



A PROSPECTIVE STUDY OF BREAST CARCINOMA DEMOGRAPHY, STAGING, TREATMENT & ITS COMPLICATIONS IN TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Breast carcinoma is one of the most common malignancies among women and remains a major public health concern due to delayed presentation and disease-related morbidity. Early diagnosis, appropriate surgical management, and adjuvant therapy play an important role in improving patient outcomes.

Methodology: This hospital-based prospective observational study was conducted among 80 female patients aged 18–65 years with histopathologically confirmed Stage I or II breast carcinoma. Demographic, clinical, reproductive, and treatment-related details were recorded using a structured proforma. Clinical staging was done according to the TNM classification. Patients underwent Modified Radical Mastectomy (MRM) or Breast Conserving Surgery (BCS) as per institutional protocol. Histopathological findings, postoperative complications, and adjuvant therapies were analyzed using IBM SPSS Statistics.

Results: The mean age of the study participants was 46.97 ± 10.24 years. Most patients were premenopausal (55.00%), multiparous (78.75%), had Stage II disease (92.50%), positive lymph nodes (80.00%), and invasive ductal carcinoma (90.00%), with the upper outer quadrant (63.75%) being the most common tumor site. MRM (77.50%) was performed more often than BCS (22.50%), mainly due to fear of recurrence (37.50%). Most patients had no postoperative complications, with seroma (7.50%) being the most common. All patients received radiotherapy, while 82.50% received chemotherapy and 63.75% received endocrine therapy.

Conclusion: Breast carcinoma commonly affected middle-aged women and frequently presented at Stage II with nodal involvement. Invasive ductal carcinoma was the predominant histological subtype. The findings highlight the importance of early detection, timely surgical intervention, and multimodal adjuvant therapy in improving outcomes among breast carcinoma patients.

Keywords: Breast Carcinoma, Modified Radical Mastectomy, Breast Conserving Surgery, Invasive Ductal Carcinoma, Adjuvant Therapy, Postoperative Complications.

INTRODUCTION

Breast carcinoma is the most common malignancy among women worldwide and remains a major public health concern due to its increasing incidence, morbidity, and mortality.

According to recent global cancer statistics, breast cancer accounts for a significant proportion of newly diagnosed cancers among women and is one of the leading causes of cancer-related deaths. In India, the burden of breast cancer has increased steadily over the past decade, particularly in urban populations, with many patients presenting at a younger age and at more advanced stages of the disease compared to Western countries [1,2].

Early diagnosis and accurate staging of breast carcinoma play a crucial role in determining prognosis and selecting appropriate treatment strategies. The Tumor-Node-Metastasis (TNM) staging system remains the standard method for clinical and pathological staging of breast cancer. Advances in imaging modalities, histopathological



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assessment, and molecular profiling have significantly improved the management and survival outcomes of breast cancer patients in recent years [3,4].

Treatment of breast carcinoma requires a multidisciplinary approach involving surgery, chemotherapy, radiotherapy, hormonal therapy, and targeted therapy. Surgical management continues to be the cornerstone of treatment for early-stage breast cancer. Breast conservation surgery (BCS) combined with radiotherapy has emerged as an effective alternative to modified radical mastectomy (MRM) in selected patients, offering comparable oncological outcomes with better cosmetic and psychological benefits. Recent studies from tertiary care centers in India have demonstrated favorable outcomes of BCS in Stage I and II breast carcinoma with acceptable postoperative morbidity [4,5].

Neoadjuvant chemotherapy has also become an important component in the management of locally advanced breast carcinoma, helping to reduce tumor size, improve operability, and increase the feasibility of breast conservation procedures. Studies conducted at tertiary care hospitals have shown significant tumor response rates following neoadjuvant therapy, thereby improving surgical outcomes and reducing postoperative complications [6,7].

Despite advances in treatment modalities, postoperative complications such as seroma formation, flap necrosis, surgical site infection, hematoma, lymphoedema, and postoperative pain continue to affect patient recovery and quality of life. Prospective studies evaluating complications following modified radical mastectomy have highlighted the importance of early detection and appropriate perioperative management to minimize morbidity [7,8].

