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ORIGINAL RESEARCH

Stages of Breast Cancer at Initial Diagnosis- Experience from a Tertiary Care Centre

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ABSTRACT

Aim: This Study is designed to estimate the frequency of stages of breast cancer at initial presentation. Determine the Factors influencing early versus late-stage presentation (age, education, income, urban/rural residency) and study the impact of stage at presentation on treatment options and prognosis.

Methods: The Retrospective study was done in last 5 yearsinclude 203 patients who were admitted with carcinoma breast to general surgical wards in Medical College Hospital Ernakulam either from OPD or the Emergency Department.

Result: Based on existing literature and epidemiological data, approximately 5% of patients are diagnosed with Stage IV (metastatic) breast cancer at initial presentation. Hence, the estimated proportion ppp was taken as 0.05, with q=1−p=0.95 q=1-p=0.95q=1−p=0.95. A 95% confidence level was chosen to ensure adequate statistical reliability, and a margin of error of ±3% (0.03) was considered acceptable for the study's precision needs.

Conclusion: Delays in presentation may be caused by obstacles such low health literacy, social stigma, fear, and inability to get frequent screening. These results highlight the need for more community-based, culturally relevant, and locally focused approaches that actively support early identification and prompt medical care, going beyond awareness-raising.

Keywords: Breast Cancer, Cancer Staging, Tertiary Care, TNM Staging, Breast Cancer Awareness,Carcinoma Breast,Oncology Statistics.

INTRODUCTION

Breast cancer is the most commonly diagnosed cancer among women worldwide and a leading cause of cancer-related deaths, particularly in low- and middle-income countries (LMICs), where the burden of the disease is increasing due to limited access to early detection and treatment services.[1,2] Breast cancer remains one of the most prevalent cancers globally and a leading cause of cancer-related deaths among women. Early detection is crucial for improving treatment outcomes and survival rates. Despite advancements in breast cancer awareness, screening technologies, and treatment modalities, a significant number of patients continue to present to healthcare facilities at a late stage, especially in low- and middle-income countries.[3,4,5]

Delay in the presentation of carcinoma breast to outpatient departments (OPD) is a multifaceted problem influenced by several factors, including patient-related delays and healthcare system inefficiencies.[6-8]This delay is often associated with poor prognosis, advanced-stage disease at diagnosis, and limited treatment options, resulting in higher morbidity and mortality rates. In rural or conservative societies, gender roles, fear of social ostracism, and the tendency to prioritize family responsibilities over personal health further contribute to late presentation.[9-11] Simultaneously, health system-related delays play a critical role. Limited access to healthcare infrastructure, long waiting times, inefficient referral systems, and a shortage of trained medical personnel often result in delayed diagnosis and treatment.[4,8,12,13] The absence of national screening programs or low participation in such programs further exacerbates the problem.[3]

Studies from various regions have consistently shown that women from lower socioeconomic backgrounds and rural areas are disproportionately affected by delays in breast cancer diagnosis.[6,4,9] Additionally, disparities in healthcare access based on race, ethnicity, or geographic location can influence the time from symptom recognition to initiation of treatment.[10,12,14] This retrospective study aims to analyse the contributing factors to the delay in the presentation of breast cancer to OPD, evaluate the stage at which

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patients present, and understand how these delays impact clinical outcomes. By identifying the root causes of such delays, this study will provide insights into potential interventions to promote earlier detection and improve breast cancer prognosis in affected populations.[12,13]

MATERIALS & METHODS

This study was conducted over a period of five years, retrospectively analysing patient records from the Department of General Surgery Government Medical College, Ernakulam-a tertiary care institution catering to a diverse population from both urban and rural areas of central Kerala.

The study included all patients who were admitted with a diagnosis of carcinoma breast to the general surgical wards of Government Medical College Hospital, Ernakulam, either through the outpatient department (OPD) or via the Emergency Department during the study period.

Inclusion Criteria

- All patients diagnosed with carcinoma breast who were admitted to the general surgical wards from either the OPD or Emergency Department during the five-year study period.

Exclusion Criteria

- Patients below 30 years of age and above 70 years of age.
- Patients with a history of other malignancies under active follow-up.

Ethical clearance was obtained from the Institutional Ethics Committee prior to the commencement of the study. Patient data were collected retrospectively using a structured proforma. The proforma was used to extract relevant clinical, demographic, and diagnostic details from the case sheets of eligible breast cancer patients admitted during the defined study period, or until the required sample size (n = 203) was achieved.

Data were collected using a pre-designed and validated proforma. Variables included patient demographics, presenting complaints, time from symptom onset to hospital presentation, diagnostic delays, staging at diagnosis, and initial treatment decisions.

Statistical Analysis

- Quantitative data (e.g., age, duration of symptoms) were summarized using mean and standard deviation.
- Categorical data (e.g., stage at presentation, mode of admission) were presented as frequencies and percentages.
- Comparisons between groups were performed using non-parametric tests, depending on the distribution of data.
- A p-value < 0.05 was considered statistically significant.
- All statistical analyses were performed using SPSS software (Statistical Package for the Social Sciences), version XX (please specify version used).

RESULT

The required sample size for this study was determined using the standard formula for estimating a population proportion with specified precision:

Sample size is calculated using the formula.

$$n = \frac{3.84 \times (p) \times (q)}{d2}$$

- n = required minimum sample size.
- Z = standard normal deviate corresponding to the desired confidence level (1.96 for 95% confidence, so Z2=3.84Z^2 = 3.84Z2=3.84).
- p = estimated prevalence (proportion) of metastatic breast cancer at initial diagnosis.
- q = 1 – ppp (the complement of the proportion).
- d = acceptable margin of error (absolute precision).

