

Effect of a spiritual care program on levels of anxiety in patients with leukemia

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ABSTRACT

Background: Leukemia is the most common and fatal cancer among young adults. Among all malignancies, it has the greatest effects on emotional and mental aspects of the patients. While 25-33% of patients with non-hematological malignancies suffer from anxiety disorder, some studies have reported the rate among patients with leukemia as high as 50%. Anxiety can negatively affect other important characteristics and parameters in patients with cancer. Furthermore, cancer increases the patients' spiritual needs. Therefore, spirituality has a significant role in adapting to leukemia and coping with its consequent mental disorders such as anxiety. This study was hence performed to determine the effects of a spiritual care program on anxiety of patients with leukemia.

Materials and Methods: This randomized clinical trial was conducted in Sayerd-Al-Shohada Hospital affiliated to Isfahan University of Medical Sciences (Isfahan, Iran) in 2012. Sixty four adult patients with leukemia were randomly divided into the experiment and control groups. The spiritual care program including supportive presence and support for religious rituals was implemented for 3 days. Anxiety subscale from the 42-item depression, anxiety and stress scale was completed before and after the intervention for both groups. Data was analyzed using descriptive and inferential statistical methods (Chi-square, paired and independent *t*-tests) in SPSS₁₈.

Results: There was no significant difference between the two groups before the intervention. However, after the intervention, mean score of anxiety were significantly lower in the experiment group than in the control group ($P < 0.01$). There was also a significant difference in the scores of the experiment group before and after the intervention ($P < 0.01$). Such a difference was absent in the control group.

Conclusions: Our spiritual care program could successfully decrease anxiety levels in patients with leukemia. Therefore, in cases of refractory diseases such as cancer, nurses have to apply a holistic care approach with emphasis on spiritual care.

Key words: Anxiety, Iran, leukemia, nursing, spirituality

INTRODUCTION

Although cancer is highly prevalent in the current world, it is not a new disease and must have existed for as long as the human have lived.^[1] Despite significant advances in medical sciences, cancer is still a major disease and the second cause of mortality after cardiovascular diseases. Cancer is in fact estimated to cause 13% of all deaths by 2015.^[2]

Leukemia is the most common malignancy in young adults and has the greatest mental and emotional effects among all cancers. It comprises approximately, 8% of all human cancers and is known as the fifth most prevalent cancer in

the world.^[3] It has had a growing trend in all countries of the world including Iran (the ninth prevalent cancer in 1996 and the fourth in 2001).^[4] Considering the number of affected people to the general population, different types of leukemia have shown the highest growth rate during the past 26 years in Iran. They have also been the most common cause of mortality due to cancer among Iranian men.^[5]

Leukemia is a prevalent cancer in Isfahan (a city in central Iran) and causes 13% of the total cancer mortality.^[6,7] In 2007, the prevalence of leukemia among the male and female population in Isfahan was 8.48 and 4.72 patients per 100,000 inhabitants, respectively.^[8]

Leukemia changes the life of an individual in all its physical, psychological, social, spiritual, economic and family aspects.^[9] Research has indicated that such a diagnosis may cause deep emotional problems such as anxiety in both the patient and his/her family.^[10,11] Hearing the word "cancer" may evoke feelings of shock, phobia, isolation, anger, irritability, confusion and most commonly anxiety.^[12]

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High levels of anxiety remain persistent in survivors of leukemia even long after the chemotherapy.^[13] Almost 35% of patients with leukemia experience high-levels of anxiety during the induction and consolidation chemotherapy.^[13,14] While anxiety has been reported among 25-33% of patients with non-blood cancers, the rates have been estimated to be as high as 50% in patients with leukemia.^[13] Malekian *et al.* evaluated hospitalized patients with cancer in Isfahan and found the highest prevalence of anxiety (28.9%) among individuals with leukemia.^[15] Anxiety affects not only the psychological status and quality of life of patients with cancer, but also the progress of the disease, the efficiency of treatment, the length of hospital stay and even the patients' lifespan.^[16-19]

