

ORIGINAL RESEARCH

Factors associated with depression and the relationship to quality of life among Saudi women with breast cancer

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ABSTRACT

Background and objective: Breast cancer is the most common malignancy among women worldwide, diagnosis and treatment and the months following primary therapy associated with different psychological symptoms that affect quality of life (QoL) in most women with breast cancer. The aim of this study was to identify the relationship between depression and QoL among Saudi women with breast cancer.

Methods: Design: This is a descriptive, cross-sectional study. Methods: A convenience sample of 370 women with breast cancer was recruited from the out-clinic in King Faisal Specialist Hospital & Research Center (KFSH&RC). Data were collected using self-report tools derived from the Patient-Reported Outcomes Measurement Information System (PROMIS) Emotional Distress-Depression-Short Form; the EORTC quality of life questionnaire (QLQ) (EORTC QLQ-C30, v.3.0 and EORTC QLQ-BR23); and from the Demographic and Clinical Data Sheet.

Results: The correlation between depression and global health status with functioning subscales for the women was negative (Pearson's $r = -.357, p < .001$; $r = -.368, p < .001$); whereas a positive correlation was found between depression and symptom subscales, together with its items.

Conclusions: This study shows that depression is associated with QoL among Saudi women diagnosed with breast cancer. Therefore, depression affects upon QoL among the breast cancer population. However, enhancement of mental health statuses and psychological interventions helps to reduce the severity of depression and improves health related QoL among this population.

Key Words: Quality of life, Depression, Breast cancer, Saudi women, Kingdom of Saudi Arabia

1. INTRODUCTION

Breast cancer is considered a fast emerging killer of women today, and is the second most common cancer overall. It is a cause of morbidity, not only for women, but also for their families. Overall among women, breast cancer is the most common cause of cancer-related mortality worldwide.^[1,2] Additionally, many women experience emotional distress and psychological symptoms following a diagnosis of breast

cancer, which can persist for prolonged periods, irrespective of the clinical treatment outcome.^[3] Of all the symptoms, depression is the most prevalent psychological symptom perceived by cancer patients.^[4]

In order to achieve holistic care for women who suffer from breast cancer, it is necessary to understand the prevalence of common psychological changes they experience. Indeed, depressive symptoms may progress to depression disorders,

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which negatively affect overall quality of life (QoL).^[5] The untreated psychiatric co-morbidities in patients with cancer lead to many disabilities, poor QoL, and they tend to worsen patients' conditions if not adequately treated.^[6]

2. BACKGROUND

Breast Cancer has a major impact on the health of women worldwide, and women in the Kingdom of Saudi Arabia (KSA) are no exception. Data on relevant reports from the KSA appear either scant or not provided with sufficient attention.^[7] According to the most recent report by the Saudi Cancer Registry (SCR), breast cancer constitutes 26% of all cancer incidents in Saudi women. In total, there were 1473 female breast cancer cases for the year 2010. Breast cancer ranked first among females, accounting for 27.4% of all newly diagnosed female cancers (5,378) in 2010. The age specific incidence rate (ASR) was 24.9/100,000 for the female population.^[8]

The number of breast cancer cases has doubled over the past 10 years, with 50% of the cases in the Saudi population under the age of 20.^[9] Moreover, a dramatic increase in both incidence rates (350%) and mortality rates (160%) over the coming decade is anticipated.^[9] The incidence rate per every 100,000 population in the KSA in 2012 was estimated at 19.5-30.9, and the mortality rate for the same year estimated at 8.2-12 among Saudi women with breast cancer.^[10] Moreover, women who are diagnosed with breast cancer face multiple stressors throughout their illness trajectory. Women may experience several mental and behavioral disturbances as an adverse effect of breast cancer diagnosis and treatment.^[11] Breast cancer also affects patients' sexuality, femininity, body image, and maternal issues following mastectomies, which may lead women to face psychiatric co-morbidity.^[12] Depression is the most common psychiatric disorder in patients with cancer, with a high prevalence rate depending on the location of the tumour, clinical stage pain, functional and physical performance, and the existence of social support.^[13] The depression effect can be intense and last for extended time periods, which can lead to a reduction of a person's functionality in most life areas.^[14]

