Factors Influencing the Quality of Life among Jordanian Women Undergoing Breast Cancer Treatment: A Cross Sectional Study

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Abstract: The current study aimed to assess the quality of life (QOL) and to determine its predictors among Jordanian women undergoing breast cancer treatment at public referral hospital in Amman, Jordan. A descriptive cross-sectional design was used; two hundred women participated in the study. The QOL-Breast Cancer Version (QOL-BC) questionnaire was used to collect the data. The worst overall mean QOL scores of participants for each domain were for fatigue and pain in the physical domain; distress from cancer diagnosis and distress from chemotherapy treatment in the psychological domain; fear of the occurrence of cancer among relatives and family distress from the illness in the social domain; and the importance of religious activity and change of spiritual life as a result of cancer in the spiritual domain. Regression analysis revealed that type of surgery, type of treatment, chemotherapy dose and stage were good predictors of the QOL of women with breast cancer. Jordanian women undergoing breast cancer treatment have difficulties in the physical and psychological domains. Therefore, nurses are encouraged to routinely examine patients' QOL throughout the breast cancer trajectory and to identify factors that affect QOL, to plan the best individualized holistic care for women with breast cancer.

Key words: Quality of Life (QOL) · Breast Cancer · Breast Cancer Treatment · Predictors of QOL

INTRODUCTION

Breast cancer is one of the most common cancer affecting women worldwide and an important public health issue in Jordan. According to the most recent data from the Jordanian National Cancer Registry, there were 978 breast cancer cases among Jordanian women in 2010, with a crude incidence rate of 31.8 per 100,000 in the female population [1]. Because of advances in early detection and treatment of breast cancer, survival rates have improved [2]. However, the undesirable effects of treatment, especially chemotherapy, can seriously reduce patients' quality of life (QOL) [2- 3]. Health-related quality of life emphasizes the influence of medical conditions on the persons' physical, emotional and social wellbeing [4].

An extensive literature have been investigated the QOL outcomes in women undergoing breast cancer treatment [2, 5 - 9]. One of these studies compared the quality of life of 110 women undergoing mastectomy one month and one year postoperatively; the QOL of women who were surveyed after a year scored significantly higher than those who were surveyed after a month [5]. Similarly, Costa-Requena et al. [6] found that mean QOL score declined from time of diagnosis to mid-treatment, then improved following treatment [6]. In addition, Yildirim and Batmaz [10] found changes in the psychological status and perceived social support of 100 women undergoing breast cancer treatment in Turkey. Moreover, Ursaru et al. [8] found that women who had partial mastectomy had lower QOL (M=18, SD=2.82) than those underwent radical surgery (M=22, SD=3.97).

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Factors influencing QOL of women with breast cancer has been investigated in several studies. The findings of one recent study conducted in Greece revealed that age, menopausal status and types of therapy have influence QOL of breast cancer women [11]. Hyphantis *et al*. [12] evaluated the predictors of HRQOL in 124 women with early breast cancer over a one-year period. They found that depressive symptoms and physical HRQOL were improved significantly, while state anxiety, mental and environmental HRQOL were remained stable and social-relational HRQOL was deteriorated. Socioeconomic factors (i e age, education and employment status), have shown significant effect on QOL for women with breast cancer [13]. Also, other factors such as the stage of the disease and its status at last follow up affected the QOL [13]. Sexual problems were highlighted in a study conducted in Iran, where 54% of Iranian women with breast cancer reported reduced satisfaction and 43% complained of desire disorder [2].

