

Research Article

Open Access, Volume 4

Impact of the Methodology of Breast Cancer Screening Camps: A Community Based Observational Study

Muralidhar Parthasarathy^{1*}; Deepti Mishra²; Aruna Prabhu²; Sunitha Jayarani³; Gowsika Palanivel⁴

¹General Surgery NB Surgical Oncology Resident, Thangam Cancer Center, Namakkal, India.

²Consultant Surgical Oncologist, Thangam Cancer Center, Namakkal, India.

³DNB General Surgery NB Surgical Oncology Resident, Thangam Cancer Center, Namakkal, India.

⁴General Surgery NB Surgical Oncology Resident, Thangam Cancer Center, Namakkal, India.

Abstract

Breast cancer is a significant health concern globally and early detection remains pivotal for effective treatment. In resource-constrained settings such as India, innovative screening approaches are crucial. This study examines the impact of community-based screening camps versus hospital-based screening within a district-level hospital context, considering accessibility and outreach. A comparative study was conducted at Thangam Hospital, Namakkal to understand the difference between screening and awareness provided during screening camps conducted in local communities versus hospital-based screenings. These camps involve mobile units equipped for clinical examinations, self-breast examination demonstrations and raising awareness of breast cancer. The study revealed that community-based screening camps significantly increased screening coverage, especially in remote areas. The cancer detection rates were comparable between the two methods, highlighting the viability of community-based screening initiatives. Additionally, these camps demonstrated higher patient satisfaction, potentially contributing to increased participation in future screenings. Community-based screening camps have emerged as a promising strategy to enhance breast cancer screening accessibility in district-level health care settings in India while maintaining detection efficacy. These camps offer a more inclusive and people-friendly approach, underscoring the importance of community-centric health care initiatives for effective breast cancer control in resource-limited environments.

Keywords: Breast cancer; Screening methodology.

Abbreviations: LMIC: Low and Middle Income Countries; HIC: High Income Countries.

Manuscript Information: Received: Aug 12, 2024; Accepted: Aug 30, 2024; Published: Sep 06, 2024

Correspondance: Muralidhar Parthasarathy, General Surgery NB Surgical Oncology Resident, 54 Sankaran Road, Trichy Main Road, Namakkal, Tamil Nadu 637001, India. Email: muralidhar3@gmail.com

Citation: Parthasarathy M, Mishra D, Prabhu A, Jayarani S, Palanivel G. Impact of the Methodology of Breast Cancer Screening Camps: A Community Based Observational Study. *J Oncology*. 2024; 4(2): 1144.

Copyright: © Parthasarathy M 2024. Content published in the journal follows creative common attribution license.

Introduction

Breast cancer is the most common malignant neoplasm globally, with an incidence of 2.3 million new cases, representing 11.7% of all cancer cases and it is the fifth leading cause of cancer mortality worldwide [1]. In India, it is the most common cause of cancer in women and the expected increase in breast cancer incidence will be 52.3% by 2040 [2].

In addition to the increasing incidence, a significant number of breast cancer patients in India are detected in an advanced stage compared to the West [3]. Lack of cancer awareness in the community, suboptimal access to quality treatment, cultural barriers and social stigma are some of the main reasons for this. Late diagnosis is directly correlated with increased mortality rates. Also women from low socioeconomic status and regions of low literacy many a times do not seek medical help, when they feel a small painless lump [4].

Breast cancer screening has proven to be an important tool in early cancer diagnosis and in improving public awareness. The commonly used tools for breast cancer screening are mammography, clinical breast examination and self-breast examination. There is no standardized protocol yet for breast cancer screening.

Although screening mammography is a widely practiced method for detecting early breast cancer lesions [5], its use is limited in low-middle income countries such as India because of logistical reasons. In addition, India being a young nation has more than 65 % of its population below 35 years of age, where mammography is not as sensitive [6]. Screening by clinical breast examination with the teaching of self breast examination as an integral component will probably be effective in reducing breast cancer mortality in countries with lesser resources and advanced stage of disease at diagnosis [7]. Innovative screening methods are thus essential to tailor the process to the available resources while still maintaining efficacy.

This study examined whether community-based screening camps improve breast cancer awareness and detection compared with traditional hospital based screening.

Methods and materials

A comparative study was conducted at Thangam Hospital, Namakkal to understand the difference between screening and awareness provided during screening camps conducted in local communities versus hospital-based screenings.