Of the main outcome measures in cancer treatment is QoL, which is a multi-dimensional measure of psychological, physical, cognitive and social well-being, closely related to the illness progress, cancer treatment, underlying psychological condition, coping strategies, and social support.^[15] In a study conducted in the Gulf region, the authors found that QoL of Bahraini women with breast cancer is poor with the lowest score for emotional functioning. The authors also emphasised the need to address this issue in the Middle Eastern society.^[16] Today, QoL studies have an important role in

health care, especially in chronic diseases. However, breast cancer has several complications that affect patients' lives. Therefore, it is critical for health care professionals to become familiar with the impact of a breast cancer diagnosis and its treatment on patients' QoL.^[17]

Women who suffer from cancer are distressed due to illness, and most of them face depression, which leads to an increase in physical symptoms, functional disability, and a decrease in therapeutic compliance. Depression, however, can be especially difficult to diagnose, as of overlapping symptoms and co-morbid conditions.^[18] In general, depression can severely impair many important aspects of one's life. The effects of depression are wide ranging, and have a strong and complex relationship with cancer, which is considered as a main source of distress that can have a profound impact on the QoL of breast cancer survivors.^[19,20] There is also a significant relationship and negative correlation between depression and QoL among this population.^[21,22]

In order to improve QoL for breast cancer patients, social support is imperative throughout their treatment and recovery. Accordingly, social support can help to cope with all chronic, life-threatening illnesses that prove detrimental to patients' well-being.^[22] Nevertheless, economic challenges to one's life are viewed as the main predictor of low QoL, as better financial situations often produce better QoL. Further, many studies have demonstrate that low socio-economic statuses result in negative physical, psychological and social well-being effects.^[23-25]

A variety of articles conducted in the KSA were published on different facets (e.g. epidemiology, knowledge of breast cancer, breast self-exam, etiological factors, metastasis and rate of survival) in regards to breast cancer through a period in excess of thirty years.^[7] However, the fact that depression is a result of breast cancer is little known in the KSA. In addition, QoL is a relatively new concept in Saudi research, and there are no articles that had been conducted to specifically assess the level of QoL among Saudi women with breast cancer. Therefore, the current study describes depression and QoL, as well as evaluates the association between these variables among Saudi women with breast cancer.

3. METHODOLOGY

3.1 Study design

A descriptive correlational, cross-sectional design was used to identify the relationship between depression and QoL among women with breast cancer in the KSA. The method used to collect data was through self-reported questionnaire in regards to depression and QoL.

3.2 Population and sample

The target population consisted of only breast cancer women patients in the Riyadh region, KSA. The accessible population was all women with breast cancer at King Faisal Specialist Hospital & Research Centre (KFSH&RC). The sample was recruited using a nonprobability convenience technique sample. The inclusion criteria required for the women were: 1) free of major mental disorders or cerebrovascular disease; 2) 18 years and above, and; 3) able to understand Arabic. Therefore, the exclusion criteria included the presence of a coexisting terminal illness or using antidepressant medication when participating, and being a non-Saudi woman. The sample size was calculated using G power,^[27] for Pearson Correlation Moment Product Coefficient (Pearson r) as test statistics. The results showed that the required sample size was 366; there were 370 females accepted to participate.

3.3 Setting

The current study was carried out in King Faisal Specialist Hospital & Research Centre (KFSH&RC) in the KSA, which enjoys the recognition of having the largest cancer facility in the Gulf region. Patients with cancer are treated in this centre, where they have been treating cancer since 1975. In 2012, this centre was accredited by the World Health Organization (WHO) as a Collaborating Centre for Cancer Prevention and Control.^[28]

3.4 Ethical consideration

Ethical approval was obtained from the University of Jordan – School of Nursing and the target institutions in the KSA. Women who participated in the study were met and provided detailed information regarding the study, emphasising the right of the subject to non-participation, and ensured data confidentiality was maintained throughout the study. They were asked to verbally consent for participation, and were informed that they can quit the research at any time they wish.

