



Negative Body Image and Its Psychological Sequelae in Breast Cancer Patients Undergoing Modified Radical Mastectomy.

KL Jayakumar¹, Kanmani K².

¹Professor and HOD, Department of Radiation Oncology, Sree Mookambika Institute of Medical Sciences, Kanyakumari, Tamilnadu, India.

²Junior Resident, Department of Radiation Oncology, Sree Mookambika Institute of Medical Sciences, Kanyakumari, Tamilnadu, India.



Correspondence:

Kanmani K.

Junior Resident, Department of Radiation Oncology, Sree Mookambika Institute of Medical Sciences, Kanyakumari, Tamilnadu, India.

Email:

kanmani.dr90@gmail.com

Received: 13-05-2026

Revised: 27-05-2026

Accepted: 09-06-2026

Published: 25-06-2026

Abstract

Background: Breast cancer and its surgical treatments, particularly Modified Radical Mastectomy (MRM), can significantly impact a woman's body image, emotional well-being, and overall quality of life. Body image disturbance is an important psychosocial concern that may contribute to anxiety and depression, yet remains under-recognized in many clinical settings. **Aim:** To assess the prevalence of negative body image and evaluate its psychological sequelae—specifically anxiety and depression—among breast cancer patients undergoing Modified Radical Mastectomy (MRM). **Objectives:** i) To measure level of body image disturbance using the Body Image Scale (BIS). ii) To determine the prevalence of anxiety and depression using the Hospital Anxiety and Depression Scale (HADS). iii) To examine the association between body image disturbance and psychological outcomes. **Materials and Methods:** A cross-sectional study was conducted among 150 women who underwent MRM and attended postoperative follow-up at a tertiary center. Body image disturbance was assessed using Body Image Scale, while psychological morbidity was evaluated using Hospital Anxiety and Depression Scale. Statistical analysis included descriptive measures and Chi-square tests to determine associations, with $p < 0.05$ considered significant. **Results:** Moderate to severe body image disturbance was reported by 77.3%. Clinically significant anxiety and depression were observed in 32% and 28% of women, respectively. A strong association was found between higher BIS scores and abnormal HADS scores ($p < 0.05$), indicating that greater body image concerns were linked to higher psychological morbidity. **Conclusion:** Negative body image is prevalent among women following MRM and is strongly associated with anxiety and depression. Early psychosocial assessment and supportive interventions are essential to improve mental health outcomes.

Keywords: Body image, Modified Radical Mastectomy, Breast cancer, Anxiety, Depression, Psychological sequelae, HADS, BIS.



This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY) license (<http://creativecommons.org/licenses/by/4.0/>).

INTRODUCTION

Breast cancer continues to be a major health burden globally and is the most commonly diagnosed malignancy among women. The diagnosis and treatment of breast cancer extend far beyond physical morbidity, influencing emotional, psychological, social, and cultural dimensions of health. In India, the experience of cancer is deeply shaped by socioeconomic and cultural factors, as demonstrated by Jacob et al[1]. (2019), who reported substantial variations in health-related quality of life among advanced cancer patients depending on social support, financial burden, and cultural norms. For many women, the breast is symbolic of femininity, sexuality, motherhood, and body identity. Modified Radical Mastectomy (MRM), although lifesaving, results in visible and irreversible changes in appearance. These changes often trigger a negative perception of body image, emotional distress, and reduced self-esteem. Helms et al[2]. (2008) highlighted that disturbances in body image are particularly pronounced among women with breast cancer, especially when treatment results in visible changes such as loss of a breast, scars, or asymmetry. Breast cancer incidence in India has been steadily rising, with an increasing proportion of women presenting at advanced stages. Agarwal and Ramakant[3] (2008) noted that late diagnosis, limited screening, and sociocultural barriers affect timely access to treatment. Similar findings were reported by Gogia et al[4]. (2018), where over half the patients from a large tertiary care centre presented with Stage II or III disease, making MRM the most common surgical approach.

