

**Sociodemographic and Clinical Profile of Patients Presenting with Breast Cancer at a Tertiary Care Hospital: A Retrospective Study****Mousumi B Bora<sup>1</sup>, Sujata Hazarika<sup>2</sup>, Kaushik Nath<sup>3</sup>, Mridusmita Das<sup>4</sup>, Souvik Pramanik<sup>5</sup>, Syeda Moshina Rohman<sup>6</sup>, Bhargav Mili<sup>7</sup>**<sup>1</sup>Professor, Department of Biochemistry, State Cancer Institute, Gauhati Medical College & Hospital, Assam, India<sup>2</sup>Associate Professor, Department of Physical Medicine & Rehabilitation, Gauhati Medical College & Hospital, Assam, India<sup>3</sup>Assistant Professor, Department of Biochemistry, State Cancer Institute, Gauhati Medical College & Hospital, Assam, India<sup>4</sup>Associate Professor, Department of biochemistry, Gauhati Medical College, Assam, India<sup>5</sup>Senior Resident, Department of Biochemistry, State Cancer Institute, Gauhati Medical College, Assam, India<sup>6</sup>Professor & Head, Department of Biochemistry, Gauhati Medical College, Assam, India<sup>7</sup>Medical Officer, Department of Biochemistry, State Cancer Institute, Gauhati Medical College & Hospital, Assam, India

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**Abstract****Introduction:** Breast cancer, a type of cancer that originates in the breast tissue, is considered as an important public health problem in all the countries, especially in the developing countries. It is the commonest malignancy affecting women worldwide and is the leading cause of cancer related deaths.**Aim:** The aim of this study was to analyze the sociodemographic and clinical profile of confirmed breast cancer patients.**Materials and Methods:** This was a retrospective observational study done at State Cancer Institute, Guwahati. Data of Breast Cancer patients registered during the five-year study period (2018- 2022) were collected from Hospital Based Cancer Registry (HBCR) and the institutional ICMR-NCDIR (National Centre for Disease Informatics and Research Department). The parameters taken for study were age, sex, marital status, religion, education level, residence (urban/rural), stage at time of presentation, primary histology and morphology, histological type, laterality (right/left), the quadrant of the breast involved and metastasis.**Results:** A total of 1563 cases were analyzed of which 1529 were female (97.83%) and 34 were male (2.17%) with a male female ratio of 1:45. The age of patients ranged between 16 to 84 years and majority were urban based. Carcinoma on right breast was more common, upper outer quadrant of the breast was the most commonly affected site. Most of the patients presented in Stage II (41%) and 15% of the patients were in Stage IV with metastasis. Bony metastasis was the commonest (47%) followed by lung metastasis (27%). NOS was the most common Primary Histology –Morphology.**Conclusion:** The pattern found in our study was similar to other Indian studies where breast cancer is common among younger age groups in contrast to western countries where breast cancer is seen in post-menopausal women. Most of the patients presented in the advanced stage. The results show a trend in rise of prevalence in younger age groups, more males affected than previous studies and presentation in the advanced stage. There is urgent need for awareness programs, population screening for early diagnosis of breast cancer which will improve the overall outcome of management of breast cancer.**Keywords:** Breast Cancer, Sociodemographic Profile, Clinical Profile.**DOI:** 10.25258/ijcpr.18.6.60This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Breast cancer is a disease seen across the world. It can affect both men and women, though it is far

less common in men. Among women, it is the most frequently diagnosed cancer worldwide and

continues to be a leading cause of cancer-related death. According to GLOBOCAN 2020 [1] figures, breast cancer overtook lung cancer in 2020 to become the most commonly occurring cancer, with roughly 2.3 million new cases and 685,000 deaths each year. While the disease is found in women in every part of the world, its burden is steadily moving towards developing countries, where late diagnosis—caused by poor awareness and limited screening facilities—worsens its effect on illness and survival. The GLOBOCAN 2022 [2] database recorded 192,020 cases of breast cancer, which made up 13.6% of all cancers in women, with an estimated five-year prevalence of 526,248 new cases. In India, breast cancer has become the most common cancer among women, having overtaken cervical cancer in urban areas and rising quickly in rural ones. In Indian women, the disease tends to appear at a younger age than in Western women, with a large share of patients diagnosed before menopause. Furthermore, a great majority of patients come in with locally advanced or metastatic disease at diagnosis, which reflects gaps in awareness, screening, and early detection programs. This study was carried out in Assam, a North Eastern state of India. Assam and the wider Northeast region present a distinctive picture in cancer care. Epidemiological data from the region suggest that breast cancer is on the rise, yet thorough institution-based studies describing the sociodemographic and clinical profile of these patients are still few.

