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ORIGINAL PAPER

Relationship Between Sleep Quality and Spiritual Well-Being/Religious Activities in Muslim Women with Breast Cancer

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Abstract For determining relationship between quality of sleep and spiritual well-being/religious activities in Muslim women with breast cancer (WBC), we conducted a cross-sectional study on 80 WBC who presented at all chemotherapy clinics in Qom, Iran, in 2012. We used Pittsburgh Sleep Quality Index (PSQI), spiritual well-being scale (SWBS), and religious activities (RA) questionnaire. Global PSQI score and its seven components score were not significantly correlated with total score of SWBS and its two subscales. Global PSQI score was not significantly correlated with total score of RA questionnaire ($P = 0.278$), but its "sleep latency" ($r = 0.235$, $P = 0.044$) and "use of sleep medications" ($r = 0.237$, $P = 0.040$) components were significantly correlated with total score of RA. Global PSQI was significantly correlated with "I don't get much personal strength and support from my God," "I believe there is some real purpose for my life" questions in SWBS, and "Attendance in mosque or religious places" subscale of RA.

Keywords Sleep quality · Spiritual well-being · Religious activities · Breast cancer

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Introduction

Breast cancer is the most common malignancy affecting women worldwide which has accounted for about forty-six thousand deaths in 2013 (World Health Organization 2013). In Iran, breast cancer is one of the most important growing health concerns, and Iranian women affected by breast cancer are at least 10 years younger than their counterparts in development countries (Mousavi et al. 2007; Harirchi et al. 2004).

With breast cancer survival rates increasing and regard to the chronic process and its side effects, it is now more important than ever to understand post-treatment quality of life with breast cancer (Shapiro et al. 2001; Reich et al. 2008). One important factor of life quality is status of sleep, as in a study, patients expressed difficulty in the initiation of sleep which lasted for at least 1 month and caused clinically significant impairment in social, occupational, and other important areas of functioning (American Psychiatric Association 2000).

According to polysomnographic studies, patients with breast cancer who had completed chemotherapy reported that they suffered from lighter sleep, decrease of deep sleep, REM and sleep efficacy (Fiorentino et al. 2005). Ancoli-Israel et al. (2006) showed that patients with breast cancer have poor sleep before the onset of chemotherapy. Another study reported that 73 % of breast cancer survivors had symptoms of insomnia and severe sleep disorders and also that women with breast cancer (WBC) expressed shorter sleep duration and higher rates of night time flashes in comparison with healthy women (Carpenter et al. 2004). Koopman et al. (2002) studied sleep disturbance in woman with metastatic breast cancer and found that 63 % had sleep disorders and 37 % took hypnotic drugs in the previous 30 days. Considering highlighted insomnia in cancer patients, for finding solution for this problem, several studies were conducted on different type of cancer patients (Howell et al. 2013; Hugel et al. 2004).

Spirituality and religiosity are two important factors that can affect patients' quality of life as well as quality of sleep (QoS), especially in Iran that religious is an integral part of most Iranian people's everyday life (Atef-vahid et al. 2011). Spiritual well-being (SWB) is known as one of the most important dimensions of health in human which prepares relationship among internal potencies. It is determined with features including stability in life, reconciliation, concordance, and impression of near relationship with God (Chu-engsatiansu 2003; Vader 2006). In fact, SWB and religious activities (RA) coordinate physical, mental, and social dimensions and can help cancer patients to cope with their situation (Aldwin et al. 2014; Koenig et al. 2000; Koenig 2008; Nelson et al. 2009; Gadit 2007).

Regarding the high prevalence of sleep disturbances in breast cancer patients, as well as lack of information about Muslim WBC, present study has been conducted to assess the relationship between QoS and spiritual well-being/religious activities in Iranian WBC.

Methods

Study Design

A cross-sectional study was conducted to assess the relationships among sleep quality, SWB, and RA in a sample of WBC.

Setting and Sampling

This study was conducted on WBC who presented at all of three chemotherapy clinics in Qom, Iran, between April and May 2012. Participants who had experience of chemotherapy at least three times were eligible. Patients affected by cardiovascular diseases, diabetes, psychological diseases, and other cancers, and also patients under psychiatric treatment were not included. Based on sample size calculation to assess correlation between SWB and QoS with an error probability of 5 % and a power of 80 %, based on results of previous study (Phillips et al. 2006), at least 77 participants are needed. During study period, three co-workers presented at three clinics in different days for recruiting patients. During sampling, 91 patients were recruited, but 11 women refused to participate. Sampling continued until 80 participants were included.

