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Spiritual wellbeing, depression, and stress among hemodialysis patients in Jordan

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## Abstract

**Purpose:** The spiritual dimension of a patient's life is an important factor that may mediate detrimental impacts on mental health. The lack of research investigating spiritual wellbeing, religiosity, and mental health among Jordanian hemodialysis patients encouraged this research. This study explored levels of spiritual wellbeing and its associations with depression, anxiety, and stress. **Design:** A quantitative, cross sectional correlational study. **Methods:** A sample of 218 Jordanian Muslim hemodialysis patients completed a structured, self-administered questionnaire. The data were analyzed using descriptive statistics and linear multivariate regression models. **Findings:** The hemodialysis patients had, on average, relatively low levels of spiritual wellbeing, moderate depression, severe anxiety, and mild to moderate stress. The results of the regression models indicated that aspects of spiritual wellbeing were negatively associated with depression, anxiety and stress, but only existential wellbeing consistently retained significant associations after controlling for religious wellbeing, religiosity and socio-demographic variables. **Conclusions:** Greater spiritual and existential wellbeing of Jordanian hemodialysis patients were significantly associated with less depression, anxiety, and stress. It appears that these patients use religious and spiritual beliefs and practices as coping mechanisms to overcome their depression, anxiety and stress. The implications for holistic clinical practice are explored.

Keywords: spirituality, religiosity, depression, anxiety, stress, hemodialysis, Jordan

## **Introduction**

Hemodialysis becomes a necessary treatment for patients with End-Stage Renal Disease (ESRD) but is not a cure. ESRD causes patients distress due to the radical changes to their personal life style, pain, chronic symptoms, and fear of death (Deal & Grassley, 2012) along with the necessary treatment of hemodialysis. ESRD has become an important worldwide public health problem (Nabolsi, Wardam, & Al-Halabi, 2015) and in Jordan it is one of the leading causes of morbidity and mortality (Taraweh & Al-Qaisi, 2012). According to the Jordanian Ministry of Health the number of patients with ESRD undergoing hemodialysis increased from 2,636 in 2007 to 4,767 in 2012 (Taraweh & Al-Qaisi, 2012).

Living with such a life-threatening disease is likely to have a negative impact on the mental health of ESRD patients. Depression is a common psychological problem in hemodialysis patients with ESRD in Jordan (Nabolsi et al., 2015). The spiritual dimension of a patient's life is an important factor that may mediate detrimental impacts on mental health (Sharifnia, Hojjati, Nazari, Qorbani, & Akhoondzade, 2012). Several studies demonstrate the importance of spiritual wellbeing and religiosity on the mental health of hemodialysis patients. It has been reported that the spiritual and religious aspects of hemodialysis patients' lives play an important role in helping with coping and adaptation to their illness, improving or maintaining mental health, and improving their quality of life (Davison & Jhangr, 2010; Lucchetti, Almeida, & Granero, 2010; Tanyi, Werner, Recine, & Sperstad, 2006).

The Jordanian Nursing Care Standards (2005) note that the nursing assessment of a patient's health needs should include an assessment of their spiritual needs. The importance of spirituality and religiosity to Jordanian patients, the lack of research investigating these attributes among hemodialysis patients, and the high incidence of depression among hemodialysis patients encouraged this research. This study aims to investigate the relationship between spiritual wellbeing, religiosity, and mental health in terms of depression, anxiety, and stress among Jordanian hemodialysis patients with ESRD.

## **Background**

### **Mental health of hemodialysis patients**

Depression and anxiety are common psychological problems among hemodialysis patients. In Jordan, Nabolsi et al. (2015) found that more than 50% of hemodialysis patients reported moderate to severe depression and, of these, more than 21% had severe depression. These mental health issues were also linked to reduced adherence to treatment and lower quality of life.

Studies in Western countries have shown that approximately 30% of hemodialysis patients had depression (Chilcot, Wellsted, Davenport, & Farrington, 2011; Cukor, Coplan, Brown, Peterson, & Kimmel, 2008) and more than 40% suffered from anxiety including stress (Cukor et

al., 2008). Studies have also found that hemodialysis patients with depression had lower self-reported health and poorer quality of life (Cukor et al., 2008), and maladaptive illness representation (Chilcot et al., 2011).

### **Spiritual wellbeing and mental health**

Spiritual wellbeing is commonly described in terms of a religious dimension (vertical) that refers to a person's sense of wellbeing in relation to God and an existential dimension (horizontal) that refers to a person's sense of purpose, meaning, satisfaction in life and life direction (Ellison, 1983). Rovers and Kocum (2010, p. 17) described spirituality as "the driving force which gives meaning, stability, and purpose to life through relatedness to dimensions that transcend the self". A consensus in the literature has emerged that spirituality and religiosity are two distinct, but related, concepts (Joshnloo, 2012; Sessanna, Finnell, Underhill, Chang, & Peng, 2011). The North American Nursing Diagnosis Association, International (2009, p. 299) defined religiosity as "the ability to increase reliance on religious beliefs and/or participate in rituals of a particular faith tradition". In this study, spiritual wellbeing and religiosity were operationalized using separate measures.

