditions, etc.) on the Sri Lankan population (Cancer registry, 2019; Senevirathne, 2016). Globally, cancer patients and survivors experience many issues including lack of quality of life (QoL); impaired physical, psychological, and social health (Alagazi et al., 2020; Koenig 2002;



Smith, 2015; Weeratunga et al., 2019; Yuan et al., 2020) as mentioned earlier.

In many healthcare systems across the world, patients with cancer are supported by different adaptive approaches/coping strategies to reduce their life-threatening experiences such as behavioural health techniques (e.g., relaxation and stress reduction exercises- deep breathing and muscle relaxation) and meeting with experts, etc. (Cancer Treatment Centers of America/CTCA, 2021). Pain and psychological disturbances associated with cancer have caused many patients to seek family support, and religious/spiritual support to cope with the fear, anxiety, and distress that they experience during their treatment and recovery period (Alagizy et al., 2020; Koenig, 2002; Smith, 2015; Weeratunga et al., 2019; Yuan et al., 2020). Further, religious/spiritual beliefs influenced patients' decisions and were correlated with better QoL (Mishra et al., 2017). Religious and/or spiritual (R/S) aspects are therefore vital elements and play a significant support role in the care of oncological patients (Kowalczyk et al., 2022). Further, religious, and spiritual support which performed as coping mechanisms are vital components in cancer treatment and management (Koenig, 2002; Peteet & Balboni, 2013; Vardar et al., 2021; Weeratunga et al., 2019). Psychological support services that enhance the coping abilities of cancer survivors and their family members are essential to improve the QoL (National Cancer Institute/NCI, 2015; Peteet & Balboni, 2013; Weeratunga et al., 2019). Therefore, correct identification of religious and spiritual support perceived by cancer patients and how to measure religious and spiritual support are necessary to plan effective health promotion programs for cancer survivors.

CONCEPTUAL DEFINITIONS

The term 'religion' and 'spirituality' has been defined differently but with overlapping dimensions (Mytko & Knight, 1999; Peteet et al., 2019). 'Religion' is generally identified as a major resource for dealing with stressful events; further, religion and spirituality are resources for coping (Koenig 2002; Kruizinga et al., 2011). Therefore, religion and spirituality can assist cancer patients to find meaning for their disease and provide relief against existential fears (Peteet & Balboni, 2013, Vardar et al., 2021). Attention

to and recognition of the function of religious and spiritual coping in adjustment to serious illness, like cancer, has been growing worldwide (Koenig 2002; Pargament et al., 1998). 'Religion' refers to the aspects of belief and behavior, including spirituality that is related to the sacred or supernatural powers and is grounded in a religious community or tradition (Kruizinga et al., 2017; Williams & Sternthal, 2007).

As 'spirituality' is a complex and multidimensional construct, it refers to an individual's attempt to find meaning in life, which can include a sense of involvement with the transcendent outside institutional boundaries" (Kruizinga et al., 2017; Williams & Sternthal, 2007). Further, 'spirituality' is often mentioned in defining health, and it is a multidimensional, complex concept that influences how patients cope with serious illnesses (Balboni et al., 2007). 'Spirituality' is defined as "a dynamic and intrinsic aspect of humanity through which persons seek ultimate meaning, purpose, and transcendence, and experience relationship to self, family, others, community, society, nature, and the significant or sacred" (Puchalski et al., 2014, p. 646).

The NCI defines 'religion' as "a collection of beliefs and practices linked with a religion or denomination" and defines 'spirituality' as "the search for definitive meaning through religion or other paths" (Balboni et al., 2007; NCI, 2020). 'Religion' is a transcendental belief and practice that passes on from one believer to another based on formally documented doctrine or established cultural practices (Balboni et al., 2007; Hamdan et al., 2020), and 'Spirituality' is an attachment to religious values or a matter of spirit, meaning it is a state of connecting oneself to God, nature, one another, and the deepest parts of ourselves (Balboni et al., 2007; Hamdan et al., 2020).

Religion and/or Spirituality is an integral element of human beings and has been acknowledged as a critical factor in the health and well-being of patients; has a fundamental role in the care of patients with cancer (Jim et al., 2015; Koenig, 2002; Martins & Caldeira, 2018; Puchalski et al., 2019).