Socioeconomic factors, delayed presentation, lack of awareness, and limited access to specialized oncology services remain major challenges in the management of breast carcinoma in developing countries. Studies from Indian tertiary care hospitals have reported treatment discontinuation and advanced-stage presentation among economically weaker populations, emphasizing the need for improved screening programs and standardized treatment protocols [9,5].

In view of the rising burden of breast carcinoma and evolving treatment strategies, the present prospective study was undertaken to evaluate the demographic profile, staging pattern, treatment modalities, and associated complications of breast carcinoma patients attending a tertiary care hospital. The study aims to provide insight into the clinical

presentation and treatment outcomes of breast cancer patients in a tertiary healthcare setting [10,2].

METHODOLOGY

This hospital-based prospective observational study was conducted at L.N. Medical College & Research Centre and the associated J.K. Hospital. The study included female patients with histopathologically confirmed breast carcinoma. Ethical clearance was obtained from the Institutional Ethics Committee, and written informed consent was obtained from all participants.

Female patients aged 18–65 years with Stage I or Stage II breast carcinoma and tumor size <5 cm were included in the study. Patients with contraindications for surgery, age <18 years or >65 years, and those unwilling to provide consent were excluded. A total of 60 patients fulfilling the inclusion criteria were enrolled consecutively during the study period.

Detailed clinical history, demographic data, and relevant investigations were recorded in a structured proforma. Clinical staging was performed according to the TNM classification system. All patients underwent routine preoperative investigations, including complete blood count, renal and liver function tests, blood sugar levels, coagulation profile, chest radiography, electrocardiography, breast ultrasonography and/or mammography, and core needle biopsy for histopathological confirmation. Additional investigations were performed when indicated to exclude metastatic disease.

Preoperative evaluation and surgical planning were carried out according to standard oncological guidelines. Patients suitable for breast conservation surgery (BCS) were selected based on tumor-to-breast size ratio, absence of multicentric disease, and patient preference. Surgical procedures were performed under general anesthesia with aseptic precautions. The operative procedures included breast conservation surgery with axillary staging or modified radical mastectomy (MRM) with axillary lymph node dissection as per institutional protocol. Resected specimens were sent for histopathological examination to assess tumor size, margin status, and lymph node involvement. Postoperative care and adjuvant therapy were provided according to final histopathology findings and multidisciplinary recommendations.

Statistical analysis was performed using IBM SPSS Statistics. Categorical variables were expressed as frequency and percentage and analyzed using Pearson's Chi-square test. Continuous variables were presented as mean $\pm$ standard deviation and compared using the independent t-test. A p-value <0.05 was considered statistically significant.

RESULTS

Table 1: Age Distribution and Duration of Symptoms among Study Participants

Variables	No of cases	Percentage
Age Group (Years) (Mean ± SD)	46.97 ± 10.24 years	
Duration of Symptoms		
<6 months	48	60.00%
6–9 months	22	27.50%
>9 months	10	12.50%
Total	80	100.00%

The mean age of the study participants was 46.97 ± 10.24 years. Most patients presented within 6 months of onset of symptoms (60.00%), while 27.50% presented between 6–9 months and 12.50% presented after 9 months.

Table 2: Reproductive Characteristics of Study Participants

	No of cases	Percentage
Menstrual Status		
Premenopausal	44	55.00%
Postmenopausal	36	45.00%
Parity		
Nulliparous	3	3.75%
Uniparous	14	17.50%
Multiparous	63	78.75%

Among the study participants, 55.00% were premenopausal and 45.00% were postmenopausal. Multiparous women constituted the majority of

cases (78.75%), while nulliparous women accounted for only 3.75% of the study population.