Moreover, the threatening nature of leukemia significantly increases the spiritual needs of patients^[20] and may produce a sort of spiritual crisis.^[21,22] Spirituality is an important phenomenon, which has widely attracted the attention of Psychologists and Mental Health Professionals over the past few decades.^[23] Spirituality is a global phenomenon, which has been defined by different researchers from various aspects leading to the absence of consensus on its definition.^[24,25]

In a relatively comprehensive and accurate definition, meta-religion takes a psychological approach and defines spirituality "an attempt to develop sensitivity to the ego, other human, plants and animals and God or an inquiry to develop to a complete human."^[25,26] While the traditional definition of spirituality emphasizes on religion and faith, recent definitions are more comprehensive and integrate all aspects of human life and experience.^[27] They thus consider spirituality and religion closely related, but not the same.^[28,29] Although spirituality can be expressed in terms of religious beliefs and practices, it can be much wider as it embraces a person's relationship with God, a superior power, the family or communities (cultural associations).^[30]

According to available literature, spirituality is a strong predictor and promoter of psychological health.^[31] Previous studies have suggested that spirituality can increase the patients' resistance against mental health crisis following the diagnosis and treatment of cancer.^[32] Spiritual interventions have also been found to help prevent and improve a range of physical illnesses and cope with chronic pain and death.^[33-37]

While the spiritual needs of patients are not usually met,^[38] satisfying such needs of admitted patients will be vital to speed up recovery, gain spiritual health and control anxiety.^[39] In other words, spirituality plays an important role in adaptability to leukemia and coping with its resulting mental trauma.^[40] Research has confirmed the effects of spirituality on decreasing anxiety.^[41-46] A study on 114 patients with cancer showed that subjects with higher scores of spirituality experienced lower levels of

anxiety.^[47] Another study by McCoubrie and Davies in the U.K. used the Spiritual Health Questionnaire and reported similar results.^[45] However, there are many diverse, different and sometimes contradictory findings concerning the correlation between spirituality and parameters such as anxiety. For example, in 2006, a study on 85 American patients with cancer showed that obtaining higher scores in the spiritual domain had no impact on levels of anxiety and depression.^[48] Likewise, Koszycki *et al.* showed the absence of a statistically significant correlation between spirituality and psychological adjustment among patients with cancer.^[49]

Despite the special importance of spiritual health and care, position, history and depth of spirituality in Iran, the penetration of spiritual beliefs into every Iranian's mind and the importance of spiritual care in controlling anxiety as a common disorder among leukemic patients, we failed to find a similar Iranian study in the available literature. On the other hand, cultural and racial factors, spiritual beliefs and customs of every race and nationality can have considerable impacts on the results of studies on anxiety.^[11,50] Due to the mentioned reasons and contradictory results of previous research, we designed and implemented a spiritual care program and evaluated its effects on anxiety of patients with leukemia admitted to intensive care unit of Sayyed-Al-Shohada Hospital (Isfahan, Iran) in 2012.

MATERIALS AND METHODS

In this pretest-posttest randomized clinical trial, spiritual care and anxiety were considered as independent and dependent variables, respectively. Patients admitted to intensive care unit of Sayyed-Al-Shohada Hospital (Isfahan, Iran) were included if they were definitely diagnosed with leukemia by a Hematologist, consented to participate and were Shiite, Native Iranian and Persian speaker. Patients who were unaware of their disease, had mental retardation, blindness, deafness or active mental diseases or were undergoing chemotherapy, radiotherapy or surgery were not included. The subjects were excluded in case of unwillingness to continue the study, any troubles that prevented the person from participating or transfer of the patient to another hospital. The participants were randomly allocated to experiment and control groups ($n = 32$ in each) using envelopes containing numbers from a table of random numbers.

