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ORIGINAL RESEARCH

Prevalence of Depression and the Quality-of-Life of Breast Cancer Patients in Jordan

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Objective: The objectives of the current study are to evaluate the prevalence of depression symptoms among breast cancer patients in Jordan and impact of the disease on patient's quality-of-life.

Methods: A cross-sectional survey-based study was conducted over a 6-month period among breast cancer patients attending two major hospitals in Jordan. A validated questionnaire was used to evaluate the prevalence of depression symptoms and quality-of-life aspects among those patients utilizing Beck's Depression Inventory-II score and 36-Item Survey Form (SF-36) score, respectively.

Results: The mean age±SD of patients (n=169) was 49.12±6.48 years. Depression symptoms were reported in 30.2% of patients. As for quality-of-life, the physical functioning (PF) subscale was significantly associated with the patient's age (P=0.03). The role-physical (RP) subscale was associated with number of sleeping hours (P=0.038). Marital status of breast cancer patients was significantly associated with role-emotional (RE) (P=0.015) and mental health (MH) (P=0.009) subscales. The number of patient's siblings was significantly associated with daily habits such as PF (P=0.031) and RP (P=0.005) subscales. Moreover, the occupation of patients was associated with the PF (P=0.041) and MH (P=0.049).

Conclusion: About one-third of breast cancer patients reported depression symptoms. Quality-of-life subscales among those patients were associated with multiple social and health determinants, such as age, marital status, number of siblings, occupation, and number of sleeping hours. There is urgent need to support this group of patients to help them to cope with depression symptoms and to improve their quality-of-life.

Keywords: breast cancer, depression, quality-of-life, Beck's Depression Inventory, SF-36

Introduction

Cancer is one of the most common health problems and the second, after cardiovascular diseases, in death cases among Jordanians.[1] According to the Jordan Cancer Registry (JCR), the number of new cancer cases diagnosed among Jordanians has increased by 60.5% in the past years, from 3,370 cases in 2000 to 5,409 in 2013.[2] In Jordan, cancer mortality information shows that breast cancer is the most common cause of cancer deaths in females, accounting for 22.4%, followed by colorectal (8.9%), and lung (7.0%).[1] Cancer and symptoms associated with treatment are significant stressors for breast cancer patients receiving disease care.[3] Receiving a cancer diagnosis is related with secondary psychological symptoms of severe distress such as pain, hopelessness, fear, anxiety, depression and fatigue.[4] Depression is a common psychological symptom perceived by patients with breast cancer and affects the quality-of-life (QoL) in these patients.

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The prevalence of depression in breast cancer patients ranges from 1.5–50%, depending on factors including the basis of diagnostic and sample type.[5,6] The rates for depression among breast cancer patients are high.[7] This is due to the particular psychosocial, clinical, and hormonal factors that may affect mood in patients with breast cancer.[7] The prevalence of depression among advanced stage cancer patients in Jordan was previously shown to be 51.9%.[8] Another quantitative study showed that 53% of breast cancer survivors in Jordan were classified as abnormal on an anxiety scale, and 45% on the depression scale.[9]

Quality-of-life is a complex multi-dimensional evaluation of individuals' physical, psychological, and social well-being. Quality-of-life is an important datum reflecting the results of treatment applied to cancer patients. Several cancer-specific health-related quality-of-life (QoL) measures were developed to assess the short- and long-term effects of cancer on quality-of-life.[10] In breast cancer patients, treatment consequences represent a great source of anxiety and depression that is accompanied with a decrease in the quality-of-life during cancer therapy.[11] In the present study, we aim to assess the prevalence of depression symptoms and the QoL among patients with breast cancer diagnosis and how they associate with demographic and disease- related factors.

Methods and Settings

A cross-sectional survey study was conducted among breast cancer patients diagnosed between March 2018 and August 2018 at two major hospitals in Jordan (King Abdulla University Hospital, and the Royal Medical Services). The sample for the present study was based on convenient sampling, where all patients admitted to the oncology wards during the presence of the researcher were approached by the researcher to participate in the study. Included in the study were patients who were 18 years and above admitted with breast cancer diagnosis. Excluded were breast cancer patients with other secondary tumors or other major comorbidities such as.

A total of 189 patients were approached. The final number of patients who agreed to enroll in the study was 169. Thus, the response rate was 89.4%. As for sample size, the number of new breast cancer diagnoses in 2018 was 2,143.[12] With the assumption of even distribution of new diagnosed cases across the year, the enrolled patients in the current study represent about 15% of these cases. Participants were not paid for participation in the study and none of them dropped out after enrollment in the study.

