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ORIGINAL ARTICLE

EARLY DETECTION OF BREAST CANCER THROUGH NURSE-LED CLINICAL BREAST EXAMINATION IN PRIMARY HEALTH CARE: A CASE STUDY FROM POONAMALLEE, TAMIL NADU, 2025.

Pradeepaa B [(1)], Nandhini Selvanesan [(1)], Ramakrishnan T S [(1)], Prabakaran J [(1)]

(1) Directorate of Public Health and Preventive Medicine

ABSTRACT

INTRODUCTION : Breast cancer is the most common cancer among women in India and a leading cause of cancer-related mortality, largely due to late-stage diagnosis. Strengthening early detection at the primary care level is critical for improving outcomes and reducing inequities. This case study describes the early detection of breast cancer through nurse-led Clinical Breast Examination (CBE) at a Primary Health Centre (PHC) in Poonamallee, Tamil Nadu, in 2025. A 55-year-old woman attending the PHC for routine follow-up of hypertension and diabetes underwent opportunistic CBE by a staff nurse, which revealed a suspicious axillary lymph node. Prompt referral and further diagnostic evaluation confirmed invasive breast carcinoma, despite initial benign imaging findings. The patient underwent definitive treatment and has completed therapy successfully. This case highlights the strength of the primary health care system in delivering comprehensive, people-centred care, the importance of integrating cancer screening into routine services, empowering nurses, and ensuring effective referral linkages. Strengthening such primary care–based interventions can significantly contribute to early cancer detection and improved survival in resource-constrained settings.

INTRODUCTION

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BACKGROUND

Breast cancer is the most common malignancy among women worldwide, with an estimated 2.3 million new cases and 670,000 deaths reported in 2022.[1] While it can occur at any age after puberty, its incidence increases with advancing age. Global patterns reveal marked inequities: in very high Human Development Index (HDI) countries, approximately 1 in 12 women will develop breast cancer and 1 in 71 will die from the disease, whereas in low-HDI countries, only 1 in 27 women are diagnosed but 1 in 48 die, reflecting limited access to early detection and timely treatment.[1,2] In India, breast cancer is the leading cancer among women, accounting for approximately 27% of all female cancers.[3] Although advances in diagnostics and treatment have improved survival in high-income settings, late presentation remains a major challenge in low- and middle-income countries. In the Indian context, sociocultural barriers, limited awareness, and inadequate access to screening services frequently result in diagnosis at advanced stages.[3,4]

Clinical Breast Examination (CBE) is a cost-

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Corresponding Author: Nandhini Selvanesan
e-mail : nandhinidselvanesan@gmail.com

effective and feasible screening tool recommended for early detection in resource-limited settings.[5] The Government of Tamil Nadu has strengthened primary care services through comprehensive care delivery at Primary Health Centres (PHCs), with an emphasis on preventive and promotive health services.[6] PHCs serve as the first point of contact for the community and provide an ideal platform for opportunistic screening, continuity of care, and early identification of non-communicable diseases, including cancers.[6,7]

Tamil Nadu's Organized Cancer Screening program(OCS), focuses on early detection of breast, cervical, and oral cancers for individuals over 30, expanding existing NPCDCS efforts, integrating with Makkalai Thedi Maruthuvam using personal invitations and community outreach for greater coverage and awareness.

This case study, conducted at the Primary Health Centre (PHC), Poonamallee, Tamil Nadu, illustrates how routine Clinical Breast Examination at the primary care level enabled early clinical suspicion, timely referral, and life-saving treatment in a woman from a socio-economically disadvantaged background, reinforcing the critical role of strong primary health care systems in cancer control.[5-7]

CASE DESCRIPTION

A 55-year-old woman from a lower socio-economic background presented to the PHC, Poonamallee, for routine follow-up of hypertension and type 2 diabetes mellitus on October 21, 2025. She had no breast-related complaints. As part of integrated primary care services, staff nurse performed a Clinical Breast Examination. Examination revealed a firm, immovable axillary lymph node. Recognizing the abnormal finding, the nurse promptly informed the Medical Officer, and the patient was referred to a tertiary care facility for further evaluation on the same day. Patient reached the tertiary care centre 2 days later. At the tertiary care centre, mammography suggested a BIRADS-2 category (likely benign) on November 2nd 2025. However, given the strong clinical suspicion, further evaluation was pursued. Fine Needle Aspiration Cytology (FNAC) and histopathological biopsy confirmed Invasive Breast Carcinoma on November 17th 2025. The patient subsequently underwent mastectomy, followed by 12 cycles of chemotherapy and adjuvant radiotherapy. She has completed treatment successfully and is currently in good health under regular follow-up.

