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Original Research Article

Anxiety and Depression in Post Mastectomy Patients Receiving Radiotherapy: A Study from Tertiary Centre in Haryana

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ABSTRACT

Background- Study was planned to assess anxiety and depression and its socio-demographic correlates in post mastectomy breast cancer patients who were referred for radiotherapy.
Methods- This was a prospective study involving 61 patients in whom anxiety and depression were assessed using Hospital Anxiety and Depression Scale (HADS) at baseline, 1 month and 3 months of radiotherapy. Patients with scores >7 on HADS were assessed by consultant psychiatrist using ICD-10 and considered for intervention.
Results- At baseline, in anxiety group, 10 patients (16.4%) fell into borderline group and 6 (9.8%) were cases (>11 score) whereas, in depression group, 6 (9.8%) were in borderline group and 5 (8.2%) were probable cases. During radiotherapy (at 1 month) and after radiotherapy (at 3 months), prevalence of anxiety and depression was seen to decrease in patients. At baseline, there was statistically significant difference in anxiety symptoms in the age group of 20-39 (50 %), 40-59 age group (16.2%), 60-89 age group (30%). ($p<0.05$)
Conclusions- Study finding shows that anxiety and depression decreased at follow-up evaluations with intervention. So, there should be involvement of mental health professionals in the management of patients with breast cancer.

Key words- Anxiety, Depression, Post mastectomy, Radiotherapy

INTRODUCTION

Breast cancer has specific challenges for women due to its impact as a life-threatening disease, its intensive surgical and medical treatments, and also changes in sexuality, femininity and body image.

Since the 2008 estimates, breast cancer incidence has increased by more than 20%, while mortality has increased by 14%. [1] One in four women with malignancy gets a diagnosis of breast cancer. It is also the most common cause of death due to malignancies among women (522 000 deaths in 2012) among women. [1]

A recent report by the Indian Council of Medical Research predicted a similar trend and stated that the number of breast cancer cases in India is likely to rise to 106,124 in 2015 and to 123,634 in 2020. [2]

Anxiety and depressive disorders are the two commonly reported psychiatric disorders among breast cancer patients. [3]

Anxiety has been shown to have physiological impact, influencing the

neuroendocrine and immune systems. [4] Anxiety is also associated with increased fatigue,[5] and poor outcome of anti-malignancy treatment.[6] It was also reported that anxiety in breast cancer has a detrimental effect on the quality of life (QoL) of female patients, affecting their physical, medical and sexual QoL indicators. [7]

Factors that contribute to anxiety in patients with breast cancer can be broadly classified into physical, psychological, social, and environmental causes. Physical factors include age, side effects of treatment, hormonal changes, and the issues surrounding fertility. [8] Psychological factors encompass their perception about change in body image, [9] as well as positive and negative feelings about the disease. [10] As for social factors, it includes social support, decline in sexual interest and sexual dysfunction.[8] Environmental factors such as multiple visits to the hospital that destroy daily routine and work life, stressing on their economic situation. [11] When comparing treatment modalities, women receiving radiotherapy or chemotherapy, compared with surgery only, tend to exhibit a higher anxiety score over time. [12]

Similarly, depression causes serious suffering and distress, reduces participation with medical care and potentially prolongs stay in hospital. [13,14] Depression is also a significant determinant of quality of life and survival [15-17] and is associated with poor quality of life and increased mortality.

Various risk factors for depression have been identified in the pre- and post-treatment phases of breast cancer. Demographic factors predicting depressive disorders in breast cancer included advanced age, post-menopausal period, and previous history of anxiety or depressive disorders, [18] educational status, [19] and treatment type.[20] Psychosocial factors seem to be more associated with the patients' illness adjustment than demographic and clinical factors. Factors relating to patient's environment such as social support and family functioning, and coping styles were highly associated to anxiety and depressive disorders. [21]

Studies have suggested that mastectomy with postoperative radiotherapy for treating breast cancer was associated with a higher incidence of psychological morbidity, including depression and anxiety. [22,23]

Hence the current prospective study aimed to assess the impact of radiotherapy on anxiety and depression in post-mastectomy breast cancer patients was planned with an objective to examine its socio-demographic and clinical correlates.

