

Acceptability and Determinants of Opportunistic Screening for Breast Cancer in Indian Women

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Abstract

Background: Screening for breast cancer has been effective in decreasing mortality. Mammography is not readily available in resource-limited countries like India. Annual clinical breast examination has been demonstrated to be as effective as biennial mammography in reducing mortality with much less cost. In absence of an organized systematic screening program opportunity of women visiting the hospital can be used to educate and screen. The current study was designed to assess the acceptability, determinants of acceptability and effectiveness of opportunistic breast cancer screening. **Methods:** A prospective cross-sectional study was conducted at a tertiary care center in central India. Women of age >35 years with no breast complaints were offered to undergo screening for breast cancer by clinical breast examination. Women with non-breast related complaints or accompanying some other patients were included. Abnormal findings on clinical breast examination were followed by ultrasound (<40 years of age) or mammography (>40 years of age). Standard methods of examination were used. The sample size was 382 and the duration of the study was 2 years. **Results:** In the study out of 382 participants 255 (66.74%) accepted the examination and 127 denied. Only 66% of participants consented for screening and a lump was detected in seven (2.7%) women. All seven women with breast lump refused further diagnostic work-up. Acceptance of screening was not significantly affected by religion, educational status, marital status and occupation. **Conclusion:** There was low acceptability to screening, awareness about breast cancer and treatment compliance rates to further management. Acceptability of screening is not affected by socioeconomic or educational status.

Keywords: Breast cancer- clinical breast examination- Opportunistic screening- Breast cancer screening

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Introduction

Breast cancer is the most common cancer among women worldwide and in Indian urban women. Breast cancer incidence is increasing in Asia, Africa and South America due to changes in lifestyle and sociocultural behavior. Mortality from breast cancer is 17% higher in low/medium HDI countries compared to high/very high HDI countries (12.8 and 15 per 100,000, respectively) [1]. Factors like low awareness, younger age and advanced stage of disease at presentation lead to higher mortality in India. Screening by mammography has shown to reduce the mortality from breast cancer [2]. Population based screening mammography at every 2 years for average risk women of age group 50-69 years is recommended by WHO [3]. However, mammography is not easily available in India and its efficacy in younger population is debatable [4]. Screening by mammography is effective in reducing the mortality from breast cancer in age group 50-69 years but there is poor evidence for women aged 40-49 years and there is no benefit for women younger than 40 years [5].

Early detection and treatment are important to improve the survival of breast cancer. The annual clinical breast examination (CBE) has shown to reduce mortality as effectively as biennial mammograms at a significantly lower cost [6]. In a study from rural Malaysia CBE detects more than 50% of breast cancers identified on screening mammography and may assist to increase breast cancer survival rates [7]. American College of Obstetricians and Gynecologists and National Comprehensive Cancer Network recommends breast cancer screening by CBE every 1-3 years aged 25-39 years and annually for women 40 years or older [8]. The ministry of health and family welfare's operational guideline for management of common cancers suggests CBE screening for women between the age of 35-65 years every 5 years [9].

As India does not have a systematic, planned screening program we can take advantage of a women visiting the hospital to inform and screen her for breast cancer. Opportunistic screening is a non-systematic screening done outside of or before the implementation of the national program. There is no intended audience or

invitation sent for opportunistic screening [10]. Besides unavailability of screening programme, sociocultural barrier and fear/stigma of cancer make any screening of breast cancer difficult. Acceptability and compliance with further management in society is necessary for the success of a screening programme. The current study was designed to assess the acceptability, determinants of acceptability and effectiveness of opportunistic breast cancer screening using CBE among Indian women.

Materials and Methods

Study design and population

The study was conducted at the department of General Surgery, AIIMS Bhopal, a tertiary care center in central India over a period of March 2021 to October 2022. The study was a prospective cross-sectional survey. All women of age 35 years or above visiting the hospital for non-breast related complaint or accompanying other patient were offered screening for breast cancer by CBE. Women with breast complaints, history of previous breast surgeries and not willing to take part in the study were excluded. Abnormal findings on CBE were followed by ultrasonography (less than 40 years of age) or mammography (more than 40 years of age). CBE was performed by a surgery resident or consultant. Standard methods of CBE were used uniformly [11]. After getting consent from the patient initially visual inspection was done in sitting position with arms by the side and above the head position. General size, shape, symmetry of breast and nipple areola complex noted. Any abnormal finding over inspection noted. Palpation was done with the arms above/behind the head. Palpation was done with finger pads with slightly cupped hands. Palpation was done in clockwise concentric circle fashion. Nipple areola complex and retro-areolar tissues were palpated separately. Axilla and supraclavicular regions were noted for any lymphadenopathy. Any abnormal finding was recorded on the clock face. and Patients' demography, level of education, occupation, family history and CBE findings were recorded. Institutional ethical clearance was obtained for study.

