J Relig Health (2019) 58:1060–1071
https://doi.org/10.1007/s10943-018-0587-1

ORIGINAL PAPER

Education Moderates the Relationship Between Spirituality with Quality of Life and Stress Among Malay Muslim Women with Breast Cancer

Saeed Pahlevan Sharif[1,2] · **Fon Sim Ong**[3]

Published online: 6 March 2018

Abstract The purpose of this study was to investigate the relationship between spirituality with quality of life and stress of Malay Muslim breast cancer patients in Malaysia. In addition, the moderating role of education on this relationship was examined. Participants consisted of 145 conveniently selected Malay breast cancer patients. The results indicated that the more spiritual respondents reported a higher level of quality of life and lower level of stress. Moreover, education weakened the relationship between spirituality with quality of life and stress.

Keywords Spirituality · Quality of life · Breast cancer · Muslim · Stress · Moderation

Introduction

Breast cancer is the most common cancer in women and a significant cause of mortality worldwide (Pahlevan Sharif 2017). The International Agency for Research in Cancer (GLOBOCAN) reported that 1.7 million new breast cancer cases were diagnosed and 522 thousand women died of breast cancer (International Agency for Research on Cancer 2013). Incidence rates remain highest in developing counties. As Malaysia undergoes rapid societal and economic changes just as in other developing countries, it is experiencing a rising burden of cancers associated with reproductive, dietary and hormonal factors. In

✉ Saeed Pahlevan Sharif
saeed.sharif@taylors.edu.my

Fon Sim Ong
fonsim.ong@nottingham.edu.my

[1] Taylor's Business School, Taylor's University, No. 1, Jalan Taylor's, 47500 Subang Jaya, Selangor, Malaysia

[2] Department of Nursing, Aliabad Katoul Branch, Islamic Azad University, Aliabad Katoul, Iran

[3] University of Nottingham Malaysia Campus, Jalan Broga, 43500 Semenyih, Selangor, Malaysia

Malaysia, 5410 new breast cancer cases were diagnosed in 2012. Among them, Malay Muslims women (the indigenous people of Malaysia) were diagnosed with larger tumors, advanced stages, and suffered higher cancer mortality rates compared with other ethnic groups such as Chinese and Indians (Ahmad et al. 2011; Yip et al. 2014).

Due to the improved treatment, survival rate of breast cancer patients has increased (Rowland and Bellizzi 2008) and cancer is not a death sentence anymore. In spite of this improvement on survival rate, according to the World Cancer Report 2008, 50% of cancer patients continue to experience some types of psychological health issues that tend to cause depression, stress and negatively impact on quality of life (Boyle and Levin 2008). In Malaysia, the lower quality of life is evident among Malay Muslim breast cancer patients compared to Chinese patients (Yip et al. 2014). A higher chance of survival that is associated with the negative impact of the disease is disturbing. Improved quality of life and well-being has since attracted the attention and interest of researchers who seek to understand factors that could contribute to positive well-being among cancer patients (Pahlevan Sharif et al. 2017). Their effort has also focused on how cancer patients cope in order to improve well-being. Among them, research suggests that Malay women patients tend to use spirituality as a coping strategy to deal with cancer-related stress and improve their quality of life (Ahmad et al. 2011). Whether coping by spirituality has improved the quality of life is not yet understood. Therefore, this study aims to examine the influence of spirituality on quality of life and stress of Muslim women cancer patients in Malaysia. In addition, it introduces the role of education as a moderator that impacts the influence of spirituality.

Background and Objectives of the Study

In Islam "spirituality is not separate from religion; it is rather its inner dimension. According to this view, religion as it is expressed in prescribed religious activities provides the roadmap to one's ultimate purpose in life, that is, to live continuously in relationship with God, the Creator. Thus, the separation between religion and spirituality, most likely, is not accepted in the Islamic way of life" (Ahmad et al. 2011, p. 38). The bedrock and heart of Islam and Islamic spirituality is the Unity of God and submission to His will. Thus, connection with God and obedience to His law is the ultimate value for Muslims regardless of whether it improves their physical or psychological health (Ahmad et al. 2011; Soleimani et al. 2016).

An Islamic spiritual mind believes that God is the one who protects them and gives them strength to survive (Aboltathi Momtaz et al. 2012). "Say: 'Nothing will happen to us except what God has decreed for us: He is our protector': and on God let the Believers put their trust" (Quran, 9:51). "[Muslims] accept life as it is and adapt accordingly to all circumstances" (Abdullah al-Qarni 2003, p. 53). They see themselves as a part of the whole universe and believe that only God can help them. "Say: 'I have no power over any harm or profit To myself except as Allah Willeth. To every People Is a term appointed: When their term is reached, Not an hour can they cause Delay, nor (an hour) can they Advance (it in anticipation)' (Quran, 10:49)." Thus, during the hard times, they rely on God and pray. "O' you who believe! Seek help in patience and the Prayer" (Quran 2:153).