The region is marked by ethnic and cultural diversity, difficult geographical access, and health care disparities, all of which shape the ways in which patients reach cancer care.

Tertiary cancer care centers in Assam act as the main referral points for patients from across the state and neighboring regions, and they receive a varied patient population with different clinical presentations and histological profiles. Studying these patients by their sociodemographic background—age, education, religion, place of residence, and marital status—along with clinical features such as stage at diagnosis, tumor histology, and sites of metastasis, offers valuable insight into the local epidemiology of breast cancer. Such data help not only in understanding the disease burden but also in identifying risk factors, planning early detection strategies, and making the best use of resources within the regional health care system.

Even though breast cancer is increasingly recognized as a major health problem in Northeast India, institution-based studies from Assam that

document the sociodemographic and clinical profile of these patients remain limited. This study was therefore undertaken at a tertiary care centre in Assam to generate region-specific data, which will support cancer control policies and ultimately improve patient outcomes.

### Methods and Materials

This was a retrospective review of 1,563 confirmed breast cancer patients seen over a five-year period, from January 1, 2018 to December 31, 2022. The study was carried out at the State Cancer Institute, Gauhati Medical College, a tertiary care center that serves the districts of Assam and the neighboring North Eastern states. All clinical and treatment records that were available were collected from the hospital's medical records department. We noted down sociodemographic details for each patient, including age, sex, marital status, religion, and level of education. Tumor-related features were also recorded, such as the tumor site, laterality, composite classification, primary histology and morphology, and the location of any secondary tumors.

Our institute has run a hospital-based cancer registry since 2018, which is recognized by the Indian Council of Medical Research. Trained data-entry staff systematically retrieved confirmed breast malignancy case files from the medical records department and entered them into the registry. The extent of the disease was decided on the basis of the clinical assessment done before treatment was started. Ethical clearance for the study was taken from the appropriate institutional review board.

### Results and Observations

A total of 1563 patients with confirmed breast cancer formed the study population. The majority of the patients were female, 1529 (97.83%) and the age ranged between 16-84. The number of male patients were 34 with age ranging from 32-71 years. The male female ratio was 1:45(table1). Approximately 50% of female patients were diagnosed before 50 years of age (table 2a). The majority of male breast cancer patients were between 50-59 years of age (table 2b). Most of the study population belong to Hindu religion (81%), followed by Muslim, Christian, Jain and Sikh (Fig 1). 1182 patients were from rural and 382 patients were from urban localities (table 3). Rural urban ratio was 3.1:1. Incidence was more in married (91%) than unmarried (table 4). 80% of patients were literate and 20% of patients were illiterate (fig 2).

**Table 1: Gender distribution**

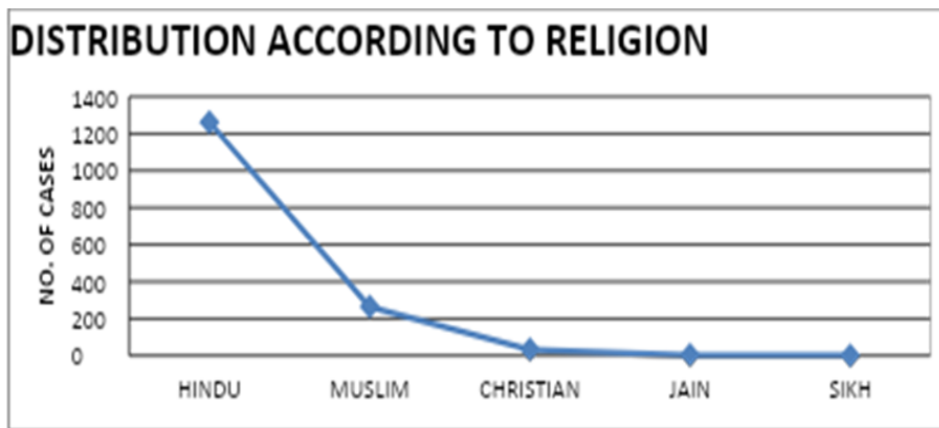
Sex	Number	Percentage
Female	1529	97.83%
Male	34	2.17%