Individuals may use spirituality and religiosity as coping mechanisms, especially as sources of strength and support, to help overcome the stressful influences of psychological problems associated with physical illnesses (Martínez & Custódio, 2014; Valcanti, Chaves, Mesquita, Nogueira, & Carvalho, 2012). Spirituality and religiosity help some patients to transcend the realities of illness and suffering and to find meaning, purpose, and direction in their life in the context of their illness (Deal & Grassley, 2012; Reig-Ferrer et al., 2012).

A comprehensive systematic review by Koenig (2012) was performed to explore the relationship between religion and/or spirituality and both mental and physical health among various patients of medical, psychiatric, and terminal illnesses. The findings revealed that higher spirituality and religiosity are associated with better mental health including less depression, anxiety, and stress. In hemodialysis patients, research studies have shown that higher spiritual wellbeing and religiosity were associated with reduced likelihood of depression, anxiety, and stress (Martínez & Custódio, 2014; Reig-Ferrer et al., 2012). Similarly, the literature review by Lucchetti et al. (2010) indicated that higher levels of spirituality and religiosity were associated with less depression in dialysis patients. A study that used data from a sample of Iranian Muslim hemodialysis patients found that spiritual coping and religiosity were positively associated with health status domains including the anxiety/depression domain (Saffari et al., 2013).

The majority of published studies of spiritual wellbeing, religiosity, and mental health have been carried out using Western samples and reflect a predominantly Christian tradition (Koenig, Al Zaben, & Khalifa, 2012) and studies with Arab Muslim samples are scarce. This study uses a sample of Jordanian Muslim hemodialysis patients and aims to first describe levels of spiritual wellbeing, religiosity, depression, anxiety, and stress and, second, to explore the associations between spiritual wellbeing, religiosity, depression, anxiety, and stress to provide initial evidence of the potential impact of spiritual wellbeing and religiosity on aspects of mental health.

## **Method**

### **Sample and Setting**

Participants were 218 Muslim hemodialysis patients drawn from eight public hospitals in northern and central Jordan. Four of these hospitals are large regional teaching and referral hospitals with a capacity ranging from 500 to more than 1,000 beds. The remaining hospitals have a capacity of more than 200 beds and are comprehensive medical centers with multi-specialty care. These hospitals have an equal chance of governmental support and a similar quality nursing care for its hospitalized patients, including hemodialysis patients. Inclusion criteria required participants who: were Muslims; were 18 years of age or older; were medically diagnosed with ESRD; had been on hemodialysis for at least three months; could read, write and clearly understand Arabic; were physically able (had a stable clinical condition, not suffering from lethargy, no visual and/or hearing impairment); and were emotionally stable (i.e. being not very anxious, angry, or crying). Eligibility of patients to participate according to their physical and emotional status was determined by the nurse in charge of the unit. Exclusion criteria included participants who were previously diagnosed with psychological, cognitive, or mental retardation disorders. These inclusion and exclusion criteria were set to ensure that all participants were Muslim adults, undergoing hemodialysis as a result of ESRD, and free from any significant disorders that affect their abilities to appropriately consent and to respond to the questionnaire items.

### **Procedure**

Permission was obtained to use the Arabic version of Ellison's (1983) Spiritual Well-Being Scale (SWBS) in this study. Ethical approval was granted by the Institutional Review Board of Al al-Bayt University and permission to approach the hemodialysis patients was obtained from all the participating hospitals.

All patients who met the inclusion criteria in the participating hospitals during the data collection period (a four-month period in 2015) were the target participants. On each day of data collection the hospital medical files of the patients were initially reviewed to obtain such general information as religion, age, and medical diagnosis. Then, the nurse in charge of the unit was asked to contact the potential participants to determine their eligibility for participation and willingness to meet with research team. Potential participants were given information about the purpose of the study, how anonymity and confidentiality would be maintained, and the right to refuse participation or to withdraw from the study at any time without affecting their care. All eligible and interested hemodialysis patients were invited to participate in the study and, after giving verbal consent, were supplied with a questionnaire. Consent to continue in the study was implied by the completion and return of the questionnaire. This form of consent was explained in the information sheet and is common practice for low-risk, paper-based studies. Participants were asked to return the completed questionnaires to the researcher at the time of meeting or to the head nurse or nurse in charge before leaving the hemodialysis unit. The questionnaires required about 20–25 minutes to complete. The response rate was 89% (223 from 250 distributed

questionnaires). Of the returned questionnaires, five were discarded because of missing basic information, leaving a final sample of 218.

