Psychological distress and body image disturbances after modified radical mastectomy among breast cancer survivors: A cross-sectional study from a tertiary care centre in North India

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Summary

Background Breast cancer (BC) diagnosis and treatment can affect women both physically and psychologically. Women with BC undergo various painful and debilitating therapies as well as emotional trauma. Additionally, treatment modalities can bring about multiple changes, causing distress and alteration in one's appearance. This study aimed to assess the psychological distress and body image disturbances after modified radical mastectomy (MRM) among BC survivors.

Methods A descriptive, cross-sectional study was conducted at a tertiary care centre in North India on 165 female survivors of BC who underwent MRM and attended outpatient follow-up. The median (interquartile range) age was 42 (36–51) years. Patients were evaluated using MINI 6·0·0 to assess for psychiatric comorbidities. The Depression Anxiety and Stress Scale (DASS-21) was used to measure psychological distress. Additionally, the ten-item Body Image Satisfaction (BIS-10) scale was used to evaluate body image disturbances.

Findings The rates of depression, anxiety, and stress were 27·8%, 31·5%, and 24·8%, respectively. Most patients (92%) experienced body image disturbances, and BC survivors who completed treatment within 12 months were more likely ($p < 0·01$) to have body image disturbances than women who had a long time since completion of treatment. Body image disturbances were not associated with age or psychological distress.

Interpretation Depression, anxiety, stress, and body image issues are common among BC survivors. Follow-up management plans for BC survivors should also include evaluation and treatment of psychological distress and addressing body image disturbances in patients undergoing mastectomy.

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Keywords: Breast cancer survivor; Psychological distress; Depression; Anxiety; Stress; Women; Body image disturbances

Introduction

Breast cancer (BC) is the most common malignancy in women globally.[1] Fortunately, the survival rate is increasing owing to increased awareness of the disease and improved technology for early detection.[1,2] Treatment for BC typically involves surgery, chemotherapy, radiotherapy, and hormonal tablets over an extended period.[3,4] A varying range of side effects are associated with the medical treatment of BC. This painful and unwelcomed treatment journey for a long period result in psychological distress. Treatment-related adverse effects, fear of death, and

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Research in context

Evidence before this study

The process of psychological suffering among patients with breast cancer is dynamic and ever evolving. For accessible evidence, we searched the databases like PubMed, Scopus, Web of Science, and Google Scholar with the key words "India," "Breast cancer survivors," "psychological problems," "women," and "psychological discomfort." Studies with repeated sample population, data older than 20 years, with the exception of seminal studies, not written in the English language, and studies with skewed results were removed. We found that prior research studies concentrated on identifying broad psychological problems, mainly worry and distress, but relatively few studies discussed about body image. Also, most of the research was done when the patients were undergoing cancer therapy. Furthermore, data were scarce with respect to the psychological issues of Indian patients with breast cancer who had undergone mastectomy.

Added value of this study

The current study will contribute to the knowledge on body image difficulties in patients with breast cancer and related psychological problems following recovery with respect to Indian population. Our research has made an effort to rule out any confounding variables that could be linked to psychological distress and body image problems among survivors of breast cancer. Our research also provides a thorough picture of the distress especially caused by breast cancer, subsequent mastectomy, and chemotherapy. Given that this study was carried out during the COVID-19 pandemic, there is a significant chance that the restrictions on visiting the out-patient clinic, travel restrictions, and lack of transportation would have a cumulative effect on psychological distress.