Two questionnaires were employed during the study: the first one included sociodemographic and health variables including age, nationality, marital status, education, occupation, monthly income, living place, average sleep hours, family history of depression, smoking status, physical activity, history of chronic diseases, and duration of breast cancer treatment. The second part of the questionnaire was concerned with evaluating the quality-of-life using the SF-36 scale,[13] and depression status using the Beck depression inventory II (BDI-II).[14] The SF-36 is a standardized tool for measuring quality-of-life. It includes the following subscales: physical functioning (PF), role-physical (RP), role-emotional (RE), vitality (VT), mental health (MH), social functioning (SF), bodily pain (BP), and general health (GH). The SF-36 is available as a validated tool in Arabic language.[15] The Beck depression inventory II (BDI-II) is also a standardized tool to evaluate depression status, and available as a validated tool in Arabic language.[16] Thus, the survey tool of the current study was done in Arabic language.

The protocol of this study was reviewed and approved by the Institutional Review Board of Jordan University of Science and Technology (Approval number 13/113/2018). The protocol of this is in accordance with the Declaration of Helsinki. Patients were approached during their hospital stay and requested to participate in the study, and given a brief explanation about the study purpose. If they agreed to participate, an interview time was scheduled. At interview, a detailed explanation of the study protocol was provided. Then, written informed consent was taken before the questionnaire administration from each participant. The interview was semi-structured, and all items of the study questionnaire were presented to the patient participants.

All the data collected were evaluated by SPSS 21.0 statistics package program (SPSS Inc., Chicago, IL, USA). Numbers and percentages were used to express categorical variables, whereas means and standard deviation were used for continuous variables. $P<0.05$ was considered significant. One-way ANOVA or unpaired t-test were conducted to compare differences in SF-36 and Beck scales as per sociodemographic and health variable of the study subjects.

Results

Breast cancer patient (n=169 females) with a mean age ±Standard Deviation (SD) of 49.12±6.48 years

participated in this study. The majority of patients were married (71%), with three-to-four children, and housewives (62.7%). Moreover, a high percentage of patients completed secondary school education (46.2%), while only 4.1% of patients completed their graduate education. Demographic characteristics of breast cancer patients are shown in Table 1. The prevalence of depression symptoms was 30.2% among patients, distributed as 26% with mild depression, 19.5% as moderate depression, and 1.8% as severe depression, as shown in Table 2.

Reliability, central tendency, and variability of scales of the SF-36 quality-of-life questionnaire among breast cancer patients are shown in Table 3. Table 4 show associations of SF-36 subscales with sociodemographic and health variables of study participants. The PF subscale was significantly associated with the patient's age (P=0.03). The RP subscale was associated with number of sleeping hours (P=0.038). The marital status of breast cancer patients was significantly associated with RE (P=0.015) and MH (P=0.009) subscales. The number of patient's siblings was significantly associated with daily habits such as PF (P=0.031) and RP (P=0.005) subscales. Moreover, the occupation of patients was associated with the PF (P=0.041) and MH (P=0.049). Patients' nationality, education level, income, and living place were not associated with any of the SF-36 subscales.

As for depression status, there is an association between family history of depression with both SF (P=0.026) and BP (P=0.047). Finally, the Beck depression inventory-II index showed a significant association with marital status (P=0.049) and sleeping hours (P=0.003) (Table 4).

Discussion

In this study, we examined the quality-of-life and prevalence of depression symptoms among breast cancer patients in Jordan. According to the BDI-II rating scale that was used to determine the depression symptoms and their severity, 30.2% of breast cancer patients displayed the cut-off point of the depression scale. Patients were distributed as 26.0% with mild depression symptoms, 19.5% with moderate symptoms, and 1.8% with severe symptoms. Marital status and average number of sleep hours during the day were significantly associated with development of depression symptoms among breast cancer patients.

Table 1 Demographic Characteristics of Breast Cancer Patients (N=169)

Demographic Characteristics	n	Percentage
Age		
18–40	32	18.9
41–50	46	27.2
>50	91	53.8
Nationality		
Jordanian	160	94.7
Non-Jordanian	9	5.3
Marital status		
Married	120	71.0
Single	13	7.7
Divorced/widowed	36	21.4
Number of siblings		
None	24	14.2
1–2	24	14.2
3–4	59	34.9
5–6	39	23.1
>6	23	13.6
Education		
Illiterate	19	11.2
Primary school	39	23.1
Secondary school	78	46.2
Bachelor or higher	33	19.5
Occupation		
Housewife/unemployed	112	66.3
Employed	57	33.7
Monthly income (JD)		
<250	54	32.0
250–500	73	43.2
>500	42	24.9
Current location		
Urban	105	62.1
Rural	64	37.9
Average sleep hours/day		
<4	32	18.9
5–6	58	34.3
7–8	64	37.9
>8	15	8.9
Family history of depression		
Yes	21	12.4
No	142	48.0
Do not know	6	3.6
Smoking status		
Smoker	21	12.1
Non-smoker	148	85.1

(*Continued*)

Table 1 (Continued).