**Table 2a: Age distribution female**

Age Distribution (Female)	Number	Percentage
10-19	1	<1%
20-29	62	4%
30-39	266	18%
40-49	525	34%
50-59	430	28%
60-69	180	12%
70-79	47	3%
80-89	18	1%

**Table 2b: Age distribution male**

Age Distribution (Male)	Number	Percentage
30-39	1	3%
40-49	2	6%
50-59	21	62%
60-69	9	26%
70-79	1	3%



**Figure 1: Distribution according to religion**

**Table 3: Area distribution**

Area Distribution	Number	Percentage
Rural	1182	76%
Urban	381	24%

**Table 4: Marital status**

Marital Status	Number	Percentage
Married	1424	91%
Unmarried	78	5%
Widow	61	4%

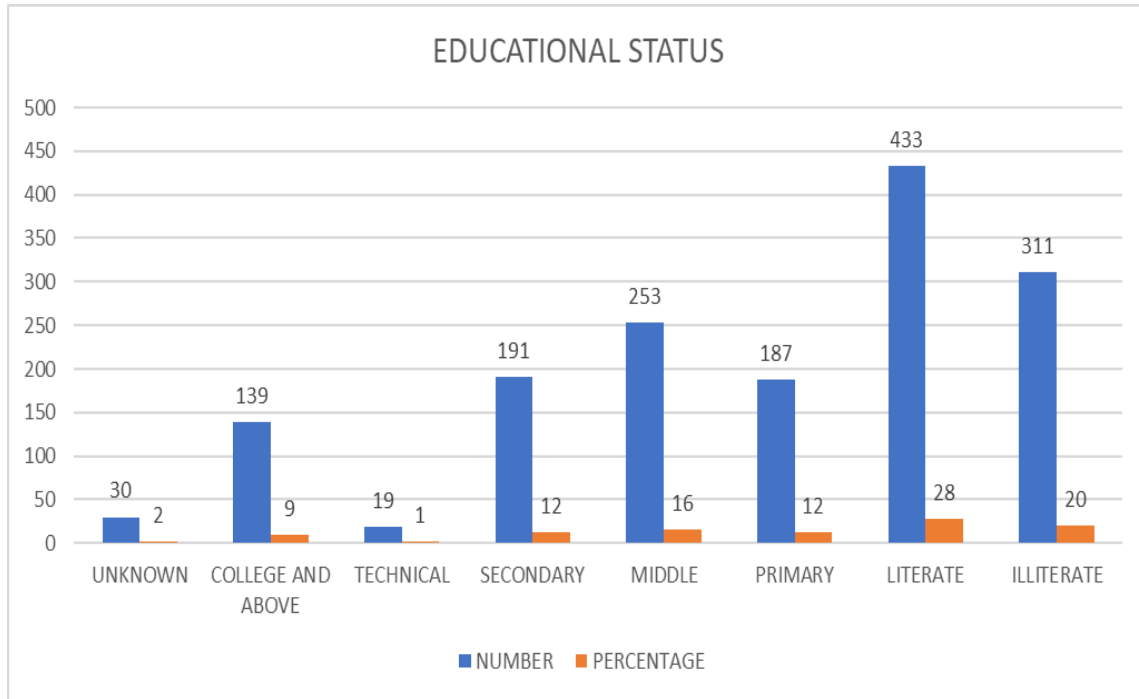


Figure 2: Educational Status

Out of the 1431 linearity case recorded, 731 patients presented with cancer in the right breast while 684 patients presented in the left breast.

