



VARIOUS BARRIERS IN DELAYED DIAGNOSIS AND TREATMENT OF CARCINOMA BREAST IN RURAL POPULATION

Oncology/Radiotherapy

Mandloi V.

Jain V.

Sharma H.

Dongargaonkar P.

Bonam J.

ABSTRACT

Aim: The aim of this study is to analyse various barriers in delayed diagnosis and treatment of carcinoma breast in rural population. **Material & Method:** A prospective analysis of 55 breast cancer patients was conducted from January 2023 to June 2023 at the Department of Radiation Oncology, Pravara Rural Medical College, Loni, in central Maharashtra. During their initial hospital visit, patients were interviewed using a questionnaire, with data gathered from patient recollections, doctors' records, and hospital files. Details of the patients' first symptoms, diagnosis, and treatment were documented. The total delay in months from the first appearing symptoms to the start of definitive cancer-specific treatment was recorded. **Results:** Median age was 53 years 33-72 range. The majority of the patient were 87.2% came from rural areas with limited healthcare resources. The majority 83.6% belonged to lower socioeconomic status, with 16.4% from middle socioeconomic status. Most of the patient 94.5% had only primary education. Regarding TNM staging at presentation, 3.6% were at stage I, 30.9% at stage II, 36.3% at stage III, 29% at stage IV, indicating a significant proportion (67.2%) presenting at advanced stages. The mean delay from first appearing symptom to end point was 145 days. Total symptom- to-treatment was due to: patient delay 71.4%, histopathological delay 14.2%, and treatment delay 21.4%. **Conclusion:** Patient delay stands out as the primary factor contributing to delayed diagnosis. Implementing breast self-examination, community education programs, and providing socioeconomic support can facilitate earlier hospital presentation, ultimately enhancing good prognosis and better quality of life outcomes.

KEYWORDS

INTRODUCTION

In 2020, breast cancer became the most frequently diagnosed cancer globally, surpassing lung cancer with approximately 2.3 million new cases, comprising 11.7% of all cancer diagnoses [1] According to epidemiological data, the global incidence of breast cancer is expected to be increased 2 million cases by 2023.[2]

In 2016, the estimated number of incident breast cancer in India was 118,000, with 98.1% of the women were affected. The number of prevalent cases that year was 526,000. Between 1990 and 2016, the age-standardized incidence rate of breast cancer in female increased by 39.1% with this upward trend observed across all states in country. [3]

As per GLOBOCON 2020 estimate breast cancer constituted 13.5% of total cancer incidence and 10.6% of cancer related mortality in India, with a cumulative lifetime risk of 2.81%. [4] Current trends indicate that a higher proportion of breast cancer cases in India are occurring at a younger age compared to Western countries. An analysis by the National cancer Registry which revived data from cancer registries between 1988 and 2013, revealed a significant increase in the incidence of breast cancer. All population-based cancer registries across the country have reported a consistent upward trend in breast cancer cases.[5]

Various socio-demographic, clinical, and patient-related factors influence delays in the presentation and diagnosis of breast cancer. These factors include age, rural residence, proximity to medical facilities, educational background, occupation like daily wage workers, frequency of health facility visits, reliance on traditional medicine, ignoring symptoms and presence of other health conditions [6,7,8,9].

Reasons for these delays often stem from milder symptoms that are overlooked, reluctance to disclose health concerns to others, negative perceptions towards healthcare professionals, and apprehensions about treatment [10]. Additionally, seeking initial consultation with non-medical practitioners and using non-medical treatments can contribute to delays in diagnosis and treatment, as observed locally.

Qualitative studies highlight further reasons such as lack of awareness and understanding about cancer, cultural beliefs surrounding cancer and its treatment, financial constraints, emotional distress, communication barriers with healthcare providers, and unmet

information needs [11,12]. These psychosocial and cultural factors significantly impact the decision-making process and contribute to delays in seeking medical care for breast-related issues. The purpose of our study to evaluate multiple components of time delay at different stages experienced by the carcinoma breast patients.

MATERIAL AND METHODS

This prospective observational study was conducted in the Department of Radiation Oncology, Pravara Rural Medical College Loni, located in central Maharashtra. The study included 55 breast cancer patients registered between January 2023 and June 2023.

After taking approval from the ethical committee data was collected. Informed and verbal consent was taken from all the eligible patients. Patients were interviewed during their first visit to the hospital. Data were collected through structured questionnaires and hospital record files. Details of the patients' first symptoms, diagnostic process, and treatment course were documented. The overall delay, measured in months from the onset of the first symptoms to the initiation of definitive cancer-specific treatment, was recorded. This delay was categorized into three segments:

1. Patient Delay: The time from the appearance of the first symptom to the first contact with the healthcare system.
2. Histopathological Delay: The time from the first contact with the healthcare system to histopathological diagnosis.
3. Treatment Delay: The time from histopathological diagnosis to the start of treatment.