Demographic Characteristics	n	Percentage
Regular physical activity		
Yes	21	12.5
No	147	87.5
Chronic diseases		
Diabetes	29	17.2
Hypertension	47	27.8
Cardiovascular diseases	14	8.3
Pulmonary diseases	13	7.7
Dermatological diseases	6	3.6
Obesity	57	33.7
Others	16	9.5
Reference person if depressed		
Family and friends	88	52.1
General practitioner	2	1.2
Pharmacist	0	0.0
Psychiatric specialist	6	3.6
Social advisor	2	1.2
No one	57	33.7
Others	14	8.3
Cancer treatment duration (years) mean±SD (range)	2.35±2.34 (1–2)	

Table 2 The Average of Beck Depression Inventory-Categories and Subscales (Cronbach Alpha=0.772; N=169)

	N	%
BDI mean±SD (range)	13.65±6.96 (0–34)	
Minimal range (0–13)	89	52.7
Mild (14–19)	44	26.0
Moderate (20–28)	33	19.5
Severe (29–63)	3	1.8
Depression (17 cut-off point)*		
No	118	69.8
Yes	51	30.2

Note: *Hisli N. Use of the Beck depression ınventory with Turkish üniversity students: Reliability, validity, and factor analysis. Turk J Psychol. 1989;7:3–13.

It was previously shown that the prevalence of depression among breast cancer patients was 24.75% in Levant region.[11] Another study at the outpatient clinics of a university hospital in Egypt showed a prevalence of depression of 38.8%.[17] In a meta-analysis study that evaluated the global prevalence of depression among breast cancer patients, 32.2% of patients were shown to have depression symptoms.[18] Yet, a higher prevalence of depression symptoms (49.6%) was recorded in women with breast cancer in Saudi Arabia.[19] Results of the different studies showed that depression was common among breast cancer patients. This variability in results in different studies might be explained by different disease stages, treatment strategies, and physical debilitation of patients' caregivers. Moreover, psychological complications of breast cancer patients and the impaired body image of women might also be a factor. For example, fatigue and pain are among the symptoms that resulted from disease treatment and their consequences in interruption of daily activities may cause feelings of distress among these women. Woman appearance and concerns about her whole body.[3] Moreover, mastectomy and hair loss due to chemotherapy or early menopause may be a serious threat to the self-image of a woman.[20]

In the current study, patients were compared according to their age with the SF-36 sub-scales; physical functioning scores of elderly patients were significantly lower than younger patients. Previous studies have reported age to

Table 3 Reliability, Central Tendency, and Variability of Scales of SF-36 Quality-of-Life Questionnaire of Breast Cancer Patients (Cronbach's Alpha=0.84; N=169)

	Items	Alpha	Mean±SD
Physical functioning (PF)	10	0.887	51.57±29.01
Role limitations due to physical health (RF)	4	0.967	32.29±44.73
Role limitations due to emotional problems (RE)	3	0.982	36.29±47.40
Energy/fatigue (Vitality VT)	4	0.732	43.52±22.79
Emotional well-being (Mental Health MH)	5	0.680	60.83±20.03
Social functioning (SF)	2	0.777	62.06±32.27
Pain (Bodily Pain BP)	2	0.805	53.43±30.02
General health (GH)	5	0.433	54.66±17.89
Health change	1	—	43.79±29.22

Table 4 The Comparison of the Sociodemographic Characteristics of Breast Cancer Patients with the Short Form 36 and Beck Depression Inventory Parameters (N=169)