LITERATURE REVIEW

Among different support mechanisms, 'religious and spiritual support' is vital for cancer patients and



survivors (Weeratunga et al., 2019). However, the advantages and disadvantages of religious and spiritual support were reported in previous studies. Peteet and Balboni (2013) revealed that advanced/terminally ill cancer patients who received high levels of spiritual support from religious communities were obtained less hospice care. Although spiritual support was associated with better QoL of advanced cancer patients, less spiritual support was reported due to not addressing the spiritual needs of some patients; they were minimally supported by religious communities or the medical system (Balboni, 2007). Additionally, revealed that many cancer patients were unable to participate in religious communities after becoming ill and little support was obtained from their private religious activities which offered some spiritual needs (Balboni, 2007).

There was less evidence that cancer patients were received the religious/spiritual support during their hospitalization (Balboni, 2007; Freire et al., 2017; Peteet & Balboni, 2013), and are still incipient. Some participants of that study stated that during hospitalization, they did not obtain the assistance of a professional responsible for this type of religious/spiritual support from the organization (Freire et al., 2017). Further, patients who were interviewed reported that the received support helped to a constructive way of thinking. Most advanced cancer patients had spiritual needs while hospitalized and expected spiritual care from their healthcare team, religious community, and/or hospital chaplain; also, a high amount of the patients was requested such types of spiritual support from them (Freire et al., 2017). Consequently, it is essential for the treatment team to identify these needs and use them to provide proper spiritual care; these findings may also be effective in changing hospital policies and facilitating greater support for needy patients (Akaberian et al., 2021).

As physical health declines, spiritual health may progressively play a pivotal role in determining patient well-being as in the literature mentioned above. All variables mentioned earlier relate to concepts of religion and spirituality. Among them, religious and spiritual support would be more important than the other aspects that could be provided for cancer patients incorporating this

support mechanism. Then patients would be able to obtain proper and adequate religious and spiritual support in all aspects.

Several tools/measurement scales have been developed to measure different aspects of 'religion and spirituality' such as religiosity, spiritual well-being, and related coping methods. The McGill Quality of Life Questionnaire (MQOL) (Cohen et al., 1995), The Functional Assessment of Chronic Illness Therapy- Spiritual Well-Being (FACIT-SpWB) (Fitchett et al., 1996), and the Brief COPE (Pargament et al., 1998) are some of the scales. In addition, Balboni and colleagues (Balboni et al., 2007) developed a questionnaire to be used in clinical settings to assess the religiousness, spiritual support, and treatment preferences of patients with advanced stages of cancer. They had observed that religious practices as one of the main methods of coping used by cancer patients (Balboni et al., 2010). There is eleven questions in this questionnaire that assesses the importance of religiosity and spirituality in improving the health of cancer patients.

A study conducted in the largest government cancer hospital in Sri Lanka revealed that spiritual and psychological support services have not been used adequately by cancer patients who come from low-income brackets (Hapuarachchi et al., 2021) compared to those patients who come from higher income brackets. Another study conducted on disabled veterans in Sri Lanka revealed that Buddhist religious activities, cultural activities, and support received from family and friends tend to reduce symptoms of depression and post-traumatic stress disorder (PTSD) (Zoysa & Wickrama, 2011). A study on spinal cord injury patients in Sri Lanka has identified the need for culturally sensitive, practical rehabilitative programmes focus on patients' psychological well-being for a speedy recovery. They further suggested that spiritual and religious practices be incorporated into rehabilitation and therapeutic interventions because religious participation is essential in improving the health and well-being of the patients (Arya et al., 2016). In Sri Lanka, a validated tool is not available to measure religious and spiritual support received or perceived by patients with chronic illnesses such as cancer. However, various religious and spiritual activities are being applied in an ad-hoc manner in cancer care



services in the country (Weeratunga et al., 2019). Thus, there is a necessity to develop and validate a tool to measure religious and spiritual support perceived by cancer patients in Sri Lanka.

STUDY PURPOSE

The purpose of this psychometric study was to develop and evaluate the reliability and validity of a Religious and Spiritual Support Scale (RSSS) for patients with cancer.

METHODS

The RSSS was developed based on the questionnaire developed by Balboni et al. (2007) for measuring religious and spiritual support received by advanced cancer patients which was less comprehensive (Table 1). Cross-cultural adaptation of the questionnaire was made using the guidelines proposed by Beaton and colleagues (Beaton et al., 2000) and World Health Organization (WHO) guidelines (WHO, 2016) in the initial stage of the development of RSSS.

