Feature Article

Psychometric Evaluation of the Adapted Prayer Scale in Muslim Cancer Patients

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The diagnosis of cancer can initiate considerable distress for patients. The threat to physical health and life can challenge a person's previously held beliefs concerning life and well-being. Religious beliefs and practices have been demonstrated to have positive effects on illness prevention, recovery from surgery, mental illness, and coping with physical illness. The aim of this study was to determine psychometric characteristics of the adapted prayer scale in Turkish patients with cancer. The sample of this study consisted of patients with any cancer in the outpatient and inpatient medical oncology clinics of this hospital. Factor analysis revealed 4 factors (meditative prayer, prayer activities, prayer experiences, and attitude toward prayer) with an eigenvalue of higher than 1.0. The 4 factors together explained 53.5% of the variance. Internal consistency of the scale had an overall coefficient Cronbach's α of .82. The subscales of the instrument had adequate reliabilities with Cronbach's α's ranging from .67 to .88. The scale has potential applications for use both in research and as a screening tool in clinical settings. This scale should be further evaluated with a larger sample, in different regions in Turkey, and with diverse populations of the world.

KEY WORDS

adapt, cancer, prayer scale, psychometric evaluation, reliability/validity

The past decade has seen a growing body of research examining the relation between religion and health. Studies have examined this relationship in community samples,[1-3] among medical and surgical patients,[4,5] and among cancer patients.[6-9] Religious beliefs and practices have been demonstrated to have positive effects on illness prevention, recovery from surgery, mental illness, and coping with physical illness.[10]

The most commonly used religious practice is prayer.[11] Prayer is one of the religious behaviors related to mental

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health and well-being,[12] which is used more than other rituals.[13] The concept of prayer is defined as communication with God as an experience and expression of the human spirit. "Prayer is love for God, a means to fly toward a secret sky, and to cause a hundred veils to fall" in Islam. The human soul's real and ultimate comfort (*Râbat*) for the Muslim population lies in accepting God, loving Him and expressing this love to Him in worship and prayer, and obeying Him. At the time of the creation of the human being, God named the human being Rûh, the soul. He also called him Nafs, because he was able to attain a union with Him through prayer, worship, and obedience in Islam.[13]

In the Islamic world, religion has to contribute to the health and well-being of its believers. In Islam, religion and medical care share similar basic premises concerning the nature of human beings and their responsibilities. Both Islamic religion and medicine consider human beings to be imperfect creations that need elevation onto the ideal status as Islam sees it. Consequently, the "imperfect human being" needs to obey the recommendations conveyed to him by both his religion and the medical professionals.[14]

People's attitudes to cancer and its treatment are influenced by the patient's and his family's faith, beliefs, societal traditions, and cultural taboos and stigmatism. Islamic beliefs and practices constantly remind humans to be prepared for death, as death cannot be delayed when the time has come. For Muslims, the ultimate hope for eternal life rests with the merciful God. When the family realizes that the patient is reaching his/her final hours, family members should pray that death will occur with as little suffering as possible.[15]

Harandy et al[16] found that many participants believed that their disease is a divine test, and it is God's will that rules over the life and death of human beings. Not only did the participants believe that getting cancer was the will God, but they also regarded their diagnosis as God's will. In addition, they believed that they would not necessarily die of cancer, because any particular person lives as long as God decides.[16] Moreover, researchers have investigated prayer among people who are undergoing stressful situations as well as the association of prayer with well-being. Several studies have investigated the prayer activities and experiences of patients with cancer. One study reported that survivors of breast cancer emphasized the positive benefits of the spiritual resources of prayer and a relationship with God.[14] In addition, long-term cancer survivors reported

prayer and putting trust in God as important coping strategies during their cancer experiences.[15]

Some people with cancer have found that their spirituality, particularly prayer, provides a resource to withstand their own physical and psychological crises brought on by the diagnosis and subsequent treatment of cancer.[16] Cancer patients described both praying personally and asking others to pray for them as spiritual coping strategies. They use prayer to cope with distressing symptoms, anxiety-provoking medical procedures, and the illness experience in general.[17]

