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Original Article

Depression among Women Diagnosed with Breast Cancer: A Study from North India

Abstract

Introduction: Major depressive disorder is a major mental health problem and is the fourth most important cause of loss of disability-adjusted life years worldwide. **Aim:** The study aimed to assess the association of depression among women diagnosed with breast cancer. **Methodology:** A descriptive, cross-sectional study was done on 102 females diagnosed with breast cancer. Women were recruited using purposive sampling technique. Patients were evaluated on Mini International Neuropsychiatric Interview Version 6.0.0 to screen other psychiatric comorbidities. Hamilton depression 17-item, rating scale was used to measure severity of depression. **Results:** The prevalence of depression was 47.05% in women diagnosed with breast cancer. Majority of the patients (54.1%) had mild depression. Correlations of clinical and Sociodemographic variables with parameters of depression were not significant. **Conclusions:** Depression is commonly associated psychiatric morbidity in patients diagnosed with breast cancer. The severity of depression is independent of the sociodemographic and clinical variables of patients with breast cancer.

Keywords: *Breast cancer, depression, India, women*

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Introduction

Across the world, breast cancer is a leading cause of death in females, and it is the most commonly diagnosed cancer in this population.[1] In Asia, breast cancer incidence peaks among women at the age of 40 years, whereas in the United States and Europe, it peaks among women at the age of 60 years.[1] In India, around 50% of breast cancer is among premenopausal women. More than one lac patients are diagnosed with breast cancer annually in India as per the Indian Council of Medical Research – Population-Based Cancer Registries data 2014.[1]

Diagnosis of cancer generates varying levels of stress and emotional upset in individuals and their families. The commonly encountered challenges in patients with breast cancer are fear of dying, distortion of self-image, loss of self-esteem, change in social role, disruption of the family integrity, and financial difficulties.[2]

Loss or distortion of the symbols of femininity due to breast cancer in women leads to low self-esteem, negative body image, false self-perception, social isolation, and communication or relationship problems with family members or friends.[3,4] Cancer treatment also results in loss of feminine physical characteristics through hair loss (secondary to chemotherapy) or the loss of one or both breasts (following mastectomy).[5] It may lead to the development of "cancer stigma" among women. Impact of cancer on the physical and psycho-social well-being is enormous. Patients diagnosed with cancer often encounter social rejection and isolation, resulting in poor well-being along with poor health outcomes.[6]

Patients with cancer often experience pain, sleep disturbances, loss of appetite, anxiety, hopelessness, worry, and apprehension related to future. Distinguishing between normal levels of sadness and depressive disorders is a critical step.[7] Similarly, many myths are associated with cancer. The common myths about cancer are as follows:

- Depression is inevitable, normal, and expected in all individuals with cancer
- Sufferings and painful deaths are seen all patients of cancer.

There is little role of treatment in cancer patients. These myths may misguide the patient, the caregivers, as well as

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the clinicians. Considering depression to be normal and inevitable in breast cancer, it may result in under-diagnosis and nontreatment of depression. As an essential element of cancer management, early detection of depression and timely intervention are highly crucial. Evidence suggests that relaxation techniques and other psychological interventions have been effective to reduce psychological symptoms in women with a new diagnosis of gynecological cancer.[8]

Individual differences in response to diagnosis and adjusting are seen among people living with cancer. Simple sadness or a blue mood is not considered as depression.[9,10] Patients with major depression have recognizable symptoms that can and should be diagnosed and treated because they adversely affect the quality of life. At the time of diagnosis of cancer, depressive symptoms may present and it might be the on-going depressive disorder, hence needs focused evaluation.[11,12]

Depression is a frequently discussed entity in the context of cancer; however, it is often challenging to evaluate it in the context of cancer as many of the symptoms of cancer and side effects of cancer treatment (pain, fatigue, loss of weight, and appetite) often resemble with depression.[12] Comorbid depression negatively affects the treatment of both cancer and depression. It may lead to poor adherence to treatment recommendations, hence resulting in poor outcomes.