Ethical Consideration

The study protocol was approved by the ethical committee of the Qom University of Medical Sciences. All participants provided informed consent. All questionnaires were anonymous, and participation in this study was voluntary.

Measurements

Demographic data including age, educational level, marriage status, also menopausal status, history of present disease, and its treatments were collected. For data collection, we used three standardized questionnaires. Questionnaires were completed by participants just before onset of chemotherapy session. For illiterate patients, questions were asked by one research worker and answers were recorded.

Sleep Quality

To measure QoS, Pittsburgh Sleep Quality Index (PSQI) was used. This self-administered questionnaire measures QoS during previous month and contains 19 questions that yield seven components (scored from 0 to 3) including: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, use of sleep medications, and daytime dysfunction. The total score of PSQI is from 0 to 21. Higher scores show lower QoS. The score 6 or higher indicates that patient has sleep disorder (Buysse et al. 1989). Validity and reliability of the Persian version of PSQI in cancer patients have been well supported among Iranian patients with cancer (Shahidi et al. 2007). In this study, reliability was determined by Cronbach's alpha as 0.75.

Spiritual Well-Being

To measure SWB, the spiritual well-being scale (SWBS) was used. The SWBS is a 20-item self-administered instrument with two subscales, the religious well-being subscale (RWBS) and the existential well-being subscale (EBWS). The RWBS consists of ten items that determine an individual's relationship with God, and EWBS has ten items to determine a person's relationship with other individuals and the physical world. Each item is scored on a six-point ordinal scale (from strongly disagree = 1 to strongly agree = 6). Global scores for the instrument range from 20 to 120 and from 10 to 60 for each subscale. Higher scores show greater SWB (Paloutzian and Ellison 1982). Validity and reliability of

Persian version of SWBS have been well supported among Iranian patients with cancer (Baljani et al. 2011). In this study, reliability was determined by Cronbach's alpha as 0.74.

Religious Activity

We used religious activity (RA) questionnaire to measure religious activity. This questionnaire consists of 13 questions in 5 subscales including private religious practices (four items), attendance in mosque or other religious places (two items), religious support provided (two items) and religious support received (two items), and religiosity (three items). Possible total scores of RA ranged from 0 to 65. A higher score indicates more religious activity (Idler 1999). Validity and reliability of Persian version of RA questionnaire have been well supported (Heidari et al. 2013). In this study, internal consistency of this questionnaire was evaluated and Cronbach's alpha coefficient was 0.81.

Statistical Analysis

Data were analyzed using IBM SPSS software version 21. We used descriptive and analytic statistics. Independent *t* test was used for comparison of means between two poor and good QoS, and we used Pearson's correlation coefficient for testing correlation between two variables. A P value <0.05 was considered as significant different.

Results

All subjects were Shite Muslim. Mean age was 48 ± 6.9, and age range was 26–57. Most of the subjects were married (94 %), 30 % of subjects had high school educational level, and 41.3 % of them were postmenopausal. Most of the subjects (63.8 %) had received both surgery and chemotherapy. Mean time since diagnosis was 18.7 ± 12.5 months (range 3–48). Average length of chemotherapy was 4.8 ± 1.5 months (Table 1).

The average global PSQI was 8.97 ± 2.96 (range 4–16), and about 90.7 % of the subjects were classified as poor sleepers (PSQI ≥ 6). Mean scores of total score of SWB, religious well-being (RWB), and existential well-being (EWB) were 68.9 ± 3.95 (range 63–77), 36.61 ± 2.60 (range 31–45), and 32.36 ± 3.53 (range 24–38), respectively. Mean score of RA was 36.86 ± 6.44 (range 21–49) (Table 2).

Between two groups of patients with good and poor QoS, there were no significant differences in terms of mean scores of SWB ($P = 0.459$), RWB ($P = 0.865$), EBW ($P = 0.236$), RA ($P = 0.631$), and five components of RA ($P > 0.05$) (Table 3).

Global PSQI score was not significantly correlated with total score of SWBS ($P = 0.214$), score of RWBS ($P = 0.477$), and score of EWBS ($P = 0.524$). Also, none of seven components of PSQI were significantly correlated with score of SWBS, score of RWBS, and score of EWBS ($P > 0.05$). There was no significant correlation between global PSQI score and total score of RA ($P = 0.278$). Among seven components of PSQI, "sleep latency" ($P = 0.044$) and "use of sleep medications" ($P = 0.040$) were significantly correlated with global RA score (Table 4).