Forward translation of the original questions into the local language, Sinhalese, was done by two experts who are fluent in both English and Sinhalese languages. A discussion was conducted among these two experts and three cancer patients to refine translated questions. Two items that were culturally unsuitable were removed. Then, the Six-point Likert scale (6 (strongly agree) to 1 (strongly disagree)) was used for the first six questions and the final three questions were coded as 6 for yes and 0 for 'no'. Thus, the range of the overall RSSS score was 6-54.

Back translation was done by two bilingual translators. These two English-translated versions were then reviewed by three independent health professionals, fluent in both English and Sinhalese languages (Beaton et al., 2000; Koenig & Al Zaben, 2021; WHO, 2016). Cognitive interviews were done using ten cancer patients to evaluate the understandability and ambiguity of the wording of the items and the cultural appropriateness of the questions. Three participants raised minor issues related to the comprehensibility of the two questions. Slight modifications were done based on their comments on those questions. All the participants agreed that the content in the RSSS was adequate to

measure religious and spiritual support received or perceived by cancer patients. All participants were satisfied with the number of questions the tool has and its simplicity for the target group. Three health experts evaluated the final scale.

Setting and Participants

A total of forty patients with cancer at the Radiotherapy unit, Oncology ward, Teaching Hospital, Karapitiya (THK) in Southern Sri Lanka were enrolled for this evaluation. Cancer patients who satisfy the following conditions were selected: having confirmed primary diagnoses as any type of cancer; planning for radiotherapy; being able to understand the Sinhala language and being able to provide informed consent with sufficient physical and mental stability. Subjects with any surgical problems other than cancer-related and in a critical state/end-stage of medical condition were not enrolled.

Clear information was provided to the participants using hard copies of the objectives and procedure of the research, and voluntary participation was ensured (e.g.- information sheet, voluntary consent form, and questionnaire). This simple interviewer-administered tool was able to complete within 10-12 minutes. All possible arrangements were made to ensure the quality of data acquired while collecting data. Only the principal investigator (PI) was involved in the data gathering. All subjects were educated on the purpose of the study, the nature of the study, and the fact that the data collected would be confidential and accessible only to the PI. Data entry and re-checking were done by the PI. Written informed consent was obtained from each patient before the commencement of the study. The study was performed following the principles of the Declaration of Helsinki and was done in accordance with Strobe cross-sectional guidelines.

Reliability Assessment

Reliability was assessed using Cronbach's alpha and intra-class correlation coefficient (ICC) respectively. The test-retest reliability of the questionnaire was assessed by administering the same tool to the forty cancer patients again after the two-week interval in the same unit when they come



for the treatment after 14 days of their first treatment.

Validity Assessment

The final version of RSSS (9 items) and previously validated two scales, the Centre for Epidemiological Studies–Depression scale (CES-D) (Radloff, 1977) and the World Health Organization–Quality of Life–Brief scale (WHOQOL-BREF) (WHO, 1988) were administered in this activity. An interviewer-administered questionnaire and the diagnosis cards of the participants were used to acquire socio-demographic data and clinical characteristics.

Centre for Epidemiological Studies–Depression scale (CES-D)

The 20-item-CES-D self-reported scale originally aimed to determine depressive symptomatology in the general population globally (Radolf, 1977) during the ‘past week’. Each question has 04 answers from 0 (rarely or none of the time) to 3 (most or all the time). The total score of the CES-D scale ranges from 0 (no depressive symptoms) to 60 (high level of depressive symptoms), where higher scores show the presence of more depressive symptomatology. The standard cut-off point that was used to detect those with elevated depressive symptoms was 16 or above on the total scores and validated in Sri Lanka (De Silva et al., 2014; Ferdinando, 2006).

World Health Organization–Quality of Life–Brief scale (WHOQOL-BREF)

The 26-item WHOQOL-BREF scale consists of 04 domains such as physical, psychological, social, and environmental, and was initially developed to assess the QoL (WHO, 1988). The higher scores signified a higher level of QoL. The WHOQOL-BREF scale has been validated in Sri Lanka (Kumarapeli et al., 2006).

Data Analysis

Data analysis was done using SPSS 25.0 (IBM statistics, Inc., Chicago). All results were considered statistically significant at $p < 0.05$. Descriptive statistics, including means (SD) and frequency (%), were used to describe the sample.