16 patients had bilateral breast cancer (table 5). NOS was one of the most common histology found in 71% of breast cancer patients (fig3). The upper

outer quadrant of the breast was the most common affected site (34%) (fig4). Most of the patients were in stage II (41%) followed by stage III (36%) and stage IV (15%) (Fig5). Metastasis was recorded in 169 patients of which Bony metastasis was commonest (47%) followed by lung metastasis (16%) (Table 6).

Table 5: Laterality, Total 1431 Cases Linearity Was Recorded

Laterality	Number	Percentage
Right	731	51%
Left	684	48%
Bilateral	16	1%

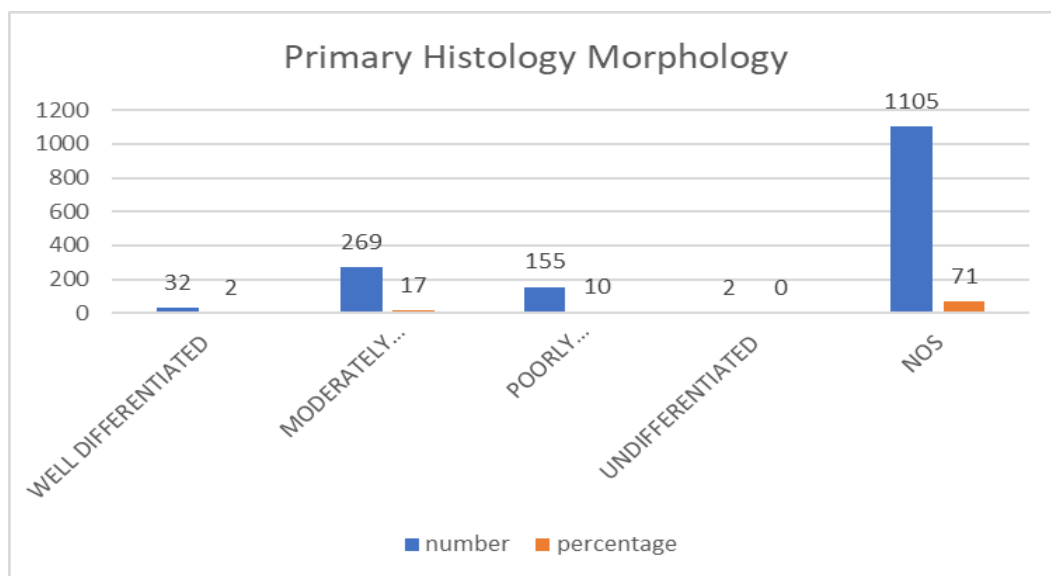