MATERIAL AND METHODS

STUDY SAMPLE

For the purpose of study 74 consecutive patients with histopathologically proven carcinoma referred for post-mastectomy radiotherapy between August 2012-July 2013, were included.

Patients were excluded if they had breast conservation surgery, metastasis any other medical comorbidity, unfit for radiotherapy. The patients were also excluded if they had taken psychiatric treatment before diagnosis of breast cancer. Ethical approval was sought from institutional ethical committee for the purpose of the study.

PRE-TREATMENT EVALUATION

The pretreatment evaluation in all patients included medical history with complete physical examination. Haematological assessment was done by complete haemogram including haemoglobin, total leukocyte count (TLC), differential leukocyte count (DLC). Biochemical assessment to assess the kidney and liver functions was done by the estimation of blood urea, serum creatinine, liver function tests. Radiological assessment including chest X-ray, ultrasonography of abdomen and pelvis was done in all patients. Computed tomography of abdomen and pelvis was done in selected patients whenever indicated.

TOOLS

PROFORMA FOR SOCIO – DEMOGRAPHIC AND PSYCHIATRIC HISTORY: A special Performa was used to gather socio-demographic, and psychiatric variables of mastectomized patients.

THE ICD-10 CLASSIFICATION OF MENTAL AND BEHAVIOURAL DISORDERS- DIAGNOSTIC CRITERIA FOR RESEARCH [24]

HOSPITAL ANXIETY AND DEPRESSION SCALE (HINDI VERSION): [25] the commonly used fourteen item Likert scale with seven of the items related to anxiety and seven relate to depression.

PROCEDURE:

Written and informed consent was taken from all the participants. They were explained that participation is voluntary and non- participation would not affect their treatment in any way. Participants were evaluated at 3 points of time, at the start of radiotherapy/day 0, at 1month i.e. during radiotherapy (when radiotherapy reaction are at peak), after 3 months of Ist assessment i.e. day 90 (after settlement of radiotherapy reactions) as patients come for radiotherapy regularly for 5 weeks on outpatients basis.

A proforma designed for socio-demographic and psychiatric history was used to record socio-demographic and clinical data of all participants. All assessments were carried out in a separate room beside the radiotherapy room. The subjects were evaluated for psychiatric symptoms using HADS (Hindi version). Patients who were not able to read Hindi were assisted by the interviewer in form of reading the questions. Those who were screened positive (HADS Score >7) were subjected to detailed clinical assessment as per ICD10-Classification of Mental and Behavioural Disorders: Diagnostic criteria for research by a consulting psychiatrist and patients were considered for pharmacological or non-pharmacological interventions. Patients were contacted telephonically if they were missed in follow up for assessment of symptoms.

DATA ANALYSIS

The data collected during the study were analyzed using SPSS.14 version. For Descriptive statistics frequencies, percentages, means and standard deviations of different variables were calculated. Two tailed p values were calculated with α set at ≤0.05.

RESULTS

Seventy four patients were recruited in this study. However, thirteen out of 74 patients were excluded due to various reasons (hypertension-4, diabetes mellitus-2, metastasis-2, asthma-2, past history of psychiatric illness-2, migraine-1). Thus, a total of 61 patients were follow-up for study.

SOCIO-DEMOGRAPHIC AND CLINICAL CHARACTERISTICS

Among socio-demographic and clinical variables of the patients most of them were in the age group of 40-49 (32.4%) followed by 50-59 age group (27.9%). Around two third of the patients (67.2 %) were from rural background and two thirds were from middle socio-economic status (65.6%). Most of the patients (88.5%) were married. Nearly all patients attained menarche at the age of 13-14 years. At the time of start of radiotherapy, 30 (19.2%) were menopausal and among non-menopausal, 25 (41%) were having amenorrhea. Excluding one, none had used oral contraceptive pills. About two thirds patients (68.9%) got married at the age of 16-20 years. Nearly 90% of them had their first child before the age of 25. Most of the patients (around 85%) were having 2- 4 children. Family history of psychiatric illness was present in 5 (8.2%). (Table-1 and 2)

Table1: Socio-demographic and clinical variables of patients:

Variable			Frequency (n=61)	Percentage
Age group (Years)		20-29	04	06.6
		30-39	10	16.4
		40-49	20	32.8
		50-59	17	27.9
		60-69	07	11.5
		70-79	02	03.3
		80-89	01	06.0
Background		Rural	41	67.2
		Urban	20	32.8
Socioeconomic Status		Upper	19	31.1
		Middle	40	65.6
		Upper Middle	02	03.3
Marital Status		Unmarried	01	01.6
		Married	54	88.5
		Widow	06	09.8
Age at menarche		By 13 years	38	62.3
		By 14 years	22	36.1
		By 15 years	1	1.6
Menstrual Cycle	Non-Menopausal	Amenorrhea	25	41.0
		Normal	06	09.8
	Menopausal		30	19.2
Oral Contraceptive Pills		Used	01	01.6
		Not Used	60	98.4

Table 2: Socio-demographic and clinical variables of patients:

Variable		Frequency (n=61)	Percentage
Age at marriage (years)	10-15	9	14.8
	16-20	42	68.9
	21-25	8	13.1
	26-30	1	1.6
	Unmarried	1	1.6
Age at first childbirth (years)	10-15	1	1.6
	16-20	30	49.2
	21-25	21	34.4
	26-30	3	4.9
	31-35	4	6.6
Parity	No child	2	3.3
	1 child	3	4.9
	2 children	18	29.5
	3 children	21	34.4
	4 children	11	18.0
	5 children	4	6.6
	6 children	2	3.3
Smoking	Smoker	03	04.9
	Non-smoker	58	95.1
Family History of Psychiatric illness	Present	05	08.2
	Not present	56	91.8

Prior to radiotherapy, chemotherapy was given to 59 (96.7%) patients. Most of the patients were diagnosed at stage III (60.7%) as compared to stage II (37.7%). [26] Most of them 57 (93.4%) were having infiltrating ductal carcinoma and rest 4 patients had stromal sarcoma (1), ductal carcinoma in-situ (1) and mucoid adenocarcinoma (1) and adenocarcinoma (1). Mastectomy was performed in all the patients before the start of radiotherapy.

Most of the patients came with chief complaints of lump (98.3%) along with the other complaints like pain in breast, discharge from nipple, bleeding from nipple and paraesthesia. Seven patients presented with more than 1 complaint.

ANXIETY AND DEPRESSION

Prevalence of anxiety and depression in patients was assessed as per hospital anxiety and depression scale.(Table-3) At baseline, in anxiety group 45 patients (73.85%) scored below 7, 10 patients (16.4%) fell into borderline group (HADS score 7-11) and 6 (9.8%) were cases (>11 HADS score). In depression group, 50 (82%) were in normal group, 6 (9.8%) were

in borderline group and 5 (8.2%) were probable cases.

Table 3: Prevalence of anxiety and depression in patients (n=61):

Variables	HADS Score	Baseline	I month	3 months
		Frequency (%)	Frequency (%)	Frequency (%)
Anxiety	Normal (0-7)	45 (73.8)	50 (82)	54 (88.5)
	Borderline (8-10)	10 (16.4)	10 (16.4)	7 (11.5)
	Case (11-21)	06 (9.8)	1 (1.6)	0 (0)
Depression	Normal (0-7)	50 (82)	50 (82)	55 (90.2)
	Borderline (8-10)	06 (9.8)	10 (16.4)	6 (9.8)
	Case (11-21)	05 (8.2)	1 (1.6)	0 (0)

After one month of the treatment, prevalence of anxiety and depression was seen to decrease. In both anxiety and depression group 50 (82%) patients were in normal group, 10 (16.4%) were in borderline group, only one patient was still in case group.

After completion of radiotherapy, only 7 (11.5%) were in anxiety borderline group and the rest were in normal group. In depression group, 6 (9.8%) were borderline and the rest were normal. No case was detected at 3 months.

Patients who were found to have HADS scores > 7 (both borderline and cases) during assessment (n=16), were referred to the psychiatry department for further assessment and management. These 16 patients were examined by a consultant psychiatrist and were found to be suffering from various psychiatric disorders (Mixed anxiety and depressive disorder 6, Adjustment disorder-5, Mild depressive disorder-3, Moderate depressive disorder-1, Generalized anxiety disorder-1). These patients were started on pharmacotherapy or psychological interventions depending on symptom severity.