Muslims also believe in life after death. According to the Islamic beliefs, this worldly life is just a short stage of our lives and "God placed man temporarily in this world to test him." This may help Muslims to cope with pain and illnesses and reduce the related

negative impacts on their psychological well-being (Aboltathi Momtaz et al. 2012). Thus, Muslims tend to engage in religious activities when they face with major life events, whether positive or negative.

Besides the Muslims in their belief in Islam, the relationship between spirituality and psychological health has good theoretical supports too. The theory of attachment suggests that securing attachment to God contributes to mental health and well-being (Miner 2008). This is because in times of crisis, people look to God as a being who protects them. As a result they feel more secured and experience less stress (Hill and Pargament 2003). Many studies have supported the link between spirituality in terms of a close relationship with God and psychological well-being (e.g., less depression, Maton 1989; less loneliness, Kirkpatrick et al. 1993; and less moral distress, Soleimani et al. 2016). Past studies also show that people use their connection to God as a coping strategy to deal with stressful situations in their life such as in undergoing a surgery, in illnesses and in facing end-of-life care dilemmas, moral distress and in natural disasters (Lee et al. 2014; Tix and Frazier 1998; Koenig et al. 1998; Ferrell 2006; Smith et al. 2000).

Spirituality for some people is a framework that gives purpose, meaning and direction to their lives (Allport 1950; McIntosh 1995; Pargament 2001). A spiritual person believes that life and its different aspects (e.g., physical and psychological health) are meaningful and sacred and should be treated with care and respect (Pargament and Mahoney 2002). Moreover, this framework provides "people with a sense of their ultimate destinations in life by providing ultimate purpose and meaning even in disturbing life events" (Hill and Pargament 2008, p. 68). Such a feeling empowers them and may lead to greater personal coherence which results in more stability in critical life situations and physical and psychological health (Davison and Jhangri 2013; Emmons 1999; Hill and Pargament 2003, 2008; Lazar 2009). Therefore, people with stronger spiritual frameworks have access to more spiritual and religious coping strategies when they undergo stressful experiences. Using these strategies can reduce their stress and contribute to their mental health (Pargament 2001).

Although there are some studies that fail to support the link between spirituality and well-being (gynecological cancer patients, Boscaglia et al. 2005; breast cancer survivors, Gibson and Parker 2002; advanced cancer patients, Mystakidou et al. 2007), the majority of empirical studies on patients with different types of cancer show that spirituality is associated with higher quality of life and lower stress, anxiety and depression (Dapueto et al. 2005; Edmondson et al. 2008; Jafari et al. 2013; Kandasamy et al. 2011; Krupski et al. 2006; Leak et al. 2008; McCoubrie and Davies 2006; Prince-Paul 2008; Rodin et al. 2009; Vallurupalli et al. 2012; Zavala et al. 2009), and this relationship is not dependent on socio-demographic factors (e.g., age) and cancer-related factors (e.g., physical symptoms) (McClain-Jacobson et al. 2004; McClain et al. 2003; Morgan et al. 2006; Perkins et al. 2007; Romero et al. 2006; Salsman et al. 2008; Zavala et al. 2009). Other studies on cancer patients show that spirituality contributes to psychological well-being indirectly through increased hope (Gibson and Parker 2002; Visser et al. 2010).

More specifically among breast cancer patients, a study by Bauer-Wu and Farran (2005) shows that spirituality measured by meaning in life has a negative effect on stress and distress of breast cancer survivors. Similarly, the results of a longitudinal study by Yanez et al. (2009) show that meaning in life reduces depressive symptoms. In another study by Purnell and Andersen (2009), meaning in life explained 43% of the variance in psychological well-being of breast cancer patients. Also their results show an inverse association between spirituality and stress. According to Romero et al. (2006), 41% of the variance of quality of life is accounted by spirituality. In a study on Latina women diagnosed with

breast cancer, Wildes et al. (2009) found a positive relationship between spirituality and social well-being.

Furthermore, a systematic review by Schreiber and Brockopp (2012) on quantitative studies published over a period of 25 years shows that breast cancer patients' belief system may play a role to ameliorate the negative impact of cancer on well-being. Most of these studies on breast cancer patients (and also patients with other types of cancer) have been conducted in the context of non-Muslim countries and particularly in the USA, where about 70% of the population are Christians. Thus, quantitative studies on the relationship between spirituality and psychological well-being are scarce in Islamic societies. Therefore, the focus of this study is on Malay women with breast cancer in Malaysia and it seeks to examine the association between spirituality with quality of life and stress among these Muslim female patients. We hypothesized the relationship between spirituality and quality of life to be positive, while spirituality has a negative relationship with stress.