India, being a heavily populous country, caters nearly one-sixth of the world's population. India accounts for a major chunk of global burden of diseases including cancers as well as depression. However, depression is understudied in Indian women, diagnosed with breast cancer. The development of studies from this perspective can have meaningful implications in holistic care of breast cancer and comorbid depression. Taking into account such aspects, this study aims to verify the occurrence and pattern of depression from the signals and symptoms evidenced, in women diagnosed with breast cancer.

Methodology

The study was conducted during 2016–2017 (November 2016 to April 2017), in a tertiary care teaching hospital located in North India. The study was approved by the Institute's Ethics Committee, and all patients were recruited after obtaining written informed consent.

The study had a cross-sectional design, and the sample was recruited by purposive sampling. The women, who were attending the outpatient services of the Department of Endocrine Surgery and Surgical Oncology, King George's Medical College, Lucknow, Uttar Pradesh, with the diagnosis of breast cancer, were approached. They were explained the purpose of the study and were given freedom of choice, to accept or refuse to participate in the study.

Patients diagnosed with breast cancer (as confirmed by fine needle aspiration cytology or tissue biopsy) within 1 year were included in the study. Female patients who were receiving chemotherapy, aged above 80 years or <18 years were not included in the study. Those with any other psychiatric morbidity on Mini International Neuropsychiatric Interview (MINI) 6.0.0 Version other than depression and any debilitating comorbid physical illness were excluded the study.

Tools for assessment

Patients were assessed on a semi-structured pro forma for sociodemographic and clinical details. MINI 6.0.0 version was used to rule out the psychiatric comorbidities.[13] The diagnosis of depression was confirmed using the International Classification of Diseases-10, diagnostic criteria research.[14] Severity of depression was assessed using Hamilton depression (HAM-D) rating scale (17-item version).[15]

Procedure

All female patients diagnosed with Breast cancer attending the abovementioned outpatient settings were assessed on selection criteria. Sociodemographic data were collected on the semi-structured pro forma, after obtaining the informed consent. Subjects were screened using MINI 6.0.0 for other psychiatric comorbidities. HAM-D (17-item) was administered to assess the severity of depression. The patients, who were found to be suffering from depression or any other psychiatric morbidity, were referred to Outpatient Department of Psychiatry for appropriate treatment.

Statistical analysis

The data collected were first coded and summarized in Microsoft Excel data sheet and analyzed based on objectives of the study using STATA-23 software (StataCorp LLC, Texas, USA). Descriptive analysis was carried out using mean and standard deviation (SD) with range for continuous variables and in terms of frequency and percentage for categorical variables. The continuous variables were compared using Student's *t*-test. The ordinal and nominal variables of the two groups were compared using the Chi-square test. Relationship between various domains of depression and other variables was studied using Pearson's correlation coefficient.

Results

A total of 250 women diagnosed with breast cancer were screened, and among them, 114 patients met the inclusion criteria. The most common reason for noninclusion was patient receiving chemotherapy, as defined for this study. On further evaluation, 12 patients were excluded who had other psychiatric comorbidity. The final sample comprised 102 patients, which was further categorized into two groups (Group A and Group B). Groups A included patients

Table 1: Frequency and percentage distribution of patient's sociodemographic variables

Variable	Categories	Group A (MINI positive for depression) (*n*=48), *n* (%)	Group B (MINI negative for any other psychiatric illness) (*n*=54), *n* (%)	Test of significance
Age (years)	18-30	2 (4.2)	1 (1.9)	χ^2=1.42, *P* 0.70, df=3
	31-40	14 (29.2)	16 (29.6)	
	41-50	11 (37.5)	25 (46.3)	
	51-60	14 (29.2)	12 (22.2)	
Mean±SD		43.83±8.16	43.55±7.20	*t*=0.184, *P*=0.854, df=100
Occupation	Housewife	43 (89.6)	51 (94.4)	χ^2=5.01, *P*=0.08, df=2
	Professional	5 (10.4)	3 (5.6)	
Education	Illiterate	27 (56.3)	31 (57.4)	χ^2=1.50, *P*=0.47, df=2
	Up to matric	14 (29.2)	19 (35.2)	
	Above matric	7 (14.6)	4 (7.4)	
Marital status	Married	43 (89.6)	40 (74.1)	χ^2=4.03, *P*=0.07, df=1
	Widowed/divorced/ separated	5 (10.4)	14 (25.9)	
Religion	Hindu	44 (91.7)	50 (92.6)	χ^2=0.56, *P*=0.75, df=2
	Muslim	2 (4.2)	3 (5.6)	
	Sikh	2 (4.2)	1 (1.9)	
Family monthly income (INR)	Up-to 2500	23 (47.9)	21 (38.9)	χ^2=2.94, *P*=0.22, df=2
	2501-5000	6 (12.5)	14 (25.9)	
	>5000	19 (39.6)	19 (35.2)	
Type of family	Nuclear	22 (45.8)	18 (33.3)	χ^2=1.66, *P*=0.22, df=1
	Joint	26 (54.2)	36 (66.7)	
Domicile	Rural	28 (58.3)	26 (48.1)	χ^2=1.05, *P*=0.30, df=1
	Urban	20 (41.7)	28 (51.9)	

