

Prevalence and Determinants of Depression among Women with Breast Cancer in Middle Euphrates Cancer Center in Najaf Province -Iraq

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Abstract

Background: Breast cancer (BC) is the most prevalent cancer among women worldwide. The psychosocial consequences of illness among women with BC are so frequent that they result in depression and other psychological distress.

Objectives: The present study aims to estimate the prevalence of depression among BC patients and to identify the potential determinants.

Patients &Methods: An analytic cross-sectional study of patients with BC was carried out throughout the period from January 2016 to July 2016 at the Middle Euphrates Cancer Center in Najaf Province-Iraq. A purposive sample of 175 women with BC was selected from the outpatient clinic; patients were interviewed by a questionnaire which is specially prepared for this study and includes demographic data, clinical data, and Beck Depression Inventory (BDI-II).

Results: According to the results of BDI-II questionnaire, 65 patients (37.1%) were screened as having depression and 110 patients (62.9%) were considered normal. The mean score for depression $\pm$ SD is equal to 13.60 ± 8.78 . The data analysis has found that 12.0%, 21.7%, and 3.4% of respondents had borderline, moderate depression, and severe depression, respectively while the binary logistic regression analysis has shown that cases with inadequate income ($P = 0.010$, OR = 2.52, 95% C.I = 1.28-5.08), and lower educational attainment ($P = 0.031$, OR = 2.34, 95% C.I = 1.07-4.90) were more likely to have depression.

Conclusion: it has been found that depression among women with BC is a considerable issue. Inadequate income and lower educational attainment can be independent risk factors for such a depression.

Keywords: Breast cancer, Beck Depression Inventory, Depression, Prevalence, Iraq.

Introduction

Breast cancer (BC) is the most prevalent cancer in women worldwide, estimated at nearly 2.3 million new cases in 2020. It accounts for about 11.7 % of all new cancer cases and 24.5 % of all cancers among women⁽¹⁾. In Iraq, BC constitutes about 37.9% of the registered cancer cases, and it is the leading cause of death among 15.3% of women⁽²⁾. Often, women diagnosed with BC experience some psychological distress because of the burden of the disease, its treatment, and its consequences. As a result, this distress can negatively affect women's health, wellbeing, and social functioning⁽³⁾. Psychological distresses are common in women with BC, but they are often overlooked and undertreated, despite their effect on daily life functioning⁽⁴⁾. The main reason is that depression symptoms like pain, fatigue, and weight loss, are often considered normal and expected side-effects of treatment⁽⁵⁾. Many BC patients experience depression, fatigue, and/or anxiety months to years after their diagnosis; these psychological symptoms are often related to greater disability and a lower quality of life⁽⁶⁾. Patients with cancer are predisposed to psychological morbidity for different reasons, including metabolic or endocrine changes, debilitating chemotherapy regimens, immune response modifiers, and cancer-related chronic pain⁽⁷⁾. Furthermore, feelings of change in their family or work roles, and loss of control over life events have an impact on the patient's sexuality, femininity, and body image, in addition to maternal issues following mastectomy⁽⁸⁾.

A wide variety of risk factors for depression or higher depressive symptoms in BC have been reported. These include age, educational status⁽⁹⁾, cancer severity⁽¹⁰⁾, type of treatment^(9,11), pain⁽¹⁰⁾, time since diagnosis, physical activity⁽¹²⁾,

diet, menopausal symptoms/status⁽¹¹⁾, physical functioning/symptoms^(10,11), social functioning⁽¹⁰⁾, self-esteem⁽⁹⁾, and psychiatric history⁽¹⁰⁾.

Earlier studies found a high prevalence of psychological distress among BC patients, and they are highly vulnerable to developing severe anxiety, depression, and potential mood disorders⁽¹³⁻¹⁵⁾. Among BC survivors, a systematic review of sixty studies has shown a high prevalence of depression that ranges from 30-50%⁽¹⁶⁾. Unfortunately, to the researcher's best knowledge, no sufficient published data on depression among BC patients in Najaf city or other Iraqi cities are available; therefore, this study was carried out to identify the frequency of depression and some possible sociodemographic risk factors for depression in women with BC.

Patients & Methods:

An analytic cross-sectional study of patients with BC was carried out throughout the period from 1st of January 2016 to 1st of July 2016 at Middle Euphrates Cancer Center in Najaf Province.

A purposive sample of 175 women selected from the outpatient clinic. During the period of data collection, all attended women with BC, and who accepted to participate in this study were included. A data collection process was conducted for 2 days per week during the period of the study; the time needed to fill the questionnaire was nearly 20 minutes. Eligibility criteria included all BC women aged 18 years and above, and were having the ability to understand and answer the interviewer's questions. Yet, the exclusion criteria include any patient who had a history of chronic disease (like diabetes mellitus and hypertension), or any previous history of psychiatric illness or substance abuse.