Moreover, this study goes one step further and argues that the hypothesized relationship between spirituality with quality of life and stress depends on the patients' education level. This is derived from the literature on the effect of education on religiosity and spirituality in which education has been studied as an antecedent for spirituality, but not as a moderator variable. Past research suggests that when an individual becomes more learned in an academic field, the probability of that individual sustaining religious and spiritual belief decreases (Ecklund and Scheitle 2007; Larson and Witham 1998). In a highly cited review of the sociological literature, Sherkat and Ellison (1999) state that "higher levels of education have a negative impact on measures of traditional religious beliefs" (p. 368), and in another review, Johnson (1997) states, "…for all the research conducted on the relationship between education and faith over the years, the overall empirical picture is surprisingly uniform… the majority consistently show a modest negative relationship between the two." (p. 233).

However, our review of literature shows that there are some studies that found a positive relationship between education with spirituality and religiosity (Glaeser and Sacerdote 2008; Iannaccone 1998; Musa and Pevalin 2012, 2014), whereas a few studies failed to find a relationship between education and spirituality (Aly 2010; Genia 1996; Musgrave and McFarlane 2003). According to Arias-Vazquez (2012) the inconsistent findings can be attributed to the nature of research approach, i.e., the cross-sectional approach in data collection might have contributed to the inconsistent results. Based on their longitudinal study, they found that people who attend college become less religious compared to those who do not attend college. In addition, while college attendees' religiosity orientation reduces over time; those who do not attend college become more religious.

Therefore, this study hypothesizes that breast cancer patients with lower level of education use spirituality as a coping strategy to deal with cancer more than patients with high level of education. In other words, education level dampens the relationship between spirituality with quality of life and stress.

Method

Design

A cross-sectional correlational design was used to examine the relationship between spirituality with quality of life and stress as well as the moderating effect of education on this relationship in a sample of Malay Muslim women diagnosed with breast cancer.

Sample and Setting

Malay women who had been diagnosed with breast cancer were considered eligible for the study if they were at least 18 years old and had not received any psychological treatment and/or anti-anxiety medications. By using convenience sampling technique 145 samples were collected from a clinic in Kuala Lumpur in 2016. The results of power analysis using previous similar studies findings (Rippentrop et al. 2006) showed that 70 samples are big enough to achieve an alpha less than or equal .05 (two-tailed) and power greater than or equal to 80%.

Ethical Consideration

An overview of the objectives of the study was provided to the participants, and they were assured that all questionnaires were anonymous, and participation in this study is voluntary. The study protocol was approved by the ethical committee of Taylor's University.

Variables and Their Measurement

Spirituality

Spirituality was measured by 20-item Beliefs and Values Scale using a 7-point Likert scale varying from *strongly disagree* to *strongly agree*, for example, "I believe I have a spirit or soul that can survive my death," "I believe in a personal God," and "I believe in life after death." The scale is suitable for studies in psychiatry and medicine (King et al. 2006). Beliefs and Values Scale is not limited to religious thought, and it measures individual's overall spiritual beliefs that exist outside of traditional religious contexts. The scale showed a high test–retest consistency (weighted Kappa $< .5$) as well as high reliability and internal consistency (Cronbach's alpha $= .94$) (King et al. 2006).

Stress

A single-item question was used to measure the general experience of stress as follows: "Stress means a situation in which a person feels tense, restless, nervous or anxious or is unable to sleep at night because his/her mind is troubled all the time. Do you feel this kind of stress these days?" The response is scored on a 7-point Likert scale from "not at all" to "very much." The scale showed satisfactory content, criterion, and construct validity for group-level analysis (Elo et al. 2003).

Quality of Life

Quality of life was measured by using the 16-item McGill Quality of Life Questionnaire which is a validated scale appropriate for patients with advanced disease (Cohen et al. 1997; Cohen et al. 1995). Each item is recorded on an eleven-point Likert scale varying from 0 to 10. The scale assesses four dimensions of quality of life including physical (3 items), psychological (4 items), existential (6 items), and social support (2 items). The summed score of all items represents the overall quality of life (range 0–160).

Statistical Analysis

This study used SPSS v. 22 and PROCESS package to analyze the data. Frequencies and percentages were used to summarize the categorical variables, and arithmetic mean and standard deviation (SD) were used for continuous variables. The relationships between the main variables of this study were assessed using Pearson correlation analysis. Next, a two-step approach suggested by Hayes (2013) was used to explore the moderating effect of education on the relationship between spirituality with quality of life and stress. Bootstrapping with 1000 replications was conducted to estimate the standard errors of path coefficients. Bootstrapping is a nonparametric distributional assumption-free method that estimates more reliable standard errors and CIs (Pahlevan Sharif et al., forthcoming). In other words, this study examined whether the strength or direction of the relationship between spirituality with quality of life and stress depended on the education level of participants (Pahlevan Sharif and Mahdavian 2015). Thus, moderation analysis was used to determine "for whom" the hypothesized relationship is stronger (Frazier et al. 2004; Jaccard and Turrisi 2003). All tests were two-tailed, and a p value of $< .05$ was considered to be statistically significant.