	PF	RP	RE	VT	MH	SF	BP	GH	BDI
Age									
18–40	60.0±31.7	40.6±45.7	44.8±47.6	49.4±23.6	56.5±22.4	62.1±26.8	60.6±27.1	55.3±22.6	13.2±7.9
41–50	56.2±24.3	23.9±40.5	26.8±44.2	40.0±18.9	60.1±19.9	60.6±32.6	50.1±28.4	54.4±17.4	15.2±7.6
>50	46.3±29.4	33.6±46.2	38.1±48.6	43.3±24.1	62.7±19.1	62.8±34.1	52.6±31.7	54.6±16.5	13.1±6.2
P-value	0.03	NS	NS	NS	NS	NS	NS	NS	NS
Nationality									
Jordanian	52.7±29.1	33.5±45.1	36.7±47.6	44.3±22.6	61.4±19.4	61.6±32.7	54.8±29.6	54.7±17.9	13.4±6.9
Others	31.1±17.8	11.1±33.3	29.6±45.5	29.4±22.6	50.7±28.4	69.4±22.6	29.72±29.9	54.1±18.6	17.44±5.7
P-value	NS	NS	NS	NS	NS	NS	NS	NS	NS
Marital status									
Married	52.9±28.3	30.7±43.7	33.6±46.2	42.6±22.3	59.6±20.4	62.9±31.1	53.8±28.7	53.3±17.5	14.2±6.9
Single	56.2±35.9	40.4±49.5	69.2±48.0	52.3±21.7	74.2±13.2	55.8±39.1	51.5±34.7	64.6±16.5	10.5±8.45
Divorced/Widowed	46.0±29.9	40.8±49.3	40.0±49.8	47.0±23.8	63.6±17.2	59.2±34.1	56.1±31.9	57.0±18.4	11.7±6.1
P-value	NS	NS	0.015	NS	0.009	NS	NS	NS	0.017
Siblings									
None	51.5±31.9	34.4±47. 7	50.0±51.1	43.8±22.3	65.5±16.3	53.1±35.2	48.9±32.0	61.3±17.1	11.3±6.4
1–2	54.6±28.7	55.2±48. 9	50.0±51.1	48.1±24.5	61.7±23.6	60.9±40.9	58.8±33.7	58.8±17.6	13.5±8.1
3–4	59.3±26.9	38.1±46.0	40.1±47.4	45.0±23.4	59.5±21.9	65.0±27.1	55.1±30.3	52.9±19.2	13.4±6.9
5–6	45.4±27.5	16.7±35.5	22.2±41.4	41.2±20.2	57.4±18.0	62.5±32.7	47.1±29.2	51.2±17.4	15.9±6.6
>6	39.1±29.7	17.1±35.7	21.7±42.2	38.5±24.6	64.4±17.6	64.1±31.8	59.2±23.8	53.9±15.2	13.0±6.5
P-value	0.031	0.005	NS	NS	NS	NS	NS	NS	NS
Education									
Illiterate	36.8±25.2	25.0±41.7	31.6±47.6	37.4±22.0	61.9±20.7	65.8±26.9	54.7±28.4	55.5±15.9	14.4±7.2
Primary school	52.9±30.8	23.7±42.5	29.9±45.8	40.1±21.5	57.7±19.7	58.9±33.9	46.7±29.8	55.7±16.7	15.2±8.5
Secondary school	52.8±29.2	37.9±47.1	40.6±48.5	45.8±23.7	61.5±20.1	63.9±32.5	6.51±29.2	54.7±19.2	12.5±6.3
BSc and higher	60.0±25.1	32.7±42.9	34.6±46.6	45.9±19.5	61.7±21.4	60.6±33.3	54.8±35.2	51.2±17.7	13.7±6.0
P-value	NS	NS	NS	NS	NS	NS	NS	NS	NS
Occupation									
Employed	54.04±30.15	38.16±45.59	43.86±49.26	45.96±24.74	66.11±19.05	65.79±32.61	57.89±31.45	55.29±16.84	12.67±6.65
Housewife/Unemployed	50.28±28.81	30.00±44.45	33.33±46.46	42.59±22.06	58.08±20.47	61.44±30.67	51.58±29.10	55.39±17.10	14.19±7.08

(*Continued*)

Table 4 (Continued).