Data were collected through a two-part questionnaire. The first part assessed demographic and disease-related data (age, sex, education, marital status, employment, type of leukemia, type of treatment and elapsed time from diagnosis). The second part comprised the anxiety subscale from the 42-item depression, anxiety and stress scale (DASS-42). DASS-42 is a self-report scale, which

was designed by Lovibond in 1995 to measure anxiety, depression and stress.^[51] The subscale of anxiety (items number 2, 4, 7, 9, 15, 19, 20, 23, 25, 28, 30, 36, 40 and 41) include statements to measure physiological over-arousal, fears and situational anxiety.^[51,52] The questions of this scale are scored from zero to three and the total scores of the anxiety subscale are categorized as normal (0-7), mild (8-9), moderate (10-14), severe (15-19) and extremely severe (over 20).^[52]

Lovibond and Lovibond tested DASS-42 on a non-clinical sample of 2914 patients to measure its psychometric properties. They calculated the reliability of anxiety subscale as Cronbach's alpha = 0.84.^[51] In Iran, Afzali *et al.* found all three subscales to have high Cronbach's alpha coefficients ($\alpha = 0.85$ for the anxiety subscale).^[51]

Before initializing the study, approvals were obtained from the School of Nursing and Midwifery (Isfahan University of Medical Sciences) and Hospital authorities. The selected subjects were then assured about data confidentiality and their access to final results and asked to sign informed consent forms.

A researcher (a man for male patients and a woman for females) presented at the bedside of the experiment group and implemented the spiritual care program. DASS-42 was completed before the intervention and at the end of the 3rd day by an unaware co-researcher who had been briefed explained by the researcher before the beginning of the study. The planning and implementation of the spiritual care program was closely monitored by the main researcher. Based on a previous study by Moeini *et al.*,^[53] the patients in the experiment group received the spiritual care at 16:00-20:00 for 3 days.

The planned spiritual care program included two major components of supportive presence and support for religious rituals. The researcher supported the patients through encouraging them to express their feelings, needs and concerns through verbal and nonverbal communication, providing them with a detailed description of the disease and its therapeutic process and responding to their questions in this regard, taking their hands while talking and touching them using a supportive approach and using active listening technique. Furthermore, the researcher avoided any prejudgments about the patients' appearance, accent and behavior, particularly at admission. In all stages of the intervention, patients were called with their name to preserve their dignity and respect.

In order to support religious rituals, patients were provided a pack containing a prayer rug and rosary and a veil for women. Patients were also informed about their

free access to an MP3 player and earphones to listen to Quran, Prayers and Azan. Reading the Tawasol Prayer and Quran on the patient bedside was also implemented by a clergyman.^[53-56]

Data was analyzed using the descriptive (absolute frequency, relative frequency, mean and standard deviation) and inferential statistics (Chi-square test, paired *t*-test and independent *t*-test). All analyses were performed in SPSS for Windows 18.0 (SPSS Inc., Chicago, IL, USA).

RESULTS

The mean age of the participants was 41.68 (17.17) years in the experiment group and 41.56 (13.45) years in the control group. The majority of the subjects in the experiment and control groups was male (59.4% and 62.5%, respectively) and married (68.08% and 84.4%, respectively). High school graduates constituted 46.9% of the experiment group and 50.0% of the control group. The two groups had no significant difference in terms of age ($P = 0.97$), sex ($P = 0.79$), marital status ($P = 0.14$), education ($P = 0.86$), employment ($P = 0.43$), type of leukemia ($P = 0.49$), elapsed time from diagnosis ($P = 0.96$) and type of treatment ($P = 0.97$).

Acute myeloid leukemia was diagnosed in 68.8% and 56.2% of the experiment and control groups, respectively. The mean elapsed time from diagnosis was 24.32 (13.84) months in the experiment group and 18.08 (14.09) months in the control group. Most patients in both groups had the history of hospitalization and all subjects had undergone chemotherapy.