Results

The sample was composed of 111 married (76.6%), 17 single (11.7%), 17 divorced and widowed (11.7%). With regard to educational level, 57.2% of the participants had completed primary or secondary school, 24.1% had a diploma or professional certificate, 15.2% had a university degree, and 3.4% had a postgraduate certificate. The average age of the sample was 50.6 years (SD = 9.65). The average time since initial diagnosis was 3.0 years (SD = 1.98).

Spirituality was significantly related to quality of life ($r = .471$, $p < .001$). Moreover, there was a significant negative relationship between spirituality and stress ($r = -.337$, $p < .01$). Spirituality explained 22.18% and 11.36% of the variance of quality of life and stress, respectively.

The interaction results, reported in Table 1, revealed that education level moderated the relationship between spirituality and quality of life ($b = -.677$, $p < .001$) at 95% confidence level. It means education level weakened the positive relationship between spirituality and quality of life.

Moreover, education level moderated the relationship between spirituality and stress ($b = .298$, $p < .05$). This indicates that education weakened the negative relationship between spirituality and stress. Therefore, as it is shown in Fig. 1, the higher the education level, the positive relationship between spirituality and quality of life and also the negative

Table 1 The results of the moderating effect of education level on the relationship between spirituality with quality of life and stress

	Unstandardized coefficients	Standard error	95% CIs	
			Lower bound	Upper bound
Outcome: quality of life				
$R^2 = 31.72\%$, $F(3, 141) = 21.83$, $p < .001$; ΔR^2 due to the interaction = 6.56%, $F(1, 141) = 13.55$, $p < .001$				
Education	3.557***	.896	1.178	5.329
Spirituality	2.343***	.385	1.581	3.105
Education × Spirituality	− .677***	.184	− 1.040	− .313
Conditional effect at different values of standardized education				
Standardized education level = 1.000	1.666***	.231	1.210	2.122
Standardized education level = 1.648	1.227***	.166	.899	1.556
Standardized education level = 2.510	.644***	.194	.261	1.027
Outcome: stress				
$R^2 = 15.78\%$, $F(3, 141) = 8.80$, $p < .001$; ΔR^2 due to the interaction = 3.99%, $F(1, 141) = 5.01$, $p < .05$				
Education	− 1.572***	.650	− 2.858	− .286
Spirituality	− 1.061***	.279	− 1.614	− .509
Education × spirituality	.298*	.133	.035	.562
Conditional effect at different values of standardized education				
Standardized education level = 1.000	− .763***	.167	− 1.094	− .432
Standardized education level = 1.648	− .569***	.120	− .808	− .331
Standardized education level = 2.510	− .312*	.141	− .590	− .034

Controlling for time since diagnosed and age

*$p < .05$ (two-tailed); ***$p < .001$ (two-tailed)

relationship between spirituality and stress became weaker. The model explained 31.72 and 15.78% of quality of life and stress, respectively.

Discussion and Conclusion

This study is based on data collected from Malay Muslim breast cancer patients receiving treatments in a clinic in Kuala Lumpur, the capital city of Malaysia, that has a majority of Muslim population. The results concerning the hypothesized relationship between spirituality and quality of life as well as stress are supported; the more spiritual respondents reported a higher level of quality of life and they experienced less stress. In other words, coping using the religious approach could be implied. The results of this study are consistent with past research that shows a strong correlation between spirituality and quality of life and stress (Dapueto et al. 2005; Edmondson et al. 2008; Jafari et al. 2013; Kandasamy

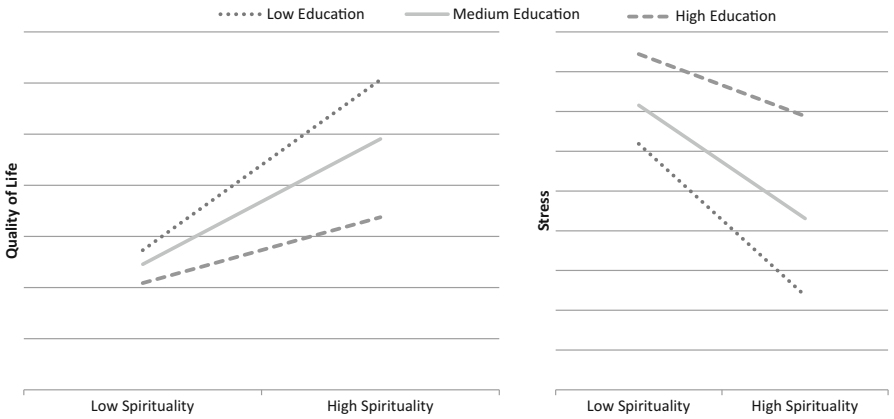

Fig. 1 The moderating effect of education level on the relationship between spirituality with quality of life and stress. Note: Standardized value for low, medium and high education levels is 1.000, 1.648 and 2.510 standard deviation, respectively