Statistical analysis

Quantitative data were expressed as median and range, while qualitative variables were as numbers (proportions, %). The differences in qualitative variables between different groups were evaluated by the Chi-Square test or Fisher's exact. Quantitative data were analyzed by paired and unpaired t-test. P value <0.05 was considered significant.

Results

Demography

A total of 382 women participated in the study. The mean age of the participants was 45(SD 9.3) years (Table 1). Mean age at menarche, marriage, first child, and menopause were 14 years, 18 years, 21 years and 43 years respectively. Most of the women were married (98%). The family history of breast cancer was present in

10 participants (2.62%) and 5% had consulted a health care provider previously for breast-related symptoms. About 33% of the total participants had no formal schooling and 66% were homemakers. Sixty-eight percent of the participants visited the hospital for some non-breast related complaints while the rest accompanied some other patient.

Awareness of breast cancer and acceptability for screening

Only 63 (16.49%) participants were aware of breast cancer (Table 2). Majority of participants (95.81%, n=366) were not screened in their lifetime while 16 (4.19%) women performed breast self-examination. About two thirds of participants (66.74%, n=255) agreed for screening by CBE while 34.26% (n=127) participants

Table 1. Socio-demographic Characteristics of Participants

| Characteristic | N=382 (%) |
|--------------------------|--------------|
| Age group (years) | |
| 35-40 | 146 (38.22) |
| 41-45 | 85 (22.25) |
| 46-50 | 57 (14.92) |
| 51-55 | 38 (9.69) |
| 56-60 | 31 (8.11) |
| ≥61 | 25 (6.54) |
| Mean age(SD) | 45.36 (9.31) |
| Religion | |
| Hindu | 365 (95.55) |
| Muslim | 14 (3.66) |
| Christian | 2 (0.5%) |
| Sikh | 1 (0.26%) |
| Marital status | |
| Married | 377 (98.69) |
| Education | |
| Graduate | 43 (11.26) |
| Master and above | 45 (11.78) |
| Illiterate | 127 (33.27) |
| Profession | |
| Homemaker | 254 (66.49) |
| Skilled | 45 (11.78) |
| Semi-skilled | 30 (7.8) |
| Farmer | 18 (4.71) |
| Unskilled | 24 (6.28) |
| Professional | 3 (0.79) |
| Shopkeeper | 2 (0.52) |
| Age at years (mean (SD)) | |
| Menarche | 13.90 (1.5) |
| Marriage | 18.84 (4.52) |
| First child | 21.35 (4.38) |
| Menopause | 46.23 (6.09) |
| Reason to visit hospital | |
| Patient | 263 (68.85) |
| Relative | 119 (31.15) |

Table 2. Awareness of Breast Cancer and Acceptability of Screening

| Characteristic | N(%) |
|----------------------------|-------------|
| Family history | |
| Yes | 10 (2.62) |
| No | 372 (97.38) |
| Previously screened | |
| Yes | 16 (4.19) |
| No | 366 (95.81) |
| Awareness of breast cancer | |
| Yes | 63 (16.49) |
| No | 319 (83.51) |
| Accepted screening by CBE | |
| Yes | 255 (66.74) |
| No | 127 (34.26) |

refused the screening.