## Measures

The socio-demographic data included information on age, gender, education, income, employment status, and marital status. Various self-report tools were used to measure spiritual wellbeing and its subscales (religious and existential wellbeing), religiosity, depression, anxiety, and stress.

**Spiritual Well-Being Scale.** The Spiritual Well-Being Scale (SWBS) was originally developed by Paloutzian and Ellison (1982) and has become a widely used and well-researched instrument. It is a 20-item self-reported paper-pencil instrument. Each item is answered on a six-point Likert scale ranging from 1='strongly disagree' to 6='strongly agree'. The SWBS consists of two subscales: the Religious Well-Being Subscale (RWBS) and Existential Well-Being Subscale (EWBS). Odd-numbered items (10 items) are designed to measure religious wellbeing and contain the word "God" and even-numbered items (10 items) measure existential wellbeing and ask such things as life satisfaction, meaning and purpose, and life direction. The overall spiritual wellbeing score is computed by summing responses to all 20 items after reversing the negatively worded items. The total scores of SWBS range from 20 to 120 with higher scores representing greater wellbeing.

The Arabic version of the SWBS was developed by XX and YY(ddd1) [anonymized for review] and it has good construct validity with high internal consistency (Cronbach's Alpha 0.82 – 0.87) in adult Arab Muslim and Christian samples (XX, dddd; XX & YY, ddd1; XX & YY, ddd2). In this study the Cronbach's alphas for the SWBS total score, RWBS, and EWBS are 0.87, 0.84, and 0.75 respectively.

**Religiosity.** A scale with items representing both religious behavior and religious attitudes was used to measure religiosity (Makros & McCabe, 2003). The religiosity scale was developed by the one of the authors (XX) based on a literature review and the judgments of an expert panel consisting of two members specializing in Islamic studies and another member in Arabic Linguistics (all holding doctoral degrees). The items of the religiosity scale were revised for language, cultural, and religious consistency to suit the Arab Muslims. The preliminary religiosity items were pretested on a convenience sample of 10 Jordanian undergraduate students. Their comments indicated that the scale items were suitable, not confusing, and easy to complete. Religious behavior items consisted of four five-point Likert-type questions asking participants about the frequency of praying, attending the mosque to pray, reading from the Qur'an, and meditating (dhikr). For males, religious behavior included an additional item that referred to the frequency of mosque attendance. For many Muslims in Jordan, a woman's prayer in her house is better than praying in the mosque. It is described in the Prophetic Tradition, as in the hadith (narration) reported by Abu Dawood: "Do not prevent your women from going to the mosque, even though their houses are better for them)" (Saheeh al-Jaami', 7458). One five-point item ranging from Unimportant (coded as 1) to Very important (5) was designed to measure

religious attitudes where participants were asked the importance of their faith to them. The total raw scores of the religiosity for males range from 5 to 25 and for females range from 4 to 20 with a higher score representing greater religiosity. Both scales were converted to Z scores by gender before being used in the analysis. Evidence of reliability and convergent-related validity for this scale has been reported in previous studies (Musa, 2015; Musa & Pevalin, 2011; Musa & Pevalin, 2015). In this study the internal consistency of the religiosity scale for females and males were acceptable to high with alpha coefficients of 0.77 and 0.82, respectively. Moreover, the significant moderate positive correlation between the religiosity scale and the SWBS, as theoretically expected, provided evidence of convergent-related validity for this scale.

**Depression Anxiety Stress Scale (DASS-21).** The Depression Anxiety Stress Scale (DASS-21) is a 21-item self-report instrument. It was designed by Lovibond and Lovibond (1995) to measure the negative emotional states of depression, anxiety, and stress. It consists of three scales each with seven items: Depression Scale (DS), Anxiety Scale (AS), and Stress Scale (SS). Items of the DASS-21 assess the severity or frequency of symptoms over the past week and each item is answered on a four-point Likert scale ranging from 'did not apply to me at all' (0) to 'most of the time' (3). Scores range from 0 to 21 for each scale and a total score on each scale can differentiate between individuals with normal values and those with mild, moderate, or severe levels of emotional distress. The DASS-21 developers set cut-off points for each scale. For depression, anxiety, and stress scales respectively, cut-off scores of 0-4, 0-3, 0-7 are labeled as normal levels, cut-off scores of 5-6, 4-5, 8-9 are labeled as mild levels, cut-off scores of 7-10, 6-7, 10-12 are labeled as moderate levels, and cut-off scores of 11-13, 8-9, 13-16 are labeled as severe levels. Taouk, Lovibond, and Laube (2001) developed and examined the psychometric properties of the Arabic version of the DASS-21 using a sample of Arabic-speaking Australian adult immigrants. Their findings revealed that the Arabic DASS-21 had a high internal consistency with alpha coefficients of 0.93, 0.90, 0.93 for the DS, AS, and SS respectively. Evidence of construct validity using factor analysis was also reported for these scales (Taouk et al., 2001). In a recent study, Mohammad, Gamble, and Creedy (2011) showed that the internal consistency of the Arabic DASS-21 was acceptable to high with Cronbach's alpha coefficients ranging from 0.77 to 0.88 using a sample of Jordanian women during pregnancy and the postpartum period. In this study the Cronbach's alphas for the DASS-21 total score, DS, AS, and SS were 0.90, 0.75, 0.76, and 0.77 respectively.