Implications of all the available evidence

There is a significant gap in the burden of psychological distress and availability of support for the patients with breast cancer. The results from this study provide evidence that psychological and body image disturbances are observed in a significant number of breast cancer patients. Hence, there is an intense need of including psychological aid for breast cancer patients in the oncology setting by strengthening the liaison with mental health professionals for holistic care.

financial burden are associated with psychological distress.[5–7]

Body image represents a direct personal view and a self-assessment of one's physical appearance. Negative thoughts and feelings about one's body signify a disruption of the body image and contribute to discomfort.[8,9] Treatment procedures such as chemotherapy, surgery, and adjuvant therapy result in body image issues such as hair loss, weight gain, partial or complete removal of one or both breasts, incorrect positioning of breasts and asymmetry of the breast, severe scarring, and breast alteration.[9–11] Body image disturbances (BID) are associated with a woman's identity, sexuality, self-esteem, sense of self, and psychological distress.[6,11,12] Studies from India suggest unmet mental health needs of patients with cancer.[5,6,13,14] Understanding the psychological distress associated with body image distress among BC survivors will provide insights into developing a holistic care model. The current study aimed to assess psychological distress and body image issues in BC survivors.

Methods

Sample and procedure

This cross-sectional analysis was performed at a tertiary care teaching hospital in North India from 2020 to 2021. The Institutional Ethics Committee approved the study, and patients were recruited after obtaining informed consent (Figure 1). The research group consisted of BC survivors. Power of the study (1-beta) was kept 0.90 for estimating the sample size. The sample size of the current study was 165 (more than the estimated sample size of 156). Women aged 18–60 years, diagnosed with and treated for BC, and who had completed their active treatment for at least 3 months (surgery, chemotherapy, and radiotherapy) were included in the study. Patients with metastasis or recurrent cancer or those receiving treatment for any psychiatric comorbidity were excluded from the study.

Criteria for age restriction of up to 60 years and exclusion of persons with morbidity were added to avoid possible variation in results due to age-related and physical factors.

The researchers explained the purpose of the study to the patients in their native language before the clinical interview was initiated and their participation was voluntary. All patients provided informed consent to participate and to review their medical histories. Patient medical records were reviewed to confirm the diagnosis, time of diagnosis, type of treatment, and disease stage.

Patients were recruited through purposeful sampling during their follow-up visits, and some patients were contacted by telephone due to restrictive visits during the coronavirus disease pandemic. No names or other identifying information was included in the questionnaires or the database to ensure confidentiality. Psychoeducation was given to all patients by mental health professionals post-assessment, and patients who experienced psychological distress and BID were referred to the psychiatric outpatient department. To avoid possible bias, stringent inclusion and exclusion criteria were adopted and standard rating scales were used.