While most of studies on QOL and breast cancer were conducted in the western countries, some have been reported in the Arab and Middle East regions. For example, Jassim and Whitford [3] assessed the QOL of 239 Bahraini women with breast cancer and found that social functioning scored the highest (M=77.5), whereas emotional functioning scored the lowest (M=63.4). Participants reported that the most distressing symptoms were fatigability (M=35.2) and sexual functioning (M=25.9). In a study conducted in Syria the authors explored the experiences of 17 women receiving chemotherapy for breast cancer, the findings revealed four themes: psychological discomfort, physical problems, social dysfunction and failure in the family role [14]. In Jordan, Lazenby and Khatib [1] found that both physical and emotional well-being were negatively correlated with spiritual well-being among 159 patients with cancer at the King Hussein Cancer Center. Their social and functional well-being were also positively correlated with their spiritual well-being. Finally, the QOL and psychological well-being of 236 breast cancer survivors was assessed in Jordan [15]. The authors found that participants had good QOL scores (M=63.7, SD=20.2), scoring highest on social functioning (M=87.1, SD=28.6), whereas emotional functioning scored the lowest (M=59, SD=33.5).

Notwithstanding the above contributions, the QOL of women with breast cancer has been inadequately studied in Arabic countries such as Jordan, in contrast to the many studies reported in Western countries.

Healthcare providers should be aware of QOL issues when deciding treatment and designing support programs for women going throughout the breast cancer trajectory [3]. Hence, there is a paramount need to evaluate the quality of life of affected women. In response to this need, the objectives of this study were to evaluate the QOL of Jordanian women undergoing breast cancer treatment and to determine the predictors of QOL among women undergoing breast cancer treatment.

MATERIAL AND METHODS

Design: A descriptive cross sectional design was employed to achieve the objectives of the current study.

Sample and Setting: The current study was conducted at King Hussein Medical Centre (KHMC) in Amman, Jordan between 6 June and 20 October 2017. Inclusion criteria for the participants were: (a) physically and mentally able to participate; (b) informed of their diagnosis of cancer; (c) free from other medical or mental illness; and (d) had a known current status of breast cancer treatment. The exclusion criteria were women who had other medical or mental diseases and women who had not been informed of the status of breast cancer diagnosis.

Instrument: All participants were asked to complete the questionnaire, which had two components: (a) a demographic tool to collect data on treatment- and disease-related characteristics that might influence QOL; (b) the QOL-BC instrument developed by Ferrell, Grant, Funk, Otis-Green and Garcia [16]. This 46-item instrument comprised four parts representing the QOL domains of physical well-being (8 items), psychological well-being (22 items), social well-being (9 items) and spiritual well-being (7 items). The scoring was based on a scale of 0 = best outcome to 10 = worst outcome on the visual analogue scale. Scores were reversed for several items: 12-17, 31, 33, 41, 42 and 44-46. The mean scores of all items within each subscale were summed to create a mean score.

The researchers translated the QOL-BC into Arabic. Then the Arabic version was back-translated into English by a Jordanian bilingual expert who had no access to the English version. Minor amendments were made to maintain the meaning. Also, a pilot study was conducted on 10 participants and minor changes had been made accordingly.

Procedure: Ethical approval has been obtained from King Hussien Medical Centre (KHMC). It was approved by the local ethical research committee at the King Hussien Medical Centre (KHMC). The women were approached by a female researcher in the waiting areas of the oncology clinics. A brief explanation of the study purpose was provided to women who agreed to participate in the study. Agreeing to fill the questionnaire was considered as an implicit consent to participate in the study. Also, the participants filled the questionnaire in the presence of the researcher to provide help if needed.

To determine sample size for the simple linear regression statistical tests, power analysis was performed. Based on Cohen's [17], as cited in Polit and lake [18], a power of 0.80 and α=0.05 was assumed for nine variables, with moderate effect size, the number of subjects needed to reject the null hypothesis that R^2=zero was 119. To compensate for missing data and to ensure a more representative sample, 220 participants were selected using the online power calculator with 95% confidence interval. Ten cases were excluded from the total of 220 women with breast cancer who were invited to participate in the study, because of the presence of comorbidities such as chronic obstructive airway disease, heart failure and diabetes. A further ten questionnaires were excluded for missing data, leaving 200 valid and completed questionnaires. There were no demographic differences between women who were included in the study and those who were excluded. Ethical compliance was assured by maintaining confidentiality and anonymity and by obtaining the informed consent of all participants. Questionnaires were administered by the researcher, who then collected them immediately after completion.