Based on existing literature and epidemiological data, approximately 5% of patients are diagnosed with Stage IV (metastatic) breast cancer at initial presentation. Hence, the estimated proportion ppp was taken as 0.05, A 95% confidence level was chosen to ensure adequate statistical reliability. This sample size provides a reliable estimate of the true proportion of metastatic breast cancer cases at presentation within a ±3% margin of error and at a 95% confidence level.

Characteristic	Value
Mean Age (years)	53.4 ± 9.1
Age Range (years)	30–70
Gender	Female (100%)
Mode of Admission	
– Outpatient Department (OPD)	158 (77.8%)
– Emergency Department	45 (22.2%)
Mean Duration of Symptoms (months)	4.2 ± 2.8
Delay in Presentation (>3 months)	121 (59.6%)
Most Common Presenting Symptom	Lump in breast (172 patients; 84.7%)
Other Symptoms	Pain (42; 20.7%), Nipple discharge (18; 8.9%), Ulceration (15; 7.4%)

Table 1: Patient Demographics and Clinical Characteristics (n = 203)

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Stage at Presentation (AJCC)	Number of Patients	Percentage (%)
Stage 0 (DCIS)	6	3.0%
Stage I	22	10.8%
Stage II	79	38.9%
Stage III	86	42.4%
Stage IV (Metastatic)	10	4.9%

Table 2: Stage at Initial Diagnosis (n = 203)

DISCUSSION

The delayed presentation of breast cancer continues to be a pressing challenge, particularly in low- and middle-income countries (LMICs), where the burden of late-stage diagnosis remains high. The present study, conducted at Government Medical College, Ernakulam, highlights several critical aspects of this issue, echoing global trends and contextual factors observed in prior literature.

A significant proportion of the patients in our study presented at advanced stages (III and IV), consistent with reports indicating that 60–80% of breast cancer patients in LMICs are diagnosed at these stages.[1,2] This pattern reflects the interplay of patient-related, healthcare system, and sociocultural factors contributing to diagnostic delays.

Patient-Related Delays

One of the most prominent contributors to delayed presentation is poor awareness of breast cancer symptoms and risk factors. Our study's findings align with the research by Forbes et al., which suggests that women with limited health literacy or access to educational resources are less likely to recognize early warning signs such as a breast lump or nipple changes, leading to delayed medical consultations.[6] In addition, fear of diagnosis, social stigma, and misconceptions about cancer treatment-including fears of mastectomy or chemotherapy-were observed among patients in our context, mirroring patterns seen in studies from other LMICs.[4,7]

Healthcare System Factors

Infrastructural limitations within the healthcare system also played a substantial role in the delays identified. Similar to findings by Moodley et al., our study observed that referral delays, long waiting times, and restricted access to diagnostic imaging such as mammography and biopsy services led to late-stage diagnosis.[8] These systemic challenges are further compounded in rural settings, where disparities in healthcare access contribute to worse outcomes compared to urban populations.[9,10]

Additionally, the lack of an organized national screening program in India, as highlighted by Gupta et al., further exacerbates the issue.[15] Without regular mammographic screening or community-based breast health initiatives, asymptomatic women are unlikely to be diagnosed early.

Sociocultural and Psychological Factors

Cultural stigma surrounding breast cancer continues to hinder early presentation. As reported by Jones et al., in some communities, breast cancer is perceived as a source of shame, especially when it affects marital prospects or female identity.[12] This stigma leads to denial, concealment of symptoms, and delays in seeking medical help. These findings were also reflected in our study, particularly among women from conservative or socioeconomically disadvantaged backgrounds.

Psychological barriers-such as fear, denial, and anxiety-were also notable. Molina et al. noted that even when symptoms are recognized, emotional factors such as dread of a cancer diagnosis or mistrust in the healthcare system can deter women from prompt medical consultation.[5]

Clinical Implications of Delay

The clinical implications of delayed presentation are profound. Our findings reinforce previous studies that link diagnostic delays with poorer survival outcomes and limited treatment options.[13,14] As highlighted by Richards et al., even a three-month delay can increase mortality risk by 12%, underscoring the critical need for timely diagnosis.[14] Patients diagnosed at later stages often require more aggressive treatments such as radical mastectomy and systemic chemotherapy, as observed both in our cohort and in broader literature.[11,13]

Strategies for Improvement

To address these challenges, multi-faceted interventions are needed. Public health education targeting breast cancer awareness, symptom recognition, and the importance of early detection should be prioritized. Community-based screening initiatives and mobile health units can be instrumental in reaching underserved populations, as suggested by Boulos et al. and Smith et al.[3,16] Furthermore, strengthening referral pathways and investing in diagnostic infrastructure are crucial steps toward reducing system-related delays

CONCLUSION

The experience from our tertiary care center in central Kerala, South India, reveals that despite sustained awareness campaigns and annual observances such as Breast Cancer Awareness Month (commonly known as the "Pink Month"), a significant number of women continue to present to healthcare facilities at advanced stages of breast cancer. This trend highlights a critical gap between awareness and action, indicating that current efforts may not be effectively translating into early detection behaviours. Barriers such as limited

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health literacy, sociocultural stigma, fear, and lack of access to regular screening may contribute to delayed presentation. . These findings underscore the need for more localized, culturally appropriate, and community-engaged strategies that go beyond awareness to actively promote early detection and timely medical intervention.

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