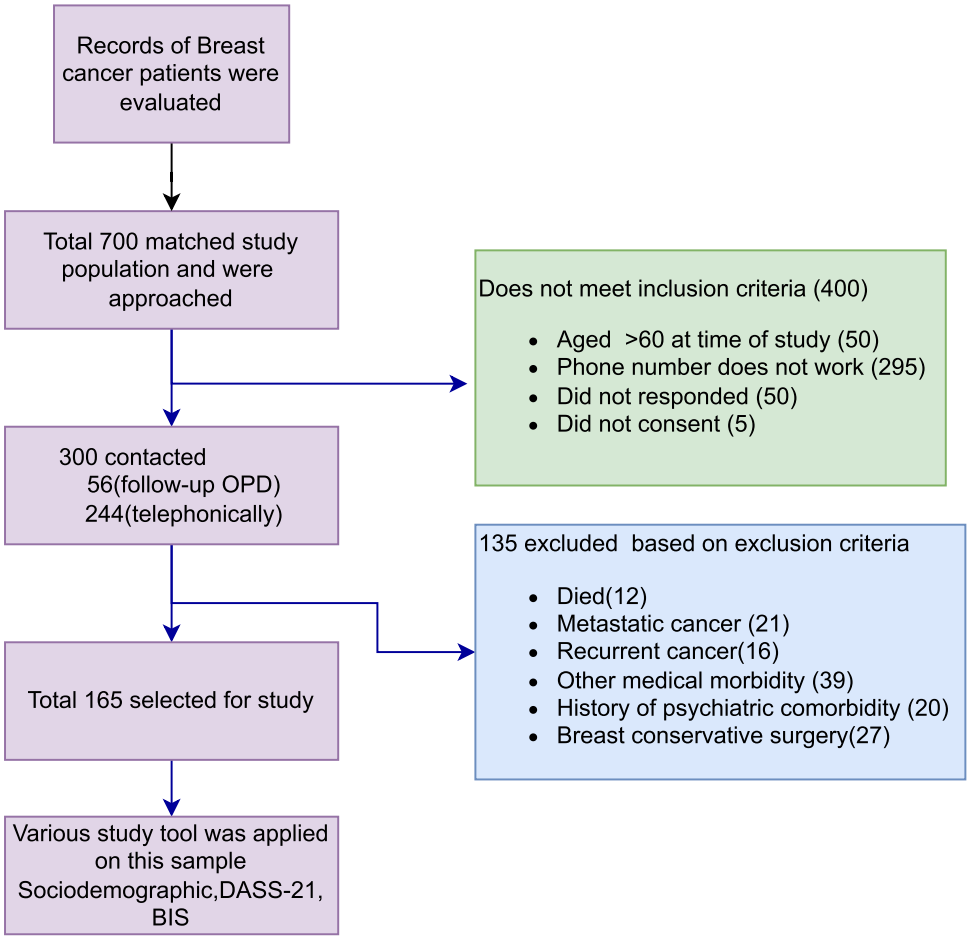

Figure 1. Pateint recruitment Procedure.

Measures

Patients were assessed using a semi-structured proforma for sociodemographic and clinical details. Psychiatric comorbidities were ruled out by applying the MINI 6·0·0 version.[15] Psychological distress was measured using the 21-item Depression, Anxiety, and Stress Scale (DASS),[16,17] validated in Hindi. BIDs were measured using the 10-item Body Image Scale.[18]

Psychological distress

Psychological distress was assessed using the 21-item Short Form of accurate and reliable DASS-21.[16] The three subscales of the DASS 21 assess depression, anxiety, and stress (i.e., nervous tension and irritability, which are factorially distinct from depression and anxiety). Participants scored questions such as "*I thought that as a person I wasn't worth much*" (from "0"=did not apply to me at all to "3"=applied very much to me or most of the time). A total score out of 21 was determined for each subscale and then multiplied by 2 to be equivalent to the full-scale DASS scores. At least 10 (depression), 8 (anxiety), and 15 (stress) ratings indicated psychological distress levels for each item. Distress severity was categorized as mild, moderate, severe, and very severe. Severity scores for depression were categorized as mild (10–13), moderate (14–20), severe (21–27), and very severe (28+). Anxiety scores were rated as mild (8–9), moderate (10–14), severe (15–19), and very severe (20+). Stress was scored as mild (15–18), moderate (19–25), severe (26–33), and very severe (34+). For all subscales (a=0·92 for depression; a=0·79 for anxiety; a=0·89 for stress), the item reliability for this scale was high.

Body image

The 10-item Body Image Scale was developed as a unitary measure of body image distress, including influence, actions, and cognition, and has been commonly used in oncology contexts.[8,18] Participants assessed the degree to which they agreed with statements on a 4-point Likert scale, such as "*Did you feel self-conscious about your appearance?*" (0=Not at all to 3=Very much).

The total summary scores ranged from 0 (no distress) to 30 (high body image distress). This scale demonstrates high reliability (a = 0·93) of the item, strong clinical validity, and alteration sensitivity. In the current analysis, the item reliability of this scale was high (α = 0·94).

Statistical analysis

Statistical analysis was performed using SPSS-25 software. Data were assessed for normality using the Shapiro-Wilk test. The non-parametric Mann-Whitney U test was used because the data were not found to be normally distributed. Spearman's rank correlation was used to determine the relationship between continuous variables. The ordinal and nominal variables of both groups were compared using the chi-square test. In a linear regression model with predictor variables (depression, anxiety, and stress), no variables were found to significantly affect body image outcomes at $p < 0·05$. For statistical analysis, considering a median of 12 months of treatment completion, BC survivors were divided into two groups: new survivors (recently recovered, within 12 months) and old survivors (more than 12 months).