SD – Standard deviation; INR – Indian rupees; MINI – Mini-international neuropsychiatric interview

with breast cancer who had depression as per the screening tool MINI (*n* = 48) and Group B consisted of patients of breast cancer who did not have any psychiatric illness as per MINI (*n* = 54). Group A comprised the study group and Group B comprised the control group for comparison of sociodemographic and clinical variables. HAM-D was applied on Group A subjects only.

Sociodemographic and clinical characteristics of the patients

The mean (±SD) age of the patients was 43.34 ± 8.62 years with a majority of the patients belonging to the age group of 41–50 years (36.7%). Majority of the patients in the study were homemakers (90.0%) and illiterates (60%). Majority (86.7%) of the patients were married and belonged to Hindu religion (90%), living in joint family (50%), from a rural background (60%) area with monthly family income of 2500 INR (50%) [Table 1].

The mean duration of diagnosis of cancer was 1.96 ± 1.82 months. Family history was found to be negative for cancer and depression in 96.7% and 90% women, respectively. Majority of the patients were diagnosed at the third stage of malignancy (66.7%). Majority of the patients had not received any treatment (63.3%) while 36.7% had undergone surgery [Table 2].

Severity of depression

The prevalence of the depression was 47.05% in our study population. Majority of the patients had mild depression 27 (56.7%) followed by moderate 17 (33.3%) and severe depression 4 (10%).

Figure 1 shows that among symptoms of depression, depressed mood was present in all the patients followed by work and activity (93%) and psychotic anxiety (90%).

Relationship between sociodemographic and clinical variable with severity of depression

Table 3 depicts that age, duration of diagnosis of breast cancer, and stage of malignancy were not statistically significantly correlated with severity of depression.

Discussion

The mean age of the patients was 43.34 ± 8.62 years with a majority of the patients belonging to the age group 41–50 years (36.7%). This could be due to the higher incidence of breast cancer in this age group.[1] Majority of the patients in the study were homemakers (90.0%) and illiterates (60%). Majority (86.7%) of the patients were married and belonged to Hindu religion (90%), living in joint family (50%) from a rural (60%) area,

Table 2: Comparison of clinical variables of patients positive for depression and negative for depression on mini-international neuropsychiatric interview

Variable	Categories	Group A (MINI positive for depression) (*n*=48), *n* (%)	Group B (MINI negative for any other psychiatric illness) (*n*=54)	Test of significance
Duration of illness (months)	<3	16 (33.3)	19 (35.2)	χ^2=0.98, *P*=0.80, df=3
	4-6	18 (37.5)	17 (31.5)	
	7-9	11 (22.9)	12 (22.2)	
	10-12	3 (6.3)	6 (11.1)	
Mean±SD		4.75±2.43	3.94±1.43	*t*=1.95, *P*=0.053, df=100
Family history of breast cancer	Yes	1 (2.1)	4 (7.4)	χ^2=1.54, *P*=0.21, df=1
	No	47 (97.9)	50 (92.6)	
Family history of depression	Yes	5 (10.4)	10 (18.5)	χ^2=1.33, *P*=0.24, df=1
	No	43 (89.6)	44 (81.5)	
Stage of malignancy	2	13 (27.1)	22 (40.7)	χ^2=4.80, *P*=0.09, df=2
	3	33 (68.8)	26 (48.1)	
	4	2 (4.2)	6 (15.6)	
Mean±SD		2.77±0.51	2.75±0.64	*t*=0.17, *P*=0.86, df=100
Treatment receiving	Surgical	16 (33.3)	16 (29.6)	χ^2=0.16, *P*=0.42, df=0.1
	No treatment	32 (66.7)	38 (70.4)	