Statistical Analysis

The data were entered and analyzed using SPSS version 23. Quantitative variables presented as mean and qualitative variable were presented as percentage.

RESULTS

The study included 55 patients with breast carcinoma, age range from 30 to 72 years, with a median age of 53 years. The majority of the patient were 87.2% came from rural areas with limited healthcare resources, while only 12.7% came from urban backgrounds. Most of the patient were illiterate 52(94.5%), underscoring limited knowledge about breast carcinoma. The majority 83.6% belonged to lower socioeconomic status, with 16.4% from middle socioeconomic status.

The mode of first symptom detection was accidental in 85.4% of

patients, while 14.5% were diagnosed by their primary physician.

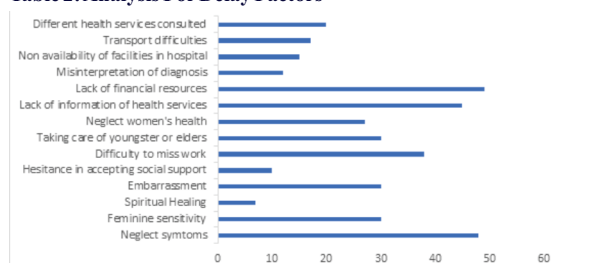
Regarding TNM staging at presentation, 3.6% were at stage I, 30.9% at stage II, 36.3% at stage III, 29% at stage IV, indicating a significant proportion presenting at advanced stages with less patient presented at stage I.

Table 1: Baseline Patient Characteristics

Characteristics	n (%)
Age	
<30	2 (3.6%)
31-40	4 (7.2%)
41-50	16 (29%)
51-60	15 (27.2%)
61-70	8 (14.5%)
>70	10 (18.1%)
Locality	
Rural	48 (87.2%)
Urban	7 (12.7%)
Education	
Illiterate	52 (94.5%)
Primary schooling only	2 (3.6%)
Higher education	1 (1.8%)
TNM staging	
Stage I	2 (3.6%)
Stage II	17 (30.9%)
Stage III	20 (36.3%)
Stage IV	16 (29%)

According to factors associated with treatment delay, almost all of the patient has ignoring symptoms 87.2 %. 89.0% women informed us about the lack of support like financial and social. A total of 81.8% women had lack of awareness or misconception regarding treatment while 27.2% women had treatment delay due to inaccessibility to healthcare. About 49% women neglected by family member because of most of them were daily wages workers and not missed their work. Approximately 21.8% women were misdiagnosed by health care worker due to unavailability by basic health services. About 36.3 % women had treatment delay because of financial support, transportation from rural area and multiple health services were consulted.

Table 2: Analysis For Delay Factors



The mean delay from first symptom to treatment was 145 days, primarily due to patient delay (71.4%), followed by histopathological delay (14.2%) and treatment delay (21.4%).

These findings highlight significant challenges related to late presentation, limited awareness, rural healthcare disparities, and socioeconomic factors influencing breast cancer outcomes in the studied population.

DISCUSSION

Breast cancer is a significant contributor to illness and death among women in India. [13]. In our study, the mean age of the patients at the time of diagnosis was 53 years. A study conducted by Tiwari et al in Central India found that the average age at diagnosis was 51.05 years. [14].

This is attributed to the fact that many patients seek medical attention only at advanced stages. Traditionally, advancing age has been linked to delayed presentation for medical care [15,16]. About 60% patients in the study were above the age of 50 years and this reflects the pattern of rising incidence in elder patients in developing countries.

In our study most of the patient 94.5% were not received primary education underscoring limited knowledge about breast carcinoma.

Illiteracy is a social barrier that has been shown to impact the timeliness of accessing healthcare services. [17]. This is especially relevant in rural populations, where limited access to information further exacerbates delay in seeking healthcare. [18]. Marital status has been found to be associated with delay in seeking healthcare, potentially due to financial dependence on a spouse and the influence of domestic stigma.