The month of October is celebrated as breast cancer awareness month world-wide. This hospital organizes month-long camp breast cancer awareness and screening camps both in the community and in house. The aim of these camps is to screen as many as women in the month of October. This period was specifically chosen because the free camps could be organized with the help of various social groups, both in the community-based and hospital based setting, thereby eliminating the bias of financial status.

During these screening programs, all women above the age of 20 years were examined. Self-breast examination demonstrations were given and presentations on awareness of breast cancer were conducted. The data of these camps was meticulously documented and included the number of women screened, their de-

mographics, documenting any benign or suspicious findings and further follow-up in terms of early cancer detection rates, patient compliance to self-breast examination.

The main modalities used were self-breast examination, clinical breast examination and screening mammography. Self breast examination methodology taught has been described in the flow-chart with appropriate images (Figures 1 and 2).

Clinical breast examination was performed by trained physicians both during camps and during hospital based screenings.

Women above the age of 40 years and younger women with suspicious findings on clinical breast examination underwent screening mammography with ultrasonography (if needed).

Both types of screening programs were planned, advertised and arranged at the same point of time. Healthy women were encouraged to participate in screening through multimedia campaigns.

Community-based screening

Trained clinicians along with a team reached the community site. Facilities for awareness education, demonstration of self breast examination and clinical examinations arranged with the help of local bodies. After clinical examinations, women with suspicious findings were brought to the hospital to complete an ultrasound/mammogram and undergo further evaluation as required.

Hospital based screening

This was conducted on a walk-in basis, on women who came to the hospital to be screened for breast cancer. These women were educated about breast cancer and underwent a clinical breast examination followed by a self-breast examination demonstration and a screening mammogram, if indicated. Women with suspicious findings were then taken up for further evaluation as required.

To make the program more effective all the screened women were contacted telephonically after a month to enquire and reinforce them to pursue self-breast examination. Details of non-adherence were also noted down.

Results

In the last three years, 4044 women have been screened for breast cancer. Of these, 2959 women were screened during community-based camps and 1085 women screened hospital based.

In 2021, 1150 women were screened, with a nearly equal distribution of hospital based screening and community-based screening. This number increased each year with the conduction of more screening camps. In 2022, 1212 women were screened, of which 856 women were screened through community-based camps. In 2023, 1682 women were screened, of which 1530 women were screened through community-based camps (Figures 3 & 4).

Through these camps, in 2021, 4 new breast cancer cases were diagnosed: 2 from hospital based screening and two from community-based screening. In 2022, a total of 5 new cases were diagnosed, of which 2 were from hospital based screening and 3 from community-based screening. In 2023, 8 new cases were

diagnosed, of which 5 were from community-based screening and 3 from hospital based screening (Figure 5).

As a measure of the effectiveness of breast cancer awareness, adherence to self-breast examination after 1 month of camp was evaluated. In 2021, only 84(7.3% women) adhered to the self-breast examination. This number increased to 226(18.6%) in 2022 and 443(26.3%) in 2023 (Figure 6).

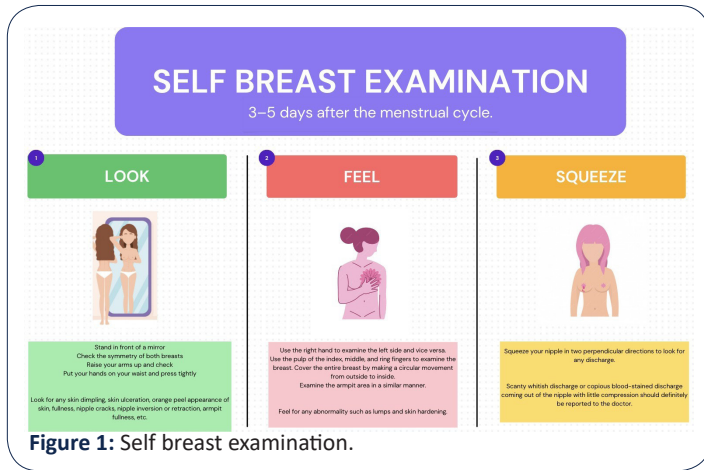


Figure 1: Self breast examination.