The reliability of the RSSS was measured using Cronbach's alpha. Bartlett's test of sphericity and Kaiser-Meyer–Olkin (KMO) measure were done to assess sampling adequacy. Validity was examined using content, construct, convergent, and divergent validity techniques. The content validity was established by the panel of experts, not involved in the development of the study instrument. Convergent validity was assessed by item-subscale correlation coefficients. Correlation coefficient values between 0.10 and 0.29 were considered low, between 0.30 and 0.49 were considered moderate, and between 0.50 and 1.00 were considered high and a very high correlation (Field, 2013). The WHOQOL-BREF and CES-D scales were used to examine convergent and divergent validity properties. The participants who have higher religious and spiritual support should have a higher QoL score and a lower depressive symptomatology score.

Construct validity of the RSSS was assessed using exploratory factor analysis (EFA). EFA was investigated with Varimax rotation and KMO. Bartlett's Test of Sphericity should achieve statistical significance ($p < 0.001$), and commonalities coefficients should be high (> 0.6) (Field, 2013). The number of extracted components were revealed by the Scree plot further, the percentage of variance described by each component, number of Eigenvalues over one (Kaiser-Guttman rule). If an item loading was ≥ 0.40 and in the cross-loading items, the factor, which had a greater loading value, was taken as the corresponding factor (Bland, 2000).

Ethics

Ethical approval was obtained from the Ethics Review Committee, Faculty of Medicine, University of Ruhuna, Galle, Sri Lanka. Permission to recruit patients was obtained from the Director of Teaching Hospital Karapitiya, Galle, Sri Lanka, and relevant Consultants, and Sisters/In-Charges in the Oncology ward of this hospital. For the scale validation process, permission was obtained from the original authors of the questionnaire used for this study. The study was performed according to the relevant guidelines and regulations (e.g., Declaration of Helsinki) and all procedures involving human subjects were permitted by the ethics committee. Further, written informed consent was obtained from all participants.



RESULTS

The age range of the participants was 35-88 years with a mean age of 61.03 years (SD = ± 11.70). The socio-demographic profile of the participants is given in [Table 2](#). The majority were male (52.5%), married (87.5%), and employed (75.0%). All participants were Sinhala and Buddhist (100%). The mean (\pm SD) score for overall RSSS was 28.40(± 8.53). The mean (\pm SD) RSSS scores of individual items are shown ([Table 3](#)). Further, the mean (\pm SD) of the RSSS score of derived subscales was evaluated.

Reliability of RSSS

The RSSS showed high internal consistency with Cronbach's alpha value of 0.874 (for all 9 items) indicating an excellent reliability property. The item-total correlation ranged from 0.425 - 0.744 ($p < 0.001$).

Test-retest reliability measured with ICC between 1st and subsequent administration of S-RSSS score was 0.981 (95% CI= 0.96-0.99, $p < 0.001$), an excellent test-retest reliability. The correlation coefficient ([Table 4](#)) and item-total correlation ([Table 5](#)) of the scale are given.

Convergent and Divergent Validity

The overall RSSS score was positively and significantly associated with the overall WHOQOL-BREF score ($r = 0.421$; $p < 0.001$), with its subscales scores; physical ($r = 0.340$; $p < 0.05$), social ($r = 0.373$; $p < 0.05$), and environmental domains ($r = 0.429$; $p < 0.001$), and negatively and significantly associated with CES-D scale score ($r = -0.338$; $p < 0.05$) indicating both convergent and divergent properties of the RSSS.

Construct Validity

As in the correlation matrix, several coefficients had stated more than 0.3 and Bartlett's Test of Sphericity got statistical significance supporting the factorability of the correlation matrix ($p < 0.001$). EFA discovered two factors with Eigenvalue exceeding 1 explaining the cumulative variance of 74.47% (factor 1; 52.80% and factor 2; 21.66%) ([Table 6](#)).

Items 1, 2, 3, 4, and 5 were loaded into factor 1 and named as 'Religious and Spiritual Practice'. Items 6 - 9 were loaded into factor 2 and named as 'Religious and Spiritual Support' ([Table 8](#)). Extracted two factors had scored strong Cronbach's alpha (Mean \pm SD of factor 1= 24.45 \pm 5.02; Cronbach's alpha 0.912, Mean \pm SD of factor 2=3.95 \pm 5.11; Cronbach's alpha 0.854). Of the two factors, the highest score was 24.45 \pm 5.02 for factor -1 'Religion and Spiritual Practice'. Factor 1 reported a positive correlation with factor 2 ($r = 0.413$; $p = 0.008$).