We also found significant negative correlations between global PSQI and question 9 "I don't get much personal strength and support from my God" ($r = -0.233$, $P = 0.048$), question 20 "I believe there is some real purpose for my life" ($r = -0.321$, $P = 0.005$) in SWBS and "Attendance in mosque or religious places" subscale of RA ($r = -0.246$, $P = 0.033$).

Table 1 Demographics and some cancer/treatment parameters of women with breast cancer, Qum, Iran, 2012

Variables	*N* (%)
Educational level	
Illiterate	22 (27.5)
Primary school	22 (27.5)
Secondary school	12 (15.0)
High school	24 (30.0)
Marital status	
Married	75 (93.8)
Widow	5 (6.2)
Menopause	
Yes	33 (41.3)
No	47 (58.7)
Time since diagnosis	
>1 year	20 (25.0)
1–2 year	45 (56.2)
<2 year	15 (18.8)
Treatments	
Only chemotherapy	7 (8.7)
Both chemotherapy and surgery	51 (63.8)
Chemotherapy, surgery, and radiotherapy	22 (27.5)

Table 2 Mean of PSQI, spiritual well-being scale, and religious activities score in women with breast cancer, Qum, Iran 2012

Variables	Mean ± SD
PSQI[a]	
Subjective sleep quality	1.50 ± 0.58
Sleep latency	1.82 ± 0.84
Sleep duration	0.83 ± 0.93
Sleep efficiency	1.58 ± 1.08
Sleep disturbance	1.42 ± 0.55
Use of sleep medications	0.28 ± 0.62
Daytime dysfunction	1.53 ± 0.62
Global	8.97 ± 2.96
Spiritual well-being scale	
Religious well-being	36.61 ± 2.60
Existential well-being	32.36 ± 3.53
Global	68.90 ± 3.95
Religious activity	
Private religious practices	14.73 ± 3.12
Attendance in mosque or religious places	8.63 ± 2.10
Religious support provided	3.62 ± 2.14
Religious support received	3.72 ± 2.10
Religiosity	6.18 ± 1.80
Global	36.86 ± 6.44

[a] Pittsburgh Sleep Quality Index

Table 3 Comparison of means of spiritual well-being and religious activities score between two groups with good and poor quality of sleep in women with breast cancer, Qum, Iran, 2012

Variables	Good QoS	Poor QoS	*P* value
Spiritual well-being scale			
Religious well-being	37 ± 2.76	36.58 ± 2.60	0.865
Existential well-being	32.57 ± 4.31	32.34 ± 3.48	0.236
Global	70.0 ± 4.34	68.80 ± 3.93	0.888
Religious activity scale			
Private religious practices	14.86 ± 2.34	14.71 ± 3.20	0.435
Attendance in mosque or religious places	8.43 ± 2.07	8.64 ± 2.11	0.824
Religious support provided	3.14 ± 2.54	3.67 ± 2.11	0.400
Religious support received	2.86 ± 2.79	3.80 ± 2.02	0.075
Religiosity	6.29 ± 2.93	6.16 ± 1.68	0.176
Global	35.57 ± 7.55	36.99 ± 6.37	0.936

Table 4 Correlation coefficients between spiritual well-being scale and PSQI, and religious activities score and PSQI in women with breast cancer, Qum, Iran, 2012

Variables	Religious well-being	Existential well-being	Spiritual well-being scale	Religious activity
Subjective sleep quality	0.051	−0.084	−0.054	0.0016
Sleep latency	−0.064	−0.054	−0.116	0.235*
Sleep duration	−0.047	−0.054	0.007	−0.028
Sleep efficiency	−0.207	−0.015	−0.175	−0.084
Sleep disturbance	0.050	−0.194	−0.174	0.010
Use of sleep medications	−0.033	−0.064	−0.094	0.237*
Daytime dysfunction	−0.013	0.046	0.040	0.194
Global PSQI	−0.088	−0.076	−0.156	0.130

* $P < 0.05$

Discussion

Based on our finding, the prevalence of sleep disorders among the WBC (defined as a global PSQI score ≥6) was 90.7 %. In a study conducted on cancer patients in Tehran, it was shown that 71.7 % of patients had poor sleep (PSQI score ≥6), but the majority of their subjects were men (59.3 %), and only 18.5 % of them were breast cancer patients (Shahidi et al. 2007). This may contribute to this difference. In other study in the USA, 65 % of WBC self-reported poor sleep in the month preceding chemotherapy (Beck et al. 2010). This difference may be due to that in our study, subjects received chemotherapy at least three times. Studies have shown that most of the WBC experience sleep disorders after initiation chemotherapy and poor QoS is one of important problems in cancer patients due to the effects of pain, fatigue, stress, or side effects of chemotherapy (Fiorentino et al. 2005; Ancoli-Israel et al. 2006; Carpenter et al. 2004; Koopman et al. 2002; Beck et al. 2010; Berger et al. 2007; Kuo et al. 2006).