Figure 3: Primary Histology-Morphology

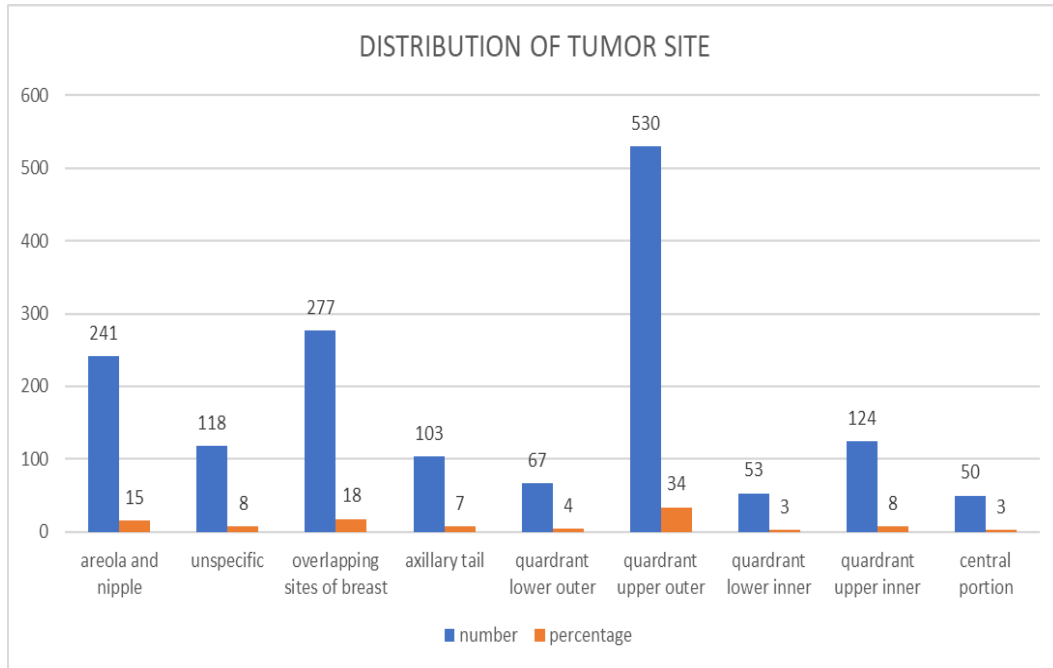


Figure 4: Distribution of tumor site

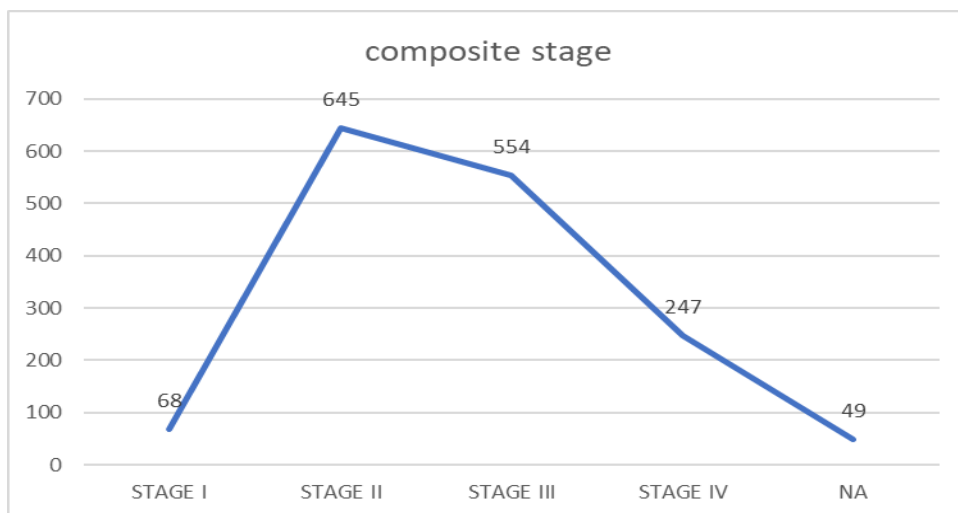


Figure 5a: Composite stage, NA (not applicable)

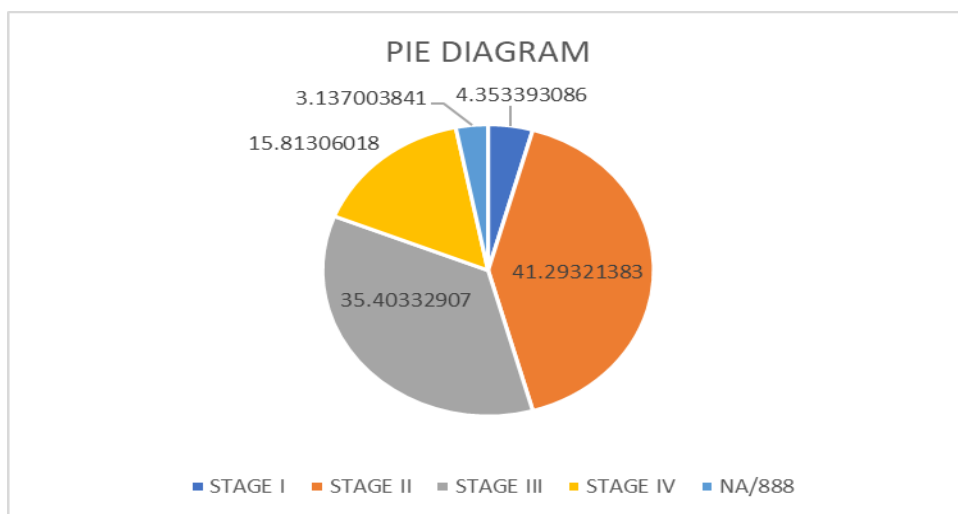


Figure 5b: Composite stage in pie diagram

**Table 6: Secondary sites of tumor**

Secondary Site Of Tumors	Number	Percentage
Liver	18	10%
Lung	27	16%
Bone	81	47%
Skin	1	1%
Ovary	1	
Brain	15	9%
Lymph Node	11	6%
Heart	1	1%
Thorax	1	
Other Breast	17	10%

## Discussion

This retrospective analysis was carried out to understand the epidemiology of breast cancer at a tertiary cancer care hospital in Assam.