## **Analysis**

Descriptive statistics, bivariate correlational analysis, and multivariate regression analysis were used to analyze the data using SPSS for Windows, version 17.0. Pearson's  $r$  was used to examine linear associations between key variables. One-way ANOVA and independent-samples  $t$ -tests were used to examine whether significant differences existed between groups in the socio-demographic variables. To determine the significant predictors of the dependent variables in this study (depression, anxiety, and stress), linear multivariate regressions were performed. Four regression models were used to estimate the effect of the independent variables first on the

DASS-21 total score, second on the Depression Scale score, third on the Anxiety Scale score, and fourth on the Stress Scale score. The level of significance for all bivariate and multivariate tests was set at  $p < 0.05$ .

## Results

### Sample characteristics

The participants ranged in age from 18 to 84 years, ( $M=48.5$ ,  $SD=15.2$ ). Most participants were male (59.2%,  $n=129$ ), earned less than 400 Jordanian Dinars per month (1 US dollar = 0.71 JD) (54.6%,  $n=119$ ), and were married (64.7%,  $n=141$ ) with 20.6% ( $n=45$ ) being single. The majority of participants were not working (78.4%,  $n=171$ ). 41.7% ( $n=91$ ) had a high school level of education with another 28.4% ( $n=62$ ) educated to college or university level. Of the socio-demographic variables, categories of education showed significant differences for the DS and SS. These results showed that participants who had a primary level of education reported statistically significantly higher mean scores on the DS and SS than those who had a college or university level of education. For the AS scale, single participants had significantly lower average scores than divorced or widowed participants. There were no other significant differences for the categories of the demographic variables. The overall sample statistics and distributions by socio-demographic variables of the SWBS total score, its subscales (RWBS and EWBS), DASS-21 total score, and its scales (DS, AS, and SS) are presented in Table 1.

The participants reported relatively low mean levels of SWBS ( $M=88.2$ ,  $SD=15.2$ ) and EWBS ( $M=41.0$ ,  $SD=7.7$ ), but at the same time high mean levels of RWBS ( $M=47.2$ ,  $SD=9.6$ ). They reported a mean level of moderate depression ( $M=8.5$ ,  $SD=4.5$ ), a mean level of severe anxiety ( $M=8.2$ ,  $SD=4.7$ ), and a mean level of mild to moderate stress ( $M=9.2$ ,  $SD=4.6$ ).

< Table 1 about here >

### Associations between Spiritual Wellbeing, Religiosity, Depression, Anxiety, and Stress

Table 2 presents the bivariate correlation matrix between the SWBS total score, its subscales (RWBS and EWBS), religiosity, DASS-21, and its scales DS, AS, and SS. The SWBS had statistically significant moderate negative correlations with the DASS-21 ( $r = 0.30$ ,  $p < 0.001$ ) and DS ( $r = 0.39$ ,  $p < 0.001$ ), and significant weak negative correlations with the AS ( $r = 0.26$ ,  $p < 0.001$ ) and SS ( $r = 0.17$ ,  $p < 0.05$ ). The EWBS had statistically significant moderate negative correlations with the DASS-21 ( $r = 0.42$ ,  $p < 0.001$ ), DS ( $r = 0.50$ ,  $p < 0.001$ ), AS ( $r = 0.31$ ,  $p < 0.001$ ), and SS ( $r = 0.33$ ,  $p < 0.001$ ) while the RWBS had statistically significant weak negative correlations with the DASS-21 ( $r = 0.14$ ,  $p < 0.05$ ), DS ( $r = 0.21$ ,  $p < 0.01$ ), and AS ( $r = 0.16$ ,  $p < 0.05$ ), and a non-significant correlation with the SS. There were no significant correlations between religiosity and the DASS-21, DS, AS, and SS.

< Table 2 about here >

### Predictors of Depression, Anxiety, and Stress

Four linear regression models were estimated to evaluate the influence of the EWBS,



RWBS, and religiosity on the DASS-21, DS, AS, and SS after controlling for the socio-demographic variables. In the four models, all independent variables explained 26%, 30%, 15%, and 23% of the variance in DASS-21, DS, AS, and SS respectively. In all models, EWBS has large, negative, and statistically significant effects on the outcome variables. In model 4, RWBS has a small, positive and statistically significant effect on SS, and non-significant effects on other models. Of the socio-demographic controls, only education has significant effects in all models, with the college or university level participants having significantly lower scores on the DASS-21, DS, AS, and SS, than the primary level participants. Marital status has significant effects in models 1, 3, and 4 with the divorced or widowed participants having significantly higher scores on the DASS-21, AS, and SS, than the single participants and, also in model 4, married participants have significantly higher scores on the SS than single participants. Results of the multivariate regression models are shown in Table 3.