According to independent *t*-test results, no significant difference existed between the mean scores of anxiety of the two groups at the beginning of the study (15.31 [8.77] in the experiment group and 13.28 [8.28] in the control group; $t = 0.95$; $P = 0.34$). The spiritual care program decreased the mean score of anxiety to 6.06 (4.31) in the experiment group. However, the mean score remained as high as 13.84 (8.57) in the control group ($t = 4.63$; $P < 0.01$). The mean change in scores of anxiety was -9.25 (6.31) in the experiment group and 0.56 (2.75) in the control group ($t = 8.29$; $P < 0.01$). Overall, there was no significant difference between the mean scores of anxiety in the control group at the beginning and end of the study ($t = 1.16$; $P = 0.26$). In contrast, paired *t*-test showed a significant difference between the scores of anxiety in the experiment group before and after the intervention ($t = 8.29$; $P < 0.01$).

DISCUSSION

Since the groups were randomly allocated, they were not significantly different in terms of demographic

characteristics, type of leukemia, type of treatment, elapsed time from diagnosis and mean scores of anxiety at baseline. After the spiritual care program; however, the mean scores of anxiety were significantly lower in the experiment group than in the control group. Similarly, Yoon and Park showed that a spiritual nursing intervention could significantly reduce situational anxiety of the experiment group compared to the control group ($t = -5.99; P < 0.01$).^[57] Puig *et al.* conducted a spiritual intervention on women with cancer and found significantly lower scores of anxiety in the experiment group than in the control group.^[58] On the contrary, Ikedo *et al.* reported no significant difference in scores of anxiety following the implementation of a spiritual care program.^[59] Differences in cultural and religious characteristics of the study populations, type of spiritual care program, sample size and type of disease might have been responsible for such an inconsistency.

In addition to the difference between the experiment and control groups, we also found a significant difference between the mean scores of anxiety before and after the spiritual care program in the experiment group. Delaney and Barrere performed a pre- and post-test quasi-experimental study to assess the impact of spiritual care on anxiety rate and spirituality of patient with cardiovascular diseases in New York. Their intervention included music sessions, guided visualization using a CD, praying and walking in a garden. Similar to our findings, they detected a significant difference between the anxiety score of patients before and after the intervention ($P < 0.01$).^[38] Another quasi-experimental to compare the effects of spiritual care, non-religious meditation and relaxation on spiritual and mental outcomes and pain in patients showed that those with higher scores in spirituality experienced lower anxiety ($r = -0.53; P < 0.01$).^[60] This finding is again in accordance with ours. In line with the results of the present study, in a case study on three women with anxiety disorder, Barrera *et al.* suggested that spiritual interventions could successfully reduce anxiety in all three patients.^[61]

The results of neurobiological research have also supported the application of spiritual techniques as a useful technique to treat anxiety.^[62] Studies have shown that spiritual interventions increase synaptic interactions in the amygdala (a region to respond to emotional stimuli and anxiety).^[62]

Datta and Nandan concluded that experiencing spirituality evokes specific neural processes in the brain. They also claimed a God spot (a natural spiritual spot) in every human's brain.^[63] The temporal lobe of the brain (located exactly beneath the temple) has in fact been called the God spot by neuroscientists as its stimulation will turn spiritual subjects such as visiting God, talking about religion, dedication and sacrifice into a person's favorite

subjects.^[64] Special scans have illustrated that this area of the brain gets brighter when people are exposed to spirituality issues (spiritual interventions).^[63] The results of studies by McCoubrie and Davies,^[45] McMahon,^[65] and Romero *et al.*^[66] support this idea.

McMahon found a statistically significant correlation between spiritual health and anxiety among 238 end-stage patients with cancer in a sanatorium Northern Virginia (USA).^[65] Musarezaie *et al.* revealed a statistically significant correlation between spiritual health scores and anxiety among patients with cancer, i.e., patients with the tendency toward spiritual life suffered from considerably lower levels of anxiety ($r = -0.23; P < 0.01$).^[67] Dunn and Shelton reported significant correlations between spiritual health and both anxiety and depression in three groups of women (non-pregnant and with normal and high-risk pregnancy).^[68]

CONCLUSION

According to the results of the present study, implementation of a spiritual care program by nurses was effective on reducing anxiety of patients with leukemia. Therefore, use of a holistic care approach with emphasis on the spiritual dimension of care by nurses can promote the recovery of patients and reduce their suffering.