The sample size was measured according to the following formula: $[Z2P(1-P)/d2]$, regarding the prevalence 21% from a previous study⁽¹⁹⁾, 90% confidence interval, and 5% border of error (d).

The data was collected by interviewing the patients by using a questionnaire specially prepared for this study; it includes three parts: first; demographic data consisting of age, residence, income employment status, educational status, and marital status. Second, data on the clinical status of the patient such as time since diagnosis of BC, menopausal status, stage of disease, type of treatment, and surgery they received. The third part was the Arabic version of Beck Depression Scale (BDI-II questionnaire)⁽¹⁷⁾, which consists of 21 multiple choice questions measuring the mood of the participants for the previous 2 weeks. The scores obtained from each question range from (0-3), the total score is calculated and it measures the presence and severity of cognitive and somatic symptoms of depression on a scale (from 0-63). A score of 0-16 is considered normal, 17-20 borderline clinical depression, 21-30 moderate depression, 31-40 severe depression, and over 40 is extreme depression⁽¹⁸⁾.

A pilot study was carried out on a purposive sample selected from patients attending the outpatient clinic, but they were not included in the final sample of the study. The purposes of the pilot study were to have an idea about the time needed for the interview to collect the required data, and to find out if there are any difficulties and unclear questions in the Arabic version of the BDI-II.

An approval from the ethical committee of Faculty of the Medicine/University of Kufa was taken for performing this study. A verbal consent was obtained from all the participants after the explanation of the objectives of the study; they were informed

that they could withdraw from this study at any time. Meanwhile, confidentiality and privacy of all collected data were preserved.

Statistical Package for Social Sciences (SPSS) version 20 was used for data analysis. To describe the demographic data, clinical data and depression status of the participants, standard deviation (SD), mean, percentage, and frequency were used. Sociodemographic and clinical features of patients were regarded as independent variables, whereas dependent variables are the presence or absence of depression. Univariate analyses between two groups were done by Chi-square test. A binary logistic regression was used for multivariable analysis to control for possible confounders. A P-value equal to or less than 0.05 was considered statistically significant.

Results

The sample included 175 women with BC; the majority of cases aged between 45 to 64 years represented (57.1%) followed by the age group 25 to 44 years representing (28%). Their mean age $\pm$ SD was 50.42 ± 12.38 years. The majority of responders were living in Najaf representing 71.4%, and the remaining were from other provinces. More than three-quarters of the women in this study were housewives (84.0%), and the rest were employers. About 50.9% of the studied samples had inadequate incomes. Women with an educational level less than or equal to six years constituted 65.7% of cases. About two-thirds of the participant women (65.7%) were married (Table1).

Table 2 below shows that menopausal women constituted most of the cases (73.3%). According to the clinical staging of BC, the frequencies were 27.4%, 41.7%, 17.1%, and 13.7% for stages I, II, III, and IV respectively. The time since diagnosis for most of the cases (63.4%)

was less than one year. The distribution of patients concerning the type of treatment showed that more than one-third (41.7%) of cases had surgery along with chemotherapy, 34.9% of cases underwent surgery with chemotherapy and radiotherapy. Regarding the type of surgery that was performed, more than two-thirds of cases 71.4% had modified radical mastectomy (MRM).

According to the results of the BDI-II questionnaire, 65(37.1%) were screened as having depression and 110(62.9%) were considered normal. The data analysis has found that 12.0% of the respondents had a borderline depression, 21.7% had a moderate depression, and only 3.4% of cases had a severe depression (see Table 3 below).

Tables 4 & 5 show that depression is significantly associated with inadequate income ($P < 0.001$), lower years of education ($P = 0.001$), menopausal state ($P = 0.031$), and type of treatment ($P = 0.015$). Further sociodemographic and clinical characteristics were not significantly associated with depression ($P > 0.05$).

Discussion

The current study was carried out among 175 women diagnosed with BC; the prevalence of depression was 37.1%. This is consistent with findings of other studies which showed a prevalence of depression ranging from 21% to 50%^(9,19-22). A systematic review of observational studies from different countries showed that the global prevalence of depression in BC cases was 32.2%. Furthermore, depression was higher in the middle east region, and middle-income countries in comparison to developed countries⁽¹³⁾. However, this finding is lower than a

descriptive cross-sectional study conducted in the north of Iraq which found a higher prevalence of depression equal to 60.4% by using Hospital Anxiety and Depression Scale (HADS) standardized questionnaires⁽²³⁾.