The patient underwent mastectomy followed by chemotherapy and adjuvant radiotherapy. She completed treatment successfully and remains under regular follow-up with good clinical outcomes.

DISCUSSION

This case demonstrates the effectiveness of cancer screening using Clinical Breast Examination (CBE) integrated within routine primary care services. The nurse-led Clinical Breast Examination (CBE) enabled early clinical suspicion in an otherwise asymptomatic woman who may have presented at an advanced stage in the absence of such screening. The Primary Health Centre (PHC) functioned as a critical entry point into the health system, facilitating early detection, timely referral, and continuity of care. This highlights the importance of strong primary care in ensuring equitable access to cancer services for women from socio-economically disadvantaged backgrounds.

The findings of this case are consistent with evidence from previous studies demonstrating the effectiveness of CBE conducted at the primary care level in facilitating early detection of breast cancer, particularly in low- and middle-income countries. Multiple Indian and international studies have shown that CBE performed by trained nurses or community health workers contribute to earlier-stage diagnosis and reduced delays in care, especially among populations with limited access to diagnostic imaging.[3-6]

Randomized controlled trials and programmatic evaluations from India have reported that CBE-based screening leads to a shift towards earlier stages at diagnosis and improved survival outcomes when compared with usual care.[3-5] Studies from Mumbai and Trivandrum have further demonstrated that trained non-physician health workers can reliably identify clinically significant breast abnormalities, supporting the feasibility and effectiveness of task-sharing within primary health systems.[3-5] The present case aligns with these findings, wherein a trained staff nurse identified a suspicious axillary lymph node during a routine visit in an asymptomatic individual.

Previous literatures have highlighted that sole dependence on imaging for breast cancer detection can lead to missed or delayed diagnoses, particularly in early or atypical presentations.[8,9] In line with findings from diagnostic accuracy studies and clinical audits, this case illustrates that low-risk or benign imaging findings do not exclude malignancy when clinical suspicion remains high.

Proceeding with tissue diagnosis despite a BIRADS-2 mammography result reflects best practices that emphasize the importance of correlating radiological findings with clinical examination.8

Health systems research further supports the role of efficient referral mechanisms between primary and tertiary care in improving cancer outcomes. Evaluations of integrated care

models within public health systems in India have shown that timely referrals from PHCs reduce diagnostic delays and facilitate earlier initiation of treatment, particularly among socio-economically disadvantaged women.[7,10] The seamless referral pathway and continuity of care observed in this case are consistent with these findings and highlight the functional strength of the primary care network.

In Comparison with settings where delayed referrals or fragmented service delivery contribute to advanced-stage presentation, this case demonstrates the advantage of comprehensive primary care models that integrate non-communicable disease management with preventive services such as cancer screening.[6,7] Overall, this case reinforces existing evidence that primary care based, nurse-led CBE is a practical, effective, and equitable strategy for early breast cancer detection in resource-constrained settings.[3-6] It highlights programmatic insight from Tamil Nadu and supports the growing body of literature advocating for the strengthening of primary health care as a central pillar of cancer control strategies in low- and middle-income countries.[1,7]

CONCLUSION

Routine Clinical Breast Examination conducted by trained Staff nurses at the primary care level can play a decisive role in early detection of breast cancer. This case from PHC Poonamallee demonstrates that a strong, responsive primary health care system can serve as the foundation for effective cancer control, enabling early diagnosis, timely referral, and successful treatment. Scaling up such primary care driven models across health facilities can substantially reduce diagnostic delays, address health inequities, and improve breast cancer outcomes in similar settings.

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