Table 3: Clinical and Tumor Characteristics of Study Participants (n=80)

Clinical and Tumor Characteristics	No of cases	Percentage
Stage		
Stage I	6	7.50%
Stage II	74	92.50%
Node Status		
N0	16	20.00%
N1	64	80.00%
Tumor Location in Different Breast Quadrants		
Upper Outer	51	63.75%
Upper Inner	19	23.75%
Lower Outer	5	6.25%
Lower Inner	3	3.75%
NAC	2	2.50%

The majority of patients presented with Stage II disease (92.50%), while 80.00% had positive lymph node status (N1). The upper outer quadrant was the

most common site of tumor involvement (63.75%), followed by the upper inner quadrant (23.75%).

Table 4: Histopathological Type and Surgical Management Pattern Among Study Participants

	No of cases	Percentage
HPE Type		
Invasive Ductal Carcinoma	72	90.00%
Invasive Lobular Carcinoma	8	10.00%
Surgical Management Pattern Surgery Type		
Modified Radical Mastectomy (MRM)	62	77.50%
Breast Conserving Surgery (BCS)	18	22.50%

Invasive ductal carcinoma was the predominant histopathological type observed in 90.00% of cases, while invasive lobular carcinoma accounted for

10.00%. Modified radical mastectomy was the most commonly performed surgical procedure (77.50%),

whereas breast conserving surgery was performed in 22.50% of patients.

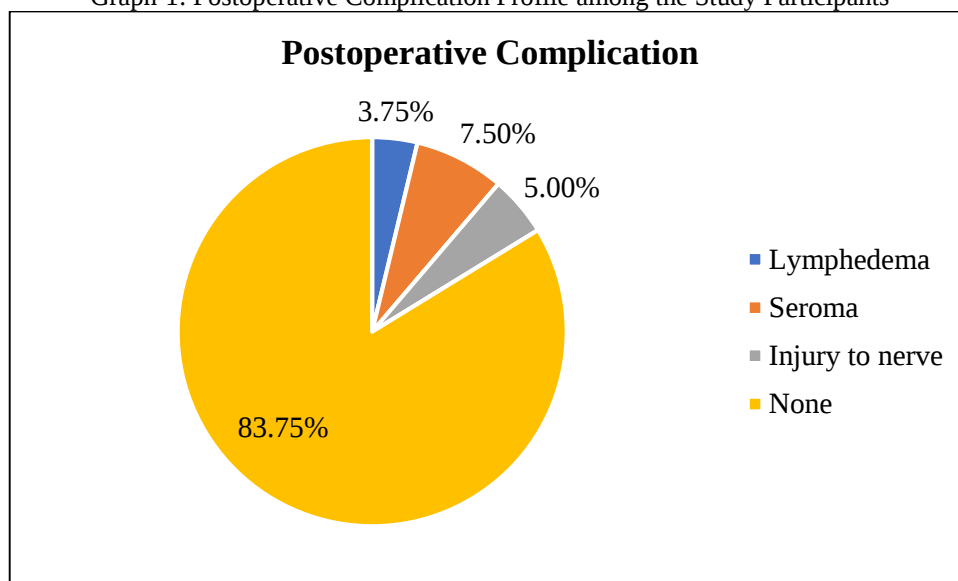
Table 5: Factors Influencing Choice of Surgical Treatment among Study Participants

Reason	No of cases	Percentage
Concern for recurrence	30	37.50%
Unwilling for radiotherapy	20	25.00%
Concern about residual cancer	18	22.50%
Other (social/financial)	12	15.00%
Total	80	100.00%

Fear of recurrence was the commonest reason for choosing surgery (37.50%), followed by unwillingness for radiotherapy (25.00%). Concern

about residual cancer and social or financial reasons were seen in 22.50% and 15.00% of patients, respectively.