< Table 3 about here >

### **Discussion**

The main finding of this study is that among Jordanian Muslim hemodialysis patients' spiritual wellbeing, existential wellbeing, and religious wellbeing were negatively associated with depression, anxiety, and stress. However, in the final multivariate regression model only existential wellbeing retained a significant strong association with depression, anxiety, and stress after controlling for religious wellbeing, religiosity, and socio-demographic variables. The findings also demonstrated that those patients had relatively low mean levels of spiritual and existential wellbeing, high mean levels of religious wellbeing and religiosity, and mean scores of moderate depression, severe anxiety, and mild to moderate stress. This study is the first to explore levels of spiritual wellbeing, existential wellbeing, religious wellbeing and religiosity, and their association with depression, anxiety and stress in a sample of Arab Muslim hemodialysis patients. Also, the distributions of scores across the socio-demographic variables of this study are the first preliminary findings of population norms for the SWBS, EWBS, DASS-21, DS, AS, and SS in Arab Muslim hemodialysis patients.

#### **Levels of Spiritual, Existential, and Religious Wellbeing, Religiosity, and Mental Health**

This study revealed that hemodialysis patients suffer from disturbances in spiritual and existential wellbeing, which include such aspects as life satisfaction, life direction and future, and meaning and purpose of life. The relatively low average levels of the spiritual and existential wellbeing are supported by and consistent with other studies using non-Arab Muslim hemodialysis patient samples (Asayesh, Zamanian & Mirgheisari, 2013; Sharifnia et al., 2012) and Christian Western hemodialysis patient samples (Davison & Jhangr, 2010; Reig-Ferrer et al., 2012; Tanyi & Werner, 2007). Chaves, Carvalho, Terra and Souza (2010) found that 27.5% of chronic renal disease patients undergoing hemodialysis met the criteria of the nursing diagnosis "impaired spirituality". Similarly, a qualitative study by Finkelstein and Finkelstein (2000) revealed that chronic dialysis patients experience the pain of spiritual distress as a main theme. To explore causes of these low levels of spirituality and existential wellbeing and suggestions for

improvement from the perspective of hemodialysis patients a different line of research is needed, using various qualitative research methods.

The high mean levels of religious wellbeing and religiosity in this study revealed that these dimensions are important to the lives of these hemodialysis patients during suffering and illness. In terms of measured aspects of these dimensions, the findings indicated that those patients have a high mean level of a close, deep, and satisfied relationship with God, getting strength and support from God, praying, remembrance of Allah (dhikr), and reading from the Qur'an. Several studies similar to the current one reported high levels of religious wellbeing and religiosity (Chaves et al., 2010; Tanyi & Werner, 2007) among those patients. For many Muslims their relationship with God, religious beliefs, and orthodox religious rites are sources of strength and support that give them a sense of security and wellbeing during suffering and illness. The high levels of religious beliefs and activities during suffering and illness among many Muslims have their roots in Islamic teachings, such as the translation of the meaning of the Qur'anic verses: "And when I am ill, it is He (God) who cures me" (The Qur'an 26: 80); "But whosoever turns away from My Reminder, certainly for him is a life of hardship" (The Qur'an 20: 124); and "And when My servants ask you, [O Muhammad], concerning Me - indeed I am near. I respond to the invocation of the supplicant when he calls upon Me. So let them respond to Me [by obedience] and believe in Me that they may be [rightly] guided" (The Qur'an 2: 186).

The scores obtained from the DASS-21, DS, AS, and SS revealed that these hemodialysis patients had mean scores of moderate depression (32.5% of patients had severe to extremely severe depression), severe anxiety (54.1% had severe to extremely severe anxiety), and mild to moderate stress (23.4% had severe to extremely severe stress). These findings are consistent with other studies using a sample of Jordanian hemodialysis patients (Nabolsi et al., 2015) and various Western samples of hemodialysis patients (Chilcot et al., 2011; Cukor et al., 2008). Therefore, this study supports the conclusion of previous research that depression, anxiety, and stress are common and substantial negative emotional states in hemodialysis patients.