	PF	RP	RE	VT	MH	SF	BP	GH	BDI
P-value	NS	NS	NS	NS	0.049	NS	NS	0.031	NS
Monthly income (JD)									
<250	48.3±29.4	31.5±44.8	33.3±46.7	43.3±23.4	57.1±20.9	55.8±32.5	49.0±28.7	56.2±18.1	14.1±7.9
250–500	51.8±28.1	33.9±46.2	36.5±48.1	43.2±22.8	65.1±17.9	66.8±31.7	56.7±29.1	53.9±18.2	13.6±6.7
>500	55.4±30.1	30.5±42.7	39.7±47.8	44.4±22.4	58.1±21.2	61.9±32.1	53.3±33.1	53.8±17.1	12.9±5.1
P-value	NS	NS	NS	NS	NS	NS	NS	NS	NS
Current location									
Urban	51.0±30.1	32.9±45.4	33.6±46.8	44.1±23.8	59.4±21.1	64.5±30.8	56.5±29.6	54.7±17.7	13.5±6.8
Rural	52.4±27.2	31.2±43.8	40.6±48.4	42.4±21.1	63.1±18.0	58.0±34.3	48.2±30.1	54.4±18.2	13.7±7.2
P-value	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average sleep hours/day									
<4	41.5±28.7	24.2±42.8	33.3±47.1	37.1±22.5	58.1±19.4	60.1±37.7	44.6±32.7	50.1±16.1	17.6±7.2
5–6	52.7±29.7	23.2±39.4	29.8±44.8	44.4±20.0	60.8±19.8	59.9±32.7	50.4±26.4	54.5±17.8	12.9±6.5
7–8	54.2±27.8	44.8±47.7	41.1±48.8	45.3±24.3	61.5±20.3	64.8±30.1	59.8±30.4	56.2±18.9	12.4±6.3
>8	56.6±29.6	31.67±46.7	46.6±51.6	45.3±26.2	63.4±22.3	62.5±28.7	56.1±32.0	58.0±16.7	13.0±8.0
P-value	NS	0.038	NS	NS	NS	NS	NS	NS	0.003

Note: One-way ANOVA was used to compare variables with three or more categories, whereas unpaired t-test was used for two-group variables.

Abbreviations: PF, physical functioning; RP, role-physical; RE, role-emotional; VT, vitality; MH, mental health; SF, social functioning; BP, bodily pain; GH, general health; BDI, Beck's Depression Inventory; JD, Jordanian Dinar (=0.71 US Dollars).

have an effect on the quality-of-life and reported a strong decline in physical activity immediately after diagnosis with breast cancer.[21,22] The current results showed that divorced patients had lower scores than other patients in emotional well-being, whereas their mean BDI-II scores were significantly higher. A previous study about the relation between marital status and optimism score among breast cancer survivors revealed that married women had significantly higher optimism compared to unmarried women.[23] Another study from China showed that divorced women had a 30% lower score of social and family well-being compared with married women with breast cancer.[24] A study about quality-of-life after adjuvant chemotherapy for breast cancer revealed that unmarried breast cancer survivors experienced lower mental well-being than married breast cancer survivors.[25,26] The current study reported that a higher number of siblings was associated with a lower level of limitation role due to physical health and limitations role due to emotional problems in breast cancer patients. Such findings strongly imply that, in dealing with breast cancer patients, social support from family members and friends as well as other social connections plays an important role.

Both mental health and general health of employed patients were significantly better than those of the unemployed. The current results are similar to other studies which showed that general wellbeing of women who worked at least some hours per week was higher than those who did not work.[27] Other findings revealed that physical wellbeing and other quality-of-life domains were positively related to the number of hours worked per week.[28] General wellbeing may be higher in women working at the time of diagnosis because of good support received from coworkers and friends in the workplace. Feelings of life normalcy and the ability of work were shown to distract patients from their illness and to provide patients with a good sense of self-efficacy to cope with disease, which could be another explanation for the good impact of work on quality-of-life among cancer patients.[27]

Patients with an average sleep of less than 6 hours per day had been significantly correlated to limitations due to physical heath. A previous study has shown that breast cancer patients who were sleep deprived reported problems due to physical weaknesses in their ability to perform work and daily tasks.[29] Other studies indicate poor sleep quality has been associated to lower life quality including physical activity.[30,31] In fact, high level of physical activity was correlated with an increase in self-efficacy which, in turn, were correlated with enhancement in general health status parameters and quality-of-life.[32,33]

The current study has some limitations as it only included two medical centers in Jordan. It covered only a period of 6 months, and it only collected limited information about treatment and intervention given to patients. Future more comprehensive studies are needed to cover more clinical aspects of the disease and relate those to the status of depression of patients and their quality-of-life.

In conclusion, the current results showed the prevalence rate of depression among breast cancer patients to be 30.2%. The majority of the reported depression cases were minimal to mild in severity. Quality-of-life measurements domains were impacted by different factors including patient's age, marital status, number of siblings, patient's occupation, and average number of sleep hours per day. Current results showed a necessity to pay attention and provide more social and psychological support to breast cancer patients and to tailor the measurements taken to reduce the symptoms of depression and improve their quality-of-life.

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