3.5 Procedure

Women who were interested in the study were invited to participation by asking for their consent before starting the face-to-face interviews. Hence, their permission was taken following a public invitation to the women to participate and a distributed flyer containing the aim of the study and criteria for eligibility. Participants were informed that filling the questionnaires would be conducted one time only while waiting in the clinic. The questionnaires (PROMIS) Emotional distress-Depression, EORTC QLQ-C30, and demographic information were asked to be filled in by the women. In addition, the researcher was available for all the participants for reading and filling the questionnaires, which was filled

out by the participants.

3.6 Instruments

The data were collected using an Arabic version of the scales. The instruments were:

- 1) The first part of the questionnaire was prepared by the researcher to collect demographic data regarding the study sample based on hospital records. It mainly addressed the following information: age, marital status, cancer staging, and types of treatments (chemotherapy, radiotherapy, surgical treatment, or combined), employment, co-morbidities and educational levels.
- 2) Depression was measured using The Patient-Reported Outcomes Measurement Information System (PROMIS) Emotional distress-Depression- short form scale. The measurement was developed to assess the clinical signs of depression in the clinical settings, and thus, it included eight items that requested the women to rate their depressive feelings based on a scale (never (0) to always (5)), with the complete range from 8-40. These scores were able to be obtained by summarising the raw scores from the eight items, with a T-score table utilised in the identification of the T-score for the participants' overall raw score. The scores were marked as follows: < 55 (none-slight); between 55.0 and 59.9 (mild depression); between 60.0 and 69.9 (moderate depression); and >70 (severe depression).^[29] In addition, this measures the negative mood, negative views for the self, decreases the positive effect, and negative social cognition.^[30] Moreover, the scale was translated into the Arabic language, and used among elderly people within the Jordanian culture, which showed high internal consistency values with Cronbach's alpha of .875.^[31]
- 3) The European Organisation for Research and Treatment of Cancer Specific Version (EORTC QLQ-C30, v.3.0) assessed the QoL translated into Arabic and was validated.^[32,33] Global health, physical, role, emotional, cognitive, social functioning, fatigue, nausea/ vomiting, pain, and financial impact are all explored by the EORTC QLQ-30. The QoL Breast Cancer Specific Version^[32,33] was also used and translated into Arabic. The EORTC QLQ-BR23 incorporates five domains: therapy side effects, arm symptoms, breast symptoms, body image, and sexual functioning. Scores for these questions range between 0 and 100. For scales that evaluate global health and function, a higher score represents higher levels of functioning and health. For scales that evaluate symptoms, a higher score indicates more problems and higher level of symptoms.

3.7 Statistical analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS). Descriptive statistics were used to describe

and summarise the continuous variables (depression and QoL). Moreover, frequencies or percentage statistics were used to describe and summarise the nominal and ordinal variables, such as demographics. ANOVA, independent sample *t*-test, and correlation coefficient analysis tests were also used to determine whether depression would differ in terms of demographic characteristics. A partial correlation coefficient test was used to determine the relationship between the depression and QoL after controlling the demographic variables. All the tests were two-tailed with an alpha level of 0.05.

4. STUDY'S FINDINGS

In the current study, a total of 370 women participated. As presented in Table 1 below, the mean age of the sample was 46.60 years (SD = 11.03), ranging from 18 to 80 years. Married women represented 248 (67.0%) of the total sample size. Of the sample, 46.5% of them had a lower-secondary education, while 50.7% were unemployed. 73.5% of the participants did not suffer from any chronic diseases except 26.5% had a co-morbid disease and 70.0% of those were receiving combined treatment.

Table 1. Women's demographics' data (N = 370)

Variable	N (%)	M (SD)
Age		46.60 years (SD = 11.03)
Marital Status		
Married	248 (67.0)	
Unmarried	122 (33.0)	
Educational Level		
Lower-secondary education	220(46.5)	
Upper-secondary education	150(31.7)	
Diagnosis		
Stage I	117 (31.6)	
Stage II	117 (31.6)	
Stage III	101 (27.3)	
Stage IV	35 (9.5)	
Type of Treatment		
Chemotherapy and Radiotherapy	83(22.7)	
Surgical treatment	27 (7.3)	
Combined treatment	260 (70.3)	
Co-Morbidities		
Yes	98 (26.5)	
No	272 (73.5)	
Employment Status		
Employed	130 (27.5)	
Unemployed	240 (50.7)	