Currently, the mean(SD) of BDI- II score is 13.59(8.78), borderline, moderate, and severe depression are prevalent in 12.0%, 21.7%, and 3.4%, respectively. Consistently, Casavilca-Zambrano S et al. reported that mild, moderate, and severe depression are prevalent among 16.9%, 6.3%, and 2.4% of BC patients⁽²⁴⁾. A higher result was reported by a study conducted in Kazakhstan in which the mean(SD) score of the BDI-II questionnaire was 22.34 (9.65%). Meanwhile, the prevalence of moderate, and severe depression among women with BC was 46% and 31%, respectively⁽²⁵⁾. This incompatibility in results could be explained by the differences in the sociodemographic and clinical characteristics of the studied populations, in addition to differences in case definition, screening tools, and design of the study.

Concerning the sociodemographic factors, the results showed no significant association between depression in BC cases and residence, employment status, and marital status. However, Casavilca-Zambrano S and his coworkers found that being employed or married significantly decreased the likelihood of depression among Peruvian women with BC⁽²⁴⁾. Another study reported that patients who were unemployed or retired had a significantly higher risk of developing depression symptoms than those who were employed⁽²⁵⁾, in contrast with a case-control study that found no significant differences in depression concerning employment status⁽²⁶⁾.

Table 1: Distribution frequency of the study sample by socio-demographic variables

Socio-demographic variables	N (175)	%
Age group (years)		
25-44	49	28.0
45-64	100	57.1
≥65	26	14.9
Mean=50.42, SD±12.38, Min= 25 years, Max=83 years		
Residence		
Al-Najaf	125	71.4
Other governorates	50	28.6
Employment status		
Employed	28	16.0
Housewife	147	84.0
Income		
Inadequate	89	50.9
Adequate	86	49.1
Years of education		
≤ 6 years	115	65.7
> 6 years	60	34.3
Marital status		
Married	115	65.7
Divorced	12	6.9
Widowed	32	18.3
Single	16	9.1
Number of children		
0	38	21.7
1-2	28	16.0
3-4	33	18.9
>5	76	43.4

Table2: Distribution frequency of the study sample by clinical variables

Clinical variables	N (175)	%
Menopausal state		
Menopause	129	73.7
Non-menopause	46	26.3
Stage of BC		
I	48	27.4
II	73	41.7
III	30	17.1
IV	24	13.7
Duration since diagnosis (years)		
< 1 year	111	63.4
≥ 1 year	64	36.6
Type of treatment		
Surgery	13	7.4
Surgery + chemotherapy	73	41.7
Surgery + chemotherapy + radiotherapy	61	34.9
Radiotherapy+ chemotherapy	9	5.1
Chemotherapy	19	10.9
Type of surgery		
Breast conservative surgery	42	28.6
Modified radical mastectomy	105	71.4

Table 3: Distribution of women with BC according to depression level as per Beck depression score

Level of depression	Score of depression	Frequency	Percentage
No depression	0-16	110	62.9
Borderline depression	17-20	21	12.0
Moderate depression	20-30	38	21.7
Severe depression	31-40	6	3.4
Mean score =13.60 (SD=8.78), minimum score =0, maximum score =36			

Table 4: Distribution of the study group by depression and selected socio-demographic variables

socio-demographic variables	Presence of Depression (N=110)		Absence of Depression (N=65)		Total (N=175)		X ²	P
	No	%	No	%	N0	%		
Age groups (years)								
25-44	15	30.6	34	69.4	49	100.0	4.058	0.131
45-64	36	36.0	64	64.0	100	100.0		
>65	14	53.8	12	46.2	26	100.0		
Residence								
Al-Najaf	45	36.0	80	64.0	125	100.0	0.245	0.621
Other governorates	20	40.0	30	60.0	50	100.0		
Employment								
Employed	8	28.6	20	71.4	28	100.0	1.049	0.306
Housewife	57	38.8	90	61.2	147	100.0		
Income								
Inadequate	45	50.6	44	49.4	89	100.0	13.968	0.000*
Adequate	20	23.3	66	76.7	86	100.0		
Years of education								
≤6 years	53	46.1	62	53.9	115	100.0	11.493	0.001*
>6 years	12	20.0	48	80.0	60	100.0		
Marital status								
Married	41	35.7	74	64.3	115	100.0	2.568	0.463
Divorced	6	50.0	6	50.0	12	100.0		
Widow	14	43.8	18	56.2	32	100.0		
Single	4	25.0	12	75.0	16	100.0		
Number of children								
0	12	31.6	26	68.4	38	100.0	1.535	0.674
1-2	10	35.7	18	64.3	28	100.0		
3-4	11	33.3	22	66.7	33	100.0		
≥5	32	42.1	44	57.9	76	100.0		