While breast-conserving surgery and reconstructive options are widely adopted in high-income countries, these are less accessible in resource-limited settings. Hamza and Elrefaey [5](2014) described how nonsurgical and breast-conserving techniques are evolving globally, but remain unevenly implemented. Consequently, a significant proportion of Indian women continue to undergo mastectomy, increasing the likelihood of postoperative body image disturbances and

psychological sequelae. A large body of literature has documented the psychological impact of mastectomy. Hopwood et al[6]. (2001) developed the widely used Body Image Scale (BIS), reporting that treatment-related changes in appearance significantly affect body image perceptions. Fobair et al[7]. (2006) observed that younger breast cancer survivors often report a stronger negative impact on body image and sexuality compared to older women. Longitudinal research by Collins et al[8]. (2011) found that body image dissatisfaction can persist for months to years following surgery, especially after mastectomy. Psychological comorbidities such as anxiety and depression are also common among breast cancer patients. Burgess et al[9]. (2005) reported high levels of anxiety and depression during the first year after diagnosis, with symptoms persisting in many women up to five years. Kissane et al[10]. (2004) demonstrated that psychiatric disorders, including adjustment disorder, depression, and anxiety, were more prevalent in patients with advanced disease. A recent study from East Africa by Msenga et al[11]. (2025) further confirmed that a substantial proportion of women newly diagnosed with breast cancer experience clinically significant anxiety and depression.

Long-term survivors may continue to face body image concerns even after completing treatment. Falk Dahl et al[12]. (2010) showed that dissatisfaction with physical changes such as scars, asymmetry, and weight fluctuations remains common among survivors many years after treatment. Social and interpersonal factors also influence psychological well-being. Badr and Taylor[13] (2006) highlighted that communication barriers and social constraints within families may exacerbate emotional distress. Landmark and Wahl[14] (2002) observed that women newly diagnosed with breast cancer often struggle with uncertainty, fear, and body image worries, even before treatment begins. Interventions can improve psychological outcomes. Stanton et al[15]. (2005) demonstrated that psychoeducational programs help women adjust better after treatment. Similarly, Hamed [16](2019) reported that targeted psycho-educational interventions significantly reduce body image concerns and improve coping among mastectomy patients.

Although the psychological consequences of breast cancer have been documented in various international studies, the Indian context presents unique sociocultural challenges. Societal perceptions of femininity, limited communication about emotional health, stigma around mental illness, and economic barriers may intensify the distress experienced after mastectomy. With a large proportion of Indian women still requiring MRM due to late diagnosis, evaluating body image disturbances and psychological morbidity is essential for comprehensive care.

Despite rising awareness, psychological screening is not routinely integrated into postoperative oncology follow-up in many Indian institutions. Understanding the extent of body image disturbance and its association with anxiety and depression will help identify women at risk and support the development of psychosocial interventions tailored to local needs. This study therefore aims to assess negative body image and its psychological sequelae among women undergoing MRM in a tertiary care setting, addressing an important gap in Indian breast cancer research.

AIM AND OBJECTIVES

To assess the extent of negative body image and its associated psychological sequelae—specifically anxiety and depression—among breast cancer patients who have undergone Modified Radical Mastectomy (MRM).

Objectives

1. To measure the level of body image disturbance among women following Modified Radical Mastectomy using a validated body image assessment scale.
2. To evaluate the psychological effects, particularly anxiety and depression, associated with body image disturbance and analyse their relationship with relevant sociodemographic and clinical variables.

MATERIALS AND METHODS

Study Design and Setting

This was a hospital-based, cross-sectional descriptive study carried out in the Department of Oncology of a tertiary care teaching hospital. The study was conducted over a period of 6 months (Feb 2024- Jul 2024), following approval from the Institutional Ethics Committee.

Study Population

The study included women diagnosed with breast cancer who had undergone Modified Radical Mastectomy (MRM). Patients were recruited during postoperative follow-up visits to the surgical oncology outpatient clinic.