et al. 2011; Krupski et al. 2006; Leak et al. 2008; Prince-Paul 2008; Rodin et al. 2009; Salsman et al. 2008; Vallurupalli et al. 2012; Zavala et al. 2009). This confirms that in an Eastern society with majority of Muslim population, spirituality has a positive influence on quality of life and at the same time helps to ameliorate stress from major illness.

While past research shows education as an antecedent for spirituality and finds that more educated people score lower in spirituality, this study introduced education as a moderating variable. We hypothesized that the effects of spirituality on quality of life and stress are dependent upon the educational level of individuals. We tested the moderating effect of education and found that education is a significant moderator. The effect of spirituality on quality of life and stress became weaker when education is introduced as a moderator.

In other words, in less educated patients, spirituality plays more important role in their psychological well-being. This suggests that respondents with higher educational level may turn to other coping strategies when faced with this major illness. For example, they may be using more problem-focused coping strategies instead of using emotion-focused strategies (Lazarus and Folkman 1984) to deal with this life threatening illness. They could be searching for more information, seek expert opinion and learn more about the illness in order to understand the illness better and to cope. This would give them more internal locus of control, and hence improve their quality of life and perhaps less stress experienced (Lin and Tsay 2005; Shaha et al. 2008). Thus, the major contribution of this study on education as a moderator has added new insights, so that in less educated patients spirituality appears to be a stronger predictor of quality of life and stress.

This study is not without limitations. Due to the sensitive nature of the study, data were collected in one clinic in Kuala Lumpur. A national study could be replicated to include other states as geographic location may affect coping approaches due to informational barriers or availability of resources. In addition, since Malaysia is a multicultural society, it would be interesting to examine sub-cultural differences in spirituality and quality of life. As suggested above, it is important to investigate the coping strategies used by patients based on their educational level. Other third variable (such as locus of control, personality) influence could also be the focus of future studies.

Funding This study was funded by the Taylor's University Research Grant [TRGS/ERFS/1/2015/TBS/014].

Compliance with Ethical Standards

Conflict of interest All authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

Abdullah al-Qarni, A. I. (2003). *Don't be sad* (4th ed.). Riyadh: International Islamic Publishing House.

Aboltathi Momtaz, Y., Hamid, T. A., Ibrahim, R., Yahaya, N., & Abdullah, S. S. (2012). Moderating effect of Islamic religiosity on the relationship between chronic medical conditions and psychological well-being among elderly Malays. *Psychogeriatrics, 12*(1), 43–53.

Ahmad, F., Binti Muhammad, M., & Abdullah, A. A. (2011). Religion and spirituality in coping with advanced breast cancer: Perspectives from Malaysian Muslim women. *Journal of Religion and Health, 50*(1), 36–45.

Allport, G. W. (1950). *The individual and his religion: A psychological interpretation*. Oxford, England: Macmillan.

Aly, H. A. (2010). *Spirituality and psychological well-being in the muslim community: An exploratory study* (Ph.D.). University of La Verne, La Verne, USA.

Arias-Vazquez, F. J. (2012). A note on the effect of education on religiosity. *Economics Letters, 117*(3), 895–897.

Bauer-Wu, S., & Farran, C. J. (2005). Meaning in life and psycho-spiritual functioning: A comparison of breast cancer survivors and healthy women. *Journal of Holistic Nursing, 23*(2), 172–190.

Boscaglia, N., Clarke, D., Jobling, T., & Quinn, M. (2005). The contribution of spirituality and spiritual coping to anxiety and depression in women with a recent diagnosis of gynecological cancer. *International Journal of Gynecological Cancer, 15*(5), 755–761.

Boyle, P., & Levin, B. (2008). *World cancer report 2008*. Lyon: IARC Press, International Agency for Research on Cancer.

Cohen, S. R., Mount, B. M., Bruera, E., Provost, M., Rowe, J., & Tong, K. (1997). Validity of the McGill Quality of Life Questionnaire in the palliative care setting: A multi-centre Canadian study demonstrating the importance of the existential domain. *Palliative Medicine, 11*(1), 3–20.