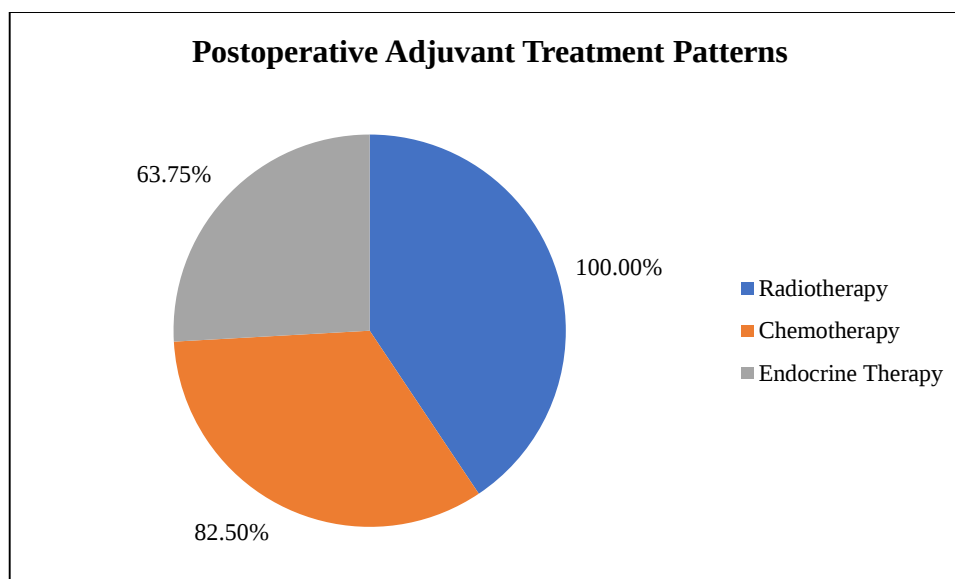
Graph-1: Postoperative Complication Profile among the Study Participants



Most patients did not develop any postoperative complications (83.75%). Among the complications observed, seroma was the most common (7.50%),

followed by nerve injury (5.00%) and lymphedema (3.75%).

Graph-2: Postoperative Adjuvant Treatment Patterns among the Study Participants



All patients received radiotherapy, while chemotherapy and endocrine therapy were given in 82.50% and 63.75% of patients, respectively, showing that combined postoperative treatment was commonly used.

DISCUSSION

The present prospective study evaluated the demographic profile, clinical staging, treatment patterns, and postoperative complications among patients with breast carcinoma treated at a tertiary care hospital. The mean age of patients in the present study was 46.97 ± 10.24 years, which is comparable with the findings reported by Bhandari et al.[11](2022), who observed that breast cancer commonly affected women in the fourth and fifth decades of life in Indian settings. Similarly, Jagadev et al. [12] (2025) reported a mean age of 47.65 years among patients undergoing breast-conserving surgery and 48.19 years among those undergoing modified radical mastectomy. Rahman et al. [13] (2021) also documented a comparable mean age of 48.43 ± 12.3 years among breast carcinoma patients. These findings indicate that breast carcinoma in developing countries tends to occur at a relatively younger age compared to Western populations.

In the current study, 60.00% of patients presented within six months of symptom onset, whereas a smaller proportion presented after prolonged duration. Delayed presentation remains a common issue in low- and middle-income countries because of lack of awareness, fear, social stigma, and limited access to screening programs. Dalvi and Solanki [14] (2021) similarly observed that most patients presented with palpable breast lumps and locally advanced disease at tertiary care centers. The persistence of delayed healthcare-seeking behavior highlights the need for improved awareness and early detection strategies.

Regarding reproductive characteristics, 55.00% of patients in the present study were premenopausal, while multiparous women constituted the majority (78.75%). Similar demographic patterns were noted by Kachavi et al. [15] (2022), who reported that most breast cancer patients belonged to the reproductive age group and had multiparity. These findings suggest that breast carcinoma in Indian women frequently occurs before menopause, emphasizing the importance of screening and awareness among younger women.

Most patients in the present study had Stage II disease (92.50%) with positive nodal involvement (80.00%). Comparable findings were reported by Rahman et al. [13] (2021), where Stage II carcinoma represented the largest patient group. Similarly, Dalvi and Solanki [14] (2021) observed that a large proportion of patients presented with locally advanced breast carcinoma requiring multimodality treatment. The high prevalence of nodal positivity in the current study reflects delayed diagnosis and aggressive disease presentation in tertiary care hospitals.