The mean score of the depression scale was 17.13 (SD = 6.20), with the median at 16. Furthermore, 50.8% of the women had non to slight depression; and 32.2% had mild depression. The last percentage was 17% for women who

suffered from moderate to severe depression. In this case, assessment, follow-up and suitable treatment is essential for clinical depression.^[29]

4.1 Quality of life scores

Participants had a mean score for the global health subscale of 63.15 (SD = 18.14). Among functional subscales, the physical functioning item scored the highest at 93.23 (SD = 4.17), whereas the social functioning item scored the lowest at 76.80 (SD = 16.45). On the symptom subscales, the worst was the insomnia item 49.09 at (SD = 76.86), followed by appetite loss and dyspnoea items. Using QOL-BR23, the functional subscales found the future perspective item the lowest at 36.03 (SD = 32.62), which indicates poor functioning; whereas, the sexual functioning item scored the highest at 91.86 (SD = 11.26). Among the symptom subscales, the upset by hair loss item was found to be high at 63.42 (SD = 41.08), which indicated worse functioning, followed by the arm symptoms item at 14.91 (7.50).

The Pearson correlation coefficient test showed that there is a statistically significant negative correlation between the age and depression total score ($r = -.216, p < .001$). Therefore, the youngest women had a higher total score of depression. Comparatively, there were no statistically significant differences in mean scores of depression based on women's demographics (see Table 2).

The test findings showed a negative correlation between depression and the QLQ-C30- global health status, functioning subscales ($r = -.357, p < .001; r = -.368, p < .001$), and positive correlation between depression and QLQ-C30- symptom subscales and items ($r = .284, p < .001$) (see Table 3). Moreover, the findings showed a negative correlation between depression and QLQ-BR23-functional subscales ($r = -.431, p < .001$), and found a positive correlation between depression and QLQ-BR23-symptom subscales and items ($r = .311, p < .001; r = .313, p < .001$) (see Table 4). The results showed that the influences of confounding variables on the main association did not change the original correlation. In other words, the controlling variable (age) has no significant effects on the strength and direction of the relationships between depression and QoL.

5. DISCUSSION

The current study is the first Saudi study to investigate the relationship between depression and QoL among Saudi women with breast cancer. The results determined that 49.2% of the total sample had from mild to severe depression; psychological assessment or interventions was not provided to them. Moreover, the findings regarding prevalence of depression are considered to be general high worldwide. Studies from

Western countries have shown that the prevalence of depression ranges from 1% to 56%, whereas the prevalence of depression from Asian studies is 12.5% to 31%.^[3]

Table 2. Differences of depression based on women’s demographics

Variable	N	Depression M (SD)	T	p-value
Marital Status				
Married	122	17.30(6.75)	.365	.200
Unmarried	248	17.05(5.92)		
Educational Level				
Lower-secondary education	220	16.63(6.29)	-1.89	.507
Upper-secondary education	150	17.87(6.00)		
Employment Status				
Employed	130	18.17(6.14)	2.39	.793
Not employed	240	16.57(6.17)		
Presence of Co-morbid Disease				
Yes	98	15.74(6.32)	-2.60	.764
No	272	17.63(6.09)		

Table 3. Pearson r-correlation of the main variables (Depression and QoL- QLQ-C30)

Variable	r
Global Health Status	= -.357, p = .000
Functional Subscales	
Physical Functioning	= -.040, p = .441
Role Functioning	= -.243, p = .000
Emotional Functioning	= -.465, p = .000
Cognitive Functioning	= -.091, p = .079
Social Functioning	= -.419, p = .000
Symptom Subscales	
Fatigue	= .256, p = .000
Nausea and Vomiting	= .183, p = .000
Pain	= .279, p = .000
Dyspnoea	= .052, p = .321
Insomnia	= .081, p = .121
Appetite Loss	= .200, p = .000
Constipation	= .051, p = .328
Diarrhoea	= .207, p = .000
Financial Difficulties	= .368, p = .000