### **Associations between Spiritual, Existential, and Religious Wellbeing, Religiosity, and Mental Health**

In this study, the participants with greater spiritual and existential wellbeing were more likely to have less depression, anxiety and stress. These results are comparable and support results of previous research which revealed that higher levels of spiritual and existential wellbeing are associated with less depression, anxiety and stress in Western hemodialysis patient samples (Lucchetti et al., 2010; Martínez & Custódio, 2014; Reig-Ferrer et al., 2012). The positive association between spiritual and existential wellbeing, and mental health among the hemodialysis patients in this study has its roots in Islamic teachings, such as the translation of the meaning of the Qur'anic verses: "Those who believe and whose hearts have rest in the remembrance of Allah, Verily, in the remembrance of Allah do hearts find rest" (Qur'an 13: 28) and "Oh you who believe, enter into peace, all of you" (Qur'an 2: 208). Moreover, many Muslim patients view their suffering and illness as a part of life, a test from Allah, an Allah's will, and a

way of atonement for their sins and rewarding. These Islamic ethics are supported by the Qur'anic verses translated as: "And We will surely test you with something of fear and hunger and a loss of wealth and lives and fruits, but give good tidings to the patient, Who, when disaster strikes them, say, "Indeed we belong to Allah, and indeed to Him we will return"" (Qur'an 2: 154-156).

It is particularly interesting that religiosity was not significantly associated with depression, anxiety, and stress and that religious wellbeing had only a weak association with depression and anxiety and a non-significant association with stress, although similar findings were also reported in previous studies (Martínez & Custódio, 2014). Martínez and Custódio (2014) found that the religious wellbeing of hemodialysis patients was not associated significantly with mental health and psychological stress. Moreover, it was reported with hemodialysis patients that religiosity was not significantly associated with several domains of health-rated quality of life (Davison & Jhangr, 2010) and with a patient's survival (Spinale et al., 2008). This study suggests that the influence of religiosity and religious wellbeing on depression, anxiety, and stress operates through spiritual wellbeing, in particular existential wellbeing, as there were significant moderate to strong correlations between religiosity and religious wellbeing, and between spiritual and existential wellbeing. The latter had significant correlations with depression, anxiety, and stress. The significant positive associations between religiosity and spiritual and existential wellbeing were consistent with other studies using Western and non-Arab Muslim hemodialysis patients (Asayesh et al., 2013; Davison & Jhangr, 2010; Reig-Ferrer et al., 2012; Sharifnia et al., 2012). It would appear that for the Jordanian Muslim participants in this study their sense of religiosity, spiritual wellbeing, and existential wellbeing were intimately interwoven, in that their religiosity was reflected through their spiritual and existential wellbeing. Future studies are warranted to investigate the mediating effect of existential wellbeing on the association between religiosity and various measures of mental health and wellbeing.

Findings of this study suggest that Arab Muslim hemodialysis patients might use religious belief and practice as coping mechanisms to achieve higher levels of spiritual and existential wellbeing, including having a sense of meaning, purpose, life direction, hope, optimistic outlook, comfort, security, and satisfaction with life. Through having higher levels of these aspects of existential wellbeing, hemodialysis patients find a means to overcome their depression, anxiety, and stress. The pathways through which spirituality and religiosity can affect the individual's health and wellbeing are still underdeveloped in the literature (Aldwin, Park, Jeong & Nath, 2014). However, several authors have proposed that spirituality and religiosity influence health outcomes through promoting meaning, purpose, connectedness, and hope (Koenig, 2008), behavioral and emotional regulation (Aldwin et al., 2014), and permeating patient contexts with religious meaning and forgiveness (Park, 2012). Similarly, hemodialysis patients used religious/spiritual coping mechanisms in a positive way to deal with their disease and suffering (Valcanti et al., 2012). They give patients meaning, purpose, hope, peace, life direction (Reig-Ferrer et al., 2012), an optimistic outlook (Lucchetti et al., 2010) and a source of strength to transcend the realities of illness and suffering (Deal & Grassley, 2012).

## **Implications for nursing practice**

Several implications for nursing practice and research can be drawn from the findings of this study. The study suggests that addressing the spiritual and religious aspects of a patient's life and care in the clinical setting is important. It adds to the calls for integrating spirituality and religiosity into patient care, to enhance and promote spiritual health and wellbeing, to deal appropriately with the holistic nature of the individual, to provide comprehensive holistic care, and to achieve positive health outcomes including mental health. Similarly, comprehensive health promotion programmes for hemodialysis patients need to include aspects of spiritual and religious coping strategies in order to achieve higher levels of spiritual and mental health through supporting patients' religious and spiritual resources, assisting them in maintaining their religious and spiritual connections, and promoting further spiritual growth. This study focused on investigating associations of spiritual wellbeing and religiosity with negative emotional states for hemodialysis patients; therefore, further research is warranted to investigate associations of spirituality and religiosity with various aspects of health and wellbeing including positive emotional states, social wellbeing, physical wellbeing, general health and quality of life among those patients, and among patients with other life-threatening chronic diseases. This study demonstrated that while hemodialysis patients suffer from spiritual and existential disturbances, existential wellbeing was the strongest predictor of depression, anxiety and stress. Therefore, nurse administrators and nurses should increase efforts to focus on the existential dimension of spirituality when providing spiritual care, or when dealing with overall wellbeing during treatment.