In this study, we did not find significant correlation between QoS and SWB, and also there were no significant correlation between any components of PSQI with total score of SWB and RWB and EWB subscale scores. But we found significant negative relationship between PSQI with question 9 "I don't get much personal strength and support from my God" and with question 20 "I believe there is some real purpose for my life" in SWB questionnaire. These imply that WBC who held strong believes to God as a supporter or purpose for life have better QoS or conversely. Consistent with our finding, in Yang et al.'s (2008) study conducted on hemodialysis patients, there was no correlation between QoS and spiritual/religious activity, but patients who held spiritual beliefs more strongly reported more sleep disturbance, and patients who exercised strong religious beliefs reported less trouble in daytime dysfunction. In another study conducted on HIV-infected individuals, sleep quality was significantly related to total SWBS and EWBS, but not to RWBS (Phillips et al. 2006). A study conducted on Latina breast cancer survivors reported that high levels of religiosity/spirituality predict better functional well-being, and QoS was one of the functional well-being items in this study (Wildes et al. 2009).

In other study, patients with higher score of SWB had lower level of anxiety (Kaczorowski 1989). A study in Iran showed that patients with higher score of SWB were less depressed (MomeniGhaleghasemi et al. 2012). Studies in Iran have demonstrated that SWB can help WBC to cope with disease and decreases their psychological disorder and improves their quality of life after diagnosis of cancer and during treatment (Fasihiharandy et al. 2010; Taleghani et al. 2006; Sadjadian et al. 2011).

In our study, there was no significant correlation between QoS and global score of RA, but there were significant positive relation between RA with two "sleep latency" and "use of sleep medications" component of PSQI. These imply that WBC who suffered sleep latency disorder or use sleep medications reported more RA or conversely. It may be that poor sleepers tend to involve in religious activity to resolve their sleep problems. We also found significant negative correlation between PSQI and "Attendance in mosque or religious places" RA subscale. This means that WBC who had more attendance in religious places have better QoS. Religious places are recognized as a resource of relaxation. Patients who had more attendance in religious place may cope better with their disease and thus have better QoS (Koenig 2008). Hillet al. (2006) in a study conducted on Texas adults demonstrated that regular attendance in RA related to better QoS. Meraviglia (2006) in a study conducted on WBC in Texas demonstrated that psychological well-being was positively related to meaning in life and prayer, and also symptom distress was negatively related to meaning in life, but not significantly related to prayer. Studies have shown that meaning in life is positively associated with physical and psychological well-being (Krause 2002; Steger and Frazier 2005; Lee et al. 2006; Pinquart et al. 2009). Also, studies demonstrated positive benefits of prayer in breast cancer survivors (Gall and Cornblat 2002; Fuller et al. 1993). Cancer patients use prayer and putting trust in God to cope with their disease (Halstead and Fernsler 1994).

Limitations

This study had some limitations; in this study, we used questionnaire to measure spiritual well-being. Although the reliability and validity of these questionnaires in Iranian people were approved, there is still question whether the SWBS for measuring SWB is suitable for Iranian Muslim people. Also, we ask about patients' religious activity that may be affected by disease situations. Another limitation of this study is that there are many factors such as

demographic and socioeconomic status which can interfere with sleep quality because our sample size was small and has not been controlled in analysis. We recommend further studies especially interventional studies for determining effects of spirituality and religiosity on QoS in Muslim cancer patients.

Conclusions

In conclusion, majority of WBC in Iran suffer sleep disorder. There are no significant correlations between QoS and SWB and RA. However, we found that patients who had more belief that they get much personal strength and support from God and also who had more belief that there is some real purpose for their life had better quality of sleep. We also found that WBC who had more attendance in mosque or religious places had higher quality of sleep. Based on these findings, designing and implementing spiritual and religious intervention that emphasizes especially on meaning of life, believing to get support and help from God, and attendance in mosque or religious places may be useful for improving QoS in Iranian WBC.

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Conflict of interest Authors have no conflicts of interest to declare.

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