RELATION OF SOCIO-DEMOGRAPHIC AND CLINICAL VARIABLES WITH ANXIETY AND DEPRESSION AT BASELINE

At baseline, there was statistically significant difference in anxiety symptoms in the age group of 20-39 (50 %), 40-59 age group (16.2%), 60-89 age group (30%). (Table-4)

Table 4: Relation of socio- demographic and clinical variables with anxiety and depression at baseline (n=61):

Variable		Normal N(%)	Anxiety symptoms N(%)	Normal N (%)	Depressive symptoms N (%)
Socioeconomic Status	Low	12 (63.2)	7 (36.8)	14 (73.7)	5 (26.5)
	Middle	31 (77.5)	9 (22.5)	34 (85)	6 (15)
	Upper middle	02 (100)	0 (0)	02 (100)	0 (0)
Marital Status	Unmarried	1 (100)	0 (0)	1 (100)	0 (0)
	Married	40 (74.1)	14 (25.9)	45 (83.3)	9 (16.7)
	Widow	4 (66.7)	2 (33.3)	4 (66.7)	2 (33.3)
Age Group	20-39	7 (50)	7 (50)*	10 (71.4)	4 (28.6)
	40-59	31 (83.3)	6 (16.2)*	32 (86.5)	5 (13.5)
	60-89	7 (70.0)	3 (30.0)*	8 (80)	2 (20)
Background	Rural	30 (73.2)	11 (26.8)	33 (80.5)	8 (19.5)
	Urban	15 (75)	5 (25)	17 (85)	3 (15)
OCP	Used	0(0)	1(100)	1(100)	0(0)
	Not used	45(75)	15(25)	49(81.6)	11(18.3)
Parity	≤3 children	30(68.18)	14(31.81)	34(77.27)	10(22.72)
	>3 children	15(88.2)	2(11.8)	16(94.1)	1(5.9)
Smoking	Smoker	2(66.7)	1(33.3)	2(66.7)	1(33.3)
	Non-smoker	43(74.1)	15(25.9)	48(82.8)	10(17.2)
Family history of psychiatric illness	Present	4(80.0)	1(20.0)	4(80)	1(20)
	Absent	41(73.2)	15(26.8)	46(82.1)	10(17.9)

significant (P <0.05), Normal-HADS score≥7, Anxiety/Depressive Symptoms-HADS

Anxiety and depressive symptoms were more in patients from low socioeconomic status (36.8%, 26.5% respectively) than that in middle socioeconomic status (22.5%, 15%). The symptoms were more in widows (33.3%, 33.3%)) than that in married ones (25.9%, 16.7%)). Oral contraceptive users exhibited

more symptoms than non-users. Similarly, anxiety and depressive symptoms were more in females with less than or 3 children (31.81%, 22.72%) than that in females with more than 3 children (11.85%, 5.9%), smokers (33.3%, 33.3%) as compared to non- smokers (25.9%, 17.2%).

Anxiety symptoms were more in patients without family history of psychiatric illness (26.8%) as compared to patients with positive family history (20%) but were almost equal in rural or urban patients.

Depressive symptoms were more in the age group of 20-39 (28.6 %) than the others, more in patients with positive family history of psychiatric illness (20%) as compared to patients with negative family history (17.9%) and more in rural patients (19.5%) than urban patients (15%) though were statistically non-significant.

Findings of relationship of socio-demographic and clinical variables with anxiety and depression at 1 month and at 3 month were not significant.

DISCUSSION

Having breast cancer or receiving treatment; either surgical or adjuvant treatment, has been seen as traumatic experience to women due to its impact on their self-image and sexual relationships. Many patients have psychiatric morbidities, especially anxiety and depressive disorders. [27] Although adjuvant treatments have extended survival of women with breast cancer, the literature shows that such treatments and the disease itself may cause symptoms [28] and that experienced symptoms and distress can cause decreased quality of life.

After one month, prevalence of anxiety and depression decreased than baseline. Similarly anxiety and depression further decreased after completion of radiotherapy. Only 7 (11.5%) were in anxiety borderline group and 6 (9.8%) were in borderline depression group and rest were normal (Table-3). The decrease in anxiety and depression scores in follow up period was probably because of the interventions (pharmacological /non- pharmacological) done in patients with abnormal scores.