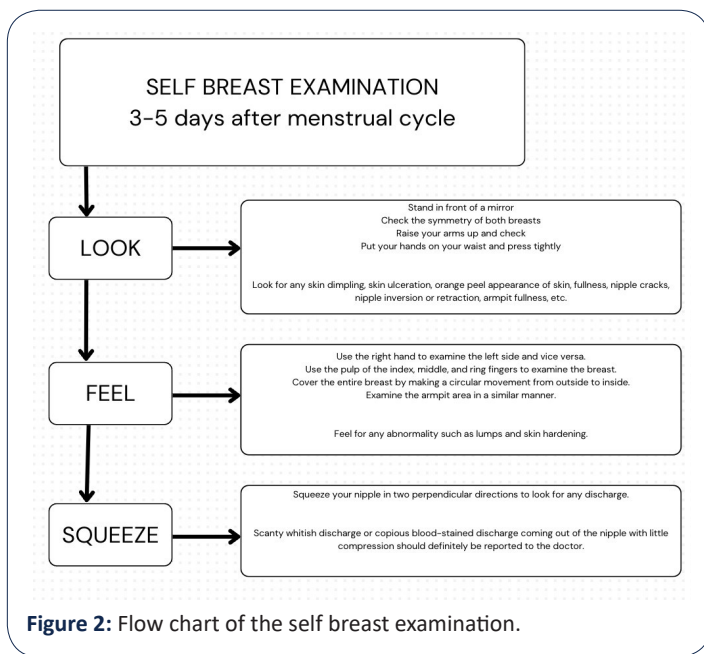


Figure 2: Flow chart of the self breast examination.

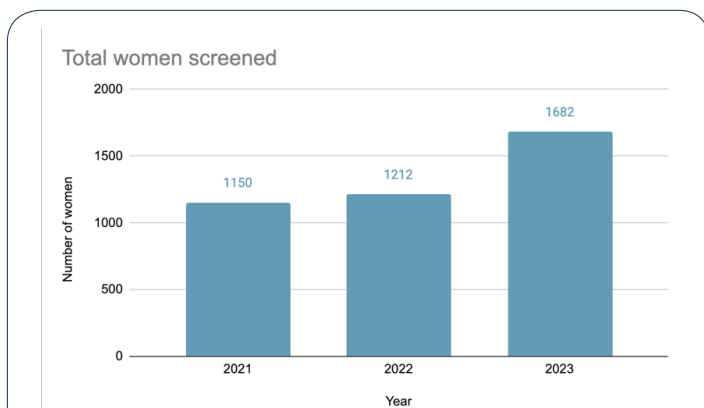


Figure 3: Graph.

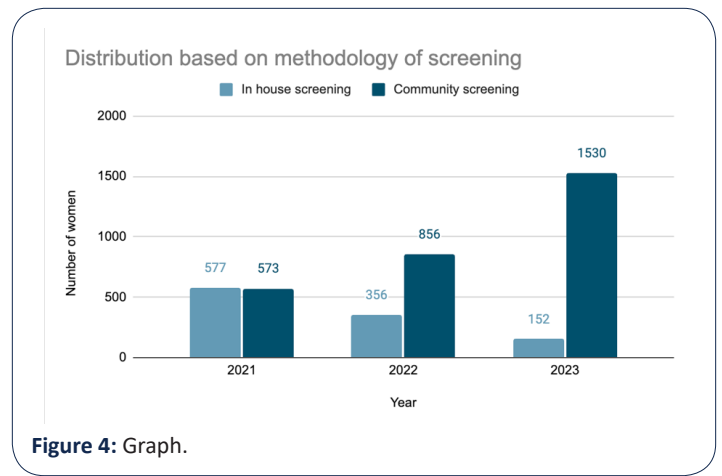


Figure 4: Graph.

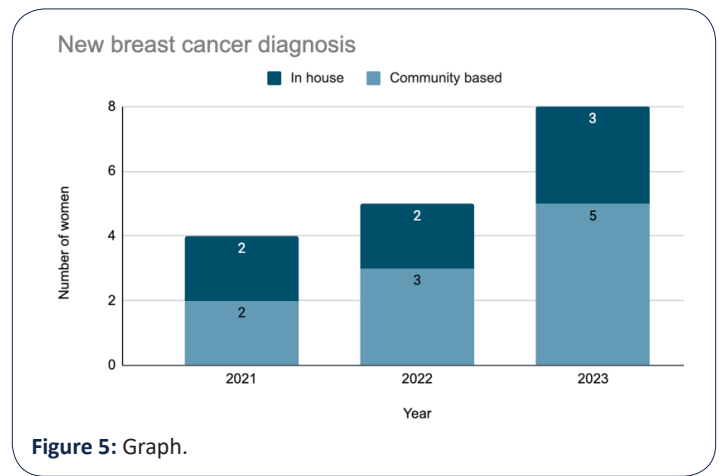


Figure 5: Graph.