DISCUSSION

Based on a questionnaire developed by Balboni and colleagues (2007), this measurement tool termed the Religious and Spiritual Support Scale (RSSS) was developed and validated. The RSSS was found to be comprehensive, but a clear and simple scale that can be used to measure religious and spiritual support perceived by cancer patients in the country.

The RSSS has an excellent reliability property as a tool to measure religious and spiritual support perceived by cancer patients in Sri Lanka (Burns & Grove, 1995; Nunnally, 1978). A good test-retest reliability coefficient of the tool was observed. Therefore, the RSSS seems to be a reliable tool to measure religious and spiritual support perceived by cancer patients in Sri Lanka.

The RSSS showed excellent validity properties. Thus, convergent and discriminant validity characteristics of the tool were evident. In this study, two factors were extracted using the EFA; those factors were termed religious and spiritual practices and religious and spiritual support. Similar studies related to RSSS were not found in the literature globally; therefore, other validation studies related to religion and spirituality were discussed.

Pastrana et al. (2021) validated the Spanish version of the Spiritual Care Competence Questionnaire (SCCQ) among 791 healthcare professionals from Spanish-speaking countries such as Argentina, Colombia, Mexico, and Spain. EFA revealed six factors with good internal consistency and Cronbach's alpha was ranging from 0.71 to 0.90. In the validation of the Danish 20-Item Spiritual Needs Questionnaire, it showed good internal consistency with Cronbach's



alphas between 0.73 and 0.93 for four dimensions and an overall alpha of 0.91 for the 20-item scale which was lower in the study of RSSS.

Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being (FACIT-SpWB) was developed by Fitchett et al. in 1996. Different models (1, 2, and 3 models) have been found in the literature but recently Alvarenga et al. (2022) have found a 1-factor model for FACIT-SpWB, and Cronbach's alpha was 0.89 in FACIT-SpWB like RSSS. Like the Cronbach's alpha of the current study, Alvarenga et al. (2022) obtained a high Cronbach's alpha/reliability (0.89). Further, Braghetta et al. (2021) developed a scale to assess spirituality (Attitudes Related to Spirituality Scale/ARES). ARES produced appropriate psychometric properties showing excellent internal consistency (alpha = 0.98) somewhat higher than the current study. Also, ARES was strongly associated with other validated R/S instruments (i.e., Duke Religion Index and Brief Multidimensional Measure of Religiousness/Spirituality). Whereas RSSS was positively associated with WHOQOL-BREF and negatively associated with the CES-D scale.

When searching about findings of different investigators, higher/good psychometric properties were found among those scales as the findings of our study. Therefore, RSSS can be used in both community and clinical settings for rapid assessment of religious and spiritual support perceived by cancer patients.

LIMITATIONS

This study adhered to best practices available in the literature when performing a cross-cultural adaptation procedure and reliability, and validity testing. The sample size was relatively small; it would be better if we could have had around 90 participants. Due to the current health conditions of the target population, we were able to recruit only 40 cancer patients. Another limitation is that we have gathered data from a single tertiary healthcare setting in Sri Lanka. Discussion also was limited due to the lack of previous literature on such type of questions. Research efforts should be extended to testing the RSSS in cancer patients in different stages of cancer. Interviewer-administered questions might be impacted by the true expressions of the patients.

CONCLUSION

The RSSS proved to be a valid and reliable tool to assess the religious and spiritual support perceived by patients with cancer in Sri Lanka. Thus, RSSS could be used in clinical settings to determine the religious and spiritual support perceived by cancer patients in Sri Lanka. Future research is needed to examine if the tool is valid for use in severe chronic diseases and further studies should be done with large sample sizes.

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Table 1. Questions on Religiousness and Spiritual Support

Items
1. How important is a religion to you?
2. How often did you attend church or other religious services before your diagnosis?
3. How often do you attend church or other religious services now?
4. How often do you spend time in private religious activities, such as prayer, meditation, or Bible study now?
5. How often did you spend time in private religious activities, such as prayer, meditation, or Bible study before your diagnosis?
6. To what extent are your religious/spiritual needs being supported by your religious community (e.g., clergy, members of your congregation)?
7. To what extent are your religious/spiritual needs being supported by the medical system (e.g., doctors, nurses, chaplains)?
8. Have you received pastoral care services within the clinic or hospital?
9. Have you been visited by a member of the clergy from outside of the hospital system?
10. Have you visited a member of the clergy in the last month?
11. If you did receive visits from the clergy, how much comfort would you say this provided for you?