The findings of this study are worthless without considering its limitations. Low number of eligible patients with leukemia was the most important limitation of this study. Particular physical and psychological situation of this inadequate number of patients was another major issue the researchers encountered. Short-duration implementation of the intervention (as a student thesis) counted as a third limitation. Implementing interventions with higher number of spiritual care sessions and longer follow-up on a greater number of patients will lead to more reliable conclusions.

RECOMMENDATIONS

It is recommended to investigate the influence of spiritual care program on anxiety of patients with other types of cancer. Reviewing the effects of spiritual care programs on other components such as depression and quality of life is also recommended. Finally, studying the experiences of patients from the received spiritual care and finding obstacles against the provision of spiritual care for cancerous patients in intensive care units will be of help.

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REFERENCES

1. Yousefi Nejad ostad Kelayeh A, Madadi A, Majd Zadeh SR, Shaban Nia R, Sadeghian N, Zarin Ara AR, *et al.* The effect of music therapy on chronic pain in patients with cancer. *J Qazvin Univ Med Sci Health Serv* 2005;34:42-39.
2. Koosha A, Mostafa F, Sevil H, Leila A, Golzari M, Seyfarshad M. Epidemiologic assessment of cancer disease in East Azerbaijan 2007. *Med J Tabriz Univ Med Sci Health Serv* 2010;32:74-9.
3. Jemal A, Thun MJ, Ries LA, Howe HL, Weir HK, Center MM, *et al.* Annual report to the nation on the status of cancer, 1975-2005, featuring trends in lung cancer, tobacco use, and tobacco control. *J Natl Cancer Inst* 2008;100:1672-94.
4. Hadi N, Moezzi M, Aminlari A. A case control study of acute leukemia risk factors in adults, Shiraz, Iran. *Shiraz E-Med J* 2008;9:2-10.
5. Mojir Sheibani KH, Mortazavi SH, Azadeh P. The trend of cancer during the past 58 years in Iran. *Iran J Surg* 2004;12:25-30.
6. Naghavi M. The state of mortality in 23 provinces of Iran, 2003. Tehran, Iran: Vice Chancellery of Health, Ministry of Health and Medical Education; 2003.
7. Shamschiri A, Kosari F, Jahani M, Shahriari-Ahmadi A, Sanaat Z, Moghimi M, *et al.* Novel treatments of lymphoma. Tehran, Iran: Hematology, Oncology, and Bone Marrow Transplantation Research Center, Tehran University of Medical Sciences; 2009.
8. Vice Chancellor of Health. National Report on Registered Cases of Cancer, Iran, 2005. Tehran, Iran: Office for Cancer, Department of Non-Communicable Diseases, Center for Disease Control; 2006.
9. Smeltzer SC, Bare BG, Hinkle J. Brunner and Suddarth's Textbook of Medical Surgical Nursing. 11th ed. Philadelphia: Williams and Wilkins; 2008.
10. Akechi T, Okuyama T, Akizuki N, Azuma H, Sagawa R, Furukawa TA, *et al.* Course of psychological distress and its predictors in advanced non-small cell lung cancer patients. *Psychooncology* 2006;15:463-73.
11. Akechi T, Nakano T, Okamura H, Ueda S, Akizuki N, Nakanishi T, *et al.* Psychiatric disorders in cancer patients: Descriptive analysis of 1721 psychiatric referrals at two Japanese cancer center hospitals. *Jpn J Clin Oncol* 2001;31:188-94.
12. Jois B, Houkans Havex J. Nursing internal medicine, surgery, cardiology, and hematology. In: Eghbali M, Khalifezadeh A, Shahgholian N, Shahriary M, Sabouhi F, Zargham A, *et al.*, editors. 1st ed. Isfahan, Iran: Isfahan University of Medical Sciences; 2006.
13. Montgomery C, Pocock M, Titley K, Lloyd K. Predicting psychological distress in patients with leukaemia and lymphoma. *J Psychosom Res* 2003;54:289-92.
14. Andrykowski MA, Greiner CB, Altmaier EM, Burish TG, Antin JH, Gingrich R, *et al.* Quality of life following bone marrow transplantation: Findings from a multicentre study. *Br J Cancer* 1995;71:1322-9.