Data Analysis: The SPSS V.21.0 statistical package was used for data analysis using descriptive statistics, i.e. frequency and percentage for the demographic data, mean and standard deviation for the QOL subscale; and inferential statistics, i.e. linear regression analysis for the predictors of QOL.

RESULTS

Sample Characteristics: Two hundred women affected by breast cancer participated in this study. Mean age of the sample was 54 years (SD=9.14) and participants were mainly married (80%) and unemployed (84%). The majority of the sample were undergoing mastectomy (81%) and more than half were undergoing chemotherapy treatment. The frequency distributions of the demographic and clinical characteristic of the participants are presented in Table 1.

Table 1: Demographic and clinical characteristics of the sample (N=200)

Characteristic		Number	Percentage
Age	< 40 years	46	23
	41-60 years	136	68
	> 60 years	18	9
Religion	Moslem	180	90
	Christian	20	10
Occupation	Housewife	167	84
	Employee	32	16
Education	Less than high school	174	87
	More than high school	26	13
Social status	Married	160	80
	Widowed	26	13
	Single	12	6
	Divorced	2	1
Cancer stage	Stage I	10	5
	Stage II	82	41
	Stage III	62	31
	Stage IV	46	23
Type of surgery	Lumpectomy	38	19
	Mastectomy	162	81
Type of treatment	Chemotherapy	116	58
	Radiotherapy	78	39
	Hormonal therapy	8	3
Time since diagnosis	<one year	136	68
	> two years	64	32
Income	< 500 JD	164	82
	> 500 JD	36	18

Physical, Psychological and Social Domain: The results indicate that on the physical well-being subscale, the symptoms with the worst outcome were fatigue, pain and appetite change, followed by menstrual changes. Table 2 shows the mean scores for the top five physical well-being outcome scales. On the psychological well-being scale, Table 2 shows that the highest mean scores were given to distress from chemotherapy treatment, initial diagnosis and surgery, followed by fear of metastasis, recurrence and new cancer. Inspection of the results also showed that there were moderate levels of anxiety and depression among participants. The social domain represents activities related to roles and relationships at work or at home. Table 2 shows that the worst outcomes on the social well-being subscale were related to fear of the occurrence of cancer among relatives, followed by family distress at the illness and the effect of breast cancer on household activities and social relationships. There was also a financial burden on participants due to their breast cancer diagnosis.

Spiritual Domain: Spiritual well-being is the ability to maintain hope and derive meaning from the cancer experience and is enhanced by one's religion. In this

Table 2: The top five mean score for the physical, psychological and social subscales Quality of life domains

Physical wellbeing scale	Physical wellbeing scale	Mean	Standard deviation
	1. Fatigue	7.11	2.23
	2. Pain	5.85	2.79
	3. Appetite change	5.37	2.68
	3. Menstrual changes or fertility	5.29	3.96
	4. Overall physical health	4.71	2.27
	5. Sleep change	4.56	2.52
Psychological wellbeing	Psychological wellbeing		
	1. Feeling of distress from cancer chemotherapy	7.16	2.87
	2. Feeling of distress from the initial diagnosis	7.14	2.74
	3. Fear of cancer metastasis	7.09	2.90
	4.Fear of cancer recurrence	6.95	2.95
	5. Fear of new cancer	6.71	2.96
Social wellbeing	Social wellbeing		
	1. Concern for relatives regarding the occurrence of breast cancer	8.71	2.06
	2.Family distress from the illness	7.02	3.14
	3.Effects of cancer on household activity	6.48	2.82
	4.Effect of cancer on social relationships	6.25	2.76
	5.Amount of financial burden from cancer	5.66	3.16

A higher mean score indicates worst outcome

Table 3: Spiritual well-being outcome mean scores (N=200)

Spiritual wellbeing	Mean	Standard deviation
1. Importance of religious activity	9.79	.46
2.Change to spiritual life as a result of cancer	9.70	.97
3.Feeling hopeful after cancer experience	9.15	1.59
4.Feeling of purpose or reason for being alive	8.57	1.71
5.Feeling of uncertainty	5.62	3.20
6. Feeling of positive changes after cancer	4.59	2.68

A higher mean score indicates good outcome

study, the importance of religious practice was ranked highest, followed by a change to spiritual life after cancer diagnosis, as Table 3 shows.