Socioeconomic status (SES) has been linked to a negative impact on health-related issues, as demonstrated in various studies [19,20]. The majority 83.6% belonged to lower socioeconomic status, with 16.4% from middle socioeconomic status. SES influences both affordability and access to healthcare, with patients in lower socioeconomic groups often relying on inexpensive alternative medicine, unqualified practitioners, or under-resourced government hospitals. Overall, SES has an inverse relationship with delays in seeking medical care, a trend that was also observed in our study. [21]

Poor awareness and the lack of specialized treatment options in rural areas contribute significantly to delays in seeking care. Additionally, the distance from healthcare centers plays a crucial role in influencing the time it takes for patients to present for treatment. [22] Patients who travel more than 50 miles for treatment often experience negative impacts on treatment compliance, disease outcomes, and overall quality of life. The majority of the patient were 87.2% came from rural areas with limited healthcare resources, while only 12.7% came from urban backgrounds. Majority of our patients come from rural area and showed significant delay. The need for multiple visits exacerbates the burden, making it more challenging for patients to adhere to their treatment plans and maintain their health. [23] In our study about 49% women neglected by family member because of most of them were daily wage workers and could not attend their work.

According to factors associated with treatment delay, almost all of the patient has ignoring symptoms 87.2 %. Awareness of BC and knowledge of screening helps in timely diagnosis and treatment [24]. Although a palpable lump was the most common presenting symptom in over 90% of our patients, many assumed it was harmless and would resolve on its own, especially when it was not accompanied by pain. The belief that cancer is inherently painful leads some patients to reassure themselves that the absence of pain means there's no urgent need for medical care, contributing to delays in seeking treatment. [25]

In our study approximately 21.8% women misdiagnosed by health care worker because of unavailability by basic health services. Approximately 75% of patients initially sought treatment from local practitioners, including both qualified physicians and unqualified individuals. Many of these patients received symptomatic treatment for extended periods without undergoing appropriate investigations for breast cancer, such as imaging or biopsies. Some were subjected to inappropriate and unplanned surgeries. Research indicates that reliance on alternative treatments often leads to delayed presentation, increased morbidity, and poor survival outcome. [26,27].

Approximately, 41% of all patients presented directly at our institution. The mean time from first consult to initiation of treatment at our institution was 8.3 days (range 3–20 days). Approximately 36.3% of women experienced treatment delays due to financial constraints, transportation challenges from rural areas, and consultations with multiple health services. Misdiagnosis at the initial consultation was commonly perceived by patients as the primary barrier to early diagnosis, followed by delays in referral, distance from hospitals, lack of information, financial issues, and logistical difficulties. Although patients were asked to identify a single most significant factor, the reality is that delays are likely multifactorial, involving a combination of these issues. Although necessary precautions were taken to avoid bias, the results may be limited by recall bias, as the study relied on inputs from patients themselves. The uni-centricity of the study is another limitation.

CONCLUSION

The study investigated the various barriers of delayed diagnosis of breast cancer, identifying patient delay as the primary contributing factor. Key risk factors were highlighted, suggesting targeted interventions such as specialized educational programs to enhance knowledge and encourage screening among at-risk women.

Implications

1. Breast Self-Examination (BSE): Encouraging regular BSE among women as a proactive measure for early detection.
2. Community Education: Promoting community-based educational

programs to enhance awareness about breast cancer symptoms, screening methods, and the importance of early hospital presentation.

3. Socioeconomic Support: Providing support systems that address socioeconomic barriers to healthcare access, thereby facilitating earlier diagnosis and improving quality of life outcomes.