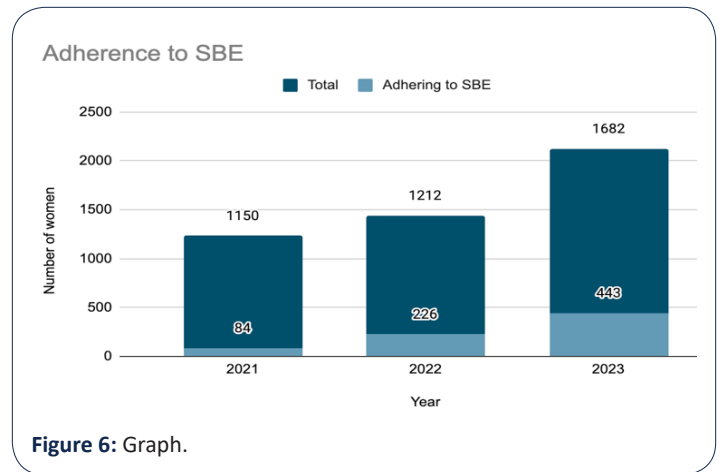


Figure 6: Graph.

Discussion

Breast cancer screening is imperative to increase awareness and identify the disease in its early stages [8]. Most of the Indian women are not aware about causes, symptoms and screening tools for breast cancer. Education and reinforcement may play an important role to spread awareness among healthy women.

In our study, there has been a gradual increase in the total number of women screened each year, from 1150 in 2021 to 1682 in 2023. This was due to the more ladies participating in community-based screening camps conducted by the hospital.

By adopting a community-based screening camp-centric meth-

od, we were able to reach out to more women during the same time interval. The number of women reached through community-based camps increased from 573 in 2021 to 856 in 2022 and 1530 in 2023.

There is no universal screening protocol for breast cancer yet. Although screening mammography is the most effective tool for identifying early breast cancer [9], its widespread use is limited in Low- to Middle-Income Countries (LMIC). Self-breast examination is cost effective, but its effectiveness as a standalone screening tool is yet to be proved [10]. Clinical breast examination has shown promise as a screening tool in LMICs, but it is limited by the quality of the assessment because not all healthcare professionals are trained adequately [11].

Basically well planned strategies helped to increase the number of breast cancer diagnosis proportionally. To increase the awareness for sustainable impact of this activity, well designed educational materials were used. Periodic telephonic calls to reinforce the self-breast examination were used as a novel strategy. Similarly to ensure proper clinical breast examination well trained clinicians have conducted these camps [12]. Women with suspicious findings were then brought to the hospital for further evaluation.

The impact of breast cancer screening was measured by the number of women who adhered to monthly self-breast examinations, which was assessed through telephonic communication with the women at 1 month interval after the camp. There was a steady increase in the number of women adhering to self-breast examinations, from only 7.3% of women screened in 2021 to 25% of women screened in 2023.

Mammography has been widely used for breast cancer screening in High Income Countries (HICs) and has shown effectiveness in reducing breast cancer mortality, mainly in women older than 50 years of age [13]. However, mammography screening is a complex undertaking and not likely to be replicated in LMICs due to several factors. The younger age at diagnosis of breast cancer in our country is again a limiting factor for the use of screening mammography owing to the higher density of breast at this age [14]. Also the practical and financial implications of doing a screening mammography on an already overburdened healthcare system cannot be ignored [15].

The 25-year follow-up results of the Canadian National Breast Screening Study has suggested yearly mammograms over and above clinical examination or usual care does not reduce breast cancer mortality as there are effective adjuvant treatment options available for breast cancer treatment [16].

In India, it is difficult to implement mammogram based screening program due to the high population. There are multiple studies that have observed the impact of clinical and self breast examination. In the present study we tried to seek basic answers on how to make masses aware about breast health [17-19].

Self-breast examination appears to be the least expensive method. It is likely to reduce mortality only if competently performed and backed up with appropriate diagnostic follow up [20].

Major health authorities like the U.S. Preventive Services Task Force, the Canadian Task Force on Preventive Health Care and the

World Health Organization have all indicated that self-breast examination does not downstage or reduce the mortality of breast cancers [21,22]. However, a community-based study in Rajasthan involving 1,57,725 women aged between 35 and 60 years showed that self breast examination education is an effective tool in increasing breast cancer awareness and early detection. In this study, a total of 745 suspected breast cancer cases were identified following self breast examination and on follow up, more than two-thirds of the women were adhering to self breast examination [23].