Role of funding source

The authors received no funding for this study.

Results

Sociodemographic and clinical details of the study sample

The median (interquartile range [IQR]) age of the patients was 42 (36–51) years. Most study patients were homemakers (158/165; 95·8%) and not literate (53/165; 32·1%). Most patients were married (163/165; 98·8%), belonged to the Hindu religion (129/165; 78·2%), living in a joint family (115/165; 69·7%), from an urban and semi-urban background (69·7%), and had a monthly family income between 5000 and 10000 INR (119/165; 72·1%).

The median (IQR) duration of time since treatment completion was 12 (6–15) months and ranged from 4 to 64 months. Family history for cancer was negative in 159/165 (96·4%) patients. Most patients were diagnosed with the third stage of malignancy (n = 89; 53·9%). More than half of the women (56·4%) were postmenopausal (Table 1).

Rate of depression anxiety and stress and the relationship between socio-demographic and clinical variables.

Depression

The rate of depression was 27·9% in our study population. Most patients had mild severity (17·57%), followed by moderate (4·9%), severe (4·24%), and very severe depression (1·21%). Depression was not associated with age. A negative association was observed between depression and the time elapsed since treatment completion (r=rs=0·219; $p \leq 0·001$; Table 3). There was a significant difference in depression scores between new survivors (up to 12 months) and old survivors (more than 12 months; $p \leq 0·05$). No significant differences in depression were observed between the premenopausal and postmenopausal groups.

Anxiety

The rate of anxiety was 31·5% in our study population. Most of the patients had mild severity (17%), followed by moderate (11·5%), severe (2·42%), and very severe anxiety (0·60%). Anxiety was not associated with age or time elapsed since treatment completion. There was no significant difference in anxiety scores between new survivors (up to 12 months) and old survivors (more than 12 months). Additionally, no significant difference was observed in anxiety scores between the premenopausal and postmenopausal groups.

Stress

The rate of stress was 24·8% in the study population. Most patients had mild stress (21·87%), followed by moderate (2·4%) and severe stress (0·60%; Table 2). Stress was not associated with time elapsed since treatment completion (rs=0·182; p = 0·019). There was a significant difference in stress scores between new survivors (up to 12 months) and old survivors (more than 12 months; p = 0·01). There was no significant difference in anxiety levels between the premenopausal and postmenopausal groups.

Body image Disturbances

The median (IQR) body image score was 23 (13–25), ranging from 5 to 30. Most patients (n = 152; 92·12%) experienced BIDs. A negative association was observed between BID and treatment completion time (rs=0·355; $p \leq 0·001$). BID did not correlate with age, anxiety, depression, and stress. A significant difference was found between new and old survivors' BID scores ($p \leq 0·01$).

No significant difference was found between the body image of young and old survivors and menopausal status. Regression models were not significant predictors of distress or body image.

Discussion

This study was conducted to determine the rates of psychological distress and BID among BC survivors who had undergone modified radical mastectomy (MRM). The median (IQR) age of patients was 42 (36–51) years. This could be due to the higher incidence of BC in this age group.[1] The median (IQR) duration of treatment

Variable	Categories	Frequency (%)/ Median (IQR)
Age (in years)		42 (36–51)[a]
Occupation	Non-working (Homemaker)	158 (95.8%)
	Working	7 (4.2%)
Education	Not literate	53 (32.1%)
	Primary school	15 (9.1%)
	High school	40 (24.2%)
	Intermediate	15 (9.1%)
	Graduation and above	42 (25.5%)
Marital status	Married	163 (98.8%)
	Single/Widowed/Divorced/Separated	2 (1.2%)
Religion	Hindu	129 (78.2%)
	Muslim	36 (21.8%)
Family monthly income (INR)	Up-to 2500	13 (7.9%)
	2501–5000	9 (5.5%)
	5001–10000	119 (72.1%)
	Above 10000	24 (14.5%)
Type of family	Nuclear	50 (30.3%)
	Joint	115 (69.7%)
Domicile	Rural	57 (34.4%)
	Urban	108 (65.5%)
Family history of breast cancer	Yes	6 (3.6%)
	No	159 (96.4%)
Stage of cancer	Stage I	5 (3.03%)
	Stage II	71 (43.03%)
	Stage III	89 (53.94%)
Time of completion of treatment (months)		12 (6–15)[a]
Menopausal status	Premenopausal	93 (56.4%)
	Postmenopausal	72 (43.6%)
Fear of recurrence	Yes	152 (92.10%)
	No	13 (7.9%)