Determinants of acceptability of screening

Sixty-three participants were aware of breast cancer

and out of them 36% (n=23) still denied the screening (p-value 0.5) (Table 3). Sixteen participants were previously screened for breast cancer and out of them 4 participants (25%) denied the breast examination. Three (n=10) participants with family history of breast cancer refused the screening even at high risk for breast cancer. Participants in age group 40-45 years were more likely to accept screening (64% vs 21% p=0.03). Religion did not affect the acceptability of screening. Two Christian participants refused screening despite a positive family history of breast cancer. Out of 365 Hindu participants 67.40% (n=246) accepted the examination. There was no statistically significant difference as per marital or educational status. Of the illiterate participants 75 (59.06%) accepted while 52 (40.94%) refused the breast examination. There was no statistically significant difference (p-value 0.6) in accepting the screening according to occupational status of participants. In professional, skilled, semi-skilled and unskilled workers 2 (66.67%), 34(75.56%), 16 (53.33%) and 16 (66.67%) accepted the screening respectively.

Table 3. Determinants of Breast Cancer Screening Acceptability

| Characteristic | N | Denied (n=127) | Accepted (n=255) | p-value |
|---------------------------|----|----------------|------------------|---------|
| Aware about breast cancer | 63 | 23 (36.51%) | 40 (63.49) | 0.5 |
| Previously screened | 16 | 4 (25%) | 12 (75%) | 0.5 |
| Family history | 10 | 3 (30%) | 7 (70%) | >0.9 |
| Age group | | | | |
| 40-45 years | | 21 (24.71%) | 64 (75.29%) | 0.03 |
| 46-50 years | | 20 (35.09%) | 37 (64.91%) | |
| 51-55 years | | 20 (52.63) | 18 (47.37%) | |
| 56-60 | | 13 (41.94%) | 18 (58.06%) | |
| >60 years | | 5 (20%) | 20 (80%) | |
| Religion | | | | |
| Hindu | | 119 (32.60%) | 246 (67.40%) | 0.2 |
| Christian | | 2 (100%) | 0 (0.00%) | |
| Muslim | | 6 (42.86%) | 8 (57.14%) | |
| Sikh | | 0 (0.00%) | 1 (100%) | |
| Marital status | | | | |
| Married | | 124 (32.89%) | 253 (67.11%) | 0.3 |
| Unmarried | | 3 (60%) | 2 (40%) | |
| Educational status | | | | |
| Illiterate | | 52 (40.94%) | 75 (59.06%) | 0.38 |
| Graduate | | 13 (30.23%) | 30 (69.77%) | |
| Masters and above | | 11 (24.44%) | 34 (75.56%) | |
| High school | | 22 (34.48%) | 56 (71.79%) | |
| Intermediate | | 8 (29.63%) | 19 (70.73%) | |
| Middle school | | 22 (28.21%) | 56 (71.79%) | |
| Primary | | 1 (25%) | 3 (75%) | |
| Occupation | | | | |
| Homemaker | | 85 (33.46%) | 169 (66.54%) | |
| Skilled | | 11 (24.44%) | 34 (75.56%) | |
| Unemployed | | 1 (16.67%) | 5 (83.33%) | |

Table 4. CBE Findings and Compliance to Further Treatment

| Characteristic | N (%) |
|-------------------------------------|---------------|
| CBE findings | |
| Lump | 7(2.74%) |
| No Lump | 248 (97.2%) |
| Axillary examination findings | |
| No findings | 255 (100.00%) |
| Compliance to further investigation | |
| Yes | 0 (0.00%) |
| No | 7 (100.00%) |

CBE, clinical breast examination

Clinical Breast examination findings

Out of 255 participants examined, seven participants had breast lump on CBE (Table 4). There was no statistically significant difference between sociodemographic characters between participants with lump and without lump. There were no axillary findings in any of the examined participants. All seven participants who had the lump refused any further follow-up investigation.

Discussion

Primary prevention of breast cancer is less likely to be successful as most of the risk factors are non-modifiable. So early detection and management is the most often used strategy to reduce the mortality from breast cancer. CBE by healthcare provider have shown to reduce mortality at lower cost. Although CBE is less sensitive than mammography still it can detect lesions at an earlier stage. A study concluded that CBE has potential to decrease the breast cancer related mortality half of that conferred by screening mammogram in a resource limited country [12]. In absence of a structured screening programme opportunity of a women visiting the hospital can be used to educate and screen for breast cancer. A Swiss study demonstrated that in absence of systematic screening by mammography high prevalence of opportunistic screening results in better prognosis [10]. Another study reported similar stage at diagnosis for invasive breast cancer and overall survival for breast cancer diagnosed by organized and opportunistic screening. However, the incidence of in situ cancer was more with organized screening [13]. Awareness of breast cancer is poor in India, current study showed only 16.4% of women were aware about breast cancer. A study from Delhi showed 53.4% women were aware about breast cancer [14]. In current study majority of participants were not screened in their lifetime 95.81%, like the report of NFHS 5 data from Madhya Pradesh India only 0.8 % of the urban population and 0.4% of the rural population were ever screened for breast cancer [15]. A cross-sectional study of peripheral workers showed low awareness of breast cancer risk factors [16]. The role of primary physicians in educating the women regarding breast cancer can't be underestimated. A study from China reported 48% of physicians discussing about the benefits and risks of breast cancer with their patients. On average 1-10 asymptomatic non high-risk women patients were