However, field experience shows that even after detailed health education, women often forget the method and are highly irregular. This can probably be overcome by monthly reminders to the women who have undergone screening. A larger study with longer follow-up can help assess if monthly reminders improve adherence to self-breast examination and if that translates to an increase in the number of early breast cancer diagnoses.

Clinical breast examination is a simple screening tool that shows promise, especially in LMICs. In a cluster randomized control trial conducted by Sankaranarayanan et al. in 2011, in Thiruvananthapuram, there was an increased incidence of early breast cancer in the arm with clinical breast examination compared to the arm without clinical breast examination [24].

Indraneel Mittra et al. conducted a cluster randomized control trial in Mumbai where 75,360 women were subjected to two yearly clinical breast examination and 76,178 women did not undergo clinical breast examination. Not only did the arm with clinical breast examination show increased incidence of early breast cancer, a 20 year follow up also showed that it reduced mortality by 30% in women aged more than 50 years [25,26].

Gyawali et al. in their study in 2016 showed that in LMICs, clinical breast examination screening provides similar benefits to mammography screening and should be the preferred screening modality of choice given the financial burden on the country. Mammography screening in LMICs has not shown to have a significant decrease in mortality rates [27].

The challenge in conducting an effective clinical breast examination in a community-based setting is to ensure that the quality of the examination does not diminish. This will be ensured if the health professionals conducting these camps are well trained and experienced.

This study has its limitations. To assess the efficacy of the breast camps a longer follow-up will help better elucidate adherence to self-breast examination. In addition, this study was conducted during October, a period when screening was free of cost. Its reproducibility during the rest of the year may not be practical given the financial and resource burden it will put on the institute, questioning its sustainability. Implementation of this method requires constant funding and trained staff.

Despite being a tertiary center in a district-level hospital, camp-based screening is more effective than hospital based screening in reaching people. However, the challenges of poor awareness and accessibility to proper assessment remain even though the distance to care has reduced.

Although breast cancer screening is essential, the methodology for its implementation still requires further research. An ideal scenario would be a combined public-private partnership where the resources of the public sector can be combined with the private sector technology and manpower to improve the overall outcome and make breast cancer screening sustainable. This partnership can be extended into the methodology of breast cancer screening, with community-based camps using clinical breast examination and self-breast examination to identify women with suspicious findings who are then brought to the hospital for mammography screening and further evaluation.

Conclusion

Our observational study shows that a community-based screening camp is a promising strategy to enhance breast cancer screening in district-level health care settings in India. Monthly reminder calls in ensuring the continuation of self breast examination has shown potential in ensuring adherence and thereby improving the impact of breast cancer screening. Although larger study with long term follow up is required to know the efficacy of this approach in reducing breast cancer mortality.

Conflicts of interest: Nil.

Funding sources: Nil.

References

1. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin.* 2021; 71(3): 209-49. doi: 10.3322/caac.21660
2. Mathur P, Sathishkumar K, Chaturvedi M, et al. Cancer Statistics, 2020: Report from National Cancer Registry Programme, India. *JCO Glob Oncol.* 2020; 6: 1063-1075. doi:10.1200/GO.20.00122
3. Mehrotra R, Yadav K. Breast cancer in India: Present scenario and the challenges ahead. *World J Clin Oncol.* 2022; 13(3): 209-218. doi: 10.5306/wjco.v13.i3.209.
4. Srinath A, et al. Barriers to cervical cancer and breast cancer screening uptake in low and middle-income countries: a systematic review. *Health policy plan.*
5. Marcon M, Fuchsjäger MH, Clauser P. et al. ESR Essentials: screening for breast cancer - general recommendations by EUSOBI. *Eur Radiol.* 2024. <https://doi.org/10.1007/s00330-024-10740-5>
6. Mishra GA, Pimple SA, Mittra I, Badwe RA. Screening for breast cancer: Cost-effective solutions for low- & middle-income countries. *Indian J Med Res.* 2021; 154(2): 229-236. doi: 10.4103/ijmr.IJMR_2635_20.
7. Miller AB, Baines CJ. The role of clinical breast examination and breast self-examination. *Prev Med.* 2011; 53(3): 118-20. doi: 10.1016/j.ypmed.2011.05.001.
8. Ginsburg O et al Breast cancer early detection: A phased approach to implementation. *Cancer.* 2020; 126 Suppl 10(Suppl 10): 2379-2393. doi: 10.1002/cncr.32887.
9. World Health Organization. WHO position paper on mammography screening. 2020.
10. Klarenbach S, Sims-Jones N, Lewin G, Singh H, Thériault G, et al. Recommendations on screening for breast cancer in women aged