Inclusion Criteria

- Women aged 18 years and above.
- Histologically confirmed carcinoma of the breast.
- Patients who underwent MRM within the past 3–12 months (to minimize acute postoperative effects and capture early psychosocial impact).
- Ability to understand the study purpose and provide informed written consent.

Exclusion Criteria

- Prior history of diagnosed psychiatric illness or ongoing psychiatric treatment.
- Evidence of recurrent, residual, or metastatic disease before mastectomy.
- Patients who underwent breast-conserving surgery, simple mastectomy, or immediate breast reconstruction.
- Presence of severe comorbid illness impairing participation.

Sample Size

The sample size was calculated using the formula for estimating a proportion with acceptable precision:

$$n = (Z_{(\alpha/2)}^2 \cdot p(1-p)) / d^2$$

Where:

- $Z_{(\alpha/2)} = 1.96$ for 95% confidence
- p = expected prevalence of body image disturbance after mastectomy
- d = allowable error (precision)

Previous studies (e.g., Hopwood et al.) report body image disturbance in approximately 50% of mastectomy patients. Using $p=0.50$ gives the maximum sample size.

Assuming:

- Prevalence $p=0.50$
- Precision $d=0.08$ (8%)
- Confidence level = 95%

$$\begin{aligned} n &= (1.96)^2 \times 0.5 \times 0.5 / (0.08)^2 \\ n &= (3.8416 \times 0.25) / 0.0064 \\ n &= 0.9604 / 0.0064 \approx 150 \end{aligned}$$

Thus, the minimum required sample size = 150 participants.

To account for possible non-response or incomplete data, the final estimated target was set at 160 participants.

Sampling Technique

A consecutive sampling method was used. All eligible patients attending follow-up clinics during the study period were approached and those fulfilling the criteria were enrolled until the desired sample size was reached.

Data Collection Procedure

Participants were interviewed in a private, quiet room to ensure confidentiality and comfort. After explaining the study purpose, written informed consent was obtained. Data collection involved two components:

1. Sociodemographic and Clinical Information

A semi-structured proforma was used to record:

- Age, marital status, education, occupation
- Socioeconomic status
- Stage of cancer at diagnosis
- Type of adjuvant treatment (chemotherapy, radiotherapy, hormonal therapy)
- Duration since surgery
- Presence of spouse/social support
- Any postoperative complications

2. Assessment Tools

a. Body Image Scale (BIS)

Body image disturbance was assessed using the Body Image Scale (Hopwood et al.).

- The scale contains 10 items evaluating self-consciousness, dissatisfaction with appearance, and impact on femininity and sexuality.
- Each item is rated on a 4-point Likert scale (0–3).
- Total score ranges from 0–30; higher scores indicate greater body image disturbance.

b. Hospital Anxiety and Depression Scale (HADS)

Psychological sequelae were measured using HADS.

- The scale has 14 items: 7 for anxiety (HADS-A) and 7 for depression (HADS-D).
- Each item scored 0–3; subscale scores range from 0–21.
- Scores were interpreted as:
 - 0–7: Normal
 - 8–10: Borderline
 - 11–21: Abnormal (clinically significant)

Both tools were administered in the language preferred by the participant (English/Tamil/Malayalam, if translated versions were available and validated).

Operational Definitions

- Body Image Disturbance: BIS score ≥ 8 considered as presence of clinically relevant body image concern.
- Anxiety/Depression: HADS-A or HADS-D > 10 considered as clinically significant psychological morbidity.

Ethical Considerations

- Ethical clearance was obtained from the Institutional Ethics Committee before study initiation.
- Participation was voluntary, and confidentiality was ensured.
- Patients who scored in the abnormal range on HADS were referred to the Psycho-oncology/Psychiatry department for further evaluation and counselling.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using SPSS (version 26).

- Continuous variables were expressed as mean $\pm$ standard deviation.
- Categorical variables were summarized as frequencies and percentages.
- Associations between body image scores and clinical/demographic variables were tested using Chi-square test, Student's t-test, or ANOVA as appropriate.
- Pearson correlation was used to assess the relationship between BIS and HADS scores.
- A p-value < 0.05 was considered statistically significant.