15. Malekian A, Alizadeh A, Ahmadzadeh GH. Anxiety and depression in cancer patients. *J Res Behav Sci* 2007;5:115-9.
16. Palmer JL, Fisch MJ. Association between symptom distress and survival in outpatients seen in a palliative care cancer center. *J Pain Symptom Manage* 2005;29:565-71.
17. Sobel RM, Markov D. The impact of anxiety and mood disorders on physical disease: The worried not-so-well. *Curr Psychiatry Rep* 2005;7:206-12.
18. Okamura M, Yamawaki S, Akechi T, Taniguchi K, Uchitomi Y. Psychiatric disorders following first breast cancer recurrence: Prevalence, associated factors and relationship to quality of life. *Jpn J Clin Oncol* 2005;35:302-9.
19. Mystakidou K, Tsilika E, Parpa E, Katsouda E, Galanos A, Vlahos L. Assessment of anxiety and depression in advanced cancer patients and their relationship with quality of life. *Qual Life Res* 2005;14:1825-33.
20. O'Brien ME. *Spirituality in Nursing: Standing on Holy Ground*. Massachusetts: Jones and Bartlett Publications; 2003. p. 96, 182, 183, 176.
21. Rezaei M, Seyedfatemi N, Hosseini F. Spiritual well-being in cancer patients who undergo chemotherapy. *J Fac Nurs Midwifery* 2009;14:33-9.
22. Mauk K, Scnemid N. *Spirituality Care in Nursing Practice*. 2nd ed. Philadelphia: Lippincott Company; 2004. p. 60-199.
23. West W. *Psychotherapy and Spirituality: Crossing the Line between Therapy and Religion*. In: Shahidi Sh, Shirafkan S, editors. Tehran: Roshd; 2001.
24. Villagomez LR. The role of spirituality in cardiac illness. A research synthesis, 1991-2004. *Holist Nurs Pract* 2006;20:169-86.
25. Ziaie MS, Nargesian A, Aibaghi Isfahani S. The role of spiritual leadership on human resource empowerment in the University of Tehran. *Iran Public Adm* 2009;1:67-86.
26. Farhangi AA, Rastegar AA. Designing a motivational model based on the staff's spirituality. *Daneshvar-e-Raftar* 2006;13:1-24.
27. Dehshiri GH, Sohrabi F, Jafari I, Najafi M. Evaluation of psychometric properties of the spiritual well-being scale among university students. *Q J Psychol Stud* 2009;4:129-44.
28. Goodall MA. The evaluation of spiritual care in a dementia care setting, dementia. Vol. 8. *Dementia (International Journal of Social Research and Practice)*; 2009. p. 167-83.
29. Carpenter K, Girvin L, Kitner W, Ruth-Sahd LA. Spirituality: A dimension of holistic critical care nursing. *Dimens Crit Care Nurs* 2008;27:16-20.
30. Puchalski CM. Spirituality and end-of-life care: A time for listening and caring. *J Palliat Med* 2002;5:289-94.
31. Davis B. Mediators of the relationships between hope and wellbeing in older adults. *Clin Nurs Res* 2006;14:253-72.
32. Meraviglia M. Effects of spirituality in breast cancer survivors. *Oncol Nurs Forum* 2006;33:E1-7.
33. Djuric Z, Mirasolo J, Kimbrough L, Brown DR, Heilbrun LK, Canar L, *et al.* A pilot trial of spirituality counseling for weight loss maintenance in African American breast cancer survivors. *J Natl Med Assoc* 2009;101:552-64.
34. Akbari ME, Khayam Zade M, Khoshnevis SJ, Nafisi N, Akbari A. Five and ten years' survival in breast cancer patients' mastectomies V.S. breast conserving surgeries personal experience. *Iran J Cancer Prev* 2008;1:53-6.
35. Bowland S. Evaluation of a psycho-socio-spiritual intervention with older women survivors of interpersonal trauma. *J Altern Ther Health Med* 2006;12:26-35.
36. Moritz S, Quan H, Rickhi B, Liu M, Angen M, Vintila R, *et al.* A home study-based spirituality education program decreases emotional distress and increases quality of life – A randomized, controlled trial. *Altern Ther Health Med* 2006;12:26-35.
37. Momennasab M, Moattari M, Abbaszade A, Shamschiri B. Spirituality in survivors of myocardial infarction. *Iran J Nurs Midwifery Res* 2012;17:343-51.