Healthcare personnel, in particular nurses, need to be aware of patients' religiosity and spirituality in order to provide comprehensive and appropriate culture-specific spiritual care. Addressing hemodialysis patients' spirituality in nursing care is an essential component of high-quality care, and these patients wanted nephrology nurses to incorporate spirituality into their care by such means as supporting and maintaining their religious and spiritual resources and connections (Davison & Jhangr, 2010; Tanyi et al., 2006). A nephrology nurse who spends hours a day, several times a week with the same hemodialysis patients is in the best and unique position to assess their spiritual needs and give spiritual support and care (Deal & Grassley, 2012; Tanyi et al., 2006). Therefore, the findings of this study can be incorporated into basic nursing training programmes in Jordan, focusing on spirituality, health and nursing care. Furthermore, Jordanian nursing and healthcare institutions and nurse administrators may encourage conferences, seminars, and workshops focusing on these dimensions of health and care. Future research is recommended to explore the extent to which Jordanian nurses address patients' spirituality and religiosity in their daily care, and the extent to which spiritual care from them influences levels of spiritual and existential wellbeing, depression, anxiety, and stress for hemodialysis patients.

## **Limitations of the Study**

Some limitations to this study should be noted. First, although the sample size was

reasonably large (n=218) for this target population, generalization of the study findings to the total population of Jordanian hemodialysis patients cannot be assumed. The participants represented a homogeneous group who were primarily from the north and central regions of the country, and were a self-selected sample. Therefore, future research is recommended using a more representative sample including all regions in Jordan, Jordanian non-Muslim hemodialysis patients (e.g. Arab Christians), and other hemodialysis patients from different Arab countries. Second, the current study used a cross-sectional design, so no assumptions can be made about the direction of the significant association between SWBS, its subscales (RWBS and EWBS), DS, AS, and SS.

## Conclusion

In conclusion, this study revealed that depression, anxiety, and stress are common and substantial negative emotional states among Jordanian Muslim hemodialysis patients and that these patients suffer from spiritual and existential disturbances. However, the findings also revealed that greater spiritual wellbeing, existential wellbeing, and religious wellbeing were significantly associated with less depression, anxiety, and stress. Moreover, existential wellbeing in the final model was the only variable retaining a significant association controlling for religious wellbeing and religiosity. This study suggests that there is an indirect influence of religious wellbeing and religiosity on depression, anxiety, and stress through existential wellbeing. Overall, the study proposes that Jordanian hemodialysis patients might use their religious and spiritual belief and practice as a coping mechanism to overcome their depression, anxiety and stress through such means as promoting meaning, purpose, hope, life direction, optimistic outlook, security, satisfaction with life, connectedness and faith. In addition, the findings supported the conclusion of previous research that religiosity and spirituality are two distinct, but related, concepts.

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Table 1

*Distribution of the Arabic SWBS total score, its subscales (RWBS, EWBS), DASS-21 total score, and its scales (DS, AS, and SS) by Socio-demographic Variables. Jordanian Arab Muslim hemodialysis patients, N=218.*