Cohen, S. R., Mount, B. M., Strobel, M. G., & Bui, F. (1995). The McGill Quality of Life Questionnaire: A measure of quality of life appropriate for people with advanced disease. A preliminary study of validity and acceptability. *Palliative Medicine, 9*(3), 207–219.

Dapueto, J. J., Servente, L., Francolino, C., & Hahn, E. A. (2005). Determinants of quality of life in patients with cancer. *Cancer, 103*(5), 1072–1081.

Davison, S. N., & Jhangri, G. S. (2013). The relationship between spirituality, psychosocial adjustment to illness, and health-related quality of life in patients with advanced chronic kidney disease. *Journal of Pain and Symptom Management, 45*(2), 170–178.

Ecklund, E. H., & Scheitle, C. P. (2007). Religion among academic scientists: Distinctions, disciplines, and demographics. *Social Problems, 54*(2), 289–307.

Edmondson, D., Park, C. L., Blank, T. O., Fenster, J. R., & Mills, M. A. (2008). Deconstructing spiritual well-being: Existential well-being and HRQOL in cancer survivors. *Psycho-Oncology, 17*(2), 161–169.

Elo, A.-L., Leppänen, A., & Jahkola, A. (2003). Validity of a single-item measure of stress symptoms. *Scandinavian Journal of Work, Environment and Health, 29*(6), 444–451.

Emmons, R. A. (1999). *The psychology of ultimate concerns: Motivation and spirituality in personality*. New York: Guilford Press.

Ferrell, B. R. (2006). *Understanding the moral distress of nurses witnessing medically futile care*. Paper presented at the oncology nursing forum.

Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology, 51*(1), 115.

Genia, V. (1996). I, E, quest, and fundamentalism as predictors of psychological and spiritual well-being. *Journal for the Scientific Study of Religion, 35*(1), 56–64.
Gibson, L., & Parker, V. (2002). Inner resources as predictors of psychological well-being in middle-income african american breast cancer survivors. *Cancer Control: Journal of the Moffitt Cancer Center, 10*(5 Suppl), 52–59.
Glaeser, E. L., & Sacerdote, B. I. (2008). *Education and religion*. Chicago: University of Chicago Press.
Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
Hill, P. C., & Pargament, K. I. (2003). Advances in the conceptualization and measurement of religion and spirituality: Implications for physical and mental health research. *American Psychologist, 58*(1), 64–74. https://doi.org/10.1037/0003-066X.58.1.64.
Hill, P. C., & Pargament, K. I. (2008). Advances in the conceptualization and measurement of religion and spirituality: Implications for physical and mental health research. *Psychology of Religion and Spirituality*, *S*(1), 3–17.
Iannaccone, L. R. (1998). Introduction to the economics of religion. *Journal of Economic Literature, 36*(3), 1465–1495.
International Agency for Research on Cancer. (2013). Latest world cancer statistics Global cancer burden rises to 14.1 million new cases in 2012: Marked increase in breast cancers must be addressed. World Health Organization, Press release no. 223. https://www.iarc.fr/en/media-centre/pr/2013/pdfs/pr223_E.pdf.
Jaccard, J., & Turrisi, R. (2003). *Interaction effects in multiple regression*. Thousand Oaks: Sage.
Jafari, N., Farajzadegan, Z., Zamani, A., Bahrami, F., Emami, H., & Loghmani, A. (2013). Spiritual well-being and quality of life in Iranian women with breast cancer undergoing radiation therapy. *Supportive Care in Cancer, 21*(5), 1219–1225.
Johnson, D. C. (1997). Formal education vs. religious belief: Soliciting new evidence with multinomial logit modeling. *Journal for the scientific study of religion, 36*(2), 231–246.
Kandasamy, A., Chaturvedi, S., & Desai, G. (2011). Spirituality, distress, depression, anxiety, and quality of life in patients with advanced cancer. *Indian Journal of Cancer, 48*(1), 55.
King, M., Jones, L., Barnes, K., Low, J., Walker, C., Wilkinson, S., et al. (2006). Measuring spiritual belief: Development and standardization of a Beliefs and Values Scale. *Psychological Medicine, 36*(03), 417–425.
Kirkpatrick, L., Kellas, S., & Shillito, D. (1993). *Loneliness and perceptions of social support from God.* Paper presented at the 101st Annual Convention of the American Psychological Association, Toronto, Ontario, Canada.
Koenig, H. G., Pargament, K. I., & Nielsen, J. (1998). Religious coping and health status in medically ill hospitalized older adults. *The Journal of Nervous and Mental Disease, 186*(9), 513–521.
Krupski, T. L., Kwan, L., Fink, A., Sonn, G. A., Maliski, S., & Litwin, M. S. (2006). Spirituality influences health related quality of life in men with prostate cancer. *Psycho-Oncology, 15*(2), 121–131.
Larson, E. J., & Witham, L. (1998). Leading scientists still reject God. *Nature, 394*(6691), 313.
Lazar, A. (2009). The relation between a multidimensional measure of spirituality and measures of psychological functioning among secular Israeli Jews. *Journal of Transpersonal Psychology, 41*(2), 161.
Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.
Leak, A., Hu, J., & King, C. R. (2008). Symptom distress, spirituality, and quality of life in African American breast cancer survivors. *Cancer Nursing, 31*(1), E15–E21.
Lee, M., Nezu, A. M., & Nezu, C. M. (2014). Positive and negative religious coping, depressive symptoms, and quality of life in people with HIV. *Journal of Behavioral Medicine, 37*(5), 921–930.
Lin, C. C., & Tsay, H. F. (2005). Relationships among perceived diagnostic disclosure, health locus of control, and levels of hope in Taiwanese cancer patients. *Psycho-Oncology, 14*(5), 376–385. https://doi.org/10.1002/pon.854.
Maton, K. I. (1989). The stress-buffering role of spiritual support: Cross-sectional and prospective investigations. *Journal for the Scientific Study of Religion, 28*(3), 310–323.
McClain, C. S., Rosenfeld, B., & Breitbart, W. (2003). Effect of spiritual well-being on end-of-life despair in terminally-ill cancer patients. *The Lancet, 361*(9369), 1603–1607.
McClain-Jacobson, C., Rosenfeld, B., Kosinski, A., Pessin, H., Cimino, J. E., & Breitbart, W. (2004). Belief in an afterlife, spiritual well-being and end-of-life despair in patients with advanced cancer. *General Hospital Psychiatry, 26*(6), 484–486.
McCoubrie, R. C., & Davies, A. N. (2006). Is there a correlation between spirituality and anxiety and depression in patients with advanced cancer? *Supportive Care in Cancer, 14*(4), 379–385.
McIntosh, D. N. (1995). Religion-as-schema, with implications for the relation between religion and coping. *The International Journal for the Psychology of Religion, 5*(1), 1–16.