The researchers reported that the frequency of prayer was positively related to existential well-being and religious satisfaction. Experiences during prayer were also positively correlated to religious satisfaction and existential well-being.[18-24] An instrument assessing prayer is helpful to understand the importance of prayer activities and experiences in patients with cancer. The prayer scale is a sensitive instrument for assessing prayer activities, prayer experiences, and attitudes toward prayer in people with cancer. A review of the literature revealed Poloma and Pendleton's[25] Prayer Scale (PS) was the most acceptable tool. Poloma and Pendleton[25] developed their scale to assess types of prayer activities, prayer experiences, and attitudes toward prayer. The scale was adapted by Poloma and Pendleton[25] to use for people with cancer because the original instrument was not sensitive enough to reflect cancer illness. The adapted and revised PS has 36 items, which include 3 general items about prayer, 1 item on perceived relationship with God, 17 items on prayer activities, 9 items on prayer experiences, and 6 items on attitudes toward prayer. The 2 subscales had 1 to 30 items at a 5-point Likert scale: 1 = never, 2 = once/twice, 3 = occasionally, 4 = regularly, 5 = continuously. Attitude-toward-prayer subscale of the scale had 31 to 36 items using a 5-point Likert scale: 1 = strongly disagree, 2 = somewhat disagree, 3 = don't know, 4 = somewhat agree, 5 = strongly agree. Total scores were computed for each subscale by adding the item scores. High scores reflected a high degree of prayer activity, prayer experience, or positive attitude toward prayer. Subscale scores could range from 17 to 119 for prayer activities, 9 to 63 for prayer experiences, and 6 to 42 for attitudes toward prayer.[26] Prayer is a valuable internal resource, which can lessen the effect of cancer.[26] The adapted prayer scale can be useful for cancer patients and health professionals because cancer prevalence is high in Turkey.

This study aimed to determine psychometric characteristics of the adapted prayer scale in Turkish patients with cancer.

METHODS

Design

This study used psychometric methods to test the adapted tool. To ensure the quality of the adapted scale, international norms were performed while carrying out the adaptation. The phases carried out were (i) translation, (ii) content validity, and (iii) pretest and psychometric testing (factor analysis, a reliability coefficient, and inter-item correlations).

Participants

The participants of this study are patients with a diagnosis of any cancer at a university hospital medical oncology department in Turkey. The patients have Islamic religion. The sample size consisted of 124 patients with cancer in the outpatient and inpatient medical oncology clinics of this hospital. Guadagnoli and Velicer[27] argue that when a factor has at least 4 loadings greater than 0.6, the analysis is reliable irrespective of sample size, although literature suggests that it is necessary to include 5 to 10 subjects for each scale item in studies of validity and reliability.[28,29] In the present study, many loadings were 0.60 or higher in the all factors. Thus, the sample size in the present study was adequate to perform the factor analysis, although one may argue that a greater sample size is preferable. For this reason, the sample size of the research is adequate.

The patients were selected through convenience sampling. The eligibility criteria were as follows: (1) aged 18 years or older, (2) no history of psychiatric illness that was determined from records of the patients, and (3) able to read and understand Turkish language.

Translation Procedures

For the instrument used in the present study, back translation was used to translate the Turkish version back into English. The translation was carried out by 2 Turkish people, who worked independently on the translation. They were both teachers of English. We compared the 2 translated versions and discussed them to reach a consensus regarding the initial translation. The initial translation into Turkish was back translated into English by 2 different, independent, bilingual translators, whose native language was Turkish. Both were attending the University of York in England while pursuing doctoral studies there, and neither had participated in the previous phase of the study. The translation phase had the purpose of checking for discrepancies between content and meaning of the original version and the translated instrument. We analyzed and compared all versions to achieve the final version.

Content Validity

To test item clarity and content validity, the translated version was submitted to panel members consisting of 3 experts who were cancer nursing specialists and were working in the area of knowledge of the instrument, who had published works on instrument development. The experts were informed concerning the measures and concepts involved by the authors. Each of the experts was

asked to evaluate the final translated version of the adapted prayer scale compared with the original instrument. In addition, experts were asked to evaluate from 1 to 30 items at the scale by using a 5-point Likert scale: 1 = never, 2 = once/twice, 3 = occasionally, 4 = regularly, 5 = continuously. In addition, experts were asked to evaluate from 31 to 36 items on an attitude-toward-prayer subscale of the scale by using a 5-point Likert scale: 1 = strongly disagree, 2 = somewhat disagree, 3 = don't know, 4 = somewhat agree, 5 = strongly agree. Any changing was not done for the rankings of the scale items. The items of the scale were based on these evaluations. The experts were in agreement for these evaluations. Conceptual adjustments did not require after translation and review.

Psychometric Testing

Internal Consistency

Internal consistency refers to the overall degree to which the items that make up a scale are intercorrelated. Cronbach's α was calculated to determine internal consistency. Clark and Watson[30] indicated that internal consistency may be a necessary condition for homogeneity or unidimensionality of a scale, and Cronbach's α should be .70 and greater. The item-total correlations and the mean inter-item correlations were included in the analysis. Clark and Watson[30] recommended using the inter-item correlation as a criterion for internal consistency. This should be .15. One can only be ensured of unidimensionality if all individual inter-item correlations are clustered closely around the mean inter-item correlation.