A total of 1,563 patients with confirmed breast cancer were included in the study. The age at diagnosis varied between 16 and 84 years. Ahmad BM et al (2019) [3] reported a similar age range of 16 to 80 years. In our study, nearly half of the female patients were diagnosed before the age of 50. This stands in clear contrast to Western populations, where only about 23% of breast cancer cases are seen in women below 50. Olatunji et al (2019) [4] and Hirko KA et al [5] reported a mean age of  $46.8 \pm 12.2$  years, with the largest share of patients (23%) falling between 50 and 59 years. Our findings differ here, as 21% of our female patients were below 40 years, and the biggest group 34% was in the 40 to 49 age range. One likely reason for this younger pattern in India is that the country has a comparatively younger population overall, which naturally raises the share of breast cancer cases among younger women. In Western countries, on the other hand, the disease is more common in postmenopausal women, mainly because their average population age is higher. A diagnosis at a younger age can deeply affect both the patient and her family. It can lower quality of life, take a toll on emotional health, and disrupt long-term career growth and financial security. Many young women who receive this diagnosis have either not started or not finished building their families, and treatments such as chemotherapy and radiation may harm fertility.

Of the 1,563 patients, 34 were male and 1,529 were female, giving a male-to-female ratio of 1:45, which agrees with several earlier studies. Females made up 97.83% of the study group and males 2.17%. Marcelo Antonini et al (2024) [6] reported 94.2% female and 1.7% male breast cancer cases in their work. Pawar SS et al (2021) [7], at the State Cancer Institute in Patna, Bihar, found a male share of 1.1%, which is lower than ours, while Shah et al [8] from Kashmir reported a higher figure of 4.1%.

In our study, the age of male patients ranged from 32 to 71 years, and most were above 45.

Twenty-one men fell in the 50–59 age group and nine in the 60–69 group. This shows that breast cancer in men tends to appear later in life, with the average age at diagnosis being higher. Though male breast cancer is uncommon, Anderson et al [9] noted a small rise in its incidence, from 1.0 case per 100,000 men in 1975–1979 to 1.3 cases per 100,000 men in 2010–2014.

Among all patients, 1,182 (76%) came from rural areas and 381 (24%) from urban areas, pointing to a higher rural-to-urban ratio. Most patients had a rural background, and this difference was statistically significant. These results match the studies by Sandu et al [10] and Mohite RV et al [11], who reported that more than 65% of their breast cancer patients were from rural areas. Our hospital mainly caters to a largely rural population, which may explain why rural patients dominate our data. It is also worth noting that many patients live in urban areas temporarily for work but give their permanent rural address during hospital registration.

In terms of religion, 1,261 (81%) of the study population were Hindus, followed by Muslims 264 (16.9%), Christians 33 (2.1%), and others 5 (0.3%). These findings are close to those of Shah A et al (2021) [8] and Agarwal Kapil H et al [12], who reported 86.17% Hindus, 12% Muslims, 3% Christians, and 2% others. Most patients were married (91%), while 5% were unmarried and 4% were widows, which is in line with Agarwal Kapil H et al [12]. For assessing educational status, patients who could recognize letters and sign their names were considered literate. In our study, 80% of patients were literate and 20% were illiterate. This is similar to Mohite RV et al [11], who reported 11.62% illiterate patients. In contrast Shah A et al (2021) [8] found a higher illiteracy rate of 47.37%.

All breast cancer patients were confirmed microscopically through histology and cytology of the primary tumor. Among the 1,563 patients,

invasive carcinoma of no special type (NOS) was the leading histological type, seen in 1105 cases (71%). This is in keeping with a hospital-based study from North India by Mahajan S et al. 2023 (77.78%) [13].