recommended breast cancer screening per months [17].

A study from Philippines assessing outcome of screening by CBE was forced to discontinue after first round due to poor compliance to further follow-up [18]. In the Philippines study 92% participants accepted CBE and a lump was detected in 2.5%. Only 35% of participants accepted further investigations. In an organized screening camp in northern India 50 women were screened for breast cancer by CBE and two had lump. Both women complied to further work-up and found to have benign lesions [19]. In our study 66% of participants consented for CBE and a lump was detected in 2.7%. However, all women with breast lump on CBE refused further diagnostic work-up. Screening by CBE was significantly more acceptable in age group 40-45 years in the current study and other factors like religion, educational status, marital status and occupation did not affect acceptance of screening significantly. Philippines study revealed refusers more likely to be of higher socioeconomic status, nulliparous (16% vs 10%) and more educated (attended college/university 17.7% vs 12.3%). Illiterate women were more likely (18% vs 6.2%) to accept the screening. In our study proportion of women accepting screening was higher (statistically not significant) in educated participants. Fear, embarrassment and aversion to word 'cancer' are often the reasons for refusing the screening despite having easy access to healthcare facilities and a good educational background [20, 21].

For the success of any screening programme, it needs to be acceptable to the population. India is country with diverse socio-cultural behavior any screening programme needs to be tailored for local population. This study showed there was no association between socio-economical and educational levels with the acceptability of breast cancer screening. According to the study, there was low acceptability to screening, awareness about breast cancer, and compliance rates to further management. The current study was limited by being single centered and small sample size. A large multicentric study is needed to assess the acceptability of opportunistic screening by CBE in Indian society and its usefulness.

Author Contribution Statement

Mahesh K Jagtap: Concept, Literature search, Data acquisition, Data analysis, Manuscript preparation. Ajeet Pratap Maurya: Concept, Research, Data analysis, Manuscript editing and review. Bharati Pandya: Manuscript preparation and editing, Data acquisition. Swagata Brahmachari: Manuscript preparation and editing, Data acquisition. Raghvendra Pratap Singh: Literature search, Data analysis

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Approval

It is approved thesis by AIIMS, Bhopal Institutional Human Ethics Committee- Post Graduate Research (IHEC-PGR).

Ethical declaration

AIIMS, Bhopal Institutional Human Ethics Committee-Post Graduate Research (IHEC-PGR) approved the study.

Conflicts of Interest

None.