38. Delaney C, Barrere C. Blessings: The influence of a spirituality-based intervention on psychospiritual outcomes in a cardiac population. *Holist Nurs Pract* 2008;22:210-9.
39. Safarifard F. Obstacles against the performance of religious rituals by inpatients in hospitals affiliated with Isfahan University of medical sciences. [MSc Thesis]. Isfahan, Iran: Isfahan University of Medical Sciences; 1999.
40. Gouva M, Damigos D, Kaltsouda A, Bouranta P, Tsabouri S, Mavreas V, *et al.* Psychological risk factors in acute leukemia. *Interscientific Health Care* 2009;1:16-20.
41. Fallah R, Golzari M, Dastani M, Zahirodin A, Muzavi SM, Akbari MS. Spirituality, hope and mental health in breast cancer patients. Adelaide, Australia: Palliative medicine in the 21st century; 2010. p. 14-7.
42. Breitbart W, Rosenfeld B, Gibson C, Pessin H, Poppito S, Nelson C, *et al.* Meaning-centered group psychotherapy for patients with advanced cancer: A pilot randomized controlled trial. *Psychooncology* 2010;19:21-8.
43. Nelson C, Jacobson CM, Weinberger MI, Bhaskaran V, Rosenfeld B, Breitbart W, *et al.* The role of spirituality in the relationship between religiosity and depression in prostate cancer patients. *Ann Behav Med* 2009;38:105-14.
44. Bekelman DB, Dy SM, Becker DM, Wittstein IS, Hendricks DE, Yamashita TE, *et al.* Spiritual well-being and depression in patients with heart failure. *J Gen Intern Med* 2007;22:470-7.
45. McCoubrie RC, Davies AN. Is there a correlation between spirituality and anxiety and depression in patients with advanced cancer? *Support Care Cancer* 2006;14:379-85.
46. Schulz E, Holt CL, Caplan L, Blake V, Southward P, Buckner A, *et al.* Role of spirituality in cancer coping among African Americans: A qualitative examination. *J Cancer Surviv* 2008;2:104-15.
47. Mueller PS, Plevak DJ, Rummans TA. Religious involvement, spirituality, and medicine: Implications for clinical practice. *Mayo Clin Proc* 2001;76:1225-35.
48. McCoubrie R. Depression advanced cancer patient depression not correlated with spirituality. Atlanta: Obesity, Fitness and Wellness Week; 2006. p. 812. Available from: URL: <http://proquest.umi.com/pqdweb?did=1063972891&sid=1&Fmt=3&clientId=48024&RQT=309&VName=PQD>
49. Koszycki D, Raab K, Aldosary F, Bradwejn J. A multifaith spiritually based intervention for generalized anxiety disorder: A pilot randomized trial. *J Clin Psychol* 2010;66:430-41.
50. Boscaglia N, Clarke DM, Jobling TW, Quinn MA. The contribution of spirituality and spiritual coping to anxiety and depression in women with a recent diagnosis of gynecological cancer. *Int J Gynecol Cancer* 2005;15:755-61.
51. Afzali A, Delavar A, Borjali A, Mirzamani M. Psychometric properties of DASS-42 as assessed in a sample of Kermanshah High School students. *J Res Behav Sci* 2007;5:81-92.
52. Asgharimoghadam MA, Saed F, Dibajnia P, Zangeneh J. A preliminary study of the reliability and validity of the depression, anxiety, and stress scale on non-clinical samples. *Daneshvar-e-Raftar* 2009;31:23-38.