Table 2. Socio-demographic and Clinical Characteristics of Study Participants (n = 40)

Characteristics	Subcategory	n (%)
Age	< 60 Years	20(50.0)
	> 60 Years	20(50.0)
Gender	Male	21(52.5)
	Female	19(47.5)
Marital status	Married	35(87.5)
	Unmarried/ single	5(12.5)
Educational status	No schooling	5(12.5)
	Primary education (Grade 1-5)	9(22.5)
	Secondary education (Grade 6-12)	26(65.0)
Employment status	Employed	30(75.0)
	Unemployed	10(25.0)
Cancer groups/locations	Head & Neck cancer	2(5.0)
	GI organs	12(30.0)
	Lungs	1(2.5)
	Bones	3(7.5)
	Breast	3(7.5)
	Prostate	1(2.5)
	Lymph node	3(7.5)
	Site unknown	15(37.5)
Time since diagnosis	< 12 months	8(20.0)
	> 12 months	32(80.0)

n (%), frequency and percentage of patients



Table 3. Item Descriptive Statistics of the RSSS

9 item RSSS	Mean±SD
1. Religion is very important to me.	5.15±1.02
2. I spend more time on religious activities before the diagnosis.	5.20±0.82
3. I spend more time on religious activities after the diagnosis	4.95±1.15
4. Adequate religious support was given by a monk/priest/religious personal.	4.65±1.43
5. I obtain great comfort than other days due to religious support.	4.50±0.76
6. In the hospital, healthcare professionals gave adequate support to engage in religious activities.	2.60±1.31
7. Did you receive support from religious personals in the hospital?	0.45±1.60
8. Did religious personals come to you at home/outside the hospital?	0.45±1.60
9. Did religious personals come to you last month?	0.45±1.60

RSSS, Religious and Spiritual Support Scale; SD, Standard Deviation



Table 4. Correlation Coefficients of RSSS

Correlation coefficients									
9 item RSSS	1	2	3	4	5	6	7	8	9
1. Religion is very important to me.	1.00	.601	.873	.706	.680	.368	.239	.239	.239
2. I spend more time on religious activities before the diagnosis.	.601	1.00	.632	.518	.522	.312	.280	.280	.280
3. I spend more time on religious activities after the diagnosis	.873	.632	1.00	.734	.683	.409	.262	.262	.262
4. Adequate religious support was given by a monk/priest/religious personal.	.706	.518	.734	1.00	.914	.407	.297	.297	.297
5. I obtain great comfort than other days due to religious support.	.680	.522	.683	.914	1.00	.422	.302	.302	.302
6. In the hospital, healthcare professionals gave adequate support to engage in religious activities.	.368	.312	.409	.407	.422	1.00	.745	.599	.745
7. Did you receive support from religious personals in the hospital?	.239	.280	.262	.297	.302	.745	1.00	.279	1.00
8. Did religious personals come to you at home/outside the hospital?	.239	.280	.262	.297	.302	.599	.279	1.00	.279
9. Did religious personals come to you last month?	.239	.280	.262	.297	.302	.745	1.00	.279	1.00



Table 5. Item-Total Correlation (9 items of RSSS)

9 item RSSS	Overall RSSS
1. Religion is very important to me.	.71
2. I spend more time on religious activities before the diagnosis.	.63
3. I spend more time on religious activities after the diagnosis	.74
4. Adequate religious support was given by a monk/priest/religious personal.	.77
5. I obtain great comfort than other days due to religious support.	.77
6. In the hospital, healthcare professionals gave adequate support to engage in religious activities.	.81
7. Did you receive support from religious personals in the hospital?	.73
8. Did religious personals come to you at home/outside the hospital?	.57
9. Did religious personals come to you last month?	.73



Table 6. Two-factor Structure of RSSS after Varimax Rotation

9 item RSSS	Component extracted from factor analysis	
	1 factor-RSP	2 factor-RSS
1	.888	
2	.707	
3	.895	
4	.874	
5	.853	
6		.860
7		.948
8		.484
9		.948
Variance explained	52.80%	74.47%
Eigenvalues	4.75	1.95

Extraction and Rotation Method; EFA and Varimax with Kaiser Normalization