The stage at diagnosis is an important prognostic factor in breast cancer. In Western countries such as Canada, Denmark, Norway, Sweden, and the United Kingdom, about 30.1% to 45.2% of patients are diagnosed at stage I, 39.0% to 47.7% at stage II, 3.5% to 15.3% at stage III, and 2.9% to 6.9% at stage IV. Among women with a TNM stage, the share with stage I disease was 30.1% in Denmark, compared with 42–45% in the other countries. The share with stage III or IV disease ranged from 8% in Sweden to 22% in Denmark (Walter S et al) [14]. Rafael Cardoso et al [15] studied breast cancer patients in 21 European countries from 1978 to 2019 and found the largest rise in incidence to be in situ and stage I disease.

In contrast, our study population showed a higher proportion of stage II and stage III cases, followed by stage IV and stage I. This difference may be explained by the regular population-based mammography screening carried out in Western countries. In India, by comparison, breast cancer screening is not yet properly organized and detection is mostly symptom-based, so Indian patients tend to report late. Western countries also have greater awareness of breast self-examination, and people seek care early for small changes. In India, however, lack of awareness, fear, stigma, denial, and ignored symptoms often delay the first consultation.

In our cohort, 41% of cases were diagnosed at stage II, followed by 35% at stage III, 15% at stage IV, and 4.35% at stage I. These findings agree with those of Bhat Manzoor Ahmed et al. [3], where 49% of patients presented at stage II, 25% at stage III, and 11% at stage IV. Our results, however, differ from those of Mohite RV et al. [11] (54.16% stage IV) and Upadhyay et al [16] (48.03% stage III), who reported stage III as the most common stage at presentation, followed by stage II and stage IV. This shift towards earlier-stage diagnosis may suggest a gradual improvement in early detection and access to healthcare. Greater awareness of breast cancer symptoms, possibly driven by national programs such as the National Health Mission, may have encouraged women to seek help sooner.

The expansion of cancer care infrastructure, including the setting up of several cancer hospitals in states like Assam under initiatives supported by the Assam Cancer Care Foundation and the Pradhan Mantri Swasthya Suraksha Yojana, has likely improved access to diagnostic and treatment facilities.

Financial support schemes such as Ayushman Bharat Pradhan Mantri Jan Arogya Yojana may have further lowered economic barriers, allowing patients to seek care at earlier stages of disease. Similar trends towards earlier-stage presentation have been reported in recent Indian literature (Mehrotra et al., 2022) [17].

This observation should still be read with caution, since differences in study settings, population characteristics, and referral patterns may also affect stage distribution. Larger, population-based studies are needed to confirm whether this reflects a lasting epidemiological shift.

The data show that most patients presented with a lump in the upper outer quadrant of the breast. Our findings match those of Sandhu et al (2010) [10], who found the upper outer quadrant involved in 47.75% of cases.

In the present study, the right breast was involved in 731 cases (51%), while the left breast was affected in 684 cases (48%). These findings are in line with those of Bhat Manzoor Ahmad et al. [3], who reported right-sided breast cancer in 53% of patients and left-sided in 47%. Our results differ slightly from the study by Reddy VA (2023) [18], which reported a higher rate of left-sided breast cancer (38.98%) than right-sided (35.75%).

In addition, bilateral breast cancer was found in 16 cases (1%) in our cohort, showing a low rate of bilateral involvement that is similar to the data of Adeyemi et al 2018 [19], where the reported incidence is around 1.2%.

In our study, bone was the most common site of distant metastasis at 47%, followed by the lungs at 16%. These findings agree with those of Upadhyay et al. [16], who reported bone as the most frequently affected site (41.25%). This most likely happens because of hematogenous spread through the vertebral venous plexus—a rich network of connected veins in the skull, neck, ribs, shoulder girdle, and vertebral column that allows backward blood flow due to the absence of valves.

#### Limitations:

The data regarding breastfeeding, contraceptive use, date of menarche and menopause could not be analyzed as they were not recorded in the hospital's medical records department.

#### Conclusion:

This retrospective study highlights the sociodemographic and clinical characteristics of breast cancer patients presenting to a tertiary care hospital. Most patients presented at advanced stages, emphasizing the need for increased awareness, early detection programs, timely

diagnosis, and improved access to cancer care services.

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