Enhancing Breast Cancer Awareness and Uptake through Educational Interventions, Uttarakhand, India

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Abstract

Introduction: Breast cancer, the most prevalent cancer among females, leads to the highest mortality. However, these deaths can be prevented and treated through early detection and subsequent treatment. Inadequate knowledge of breast cancer sign, symptoms and risk factors is the primary impediment that the community faces in pursuing screening. The primary objective of this study was to assess the improvement in knowledge and practices of breast cancer (BC) after educational intervention. A secondary objective was to find the proportions of participants having abnormal findings during screening camps. Methodology: An outcome evaluation of a Health Educational Intervention was conducted in field practice area under Department of Community and Family Medicine of AIIMS, Rishikesh. Thirteen Accredited Social Health Activists (ASHA) were identified and trained in breast cancer awareness, BSE, and screening methods. These ASHAs created awareness among women in their respective areas and administered a structured questionnaire on knowledge and practice before and after educational intervention. CBE, along with Ibreast examination, was done in screening camps. Identified high-risk cases were referred to the Integrated Women Cancer Centre of AIIMS, Rishikesh, for follow-ups. Results: A total of 1095 females were interviewed and received the intervention. After three months follow-up, knowledge of BC increased from 5% to 95 %. 90 % could correctly recollect the steps of Breast Self-Examination and did it at least once during follow-up. Among the 514 participants who attended screening camp, 42 had positive findings in Ibreast/CBE examination, of which 17 (45.95%) showed BI-RADS 1, 12(32.43%) BI-RADS 2 and 4(10.8%) BI-RADS 3. Conclusion: Notable improvement in knowledge and practices regarding BC prevention was observed following health education intervention. Involving community health workers can be an effective in creating breast cancer awareness, motivating women to undergo screening, and facilitating their access to screening facilities.

Keywords: Breast Cancer- awareness- community-based screening- Clinical breast examination- I breast examination

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Introduction

Breast cancer is the most common cancer among females of all ages, with nearly 2.3 million new cases, accounting for 23.8% globally [1]. As per GLOBOCAN 2022, breast cancer is the most common cancer in India, contributing 10.75% of all cancer deaths [1]. As per the reports of National Cancer Registry Programme, breast cancer showed the highest Disability Adjusted Life Years (DALYs) among those aged from 35-69 years (63.5%) [2]. Peak incidence rates of breast and high DALYs seen in younger age groups are a matter of concern in India [2]. Breast cancer at a young age is more aggressive and has a worse prognosis. Denser breasts of young females make them less amenable to regular screening procedures and lead to late presentation with palpable mass and involvement of nodes.

'Westernization' of risk factors is responsible for the increased incidence of breast cancers in low- and middle-income countries [3]. Breast cancer deaths are preventable and treatable by early diagnosis and screening linked to timely and comprehensive treatment with greater investments in risk reduction strategies. Delay in the diagnosis and initiation of definitive management is one of the factors for poor survival rate and increased cost of breast cancer patients in India compared to Western countries [4]. Early detection and screening mechanisms include clinical breast examination (CBE) and mammography. Lack of access to health care due to the cost and geographic restrictions to carry out mammographic screening and inadequacy of specialists are identified barriers to optimal uptake of CBE/Mammography [3]. Breast self-examination (BSE) is crucial for recognizing changes in one's body,

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which can motivate individuals to seek screening for breast cancer. This proactive approach along with CBE plays a significant role in early detection [5]. Intelligent breast examination (IBE), a handheld device has shown to have high sensitivity for identifying women with suspicious breast lesions though lesser specificity than CBE by a surgeon [6]. Lack of breast awareness among health workers and beneficiaries is a major impediment to pursuing screening programs in developing countries [3, 7, 8].

This brief report is a continuation of earlier published studies to assess the improvement in knowledge and practices regarding breast cancer prevention after educational intervention [9]. A secondary objective was to determine the risk factors for breast cancer among participants attending a Screening camp (CBE + IBE), proportions of participants having abnormal findings during CBE and ibreast examination, and document the Bi-rads score of all referrals.

Materials and Methods

The methodology of this study is similar the previous survey for evaluating an Interventional Health Education

Project [9] except for conducting an Ibreast examination along with CBE for screening camps.

The study was conducted in the field practice area under the Department of Community and Family Medicine of All India Institute of Medical Sciences, Rishikesh.

Thirteen Trained ASHAs conducted health education group sessions based on Behavioural Changed intervention model as described in earlier project Phase 1 [9]. Health education session focussed on breast cancer sign and symptoms, risk factors, and the importance of early detection through screening modalities. Participants received hands-on training and were encouraged to practice BSE regularly to get familiarise with their breast.