Construct Validity

The data were analyzed using factor analysis (principal component analysis and varimax rotation). To attain the best-fitting structure and the correct number of factors, the following criteria were used: eigenvalues 1.0, factor loadings 0.40, and the so-called elbow criterion regarding the eigenvalues.[31] In addition, literature stated that factor loadings greater than 0.30 are considered to meet the minimal level; loadings of 0.40 are considered more important.[32] Before conducting the factor analysis of the adapted prayer scale, Kaiser-Meyer-Olkin and Bartlett's test (KMO) was calculated to evaluate whether the sample was large enough to perform a satisfactory factor analysis with P = .05 level.

Procedure and Data Collection

Data were collected using demographic characteristics questionnaire and the adapted prayer scale in 2012. The researchers visited the oncology clinic on 5 working days every week and conducted interviews with the patients. The questionnaire and the scale were explained to the participants, who then read it and marked their answers on the sheets. Patients completed the questionnaire under the supervision of the researchers in a separate quiet room of the oncology clinic to ensure they correctly understood items in the questionnaire. All of the participants found the questionnaire understandable and easy to complete. The questionnaires took approximately 15 minutes to complete.

Data Analysis

Pearson product-moment correlation was used to determine correlation scores of items and the total scale. Factor analysis was used to establish the construct of the scale and factor loadings of items of the scale. A principal component factor analysis was used to explore the scale's construct validity and factor loadings of items of the scale. This analysis enables specification of the method of factor extraction, and it can either retain all factors whose eigenvalues exceed a specified value or retain a specific number of factors. Cronbach's α was calculated to find internal consistency reliability.

Ethical Considerations

Permission to undertake this study was gained from the ethical committee at Atatürk University, and informed consent was obtained from each participant. The patients were informed about the purpose of the research. The participants were assured of their right to refuse to participate or to withdraw from the study at any stage. Anonymity and confidentiality of participants were guaranteed.

RESULTS

The demographic characteristics of the participants were given in Table 1. The majority of the sample was women, 82.3% were married, and 34.7% had graduated from primary school. Cancer site of the majority was the digestive system.

Content Validity

The translated scale consisted of 36 items. The experts were in agreement regarding the phrasing of the items for the translated scale. For each item, the experts could suggest possible improvements in phrasing. Subsequent revisions of the Turkish version were made and discussed again by the experts until agreement on content was reached. Thirty-six items in the scale were adequate for assessing meditative prayer, prayer activity, prayer experience, and attitude toward prayer in patients with cancer. The majority of the participants' response options was "occasionally" and "don't know" (Table 2).

Internal Consistency

The instruments completed by 124 the patients were used for the analyses. The adapted prayer scale had an overall coefficient α of .82. The coefficient α of the

subscales ranged from .67 to .88 (Table 3). Also, the item-total correlations ranged from 0.18 to 0.60 (Table 2) but indicated a nonunidimensional scale.

TABLE 1	Demographic Characteristics of the Participants (n = 124)	
Demographic Characteristics	**n**	**%**
Gender		
Women	65	52.4
Men	59	47.6
Education level		
Less than primary school (literate)	15	12.1
Primary school	43	34.7
High school	59	27.6
University	7	5.6
Marital status		
Married	102	82.3
Single	22	17.7
Occupational status		
Housewife	51	41.1
Commerce[a]	34	27.4
Worker[b]	17	13.7
Civil servant[c]	14	11.3
Retirement	8	6.5
Cancer site		
Digestive system	36	29.0
Breathing system	17	13.7
Breast	24	19.4
Ovarian	16	12.9
Lymphoma	13	10.5
Other	18	14.5
	Mean (SD)	
Age, y	45.91 (12.69)	
Monthly income of family, US $	1087 (821)	

[a]The buying and selling of goods, especially on a large scale, as between cities or nations.
[b]Laborer or employee.
[c]A civil-service employee.