The upper outer quadrant was the most common site of tumor involvement in the present study (63.75%). This observation is consistent with the findings of Dalvi and Solanki [14] (2021), who also identified the upper outer quadrant as the predominant tumor location. The higher frequency of tumors in this quadrant may be related to the relatively larger volume of breast tissue present in this region.

Histopathological evaluation in the current study demonstrated invasive ductal carcinoma as the predominant subtype (90.00%), followed by invasive lobular carcinoma (10.00%). Similar findings were reported by Rahman et al. [13] (2021), where invasive ductal carcinoma constituted 80% of cases. Likewise, the recent study on clinicopathological characteristics after modified

radical mastectomy reported invasive ductal carcinoma in 89.5% of patients. These findings reaffirm that invasive ductal carcinoma remains the commonest histological subtype of breast carcinoma globally.

Modified radical mastectomy (MRM) was the most commonly performed surgical procedure in the present study (77.50%), whereas breast-conserving surgery (BCS) was performed in 22.50% of cases. Similar trends have been reported in several Indian studies. Dalvi and Solanki (2021) observed that MRM followed by adjuvant therapy remained the most common treatment modality for locally advanced breast carcinoma. Bhandari et al. [11] (2022) also highlighted that MRM continues to be the mainstay of treatment in India because many patients present at advanced stages. However, Jagadev et al. [12] (2025) demonstrated that BCS offers comparable oncological outcomes with better cosmetic satisfaction and quality of life in early-stage disease. The relatively lower rate of BCS in the present study may be due to patient concerns regarding recurrence, reluctance for radiotherapy, and socioeconomic factors.

Fear of recurrence was the most common factor influencing surgical choice in the present study (37.50%), followed by unwillingness for radiotherapy. Similar sociocultural and psychological barriers have been described in developing countries, where many patients prefer mastectomy for perceived better disease clearance. Postoperative complications in the current study were relatively low, with most patients having no complications (83.75%). Seroma formation was the most common complication (7.50%), followed by nerve injury and lymphedema. Comparable findings were reported by the recent prospective study from Kanpur, where seroma was observed in 26% of patients after modified radical mastectomy. Bhandari et al. [11] (2022) also found significant associations between advanced tumor stage, nodal involvement, and postoperative complications such as seroma and wound dehiscence. Similarly, Rahman et al. [13] (2021) identified seroma formation and wound infection as the most frequent postoperative complications. These findings suggest that meticulous surgical technique and postoperative care are essential to minimize morbidity following breast cancer surgery.

In the present study, all patients received radiotherapy, while chemotherapy and endocrine therapy were administered in 82.50% and 63.75% of cases, respectively. This reflects the current trend toward multimodal management of breast carcinoma. Ravishankar et al. [16] (2025) also emphasized the importance of integrating surgery with chemotherapy, radiotherapy, and hormonal therapy for improved disease outcomes in invasive breast carcinoma patients. The widespread use of

adjuvant therapies in the present study demonstrates adherence to standard oncological protocols for breast cancer management.

Overall, the findings of the present study are consistent with recent literature from tertiary care centers in India and other developing countries, where breast carcinoma commonly presents in younger women, often at Stage II or locally advanced stages, with invasive ductal carcinoma being the predominant histological subtype and modified radical mastectomy remaining the most frequently performed surgical procedure.

CONCLUSION

Breast carcinoma in the present study was most commonly seen among middle-aged women and frequently presented at Stage II with lymph node involvement. Invasive ductal carcinoma was the predominant histopathological type, and Modified Radical Mastectomy was the most commonly performed surgery. Most patients received multimodal adjuvant therapy with minimal postoperative complications. The findings emphasize the importance of early diagnosis, timely surgical intervention, and comprehensive adjuvant treatment in improving outcomes among breast carcinoma patients.

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