* significant of p<0.01

Table 5: Distribution of the study group by depression and certain clinical variable

Clinical variable	Presence of Depression (N=110)		Absence of Depression (N=65)		Total (N=175)		X ²	P
	No	%	No	%	No	%		
Menopausal state								
Menopause	54	41.9	75	58.1	129	100.0	4.678	0.031 [*]
Non menopause	11	23.9	35	76.1	46	100.0		
Stage of BC								
1	16	33.3	32	66.7	48	100.0	7.559	0.056
2	21	28.8	52	71.2	73	100.0		
3	16	53.3	14	46.7	30	100.0		
4	12	50.0	12	50.0	24	100.0		
Duration since diagnosis(years)								
<1 year	39	35.1	72	64.9	111	100.0	0.524	0.469
≥1 year	26	40.6	38	59.4	64	100.0		
Treatment								
Surgery	2	18.2	11	84.6	13	100.0	12.295	0.015 [*]
Surgery + chemo	32	43.8	41	56.2	73	100.0		
Surgery +chemo+radio	19	31.1	42	68.9	61	100.0		
Radio +chemo	7	77.8	2	22.2	9	100.0		
chemotherapy	5	26.3	14	73.7	19	100.0		
Type of surgery								
BCS	16	38.1	26	61.9	42	100.0	0.012	0.914
MRM	39	37.1	66	62.9	105	100.0		

* significant of $p < 0.05$

Table 6: Binary logistic regression for factors associated with depression.

Variables	p-value	Odd ratio (OR)	95% Confidence interval	
			Lower	Upper
Constant	0.688	1.56		
Income	0.010*	2.52	1.25	5.08
Years of education	0.031*	2.34	1.07	4.90
Menopausal state	0.062	0.46	0.20	1.04
Type of treatment	0.397	0.91	0.73	1.14

* significant of $p < 0.05$

Results of different studies found that the patient's marital status was significantly related to depression among women diagnosed with BC^(25,27,28). On the contrary, other studies reported a non-significant relationship between marital status with depression in BC patients^(24,26). This could be due to the sociodemographic features of the studied sample where most of them (84.0%, & 65.7%) were housewives and married respectively; so, the

presence of such association cannot be studied obviously.

The present study has demonstrated no significant relationship between having children and depression ($P < 0.05$). However, earlier studies about having children as a risk factor for depression were contradictory with significant⁽¹⁴⁾ as well as non-significant relationships had been reported^(25,26).

Further statistical analysis using logistic regression revealed that those with inadequate income and lower educational years were independently significant predictors of depression. Numerous studies have found that a lower educational level was significantly associated with depression^(26,28-30); this agrees with the present result where patients with higher educational levels may have a greater chance of understanding their disease and its implications, in contrast to patients with lower educational attainment who have difficulty in getting enough information about the disease process, and its management. Hence, they have difficulty in understanding complex information and making decisions.

Regarding the income of the patients, financial status plays an influential role in the course of cancer treatments. Many studies showed that depression is associated with lower income/poor financial status^(14,25-27), which is in line with the current finding. This could be attributed to the cost of transportation and the high cost of cancer management. Therefore, most of the patients felt burdened by treatment, and some required investigations, especially based on their economic status. If this feeling is not being treated, it could lead to psychiatric morbidity. Additionally, incomes and educational levels are found to be related to the quality of life and self-esteem among BC survivors⁽²⁷⁾, therefore both factors adversely affect the psychological status of BC patients.

Similar to earlier findings^(28,26), this study has reported that menopausal status and the type of treatment are not significant predictors for depression, although a previous study reported that menopausal status and type of treatment were regarded as risk factors for depression⁽²³⁾.

Other clinical variables including cancer staging, duration since diagnosis, and type of surgery were found to be not significantly related to depression. Only a few researchers have suggested that cancer stage^(14,25), time since diagnosis of cancer^(14,31), and type of surgery⁽²³⁾ are risk factors for depression. However, the current findings are compatible with the majority of previous studies^(26,32-34) that have failed to find such relationships.

There were two limitations to this study, firstly; since it is a cross-sectional study, casual relationships cannot be established. Secondly; the study is conducted in a single facility which is the outpatient clinic. Consequently, the depressive status of BC women elsewhere cannot be determined.

Conclusion

Depression among BC patients is a significant problem. Moderate depression is the commonest type among depressed patients. The identified independent risk factors for depression are inadequate income and lower educational attainment. So, it is highly recommended to enhance health care professionals to pay more attention to the psychosocial aspect of BC patients, with special attention to those with low income, and lower educational years. Monitoring psychological distress in patients with BC routinely can be made by using a quick, simple, and reliable self-administered questionnaire and ensure referring those screened positive for depression for further psychiatric support.

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