TABLE 2	According to Response Options of the Participants' Disruption		
Response Options (From 1 to 30 Items)	**Percent**	**Response Options (From 31 to 36 Items)**	**Percent**
Never	14.3	Strongly disagree	20.3
Once/twice	13.4	Somewhat disagree	17.3
Occasionally	28.9	Don't know	27.2
Regularly	22.9	Somewhat agree	20.0
Continuously	20.5	Strongly agree	15.2

Construct Validity

The KMO was 0.80, indicating that the sample was large enough to perform a satisfactory factor analysis and that the sample size was sufficient for psychometric testing of a 36-item scale. The first action of the factor analysis was a principal component analysis revealing 4 factors with an eigenvalue of higher than 1.0 (Table 3). Any items in the scale load on 1 factor. The 4 factors together explained 53.5% of the variance. The first factor was "meditative prayer," with an α of .75. This factor explained 18.4% of the total variance. The second factor was "prayer activities," with an α of .88; item factor loadings related primarily with prayer activities. This factor explained 14.0% of the total variance. Item factor loading of the third factor referred to "prayer experiences," with an α of .76. The prayer experiences subscale explained 12.0 of the total variance. The fourth factor (α = .67) exclusively referred to items that deal with "attitude toward prayer." The factor explained 9.1% of the total variance. The factor loadings of the items of the scale ranged from 0.31 to 0.70.

DISCUSSION

The results of this study showed that the psychometric characteristics of the Turkish version of the adapted prayer scale were promising. The Cronbach's α, range of individual interitem correlations, and the homogeneity of the adapted prayer scale seemed to be sufficient.

Content Validity

The results of the study show that the psychometric characteristics of the adapted prayer scale are hopeful. The panel review of its content indicated that there was no need to modify its translation or content. In that case, it is likely said that content validity of the instrument has been satisfactory.

Internal Consistency

Internal consistency of the scale had an overall coefficient α of .82. The subscales of the instrument had adequate reliabilities with α ranging from .67 to .88. Meraviglia[26] determined

TABLE 3 Factor Loadings, Cronbach's α, Percent of Variance, and Item-Total Correlations of Items of the Scale (n =124)

Items of the Prayer Scale	Cronbach's α	Item Factor Loading	% of Variance	Item-Total Correlations	Item Mean (SD)
Meditative prayer	.75		18.4		
1. On average, how many times do you pray each day?		0.731		0.600	3.8 (1.2)
2. How long do you usually pray each time you pray?		0.671		0.213	46.5 (139.7)
3. To whom do you direct your prayers?		0.641		0.201	1.0 (1)
4. Where on this scale would you describe your relationship with God?		0.657		0.518	6.1 (1.4)
Prayer activities	.88		14.00		
5. Pray with other people		0.615		0.592	2.1 (1.2)
6. Pray with your family		0.573		0.605	3.2 (1.2)
7. Pray with your nurse		0.610		0.298	2.2 (1.2)
8. Pray with your clergy, chaplain, rabbi		0.388		0.414	2.6 (1.0)
9. Pray about physical symptoms from cancer		0.621		0.570	4.1 (0.9)
10. Pray about your feelings related to your cancer		0.352		0.461	3.5 (0.9)
11. Read from a book of prayers		0.399		0.367	3.8 (1.1)
12. Recite prayers you have memorized		0.350		0.535	3.6 (0.9)
13. Ask God for material things you may need		0.353		0.361	3.8 (1.0)
14. Talk with God in your own words		0.613		0.563	4.2 (0.8)
15. Ask God to forgive your sins		0.709		0.593	4.2 (0.9)
16. Ask God to provide guidance in making decisions		0.682		0.580	4.1 (0.9)
17. Thank God for his blessings		0.683		0.568	3.9 (0.8)
18. Spend time quietly thinking about God		0.670		0.546	3.9 (0.8)
19. Spend time just ''feeling'' the presence of God		0.444		0.519	3.6 (0.7)
20. Spend time worshipping and adoring God		0.530		0.465	2.7 (1.2)
21. Try to listen to God speak to you		0.396		0.311	3.1 (0.7)

(continues)

TABLE 3 Factor Loadings, Cronbach's α, Percent of Variance, and Item-Total Correlations of Items of the Scale (n =124), Continued

Items of the Prayer Scale	Cronbach's α	Item Factor Loading	% of Variance	Item-Total Correlations	Item Mean (SD)
Prayer experiences	.67		12.00		
22. Had a deep sense of peace or well-being		0.602		0.520	3.7 (0.9)
23. Felt God would heal you of your disease		0.606		0.513	4.0 (0.9)
24. Sensed the strong presence of God		0.397		0.501	2.2 (1.1)
25. Felt God did not hear your prayers		0.365		0.292	2.3 (1.0)
26. Received what you regarded as a definite answer to a specific prayer request		0.527			2.0 (0.9)
27. Been unable to pray (for whatever reason)		0.311		0.463	3.1 (0.9)
28. Received what you believed to be a deeper insight into a spiritual or biblical truth		0.581		0.222	1.9 (1.1)
29. Believed God's presence was far away from you		0.369		0.488	3.4 (1.0)
30. Felt divinely inspired or "led by God" to perform some specific action		0.475		0.287	3.6 (1.0)
Attitude toward prayer	.67		9.1		
31. My prayers have helped me adjust to the diagnosis of cancer		0.477		0.182	1.8 (0.9)
32. Prayer has been of no help to me		0.353		0.224	3.5 (1.0)
33. God, through prayer, has lessened the intensity of my physical symptoms of cancer		0.480		0.189	1.9 (1.0)
34. Praying has not helped me with the treatment I am undergoing		0.469		0.316	3.6 (0.9)
35. When I pray during cancer treatment, I do not feel as anxious		0.569		0.209	4.1 (0.9)
36. I know God is taking care of me now		0.491		0.215	2.4 (1.1)
Total	0.82		53.5		