Predictors of Quality of Life: Simple linear regression analysis using enter method was performed on the four QOL subscales as dependent variables to determine the predictors of QOL. The following factors were used as predictors: age, marital status, education, occupation, income and time since cancer diagnosis, stage of cancer, type of surgery, chemotherapy dose and type of treatment. Based on the regression analysis, results indicate that cancer stage, chemotherapy dose and type of surgery explained 16 % of the variance in the physical well-being sub scale. The final model were $\alpha=0.05$, $F=3.270$, $p<0.001$, $R=.401$, $R^2=0.161$, adjusted $R=0.111$. Whereas, cancer stage, chemotherapy dose and type of treatment explained 10 % of the variance in the psychological well-being subscale. Thus, results for predictors of psychological well-being in the final model were $F=.043$, $p<0.001$, $R^2=0.100$, $R=0.316$, adjusted $R=0.047$.

Regarding the social subscale, results for predictors in the final model were $F=4.159$, $p<0.001$, $R^2=.196$, $R=.442$, adjusted $R=.149$. This indicates that type of surgery and chemotherapy dose explained 19 % of the variance in this domain. Results for predictors of spiritual well-being in the final model were $F=2.122$, $p<.05$, $R^2=.110$, $R=.332$, adjusted $R=.058$. The multiple regression results for the social and spiritual well-being scales, indicating that chemotherapy dose were a predictor of the spiritual domain, explaining 11 % of the variance.

DISCUSSION

This study provides a preliminary account of QOL concerns among Jordanian women undergoing breast cancer treatment. The findings show that Jordanian women have difficulties in the physical and psychological domains of the quality of life. This is consistent with global QOL findings and comparable to findings on the QOL of study participants from nearby countries such as Bahrain [3]. It was also found that emotional functioning scored the lowest, while social functioning scored the

highest. These findings are consistent with a number of published studies [3, 14].

Physically, participants gave the highest mean ratings to fatigue, pain and menstrual changes or fertility issues. This finding is consistent with the results of previous studies [6, 10, 12, 19] in which fatigue and pain were among the most common symptoms reported. Zou *et al.* [4] found that the distress of symptoms was a predictor of QOL in women with breast cancer. Thus, management of fatigue, pain and other physical symptoms should be a primary concern of providers of healthcare to women with breast cancer, to improve their QOL. The finding that participants reported distress related to infertility post chemotherapy can be explained by the high value placed on childbearing in Jordanian Arab culture, leading women to tend to fear a loss of the marital relationship due to infertility. Therefore, nurses should assess the occurrence of these symptoms and evaluate the need for health education, referral and counseling. In contrast to the findings of Safarinejad *et al.* [2] sexual disorders such as vaginal dryness and menopausal symptoms were given the lowest mean score in the physical domain of QOL in the current study. This result can also be explained with reference to Arab culture, in which women are reluctant to discuss such concerns with healthcare providers. Nevertheless, women undergoing breast cancer treatment need teaching, counseling and guidance to manage these symptoms.

Psychologically, breast cancer treatment can evoke emotional reactions such as anxiety and fear. A plausible explanation is simply that emotional distress and fear are normal responses to a life-threatening illness such as cancer, reflecting a high degree of perceived immediate threat to life and survival [20]. These findings are consistent with those of previous studies [3, 14, 15, 21, 22] in which anxiety and fear were commonly reported. In particular, psychological distress explained 63 % of the variance in the QOL of women with breast cancer [8]. In this study, chemotherapy dose and treatment type explained 10 % of variance in the psychological well-being of the participants. It may be that type of treatment and chemotherapy dose adding disturbing side-effect that can affect the psychological status of the participants. However, participants in this study felt in control and more secure regarding their disease; thus, they accepted God's will. This result might be explained in light of the Jordanian Muslim culture, whereby patients understand that illness, suffering and dying are part of life and a test from Allah. Nevertheless, screening for emotional distress should be performed throughout the breast cancer

journey, especially during the treatment phase. Healthcare providers can play a major role in allaying fear and anxiety through support groups, supportive programs, discussion of treatment options, counseling and psychotherapy.