Miner, M. H. (2008). Healthy questing and mature religious reflection: Critique, antecedents, and relevance of attachment theory? *Journal of Psychology and Theology, 36*(3), 222.
Morgan, P. D., Gaston-Johansson, F., & Mock, V. (2006). Spiritual well-being, religious coping, and the quality of life of African American breast cancer treatment: A pilot study. *ABNF Journal, 17*(2), 73.
Musa, A. S., & Pevalin, D. J. (2012). An Arabic version of the spiritual well-being scale. *International Journal for the Psychology of Religion, 22*(2), 119–134.
Musa, A. S., & Pevalin, D. J. (2014). Psychometric evaluation of the Arabic version of the Spiritual Well-Being Scale on a sample of Jordanian Arab Christians. *Journal of Psychology and Theology, 42*(3), 293–301.
Musgrave, C. F., & McFarlane, E. A. (2003). *Israeli oncology nurses' religiosity, spiritual well-being, and attitudes toward spiritual care: A path analysis.* Paper presented at the oncology nursing forum.
Mystakidou, K., Tsilika, E., Parpa, E., Pathiaki, M., Patiraki, E., Galanos, A., et al. (2007). Exploring the relationships between depression, hopelessness, cognitive status, pain, and spirituality in patients with advanced cancer. *Archives of Psychiatric Nursing, 21*(3), 150–161.
Pahlevan Sharif, S. (2017). Locus of control, quality of life, anxiety, and depression among Malaysian breast cancer patients: The mediating role of uncertainty. *European Journal of Oncology Nursing, 27,* 28–35. https://doi.org/10.1016/j.ejon.2017.01.005.
Pahlevan Sharif, S., Ahadzadeh, A. S., & Perdamen, H. K. (2017). Uncertainty and quality of life of Malaysian women with breast cancer: Mediating role of coping styles and mood states. *Applied Nursing Research, 38,* 88–94.
Pahlevan Sharif, S., & Mahdavian, V. (2015). *Structural equation modeling by the use of AMOS.* Tehran: Fazel.
Pahlevan Sharif, S., Mostafiz, I., & Guptan, V. (forthcoming). Structural equation modeling in nursing research: A systematic review. *Nurse Researcher.*
Pargament, K. I. (2001). *The psychology of religion and coping: Theory, research, practice*. New York: Guilford Press.
Pargament, K. I., & Mahoney, A. (2002). Spirituality: Discovering and conserving the sacred. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 646–659). New York: Oxford University Press.
Perkins, E. A., Small, B. J., Balducci, L., Extermann, M., Robb, C., & Haley, W. E. (2007). Individual differences in well-being in older breast cancer survivors. *Critical Reviews in Oncology/Hematology, 62*(1), 74–83.
Prince-Paul, M. (2008). Relationships among communicative acts, social well-being, and spiritual well-being on the quality of life at the end of life in patients with cancer enrolled in hospice. *Journal of Palliative Medicine, 11*(1), 20–25.
Purnell, J. Q., & Andersen, B. L. (2009). Religious practice and spirituality in the psychological adjustment of survivors of breast cancer. *Counseling and values, 53*(3), 165–182.
Rippentrop, A. E., Altmaier, E. M., & Burns, C. P. (2006). The relationship of religiosity and spirituality to quality of life among cancer patients. *Journal of Clinical Psychology in Medical Settings, 13*(1), 29–35.
Rodin, G., Lo, C., Mikulincer, M., Donner, A., Gagliese, L., & Zimmermann, C. (2009). Pathways to distress: the multiple determinants of depression, hopelessness, and the desire for hastened death in metastatic cancer patients. *Social Science and Medicine, 68*(3), 562–569.
Romero, C., Friedman, L. C., Kalidas, M., Elledge, R., Chang, J., & Liscum, K. R. (2006). Self-forgiveness, spirituality, and psychological adjustment in women with breast cancer. *Journal of Behavioral Medicine, 29*(1), 29–36.
Rowland, J. H., & Bellizzi, K. M. (2008). Cancer survivors and survivorship research: A reflection on today's successes and tomorrow's challenges. *Hematology/Oncology Clinics of North America, 22*(2), 181–200.
Salsman, J., Yost, K. J., West, D. W., & Cella, D. (2008). The differential association of spiritual well-being on health-related quality of life in colorectal cancer: A multi-site examination of the role of meaning/peace. *Annals of Behavioral Medicine, 35,* 158.
Schreiber, J. A., & Brockopp, D. Y. (2012). Twenty-five years later—what do we know about religion/spirituality and psychological well-being among breast cancer survivors? A systematic review. *Journal of Cancer Survivorship, 6*(1), 82–94.
Shaha, M., Cox, C. L., Talman, K., & Kelly, D. (2008). Uncertainty in breast, prostate, and colorectal cancer: implications for supportive care. *Journal of Nursing Scholarship, 40*(1), 60–67. https://doi.org/10.1111/j.1547-5069.2007.00207.x.
Sherkat, D. E., & Ellison, C. G. (1999). Recent developments and current controversies in the sociology of religion. *Annual review of sociology, 25,* 363–394.