References

- 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(3):209-49. <https://doi.org/10.3322/caac.21660>
- Nyström L, Rutqvist LE, Wall S, Lindgren A, Lindqvist M, Rydén S, Andersson I, Bjurstam N, Fagerberg G, Frisell J, et al. Breast cancer screening with mammography: overview of Swedish randomised trials. *Lancet.* 1993;341(8851):973-8. [https://doi.org/10.1016/0140-6736\(93\)91067-v](https://doi.org/10.1016/0140-6736(93)91067-v)
- WHO. WHO position paper on mammography screening [Internet]. 2024. Available from: <https://www.who.int/publications/i/item/9789241507936>
- 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. <https://doi.org/10.1016/j.breast.2012.01.002>
- Smith RA. IARC Handbooks of Cancer Prevention, Volume 7: Breast Cancer Screening. *Breast Cancer Res.* 2003;5(4):216-7. <https://doi.org/10.1186/bcr616>
- Okonkwo QL, Draisma G, der Kinderen A, Brown ML, de Koning HJ. Breast cancer screening policies in developing countries: a cost-effectiveness analysis for India. *J Natl Cancer Inst.* 2008;100(18):1290-300. <https://doi.org/10.1093/jnci/djn292>
- Farid ND, Aziz NA, Al-Sadat N, Jamaludin M, Dahlui M. Clinical breast examination as the recommended breast cancer screening modality in a rural community in Malaysia; what are the factors that could enhance its uptake? *PLoS One.* 2014;9(9):e106469. <https://doi.org/10.1371/journal.pone.0106469>
- Committee on Practice Bulletins—Gynecology. Practice Bulletin Number 179: Breast Cancer Risk Assessment and Screening in Average-Risk Women. *Obstet Gynecol.* 2017;130: e1–e16. Available from: <https://doi.org/10.1097/AOG.0000000000002158>
- Ministry of Health and Family Welfare, Government of India. Operational framework: management of common cancers. India; 2016.
- Bulliard JL, Ducros C, Jemelin C, Arzel B, Fioretta G, Levi F. Effectiveness of organised versus opportunistic mammography screening. *Ann Oncol.* 2009;20(7):1199-202. <https://doi.org/10.1093/annonc/mdn770>
- Saslow D, Hannan J, Osuch J, Alciati MH, Baines C, Barton M, et al. Clinical breast examination: practical recommendations for optimizing performance and reporting. *CA Cancer J Clin.* 2004;54(6):327-44. <https://doi.org/10.3322/canjclin.54.6.327>
- Duffy SW, Tabar L, Vitak B, Warwick J. Tumor size and breast cancer detection: what might be the effect of a less sensitive screening tool than mammography? *Breast J.* 2006;12(Suppl 1):S91-5. <https://doi.org/10.1111/j.1075-122X.2006.00207.x>
- Peisl S, Zimmermann S, Camey B, Betticher D, Bouchard C. Comparison between opportunistic and organised breast cancer mammography screening in the Swiss canton of Fribourg. *BMC Cancer.* 2019;19(1):469. <https://doi.org/10.1186/s12885-019-5706-1>
- Dey S, Sharma S, Mishra A, Krishnan S, Govil J, Dhillon PK. Breast Cancer Awareness and Prevention Behavior Among Women of Delhi, India: Identifying Barriers to Early Detection. *Breast Cancer (Auckl).* 2016;10:147-56. <https://doi.org/10.4137/BCBCR.S40358>
- National Family Health Survey [Internet]. 2024. Available from: <https://rchiips.org/nfhs/>
- Ansari A, Agarwal M, Singh V K, Nutan K, Deo S, Deori TJ. Breast Cancer Literacy: Status of Peripheral Health Workers in Lucknow. *Asian Pac J Cancer Care.* 2023;8(2):287-94. <https://doi.org/10.31557/APJCC.2023.8.2.287-294>
- Wu TY, Raghunathan V, Shi J, Hua W, Yu W, Deng A. Improving the Outcomes of Breast Cancer in China: Physicians' Beliefs, Recommendations, and Practices for Breast Cancer Screening. *Asian Pac J Cancer Care.* 2020;5(4):251-58. <https://doi.org/10.31557/APJCC.2020.5.4.251-258>
- Pisani P, Parkin DM, Ngelangel C, Esteban D, Gibson L, Munson M, et al. Outcome of screening by clinical examination of the breast in a trial in the Philippines. *Int J Cancer.* 2006;118(1):149-54. <https://doi.org/10.1002/ijc.21343>
- MD Abu B, Arun KA. A Successful Model of Cancer Screening in Low Resource Settings: Findings of an Integrated Cancer Screening Camp from a Rural Setting of North India. *Asian Pac J Cancer Care.* 2020;5(2):83-6. <https://doi.org/10.31557/APJCC.2020.5.2.83-86>
- Sadler GR, Dhanjal SK, Shah NB, Shah RB, Ko C, Anghel M, Harshburger R. Asian Indian women: knowledge, attitudes and behaviors toward breast cancer early detection. *Public Health Nurs.* 2001;18(5):357-63. <https://doi.org/10.1046/j.1525-1446.2001.00357.x>
- Vidyarthi A, Soumya A, Choudhary S, Sinha BK. Barriers to breast cancer screening in young Indian women: A Tale of Two Cities. *Asian J Exp Sci.* 2013;27:29–35.



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