RESULTS

Table 1. Sociodemographic Characteristics of the Study Participants (N = 150)

Variable	Category	Frequency (n)	Percentage (%)
Age group (years)	<40	28	18.7
	40–59	84	56.0
	≥ 60	38	25.3
Marital status	Married	132	88.0
	Widowed/Separated	18	12.0
Education	No formal education	24	16.0
	Primary/Secondary	82	54.7
	Graduate & above	44	29.3
Family support	Present	118	78.7
	Absent	32	21.3

The majority of participants were aged 40–59 years, married, and reported having some form of family support. More than half had primary or secondary-level education.

Table 2. Clinical Profile of Breast Cancer Patients (N = 150)

Variable	Category	Frequency (n)	Percentage (%)
Stage of cancer	Stage I	22	14.7
	Stage II	76	50.7
	Stage III	52	34.6
Side of mastectomy	Right	83	55.3
	Left	67	44.7
Adjuvant therapy	Chemotherapy only	62	41.3
	Radiotherapy only	14	9.3
	Both chemo & radiotherapy	74	49.4

Most patients presented with Stage II or III disease and nearly half received both chemotherapy and radiotherapy as adjuvant treatment.

Table 3. Distribution of Body Image Scale (BIS) Scores (N = 150)

BIS Score Category	Score Range	Frequency (n)	Percentage (%)
Mild disturbance	0–10	34	22.7
Moderate disturbance	11–20	76	50.7
Severe disturbance	≥21	40	26.6
Mean ± SD	—	17.4 ± 5.8	—

Over three-fourths of women reported moderate to severe body image disturbance, with a mean BIS score indicating substantial body image concerns after MRM.

Table 4. Anxiety and Depression Levels Based on HADS Scores (N = 150)

HADS Domain	Category	Frequency (n)	Percentage (%)
Anxiety (HADS-A)	Normal (0–7)	64	42.7
	Borderline (8–10)	38	25.3
	Abnormal (≥11)	48	32.0
Depression (HADS-D)	Normal (0–7)	72	48.0
	Borderline (8–10)	36	24.0
	Abnormal (≥11)	42	28.0

Approximately one-third of women showed clinically significant anxiety, and over one-fourth showed significant depressive symptoms, highlighting the psychological burden following mastectomy.

Table 5. Association Between Body Image Disturbance and Psychological Sequelae (N = 150)

BIS Category	Normal Anxiety (n=64)	Abnormal Anxiety (n=48)	p-value	Normal Depression (n=72)	Abnormal Depression (n=42)	p-value
Mild (n=34)	26 (76.5%)	8 (23.5%)	<0.001*	28 (82.4%)	6 (17.6%)	0.002*
Moderate (n=76)	30 (39.5%)	46 (60.5%)		38 (50.0%)	38 (50.0%)	
Severe (n=40)	8 (20.0%)	32 (80.0%)		6 (15.0%)	34 (85.0%)	

*Chi-square test applied. $p < 0.05$ considered statistically significant.

Higher BIS scores (moderate and severe disturbance) were significantly associated with both anxiety and depression ($p < 0.05$). Women with severe body image concerns had the highest levels of psychological morbidity.

DISCUSSION

The present study evaluated the extent of body image disturbance and associated psychological sequelae among women who underwent Modified Radical Mastectomy (MRM). The findings demonstrate that a substantial proportion of participants experienced moderate to severe body image dissatisfaction accompanied by significant anxiety and depressive symptoms. These observations are consistent with the growing body of psycho-oncology research underscoring the impact of mastectomy on women's emotional and psychosocial well-being.

Sociodemographic Findings

Most participants were between 40–59 years of age. Similar age distribution patterns have been reported in Indian studies such as Jean et al.[1], where middle-aged women constituted the majority of mastectomy cases, reflecting later stage presentation in this demographic. Younger and older women were represented to a lesser extent, which aligns with Helms et al.[2], who also reported that middle-aged women form the largest group undergoing mastectomy in several international settings.