Demographic variables	Categories	N	SWBS		RWBS		EWBS		DASS-21		DS		AS		SS	
Gender	Men	129	87.7	(16.0)	46.6	(10.2)	41.2	(7.7)	25.1	(11.6)	8.4	(4.4)	7.9	(4.3)	8.8	(4.3)
	Women	89	89.0	(14.1)	48.2	(8.5)	40.8	(7.8)	27.2	(13.3)	8.7	(4.6)	8.8	(5.3)	9.8	(4.9)
Education	Primary	65	88.5	(13.3)	48.2	(7.9)	40.3	(7.3)	29.6	(11.7)	9.6*	(4.2)	9.4	(4.7)	10.6*	(4.3)
	High School	91	90.2	(14.7)	48.2	(9.2)	41.9	(7.8)	25.1	(12.4)	8.3	(4.6)	8.0	(4.8)	8.8	(4.6)
	College/University	62	85.2	(15.2)	44.7	(11.3)	40.4	(8.0)	23.3	(12.3)	7.7*	(4.5)	7.4	(4.6)	8.2*	(4.6)
Income	<400JD	119	88.8	(13.9)	47.7	(8.8)	41.1	(7.5)	26.1	(12.4)	8.6	(4.4)	8.2	(4.7)	9.3	(4.7)
	400-599JD	62	89.4	(16.7)	47.6	(10.2)	41.8	(8.0)	23.9	(12.1)	7.9	(4.5)	7.6	(4.8)	8.4	(4.3)
	600-799JD	24	82.0	(16.6)	43.3	(10.4)	38.8	(7.7)	28.0	(10.0)	8.8	(3.2)	9.2	(4.1)	10.1	(4.2)
	>=800JD	13	89.1	(16.4)	48.6	(11.0)	40.5	(8.3)	30.3	(16.5)	10.2	(6.4)	10.2	(5.2)	10.0	(5.8)
Employment Status	Working	47	89.5	(14.7)	47.4	(9.3)	42.1	(7.1)	25.2	(12.4)	8.1	(4.5)	8.1	(4.8)	9.0	(4.7)
	Not working	171	87.9	(15.4)	47.2	(9.7)	40.7	(7.9)	26.2	(12.4)	8.7	(4.5)	8.3	(4.7)	9.2	(4.6)
Marital Status	Single	45	89.4	(13.0)	48.1	(8.7)	41.4	(6.2)	22.8	(13.3)	7.2	(4.9)	7.5*	(4.9)	8.2	(4.9)
	Married	141	88.5	(16.1)	47.4	(9.9)	41.1	(8.4)	26.1	(12.2)	8.8	(4.4)	8.1	(4.7)	9.3	(4.5)
	Divorced/Widowed	32	85.2	(14.3)	45.2	(9.2)	40.0	(6.6)	29.6	(10.8)	9.3	(3.8)	10.1*	(4.4)	10.2	(4.3)
Sample		218	88.2	(15.2)	47.2	(9.6)	41.0	(7.7)	25.9	(12.4)	8.5	(4.5)	8.2	(4.7)	9.2	(4.6)

Note: JD, Jordanian Dinars (1US\$=0.71JD); \*one-way ANOVA F-test  $p<0.05$ ; standard deviations in brackets; SWBS, Spiritual Well-Being Scale total score; RWBS, Religious Well-Being Subscale; EWBS, Existential Well-Being Subscale; DASS-21, Depression Anxiety Stress Scale total score; DS, Depression Scale; AS, Anxiety Scale; SS, Stress Scale.

Table 2

*Correlations between the Arabic SWBS, its subscales (RWBS, EWBS), Religiosity, DASS-21, and its scales (DS, AS, and SS). Jordanian Arab Muslim hemodialysis patients, N=218.*

	SWBS	RWBS	EWBS	Religiosity	DASS-21	DS	AS
RWBS	0.91**						
EWBS	0.85**	0.55**					
Religiosity	0.51**	0.47**	0.43**				
DASS	-0.30**	-0.14*	-0.42**	-0.09			
DS	-0.39**	-0.21**	-0.50**	-0.12	0.91**		
AS	-0.26**	-0.16*	-0.31**	-0.12	0.89**	0.71**	
SS	-0.17*	0.00	-0.33**	-0.01	0.89**	0.73**	0.67**

Notes: \*  $p < 0.05$  (2-tailed); \*\*  $p < 0.01$  (2-tailed); SWBS, Spiritual Well-Being Scale total score; RWBS, Religious Well-Being Subscale; EWBS, Existential Well-Being Subscale; DASS-21, Depression Anxiety Stress Scale total score; DS, Depression Scale; AS, Anxiety Scale; SS, Stress Scale.

Table 3

*Multiple Regression Analyses for DASS-21, and its scales (DS, AS, and SS). Jordanian Arab Muslim hemodialysis patients, N=218. Standardized regression coefficients.*

	Model 1	Model 2	Model 3	Model 4
	DASS-21	DS	AS	SS
Independent variables	$\beta$	$\beta$	$\beta$	$\beta$
EWBS	-0.50***	-0.57***	-0.31***	-0.48***
RWBS	0.07	0.04	-0.03	0.18*
Religiosity	0.10	0.11	0.04	0.12
Age	-0.06	0.03	-0.04	-0.15
Female	0.06	0.02	0.07	0.08
High school <sup>a</sup>	0.14	-0.09	-0.10	-0.18*
College/university <sup>a</sup>	-0.22**	-0.17*	-0.19*	-0.23**
Working	0.10	0.07	0.09	0.10
Married <sup>b</sup>	0.15	0.13	0.09	0.19*
Divorced/widowed <sup>b</sup>	0.20*	0.12	0.19*	0.22**
Model R <sup>2</sup>	0.26	0.30	0.15	0.23
Model F-ratio	7.11***	8.98***	3.66***	6.33***

Notes: \* $p < 0.05$  (2-tailed); \*\* $p < 0.01$  (2-tailed); \*\*\* $p < 0.001$  (2-tailed); <sup>a</sup> reference category: primary (<high school) education; <sup>b</sup> reference category: single; RWBS, Religious Well-Being Subscale; EWBS, Existential Well-Being Subscale; DASS-21, Depression Anxiety Stress Scale total score; DS, Depression Scale; AS, Anxiety Scale; SS, Stress Scale.