REFERENCES

1. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA Cancer J Clin.* 2021;71:209–249.
2. DeSantis C, Siegel R, Bandi P, Jemal A. Breast cancer statistics, 2011. *CA Cancer J Clin.* 2011;61:409–418.
3. India State-Level Disease Burden Initiative Cancer Collaborators. The burden of cancers and their variations across the states of India: the Global Burden of Disease Study 1990–2016. *Lancet Oncol.* 2018;19:1289–1306.
4. International Agency for Research on Cancer. India Source: Globocan 2020. [cited 11 June 2021].
5. National Cancer Registry Programme. Three-year report of the population based Cancer Registries, 2012–2014. Indian Council of Medical Research, Bangalore. 2016.
6. Takiar R, Srivastav A. Time trend in breast and cervix cancer of women in India - (1990–2003) *Asian Pac J Cancer Prev.* 2008;9:777–780.
7. Ozmen V, Boylu S, Ok E, Canturk NZ, Celik V, Kapkac M, et al. Factors affecting breast cancer treatment delay in Turkey: a study from Turkish Federation of Breast Diseases Societies. *Eur J Public Health.* 2015 Feb 1;25(1):9–14. PMID:25096257
8. Yau TK, Choi CW, Ng E, Yeung R, Soong IS, Lee AW. Delayed presentation of symptomatic breast cancers in Hong Kong: experience in a public cancer centre. *Hong Kong Med J.* 2010;16:373–377. PMID:20890002
9. Pace LE, Mpunga T, Hategekimana V, Dusengimana JM, Habineza H, Bigirimana JB, et al. Delays in Breast Cancer Presentation and Diagnosis at Two Rural Cancer Referral Centers in Rwanda. *Oncologist.* 2015 Jul;20(7):780–788. PMID:26032138
10. Bish A, Ramirez A, Burgess C, Hunter M. Understanding why women delay in seeking help for breast cancer symptoms. *J Psychosom Res.* 2005 Apr 1;58(4):321–326. PMID:15992567
11. Sunarsih I, Prabandari YS, Aryandono T, Sastrowijoto S. Exploring possible causes for delays seeking medical treatment among Indonesian women with breast cancer. *Asian J Pharm Clin Res.* 2018;11(6):284–288.
12. Dewi TK, Massar K, Ardi R, Ruiters RAC. Determinants of early breast cancer presentation: a qualitative exploration among female survivors in Indonesia. *Psychol Health.* 2020 Nov 11;1–14. PMID:33136446
13. Bray Freddie, Ferlay Jacques, Soerjomataram Isabelle, Siegel Rebecca L., Torre Lindsey A, Jemal Ahmedin. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians.* 2018;68(6):394–424.
14. Identifying the factors causing delayed presentation of cancer patients to a Government Medical College of Central India. Tiwari V, Yogi V, Ghori HU, et al. *J Clin Diagn Res.* 2015;9:0.
15. Sharma Ketan, Costas Ainhoa, Shulman Lawrence N., Meara John G. A Systematic Review of Barriers to Breast Cancer Care in Developing Countries Resulting in Delayed Patient Presentation. *Journal of Oncology.* 2012;2012:1–8. doi: 10.1155/2012/121873.
16. Barber MD, Jack W, Dixon JM. Diagnostic delay in breast cancer. *Br J Surg.* 2004;91:49–53. doi: 10.1002/bjs.4436.
17. Tripathi N, Kadam YR, Dhobale RV, Gore AD. Barriers for early detection of cancer amongst Indian rural population. *South Asian J Cancer.* 2014;3(2):122–127. doi: 10.4103/2278-330X.130449.
18. Saha A, Chaudhary AN, Bhowmik P, Chatterjee R. Awareness of cervical cancer among female students of premier colleges in Kolkata, India. *Asian Pac J Cancer Prev.* 2010;11:1085–1090.
19. Adler Nancy E., Stewart Judith. Preface to The Biology of Disadvantage: Socioeconomic Status and Health. *Annals of the New York Academy of Sciences.* 2010;1186(1):1–4. doi: 10.1111/j.1749-6632.2009.05385.x.
20. Neal RD, Allgar VL. Sociodemographic factors and delays in the diagnosis of six cancers: analysis of data from the “National Survey of NHS patients: cancer” *Br J Cancer.* 2005;92:1971–1975. doi: 10.1038/sj.bjc.6602623.
21. Rutqvist LE, Bern A. Socioeconomic gradients in clinical stage at presentation and survival among breast cancer patients in the Stockholm area 1977–1997. *Int J Cancer.* 2006;119:1433–1439. doi: 10.1002/ijc.21949.
22. Ambroggi M, Biasini C, del Giovani C. Distance as a barrier to cancer diagnosis and treatment: review of the literature. *Oncologist.* 2015;20:1378–1385. doi: 10.1634/theoncologist.2015-0110
23. Stitzenberg KB, Sigurdson ER, Eggleston BL, Starkey RB, Meropol NJ. Centralization of cancer surgery: implications for patient access to optimal care. *J Clin Oncol.* 2009;27:4671–4678. doi: 10.1200/JCO.2008.20.1715.
24. And clinical factors on diagnostic delay of breast cancer-a cross-sectional study. *Medicine.* 2016;95:38(e4704). doi: 10.1097/MD.0000000000004704.
25. Espina C, McKenzie F, dos Santos-Silva I. Delayed presentation and diagnosis of breast cancer in African women: a systematic review. *Ann Epidemiol.* 2017;27(10):659–671. doi: 10.1016/j.annepidem.2017.09.007.
26. Han E, Johnson N, DelaMelena T, Glissmeyer M, Steinbock K. Alternative therapy used as primary treatment for breast cancer negatively impacts outcomes. *Ann Surg Oncol.* 2011;18(4):912–916. doi: 10.1245/s10434-010-1487-0.
27. Johnson Skyler B, Park Henry S, Gross Cary P, Yu James B. Use of Alternative Medicine for Cancer and Its Impact on Survival. *JNCI: Journal of the National Cancer Institute.* 2017;110(1):121–124. doi: 10.1093/jnci/djx145.