The prevalence of depression in breast cancer survivors in this study is not different from that reported in corresponding Asian and Western studies. In addition, the findings show the prevalence of depression was higher than those reported on Jordanian patients, and lower than undertaken with patients in Nigeria, which used different scales, such as the Hospital Anxiety and Depression Scale (HADS) and the Becks Depression Inventory (BDI-II).^[34,35] Further, it is important to know that depression has been treated as a categorical

variable (as ‘present’ or ‘absent’) based on the PROMIS and many other rating scales’ score or clinical judgment. The prevalence of depression in breast cancer survivors varies greatly from low to high depending on the tool of measurement used and how it has been defined.^[3] Many factors may play a role in these results, such as the difference in socio-economic statuses. These findings strongly focus on the importance of the need for psychological counselling, consultation, and follow-up for these women to reduce the severity of depression.

Table 4. Pearson r-correlation of the main study variables (Depression and QoL- QLQ-BR23)

Variable	R
Functional Subscales	= -.431, p = .000
Body Image	
Sexual Functioning	= .010, p = .854
Sexual Enjoyment	= .002, p = .962
Future Perspective	= -.376, p = .000
Symptom Subscales	
Systemic Therapy Side Effects	= .305, p = .000
Breast symptoms	= .254, p = .000
Arm Symptoms	= .147, p = .005
Upset by Hair Loss	= .313, p = .000

The current study shows a mean global health score (QL2) for the QLQ-C30 with M = 63.15 (SD = 18.14), which was close to many national and international figures. The global health score from a study from Bahrain was M = 63.9 (SD = 21.3),^[16] and from Lebanon the scale scored as M= 58.46 (SD = 23.86).^[36] In the functional subscale of the QLQ-C30 scale, physical functioning scored the highest (M = 93.23,

SD = 4.17), which is higher than that reported in Lebanon (M = 77.37, SD = 23.22),^[36] and that reported in Bahrain (M = 74.9, SD = 21.7),^[16] as well as Malaysia who scored M = 75.33 (SD = 21.41),^[37] and that reported in Jordan (M = 69.6, SD = 26.1),^[34] although consistent with Germany (M = 93.2, SD = 6.8).^[38] Regarding the functional subscales of the QLQ-BR23, sexual functioning had the highest mean score of 91.86 (SD = 11.26); this score is higher than other reported scores in Bahrain, Kuwait, Malaysia, and Brazil from 25.92 (SD = 29.77) to 72.41 (SD = 34.54).^[16, 37, 39, 40] The functional status of these women highly depends on their family roles as wives and workers; these results indicate that the functional abilities were not significantly affected or decreased.

Regarding the symptom subscale of the QLQ-C30 scale, the most distressing symptom score was Insomnia (M = 49.09, SD = 76.86). This result is higher than the reported results in Bahrain, Kuwait, Lebanon, Malaysia, and Brazil from 23.18 (SD = 14.17) to 42.7 (SD = 28.2).^[16, 37, 39, 40] Based on the QLQ-BR23, upset by hair loss had the lowest mean score at 63.42 (SD = 41.08). These scores are higher than those reported in Bahrain, Brazil, and Malaysia from 37.43 (SD = 44.12) to 46.3 (SD = 42.9),^[16, 37, 40] but lower than reported in Jordan at 69.8 (SD = 43.0).^[34] Meanwhile, Saudi and Islamic culture totally separates the women's and men's social and academic activities. As a result, women enjoy being exposed without a Hijab in-front of other ladies from the Saudi society, such as at weddings and in teaching institutions. Therefore, many women's social activities are conducted and run by women without being at risk of men's exposure. However, this cultural factor may constrain the Saudi women diagnosed with cancer and treated with chemotherapy to enjoy these events with other women due to the significant changes in their body image.