53. Moeini M, Momeni Ghale Ghasemi T, Yousefi H, Abedi HA. The effect of spiritual care on spiritual health of patients with cardiac ischemia. *Iran J Nurs Midwifery Res* 2012;17:195-9.
54. Potter PA, Perry AG. *Fundamental of Nursing*. 7th ed. Canada: Mosby Elsevier; 2009.
55. Balouchestani Asl E. Effects of two methods of prayer on quality of life of patients with cancer, Seyed-Al-Shohada Hospital, Isfahan university of medical sciences, 2009. [MSc Thesis]. Isfahan, Iran: Isfahan University of Medical Sciences; 2010.
56. Karim Elahi M. Designing a spiritual nursing care model in Iran. [PhD Thesis]. Isfahan, Iran: Isfahan University of Medical Sciences; 2007.
57. Yoon MO, Park JS. The effect of spiritual nursing intervention on anxiety and depression of the hospice patients. *J Korean Acad Adult Nurs* 2002;14:337-47.
58. Puig A, Lee SM, Goodwin L, Peter, Sherrard PAD The efficacy of creative arts therapies to enhance emotional expression, spirituality, and psychological well-being of newly diagnosed Stage I and Stage II breast cancer patients: A preliminary study. *Arts Psychother* 2006;33:218-28.
59. Ikedo F, Gangahar DM, Quader MA, Smith LM. The effects of prayer, relaxation technique during general anesthesia on recovery outcomes following cardiac surgery. *Complement Ther Clin Pract* 2007;13:85-94.
60. Wachholtz AB, Pargament KI. Is spirituality a critical ingredient of meditation? Comparing the effects of spiritual meditation, secular meditation, and relaxation on spiritual, psychological, cardiac, and pain outcomes. *J Behav Med* 2005;28:369-84.
61. Barrera TL, Zeno D, Bush AL, Barber CR, Stamly MA. Integrating religion and spirituality in to treatment for late-life anxiety: Three case studies. *Cogn Behav Pract* 2012;19:346-58.
62. Mayo KR. Support from neurobiology for spiritual techniques for anxiety: A brief review. *J Health Care Chaplain* 2009;16:53-7.
63. Datta NU, Nandan D. Importance of spiritual health in public health systems of India. Vol. 31. *Health and Population, Perspectives and Issues* 2008. p. 204-8.
64. Samadi P. Spiritual intelligence. *Q J New Thoughts Educ* 2006;2:99-114.
65. McMahon RL. The Impact of Spirituality, Social Support, and Defensive/adaptive Coping on Death Anxiety at End of Life. Washington, DC: Soc. Work Catholic University of America; 2004.
66. Romero C, Friedman LC, Kalidas M, Elledge R, Chang J, Liscum KR. Self-forgiveness, spirituality, and psychological adjustment in women with breast cancer. *J Behav Med* 2006;29:29-36.
67. Musarezaie A, Momeni Ghaleghasemi T, Ebrahimi A, Karimian J. Survey of relationship between spiritual wellbeing with stress, anxiety, and some demographic variables in women with breast cancer referred to specialized cancer treatment center in Isfahan. *Health Syst Res* 2012;8:92-101.
68. Dunn LL, Shelton MM. Spiritual well-being, anxiety, and depression in antepartal women on bedrest. *Issues Ment Health Nurs* 2007;28:1235-46.

How to site: Moeini M, Taleghani F, Mehrabi T, Musarezaie A. Effect of a spiritual care program on levels of anxiety in patients with leukemia. *Iranian Journal of Nursing and Midwifery Research* 2014;19:88-93.

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