SD – Standard deviation; INR – Indian rupees; MINI – Mini-international neuropsychiatric interview

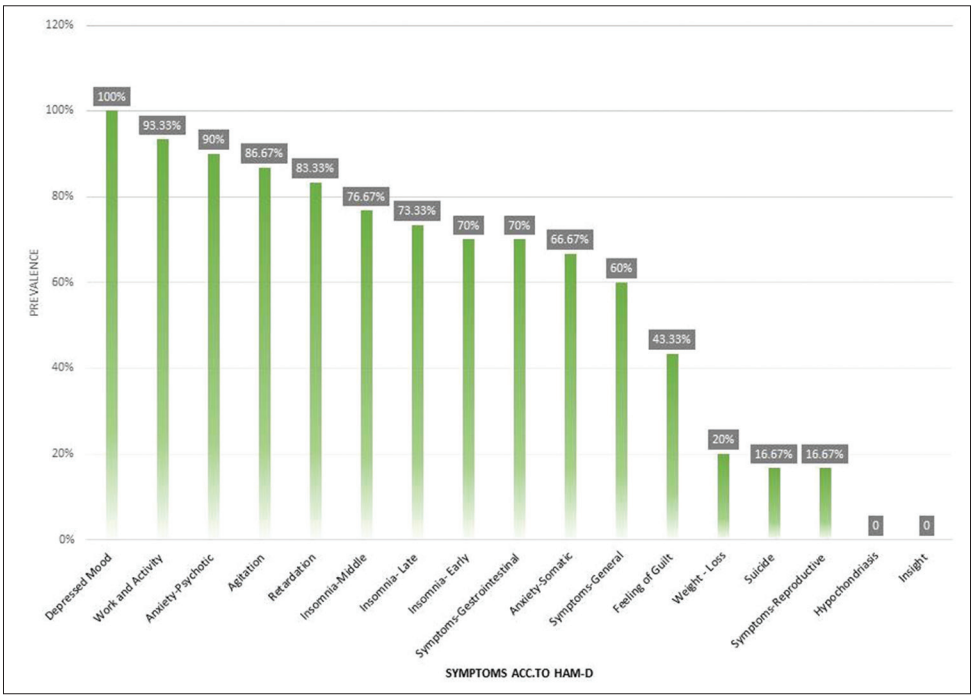

Figure 1: Bar diagram showing the prevalence of symptoms of depression (according to Hamilton Depression Score) (*n* = 48)

with monthly family income of Rs. 2500 INR (50%), similar to findings of other studies from north India.[16] Our study population represented the geographic region, where most people reside in rural areas and are Hindu as well as from joint families and low socioeconomic status, which explains the sociodemographic characteristics of our sample.

In the study population, the mean duration of diagnosis of cancer to inclusion in the study was 1.96 ± 1.82 months. This might be due to our predefined selection criteria, according to which we had only included patients whose diagnosis was made within 1 year. Family history for cancer and depression were found to be absent in 96.7% and 90% women, respectively. It was observed in previous

Table 3: Correlation of severity of depression with demographic (age) and clinical variable (duration of diagnosis of cancer and stage of malignancy) (*n*=48)

Variables	Age (*r*, *P*)	Duration of diagnosis of breast cancer (*r*, *P*)	Stage of malignancy (*r*, *P*)
Severity (HAM-D)	−0.27	−0.066	0.040
	0.060	0.657	0.786