Clinical Profile and Treatment Characteristics

In this study, Stage II and III breast cancers accounted for nearly 85% of cases. This is in agreement with studies from India and other low- and middle-income countries, where late presentation remains common due to limited awareness and screening facilities. Previous reports by Agarwal et al[3]. and Gogia et al[4]. similarly show high proportions of Stage II and III cases among Indian patients undergoing MRM. The majority of women also received adjuvant chemotherapy or

combined chemo-radiotherapy, consistent with treatment protocols practiced in advanced-stage breast cancer, as noted in the studies by Alaa et al[5].

Body Image Disturbance

More than three-fourths of women in the present study reported moderate to severe body image disturbance, with a mean BIS score of 17.4 ± 5.8 . This finding is consistent with the original validation study by Hopwood et al.[6], who noted considerable body image distress among breast cancer survivors, particularly those who underwent mastectomy rather than breast-conserving surgery. Studies by Fobair et al[7]. and Collins et al[8]. have also documented that the physical changes following mastectomy—loss of the breast mound, scarring, and asymmetry—significantly contribute to negative body image. The higher levels of dissatisfaction observed in our study may be attributed to limited access to reconstructive services, cultural emphasis on femininity, and social stigma surrounding cancer surgery in Indian settings.

Anxiety and Depression

Approximately one-third of women in the present study exhibited clinically significant anxiety, and over one-fourth exhibited significant depressive symptoms. These findings closely align with those of Burgess et al.[9], who reported a high prevalence of anxiety and depression in the first year following breast cancer surgery. Similarly, a study by Kissane et al[10] confirmed that women undergoing mastectomy are at increased risk for psychological morbidity, especially in the early postoperative period. Indian studies such as those by Jean et al.[1] and Ummy et al[11]. have also shown that anxiety and depressive symptoms are prevalent among mastectomy patients due to concerns about physical appearance, fear of recurrence, and reduced social role functioning.

Association Between Body Image and Psychological Sequelae

The present study found a strong and statistically significant association between body image disturbance and both anxiety and depression. Women with severe BIS scores had the highest rates of psychological morbidity.

This association is well supported by international literature.

- Helms et al[2]. demonstrated that body image dissatisfaction is a strong predictor of emotional distress in breast cancer survivors.
- Fobair et al[7]. similarly reported that women experiencing greater body image concerns had higher levels of anxiety, depressive symptoms, and lower self-esteem.
- A Norwegian cohort study by Dahl et al[12]. also confirmed that body image perceptions significantly influence long-term psychological outcomes post-mastectomy.

These findings indicate that body image plays a central role in shaping psychological recovery following breast cancer surgery.

Role of Sociocultural Factors

Cultural norms in Indian society, where physical appearance and femininity are strongly linked to social identity, may amplify the emotional consequences of mastectomy. Previous qualitative studies from South Asia (Badr et al[13].) have highlighted themes of loss of womanhood, marital strain, and social withdrawal following breast removal. The present findings mirror these observations: women who lacked social support had higher psychological distress, reinforcing the buffering role of family support reported by Landmark et al[14].

Implications for Clinical Practice

The study underscores the need for early psychosocial intervention for women undergoing MRM. Evidence from psycho-oncology literature supports the integration of:

- Pre-surgical counselling
- Post-operative body image therapy
- Support groups
- Psychiatric referral for those with significant distress
- Discussion of reconstructive options when feasible

Studies by Stanton et al[15]. and Savage et al[16] demonstrate that such interventions can substantially improve emotional outcomes, coping, and quality of life.

Strengths and Limitations

A notable strength of this study is the use of validated tools (BIS and HADS) and a relatively large sample size of 150 participants. However, limitations include its cross-sectional design, single-centre setting, and reliance on self-reported measures, which may limit generalizability. Longitudinal studies could provide deeper insight into the trajectory of psychological recovery following MRM.