The findings suggest that the subscales of QoL among Saudi females who suffer from breast cancer are high and satisfactory in comparison to other women around the world. Functional status and symptoms of QoL are high among Saudi women with breast cancer with financial status and social relations playing an important role in increasing QoL. What is more, the results showed that there is a statistically significant negative correlation between age and depression. The youngest women with breast cancer had a higher total score of depression compared to older women. In studies of women of all ages with breast cancer, younger women typically report responses that indicated a greater likelihood of clinical depression or greater severity of depressive symptoms, a heightened level of stress, and/or worse QoL when compared with older women with breast cancer.^[41] Younger women with breast cancer are at greater risk of psychoso-

cial distress than older ones, as younger women contract the disease as a life-threatening diagnosis.^[19] Breast cancer in young women is compounded by the fact that they must deal with an array of unique challenges, such as: loss of fertility, diagnosis during pregnancy, childcare, early career disruptions, and an increased risk of a second breast cancer.^[42]

The association between depression and QoL was a negative weak correlation between global health subscale (QL2) for the QLQ-C30 and depression; higher levels of global health status were associated with lower severity of depression. Moreover, the findings showed a negative correlation between functioning subscale for the QLQ-C30 and depression, which means a higher level of functioning status was associated with lower severity of depression. Among symptom subscale for the QLQ-C30, a positive correlation with depression was found; however, this association was not affected by other confounding variables except for ageing. This is an agreement with the findings of other studies that were conducted among the same population in Turkey and Malaysia.^[15, 22] In addition, the findings showed a negative correlation between a functioning subscale for QLQ-BR23 and depression, and a positive correlation between symptom subscale for QLQ-BR23 and depression, which is in agreement with the study from Malaysia.^[15] No Saudi studies had investigated this association among women with breast cancer previously. Indeed, these findings suggest that the QoL status and level of depression were high. Even though the proportion of depression among the target population was high, the quality of life scored high compared to other nations. Moreover, the presence of depression was noted among these women due to the illness itself and/or treatments. This finding could be explained by many reasons; firstly, Saudi governance provides incentives to Saudi women with breast cancer, such as high quality health insurance and social support. These factors increase their QoL, which is associated with living conditions and social and financial support.

The Saudi government provides free care and treatment for Saudi women with breast cancer, as well as monetary assistance and housekeeping services to breast cancer patients. Moreover, the government provides free travelling tickets and paid expenses for breast cancer patients living outside treatment care hospitals and centres. In addition, Saudi society is a traditional and conservative society that surrounds the woman patient with family members and relatives, thus creating a net of social support that improves the QoL of these women. This corresponds with other research studies that have demonstrated that high levels of personal economy help to improve women's QoL.^[44] Similarly, high better socio-economic level has been shown to correlate with

better treatment responses and recovery for patients, due to fewer financial restraints, as well as less stress due to work.^[44] This has also been shown in a study from Ethiopia, which found that patients with economic issues generally present with poor QoL.^[45] Similarly, studies from Iran, Pakistan, and Nigeria have shown corresponding data.^[28,46,47,49] These financially related findings often relate to the fact that chemotherapy is prolonged, and thus, an expensive form of treatment in many countries. Meanwhile, in Ethiopia, this is even more acutely apparent, as there are only a limited amount of facilities available for chemotherapy treatment, which results in the patients needing to travel extreme distances in order to receive treatment, and thus, increases the level of expenditure required.

For future studies, more focus should be provided to one's socio-economic status on QoL and psychological issues of women with breast cancer. Despite the presence of high depression among Saudi women with breast cancer, this did not affect their QoL, which normally remained high, as Saudi women with breast cancer do not face extreme financial and employment difficulties, and they are provided with medical, social and health services that augment their QoL.

6. CONCLUSION

Depression is often relevant for women with breast cancer, as it reduces QoL. The current study found that QoL subscales were not strongly associated with depression. The main variables of this study were shown to be high among Saudi women with breast cancer for the socio-economic reasons mentioned previously. Therefore, early identification

of depression played important roles in the improvement in effective cancer treatment among those women.^[43] In order to decrease the intensity of depression and the improvement of health conditions related to the quality of life among Saudi women with breast cancer, we should focus on the enhancement of one's mental health status and psychological interventions. What is more, understanding the effectiveness and interventions on psychological and physical wellbeing among women with breast cancer on different conditions, such as religious, social or physical, showed a requirement for further longitudinal or experimental research studies.

Limitations

One of the limitations that should be stated relates to the main variables, which were measured through questionnaires and could potentially have resulted in generating false positives or negative cases. Another limitation is a convenience sampling method, which can be easily applied. As a result, this may cause sampling bias, which will result in a lack of generalisability.^[50]

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CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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