- 40-74 years who are not at increased risk for breast cancer. *Can Med Assoc J.* 2018; 190(49): E1441. doi: 10.1503/cmaj.180463.
11. Lo J. The clinical breast examination: a useful screening tool? *J Patient Cent Res Rev.* 2015; 2(1): 34-37. doi: 10.17294/2330-0698.1049.
12. Huang N, Chen L, He J, Nguyen QD. The Efficacy of Clinical Breast Exams and Breast Self-Exams in Detecting Malignancy or Positive Ultrasound Findings. *Cureus.* 2022; 14(2): e22464. doi: 10.7759/cureus.22464.
13. Lauby-Secretan B, Scoccianti C, Loomis D, Benbrahim-Tallaa L, Bouvard V, et al. Breast-cancer screening-Viewpoint of the IARC Working Group. *N Engl J Med.* 2015; 372: 2353-8.
14. Parmar V. Rising Incidence of Breast Cancer in the Young Fertile Indian Population-a Reality Check. *Indian J Surg Oncol.* 2018; 9(3): 296-299. doi: 10.1007/s13193-018-0800-4.
15. Gutnik LA, Matanje-Mwagomba B, Msosa V, Mzumara S, Khondowe B, et al. Breast Cancer Screening in Low- and Middle-Income Countries: A Perspective From Malawi. *J Glob Oncol.* 2015; 2(1): 4-8. doi: 10.1200/JGO.2015.000430.
16. Miller AB, Wall C, Baines CJ, Sun P, To T, et al. Twenty-five year follow-up for breast cancer incidence and mortality of the Canadian national breast screening study: Randomised screening trial. *BMJ.* 2014; 348.
17. Corbex M, Burton R, Sancho-Garnier H. Breast cancer early detection methods for low and middle income countries, a review of the evidence. *Breast.* 2012; 21(4): 428-34. doi: 10.1016/j.breast.2012.01.002.
18. Nisha B, Murali R. Impact of Health Education Intervention on Breast Cancer Awareness among Rural Women of Tamil Nadu. *Indian J Community Med.* 2020; 45(2): 149-153. doi: 10.4103/ijcm.IJCM_173_19.
19. Pal A, Taneja N, Malhotra N, Shankar R, Chawla B, et al. Knowledge, attitude, and practice towards breast cancer and its screening among women in India: A systematic review. *J Cancer Res Ther.* 2021; 17(6): 1314-1321. doi: 10.4103/jcrt.JCRT_922_20.
20. Baines CJ. Breast self-examination. *Cancer.* 1992; 69(Suppl 7): 1942-6.
21. US Preventive Services Task Force. Screening for breast cancer: U.S. preventive services task force recommendation statement. *Ann Intern Med.* 2009; 151: 716-26, W-236.
22. Baxter FN. Canadian Task Force on Preventive Health Care. Preventive health care, 2001 update: Should women be routinely taught breast self-examination to screen for breast cancer? *CMAJ.* 2001; 164: 1837-46.
23. Sangwan RK, et al. Strengthening breast cancer screening program through health education of women and capacity building of primary healthcare providers. *Front Public Health.* 2023; 11: 1276853. doi: 10.3389/fpubh.2023.1276853.
24. Sankaranarayanan R, Ramadas K, Thara S, Muwonge R, Prabhakar J, et al. Clinical breast examination: Preliminary results from a cluster randomized controlled trial in India. *J Natl Cancer Inst.* 2011; 103: 1476-80.
25. Mittra I, Mishra GA, Singh S, Aranke S, Notani P, et al. A cluster randomized, controlled trial of breast and cervix cancer screening in Mumbai, India: Methodology and interim results after three rounds of screening. *Int J Cancer.* 2010; 126: 976-84.

-
26. Mitra I, Mishra GA, Dikshit RP, Gupta S, Kulkarni VY, et al. Effect of screening by clinical breast examination on breast cancer incidence and mortality after 20 years: prospective, cluster randomised controlled trial in Mumbai. *BMJ*. doi: 10.1136/bmj.n256.
 27. Gyawali B, Shimokata T, Honda K, Tsukuura H, Ando Y. Should low-income countries invest in breast cancer screening? *Cancer Causes Control*. 2016; 27(11): 1341-1345. doi: 10.1007/s10552-016-0812-8.