Socially, subjects in this study reported fear of the occurrence of breast cancer among relatives, based on the knowledge of hereditary factors, which is consistent with the findings of previous studies [2, 3, 6]. Such concerns and the associated distress are related to the fact that family was the closest social unit of participants; consequently, serious illness of any kind in a family member would have a marked impact on that family. This is especially true in Jordan, where it is mainly the women who care for the family, sustain its functions, manage the household chores, raise the children and maintain the social network of the family [23]. The importance of social support was evident in this study, as it was in the previous studies [2, 3, 6] because in Jordanian culture, people still feel a strong sense of connection, especially at times of illness, so a woman will find the required support from her husband, family members and friends. Jordanians are supportive of each other either in sickness or in health, because of both religious and cultural traditions. From the religious perspective, Islam invites people to support each other in times of illness, which is illustrated by the empathy that Muslims are required to feel towards each other. Nurses should assess family support, family roles and the extent of family stress associated with breast cancer, in order to design appropriate therapeutic interventions and referrals.

Type of surgery and chemotherapy dose explained 19 % of the variance in social well-being. In particular, there was a difference between this study's findings and those of Yildirim and Batmaz [10] regarding surgery type as a predictor of social well-being. Based on the current findings, healthcare providers should give more attention to women who have had a mastectomy than to others. As to their spiritual well-being, religious and spiritual activity were major positive influences on the QOL of participants in this study, since religious practices and a relationship with God provided a reliable source of support and comfort. This can be explained by the fact that praying and reading the Holy Qur'an are the most frequent practices for Muslims in both health and illness. Vanhabi [19] found that it was significantly important to incorporate spirituality into the care of women coping with a life-threatening illness such as breast cancer. Therefore, nurses should encourage hopeful feelings among women with breast cancer. Health teams should provide these women with religious facilities such as

religious texts, prayer rugs and a quiet place to help them practice these rituals during their hospitalization.

In summary, it is difficult to compare the results of this study directly with others, because of differences in culture, in the instruments used and in the services provided. However, this study adds to knowledge by highlighting certain aspects of QOL that need further attention from healthcare providers and by addressing the factors that may predict the QOL of Jordanian women with breast cancer. It has also shown that culture can influence the rating of the importance of QOL items.

Implications for Nursing Research: The QOL issues associated with each phase of the breast cancer experience are diverse and require phase-specific assessment. Hence, a need exists to conduct longitudinal studies of QOL throughout the breast cancer journey. Future studies should also be directed towards designing methods to enhance the coping of women undergoing breast cancer treatment and to mitigate short-term stress and subsequently the long-term impact of the disease and its treatment on patients' QOL.

Limitations: Certain limitations of this study should be noted. These include the fact that the sample was recruited from one clinical site at a general comprehensive healthcare center and that data were collected at a single point in time; thus, a full picture of the effect of treatment on participants' QOL over the treatment trajectory was not captured.

CONCLUSIONS

In conclusion, our findings indicate that breast cancer diagnosis and treatment provoke disturbing physical and psychological difficulties, which in turn can negatively affect patients' QOL. This study has identified some of these difficulties and highlighted the importance of social support and religion in handling them. These findings can be used to inform healthcare policy and to identify areas of healthcare services where providers should prioritize improvements in order to enhance patients' QOL. In this way, nurses can play a significant role in improving the quality of women's lives through symptom management, health education and counseling. The predictors of the QOL of women with breast cancer that this study has identified are type of surgery, type of treatment, chemotherapy dose and stage of disease. Thus, healthcare providers should pay particular attention to improving the QOL of women who

are at certain stages and receiving particular types of treatment or surgery. This finding highlights the important role of nurses in routinely assessing their patients' QOL in order to plan the best individualized holistic care for women with breast cancer during all stages of the disease trajectory.

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