Pearson's correlation test, $P<0.05$. HAM-D – Hamilton depression

studies that individuals with negative history of depression before the development of cancer were tend to be at more risk of depression.[17] Majority of the patients were diagnosed as the third stage of malignancy (66.7%). Poor financial status, lack of awareness, far away from treatment facility, and stigma might be the attributing factors for late consultation to a tertiary care center. This could be due to late presentation of patients to treatment facilities in India.[1] In developing countries like India, the expert facilities for health care is not easily accessible and affordable, as a result of which patients reach the tertiary care facility through a long pathway of care. Many of these patients consult to general care physicians and reach the tertiary care center through multiple referrals. The fear associated with mortality of the disease and uncertainty about the outcome of the treatment led them to consult the physician at late stages until they reach to severe illness, which necessitate hospitalization. Majority of the patients had not received any treatment (63.3%) while 36.7% had undergone surgery. As in our studies, majority of the patients were poor, from rural background, homemakers, and dependent on their family members. This might be the responsible for not receiving any treatment. From previous studies, the prevalence of depression in breast cancer ranged from 1.5% to 46%.[17] The wide range prevalence of depression found in breast cancer was due to the different stages of disease, the different time of evaluation, the different measurements, and the different population studied.[18]

In our study, of 102 women, 48 (47.05%) were found to be suffering from only depression (as other psychiatric morbidities were excluded) within the 1st year of diagnosis of their illness, which is in accordance with the study by Burgess *et al*. that has shown that during the first 2 years of survivorship, an estimated 30%–45% of women with breast cancer experience substantial psychological morbidity, including anxiety and depression.[17,18] Women diagnosed with breast cancer experience maximum anxiety and depressive symptoms in the 1st year following diagnosis, and subsequently, these symptoms become less frequent.[17] The prevalence of depression might go still higher in our population if we consider the other co-morbid psychiatric disorders together. Even after exclusion of other comorbid psychiatric disorders, the exclusive morbidity of depression still remains higher. The prevalence of depression in present study (47.05%) is not similar to the finding of other study in North India where the prevalence of depression was 28%.[16] This could be due to one of the inclusion criteria of patients to participate in our study, i.e., within 1 year of diagnosis. As it was shown in previous studies, the prevalence of depression is high year after the diagnosis of breast cancer.[17] This may be due to the immediate psychological response to the devastating aspect of disease. Subsequently, adaptation with the life stressor results in decreasing reporting of anxiety and depression. Studies conducted in Western countries describe lack of intimate psychosocial support to be a strong predictor of depression.[12] However, in our study, most patients were from joint families with many helping hands and good psychosocial support. Hence, other factors such as low socioeconomic status can be the attributing factor for psychological distress in this population.

In the study population, majority of the patients were suffering from mild depression 27 (56.7%) followed by moderate 17 (33.3%) and severe depression 4 (10%). Regarding the symptoms of depression (as per HAM-D Score), it was observed that every patient diagnosed with depression was experiencing sad mood followed by impairment in work and activity (93.33%) and anxiety (psychotic, 90%). From the previous studies, pain, fatigue, tiredness, weakness, and reduced energy were common somatic symptoms found in cancer patients.[18-20] Symptoms of pain and fatigue were the two leading symptoms reported by cancer patients, with a prevalence of nearly 80% in some tumor types.[19] It is reported that symptoms of pain and fatigue increase the risk of anxiety and depression after surgery or chemotherapy or radiotherapy.[18] In our study, we found that patients were experiencing symptoms such as fatigue, tiredness, and reduced energy which also might be attributing to reduction in work and activity. Symptoms of anxiety in the form of worry, irritability, and fear toward anticipated loss of one or both the breast or death were of much concern which makes them more anxious. In our study, symptoms of pain were not much prevalent which might be due to noninclusion of the patients who were receiving chemotherapy and radiotherapy. Symptoms of lack of insight and hypochondriasis (as described in HAM-D items) were absent in our study population.

Limitations

Exclusion of comorbid psychiatric illnesses and cancer duration >1 year limits the generalizability of prevalence of depression in breast cancer population. Conducting a prospective study, rather than cross-sectional study, will give better insight regarding the evolution of depressive symptoms.

Conclusions

Depression is the most common psychiatric morbidity associated with patients diagnosed with breast cancer. The severity of depression is an independent parameter which

had no significant correlation with sociodemographic and clinical variables of patients with breast cancer. This study provides insight into the various preventable factors which are responsible for the development of psychological morbidity particularly depression. Psychological support, financial aid from the government, psychological assessment, and appropriate intervention may lead to the treatment adherence and improved outcome of breast cancer as well as depression.

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Conflicts of interest

There are no conflicts of interest.

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