that reliability coefficient for the prayer-activity subscale was 0.75, for the prayer-experience subscale it was 0.78, and for the attitude-toward-prayer subscale it was 0.72. Breslin and Lewis[33] found that internal consistency of the measure of prayer experience was .91. Meraviglia[34] revealed internal consistency reliability for the adapted prayer scale was acceptable, which was .96 for the total scale and ranged from .77 to .95 for the subscales.

In our study, α coefficient of the other 3 subscales and the total scale were at the satisfactory level except for the attitude-toward-prayer subscale. However, α coefficient of the attitude-toward-prayer subscale (α = .67) was acceptable at a minimal level. It is known that α coefficient is affected by many factors and therefore may be unsatisfactory in some study groups. Also, DeVellis[35] stated that an α of .65 to .70 may be acceptable at a minimal level.

In this study, the item-total correlations ranged from 0.18 to 0.60 but indicated a nonunidimensional scale. Meraviglia[26] and Breslin and Lewis[33] did not report the item-total correlations of the original scale. The literature advises that the acceptable minimum point for individual item-total correlations is 0.15.[36,37] Item-total correlations were acceptable in the current study.[38]

Construct Validity

The KMO was 0.80, indicating that the sample was large enough to perform a factor analysis for psychometric testing of the scale. Literature stated that KMO 0.80 to 89 is very good, and it should be minimum .70.[28] It was very good in the present study.

The factor analysis revealed 4 factors with an eigenvalue of higher than 1.0. The 4 factors together explained 53.5% of the variance. Meraviglia[26] did not report the total variance of the original scale. It is stated that total variance explained by a scale must be minimum 30% for a scale to be acceptable.[39] In this study, total variance explained by the scale was adequate.[36,39]

Factor analysis explained 4 factors; they were meditative prayer, prayer activities, prayer experiences, and attitude toward prayer. In the study, the total scale was found to be similar to the original scale with respect to the whole scale and the subscales. The first factor was "meditative prayer"; its item-factor loadings related components of intimacy and personal relationship and "communicating with God" and "thinking about God." This finding was similar to the original scale.[27] This factor explained 18.4% of the total variance.

The second factor was "prayer activities"; factor loadings of its items associated primarily with prayer activities. This factor explained 14.0% of the total variance. Item-factor loading of the third factor referred to "prayer experiences." The prayer-experiences subscale explained 12.0% of the total variance. The fourth factor exclusively referred to items that deal with "attitude toward prayer." This factor explained 9.1% of the total variance.

In the study, factor analysis yielded factor loadings greater than 0.30, and the factor loadings of the items ranged 0.31 to 0.70. Poloma and Pendleton[25] and Meraviglia[26] did not report the factor loadings of the items of the adapted prayer scale. The acceptable minimum point is 0.30 for factor loading. Literature stated that factor loadings greater than 0.30 are considered to meet the minimal level.[32] So, the items of the scale factor loadings were sufficient.

The scale is appropriate for the Muslim faith community, although it was developed for the Christian faith community. The scale has potential applications for use both in research and as a screening tool in clinical settings.

Limitation

The findings must be interpreted cautiously because of the study limitations. The sample was selected by convenience sampling. Statistical interpretation of the results was difficult because of the small sample. The sample reflects only 1 area of Turkey and therefore cannot be generalized to all patients with cancer in Turkey.

CONCLUSION

The scale is important because it provides standardized data for spiritual care patient with cancer. This study confirmed the reliability and validity of the scale in this sample of Turkish patients with cancer. The Turkish version of the adapted prayer scale has shown statistically acceptable levels of reliability and validity. The application of a methodology accepted by the scientific literature makes available the comparison of the data obtained in different languages. It is recommended that this scale should be further evaluated both in different regions of Turkey and in diverse populations. Once a valid and reliable scale is ready to be used, it can be used to measure outcomes in an intervention study and, as mentioned above, be tested in different cultures.

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