There was a decrease in anxiety and depression after radiotherapy completion in a similar study by Hughson et al [29] on 47 patients receiving post mastectomy radiotherapy (from 34 %, 38% at baseline to 29% and 23% at 3 months respectively) on observer rating scales developed by Maguire. However, some difference observed could be attributed to different tools used in these studies.

But, prevalence of anxiety state and/or depression illness in a study by Hopwood et al [30] (27 % at baseline to 13% at 1-3 months later on HADS) on the ambulatory advanced breast cancer patients was higher. The higher prevalence of the anxiety and depression could be due to advanced stage of the cancer in this study and patients may be aware of their cancer severity and poorer prognosis.

Similar findings were reflected in study by Maraste et al [31] (14% probable anxiety cases, 13% anxiety borderline group, 3.7 probable depression cases, 9.2% depression borderline group on HADS), study by Pinder et al [32] (25% were probable cases of anxiety and/or depression on HADS) and Akechi et al [33] (23% had anxiety and depression).

But higher prevalence was noted in another study by Akechi et al [34] on advanced breast cancer patients that showed significant proportions of patients diagnosed with anxiety disorder (16.3%) and major depression (6.7%) at the time of entry in palliative care (n=209).

Psychiatric morbidity was lower in the study by Lueboonthavatchai [35] using Thai HADS. It was found that the prevalence of anxiety disorder was 16.0%, and that of anxiety symptoms was 19.0% & of depressive disorder was 9.0%, and that of depressive symptoms was 16.7%. Reason could be that most of the breast cancer patients in that study were educated and employed as compared to our study, who were probably more aware of dreadful

consequences of breast cancer hence had more anxiety and depression. Alexander et al [36] reported that psychiatric morbidity was less common in patients unaware of their cancer or in those who considered their treatment as curative.

Decrease in anxiety and depression in further follow up also resonate with a similar prospective study by Browall et al [37] in which mean scores of anxiety as evaluated by HADS were significantly lower at 3 months after completion of radiotherapy than baseline (at the start of radiotherapy).

Further, the mean scores of anxiety and depression (HADS) decreased after radiotherapy in a study by Kawase et al. [38] However, anxiety was higher in study by Osborne et al, [20] Stone et al, [39] and Hopwood et al [40] whereas depression was lower in these studies than the present study.

Anxiety and depressive symptoms during radiotherapy were 12.5% & 23.9 % respectively in study by So et al [41] whereas, in the present study both anxiety and depressive symptoms were 18 % at 1 month. This slight variation in prevalence might be attributed to the pharmacological and non- pharmacological intervention done in our patients.

Similar to our study, lower anxiety scores with advancing age were observed by Hopwood et al [40] and Osborne et al. [20] (Table-4) Akechi et al [34] also noticed more psychological distress among younger patients. This is consistent with findings of previous studies that younger patients were more likely to suffer adverse effects of radiotherapy because of induction of an early menopause and possible infertility. [42-48]

As per study by Akechi et al [34] it was observed that greater concerns about financial issues were significant factors associated with the presence of psychological distress and similar were the observations by Pinder et al [49] (depression was significantly more the lower socioeconomic classes) akin to our study. Poverty, acting through economic stressors such as unemployment, lack of affordability of medicines and travel expenses were more likely to be precursors of mental illnesses such as depression and anxiety.

Clinical anxiety was unrelated to any socio-demographic or disease related factors in studies by Osborne et al, [20] Pinder et al, [49] and Farooqi et al. [50] Similarly, Osborne et al, [20] Hopwood et al, [30] and Farooqi et al [50] observed that no factors had a significant effect on depression scores. Previous studies had also shown that psychosocial factors seem to be more associated with the patients' illness adjustment than demographic and clinical factors. [21]

Though there were some sources of bias in this study. We lack information about patients who were not referred for adjuvant radiotherapy. Patients who were not able to read Hindi were assisted by the interviewer in form of reading the questions of HADS scales. Contacting the patients telephonically for assessment of symptoms may attribute to bias in evaluation. Previous research shows that anxiety and depression affect the patients in worsening quality of life, increasing distress and sufferings, poor compliance and increased mortality. So, there should be consideration for psychiatric evaluation and interventions in breast cancer patients as a part of holistic approach in management.

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Conflicts Of Interest: None declared

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