***Table 1*: Frequency and percentage distribution of patient's socio-demographic characteristics (*N* = 165).**
[a] The figures represent median (IQR).
IQR: Interquartile range.

completion was 12 (6–15) months. This might be due to the predefined selection criteria. We included only patients whose active treatment was completed at least 3 months before data collection. Most patients were diagnosed at the third stage of malignancy (53·9%). Poor financial status, lack of awareness, and lack of resources in nearby treatment facilities are factors for late consultation at tertiary care centers.[19] A study from a tertiary care centre in India found that the delayed presentation was 6·13 months.[19]

Psychological distress (depression, anxiety, and stress) and its severity

The rates of depression, anxiety, and stress were 27·87%, 31·5%, and 24·8% in our study population,

Clinical variable/Severity	Depression N (%)	Anxiety N (%)	Stress N (%)	Body Image score Median (IQR)
Normal	119 (72.12%)	113 (68.48%)	124 (75.15%)	23 (13–25)
Mild	29 (17.57%)	28 (16.96%)	36 (21.81%)	
Moderate	8 (4.84%)	19 (11.51%)	4 (2.42%)	
Severe	7 (4.24%)	4 (2.42%)	1 (0.60%)	
Very severe	2 (1.21%)	1 (0.60%)	0 (0%)	

***Table 2*: Anxiety, depression, and stress among the patients with breast cancer (*N* = 165).**
IQR: Interquartile range.

Variables	Mean Rank		Mann Whitney U	*P* value
	New survivor <12 months of treatment completion months (*N* = 114)	Old survivors >12 months of treatment completion (*N* = 54)		
Depression	86.69	66.4	1527.000	**0.034**[a]
Anxiety	84	78.48	1889.500	0.557
Stress	84.25	77.38	1856.500	0.469
Body image score	88.53	58.1	1278.000	**0.002**[a]

***Table 3*: Comparison of depression, anxiety, stress and body image scores between new survivors and old survivors (based on median score of treatment completion time).**

[a] $P < 0.05$ was considered as statistically significant.

respectively. Factors such as financial inadequacy and fear of recurrence may contribute to psychological distress in this population. Our findings are consistent with those of many studies.[20,21]

Most patients had mild depression, anxiety, and stress. Burgess and colleagues. reported that an estimated 30–45% of women with BC experienced substantial psychological morbidity, including anxiety and depression, within the first 2 years of survivorship.[22] There was a significant difference in the depression and stress scores between new and old survivors, where the mean rank was higher for new survivors than for old survivors (Table 3). The time of treatment completion was also negatively associated with depression (rs=0·219; $p \leq 0{\cdot}01$) and stress (rs=0·182; $p = 0{\cdot}01$), suggesting that depression appears to decrease over time, a finding that is consistent with those of other studies.[23] This may be due to subsequent adaptation to life stressors, decreased financial expenditure on treatment, and adaptive coping may reduce the reporting of psychological distress (Table 4).

The rate of psychological distress in the present study was higher than that in another study in which the prevalence of depression was slightly lower, i.e., depression (22%), anxiety (19%), and stress.[24] This could be attributed to the different methodologies adopted. In a study by Khan and colleagues, the severity scores for moderate, severe, and very severe were grouped.[24] In addition, the females in our study were less than 60 years of age, while in the other studies, older women were also included. This could be the reason for the higher distress. Psychological distress scores were not correlated with age. No significant difference was observed in the psychological distress scores between the premenopausal and postmenopausal groups and between the younger and older survivor groups.[8] This result is consistent with the more extensive BC literature, which found no significant difference in psychological distress in younger patients when compared with their older counterparts.[25] These findings indicate that psychological issues remain unresolved over time despite a lower prevalence rate.