Smith, B. W., Pargament, K. I., Brant, C., & Oliver, J. M. (2000). Noah revisited: Religious coping by church members and the impact of the 1993 Midwest flood. *Journal of Community Psychology, 28*(2), 169–186.

Soleimani, M. A., Pahlevan Sharif, S., Yaghoobzadeh, A., Sheikhi, M. R., Panarello, B., & Win, M. T. M. (2016). Spiritual well-being and moral distress among Iranian nurses. *Nursing Ethics*. https://doi.org/10.1177/0969733016650993.

Tix, A. P., & Frazier, P. A. (1998). The use of religious coping during stressful life events: Main effects, moderation, and mediation. *Journal of Consulting and Clinical Psychology, 66*(2), 411.

Vallurupalli, M. M., Lauderdale, M. K., Balboni, M. J., Phelps, A. C., Block, S. D., Ng, A. K., et al. (2012). The role of spirituality and religious coping in the quality of life of patients with advanced cancer receiving palliative radiation therapy. *The Journal of Supportive Oncology, 10*(2), 81.

Visser, A., Garssen, B., & Vingerhoets, A. (2010). Spirituality and well-being in cancer patients: A review. *Psycho-Oncology, 19*(6), 565–572.

Wildes, K. A., Miller, A. R., de Majors, S. S. M., & Ramirez, A. G. (2009). The religiosity/spirituality of Latina breast cancer survivors and influence on health-related quality of life. *Psycho Oncology, 18*(8), 831–840.

Yanez, B., Edmondson, D., Stanton, A. L., Park, C. L., Kwan, L., Ganz, P. A., et al. (2009). Facets of spirituality as predictors of adjustment to cancer: Relative contributions of having faith and finding meaning. *Journal of Consulting and Clinical Psychology, 77*(4), 730.

Yip, C., Bhoo, P. N., & Teo, S. (2014). Review of breast cancer research in Malaysia. *Medical Journal of Malaysia, 69,* 8–12.

Zavala, M. W., Maliski, S. L., Kwan, L., Fink, A., & Litwin, M. S. (2009). Spirituality and quality of life in low-income men with metastatic prostate cancer. *Psycho-Oncology, 18*(7), 753–761.