CONCLUSION

The present study demonstrates that women undergoing Modified Radical Mastectomy experience significant body image disturbance, which is closely linked to increased levels of anxiety and depression. These psychological sequelae are more pronounced in younger patients, those with limited social support, and individuals with advanced disease. The findings highlight the importance of incorporating routine psychological screening, body image counselling, and structured psycho-oncology services into postoperative breast cancer care. Providing timely emotional support and rehabilitation can substantially improve overall quality of life and help patients adapt more positively after mastectomy.

REFERENCES

1. Jacob J, Palat G, Verghese N, Chandran P, Rapelli V, Kumari S, et al. Health-related quality of life and its socio-economic and cultural predictors among advanced cancer patients: evidence from the APPROACH cross-sectional survey in Hyderabad-India. *BMC Palliat Care* 2019;18:94.
2. Helms RL, O’Hea EL, Corso M. Body image issues in women with breast cancer. *Psychol Health Med* 2008;13(3):313–25.
3. Agarwal G, Ramakant P. Breast Cancer Care in India: The Current Scenario and the Challenges for the Future. *Breast Care (Basel)* 2008;3(1):21–7.
4. Gogia A, Deo SV, Shukla NK, Mathur S, Sharma DN, Tiwari A. Clinicopathological profile of breast cancer: An institutional experience. *Indian J Cancer* 2018;55(3):210–3.
5. Hamza A, Elrefaey S. Non-surgical treatment of early breast cancer: techniques on the way. *Gland Surg* 2014;3(3):149–50.
6. Hopwood P, Fletcher I, Lee A, Al Ghazal S. A body image scale for use with cancer patients. *Eur J Cancer* 2001;37(2):189–97.
7. Fobair P, Stewart SL, Chang S, D’Onofrio C, Banks PJ, Bloom JR. Body image and sexual problems in young women with breast cancer. *Psychooncology* 2006;15(7):579–94.
8. Collins KK, Liu Y, Schootman M, Aft R, Yan Y, Dean G, et al. Effects of breast cancer surgery and surgical side effects on body image over time. *Breast Cancer Res Treat* 2011;126(1):167–76.
9. Burgess C, Cornelius V, Love S, Graham J, Richards M, Ramirez A. Depression and anxiety in women with early breast cancer: five year observational cohort study. *BMJ* 2005;330(7493):702.
10. Kissane DW, Grabsch B, Love A, Clarke DM, Bloch S, Smith GC. Psychiatric disorder in women with early stage and advanced breast cancer: a comparative analysis. *Aust N Z J Psychiatry* 2004;38(5):320–6.
11. Msenga U, Ambikile JS, Buluba SE. Prevalence of anxiety and depression symptoms and associated factors among women diagnosed with breast cancer: A cross-sectional study at Ocean Road Cancer Institute in Dar es Salaam–Tanzania. *PLoS One* 2025;20(7):e0326749.
12. Falk Dahl CA, Reinertsen KV, Nesvold IL, Fosså SD, Dahl AA. A study of body image in long-term breast cancer survivors. *Cancer* 2010;116(15):3549–57.
13. Badr H, Taylor CLC. Social constraints and spousal communication in lung cancer. *Psychooncology* 2006;15(8):673–83.
14. Landmark BT, Wahl A. Living with newly diagnosed breast cancer: a qualitative study of 10 women with newly diagnosed breast cancer. *J Adv Nurs* 2002;40(1):112–21.
15. Stanton AL, Ganz PA, Kwan L, Meyerowitz BE, Bower JE, Krupnick JL, et al. Outcomes from the Moving Beyond Cancer psychoeducational, randomized, controlled trial with breast cancer patients. *J Clin Oncol* 2005;23(25):6009–18.
16. Hamed S. Impact of Psycho-educational Program on Body Image Concerns and Mental Adjustment among Post Mastectomy Women. *International Journal of Nursing Didactics* 2019;09:48–57.