Variables	Depression r_s, p	Anxiety r_s, p	Stress r_s, p
Age	0.013	0.016	−0.065,
	0.873	0.841	0.409
Time of completion of	−0.219	−0.125	−0.182
treatment (months)	0.005	0.110	0.019
Body Image Score	−0.085	−0.068	−0.076
	0.278	0.385	0.332
Body image/ Time of com-	−0.355		
pletion of treatment	0.0002		
(months)			

***Table 4*: Relationship of cancer related variables with anxiety depression and stress in patients with breast cancer (*N* = 165).**

Body image disturbances

Many women reported BID due to MRM in our study, which is consistent with other evidence documenting sustained body image difficulties after surgery and beyond.[20,26,27] The median (IQR) body image score was 23 (13–25). Most women had body image issues, suggesting a high level of BID in our study group. In the Body Image Scale validation, the BID levels among our participants exceeded those recorded by Hopwood.[18] In the current study, the women had a different time after completion of care than that in the study by Hopwood and colleagues, indicating sustained disruption of body image. The BID in our study group was higher, as our study group included patients who had undergone MRM. By contrast, other studies also included women who underwent conservative surgeries.[28] This could be attributed to the fact that the perception of femininity was preserved with breast conservation, and MRM potentially brings disfiguring changes to their body image.

Body image was inversely correlated with treatment completion time (rs=0·355; $p < 0{\cdot}001$)), which indicates

that as time passed, body image improved. There was a significant difference in the mean rank of body image between the new and old survivors (U=1278; $p < 0{\cdot}01$). It can also be concluded that the disruption of body image encountered by BC survivors decreases with time.[29] Body image was not correlated with age, depression, anxiety, and stress; these results are consistent with those of other studies.[7] This indirectly points out to the importance of body image concerns in this patient population, where body image is independent of psychological distress. This may or may not be associated with psychological morbidities. There was no significant difference between the body image of young and old survivors and menopausal status, which suggests that we remove the traditional mentality "*that a postmenopausal woman had finished her maternal role and it will not make a difference for her to have her breast removed.*" These findings suggest that the body image issues of BC survivors have not been adequately addressed.

The current study considered a few points. First, psychological distress and body image issues are significant concerns among women diagnosed with BC even after the completion of treatment. Second, a lack of psychological support in resource-poor settings may cause unresolved psychological issues over time. Hence, oncology settings should be equipped with psychological aids for a person with BC. The limiting factors of the present study were the small sample size and the number of survivors in a single outpatient clinic. More longitudinal studies with larger populations are needed to confirm these findings. In addition, further research on breast implants is warranted to determine whether they improve BID. Furthermore, all survivors should be provided consistent psychological support during all phases of treatment, i.e., after diagnosis, during treatment, and post-treatment.

Conclusion

BC survivors experience high rates of depression, anxiety, stress, and body image dissatisfaction. Therefore, evaluation and treatment of psychological distress as well as therapy for body image disorders in patients undergoing mastectomy should be part of the follow-up management plan for BC survivors. This will provide holistic care and will likely improve the quality of life of BC survivors.

Contributors

M.T., R.S., A.K.M., K.S., S.K.K.: concept, design, definition of intellectual content, manuscript preparation, manuscript editing, manuscript review, and guarantor. M.T.: literature search, data acquisition, and data analysis.

Data sharing statement

All relevant data is available in the paper. Additional requirements, if any, will be welcome, and the de-identified dataset and related codes for analysis will be made available to researchers on request after publication. Requests for data should be addressed to the corresponding author (thakurmonika.1793@gmail.com).

Declaration of interests

None.

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