To enhance early detection, clinical breast examination (CBE) camps were organized. Trained medical doctors conducted CBE along with IBE for approximately 30-35 women per camp. Women identified as high-risk or with potential abnormalities in either of or both CBE/ IBE were referred to the Integrated Breast Cancer Clinic for further screening/ diagnostic evaluation (Mammography with Ultrasound / FNAC (if required)) and management.

Detailed methodology is given in previous survey report [9] (Figure 1).



Figure 1. Flow Chart of Study Participants

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Community based Screening and Awareness for Breast Cancer

Results

Health education Session

Thirteen Accredited Social Health Activists (ASHA) were identified and trained. They identified 1095 women above 30 years old in their respective areas and interviewed them (Figure 1).

The mean age of study participants was 44.38 (12.67) years. 94.5% of participants were married, 68% were from nuclear families, 99.7% were Hindu by religion, 20.9% were illiterate, and 99.6% were homemakers. One study participant reported tobacco consumption. Five participants underwent CBE and mammography with one as a part of routine consultation and rest due to lump, discharge, or pain in breast.

Knowledge about different signs, symptoms, and risk factors of breast cancer

Prior to intervention, a negligible percentage of participants (less than 5%) out of 1095 (initially recruited for intervention) knew the signs, symptoms, and risk factors of breast cancer, except for pain and lump in the breast known to 799 (73%) and 887 (81%) participants. Three months later, we could trace 1026 (94%) participants.

During the follow-up, 95.5% were aware of the change in size and shape of the nipple, pain and a lump in the breast and 95% about the change in size of the breast and abnormal discharge from the nipple as signs and symptoms of breast cancer. Comparatively, 74.1% were aware of a painless lump in the breast as a sign of BC. Most of the participants were aware of various risk factors of breast cancer, 96% of Tobacco/ alcohol consumption, Family history of breast cancer and Usage of oral contraceptives. Risk factors identified by fewer participants included High-fat food (93.3%) and bearing child after 30 years (93.5%).

Knowledge and practice of breast self-examination (BSE)

Before the intervention, though, 471 (43%) had heard of BSE, but very few, i.e. 15 participants, had limited knowledge about BSE. After intervention, 1023 (99.7%) were aware of BSE. Among the participants, 98.6% knew BSE should be done by themselves, whereas only 41.2% knew the correct age to start BSE was 20 years. The benefits of BSE and the need to meet a doctor if an abnormality is discovered in BSE were known to 98.5% of the study participants. Around 94% of participants also knew that BSE should be done once monthly and that the best time to do it is one week after menstruation. 91.2% could reollect all the steps of BSE.

Around 74% of participants had heard of any screening test for breast cancer. Only 356(36.8%) were aware of mammography, and 152(15.9%) were aware of ultrasound as a screening test. Some of the participants (23.5%) incorrectly stated BSE as a screening test for breast cancer. Those who practised BSE at least once in the last three months after intervention were 936(91.2%). Among those who did not practise BSE, 84 out of 90 needed to learn the method, whereas six were hesitant.

Screening camps (CBE + IBE)

Out of these, 514 (47%) reported for screening camps. A total of 514 participants who underwent clinical breast examination had a mean age of 50.94(90.94) years. Among the study participants, the average number of children was 2.6 (1.13) and showed 5.59(4.31) mean years of breastfeeding. The mean age of menarche and menopause was 14.85 (1.73) years and 46.97 ± 4.00 years, respectively. Mean weight of study participants was 60.16 (11.78) kg.

Among the participants of the Screening camp, six had a family history of breast cancer. History of oral contraceptive pills consumption was present among 25 out of 504 participants, of which 14 were used for less than one year, and 11 were used for 1-6 years. One participant had history of breast cancer. Two participants had a history of breast lumps; one of them had been removed by the surgeon, and the other by a traditional healer. Oophorectomy was performed on 52 participants (10.3%).

Age and education level was found to be significantly associated with attendance in screening camp. 74 % of participants between 30-45 years attended the screening camp followed by 46-60 years age group (29 %). Illiterate had lowest attendance of 21 % and higher education 87 % had highest proportion of attendance (Table 1).

CBE findings

Among the total participants, 13 had pain in the breast, and 7 had a breast lump. Changes in skin colour of breast was present among one participant each; nobody had retracted nipple or nipple discharge.

Table 1. Demographic Distribution and Screening Camp Attendance

Variables		Att	Attended		Not attended		Chi square , p value
Age groups	30- 45 yrs	349	76.37	108	23.63	457	227, p<0.05
	46- 60 yrs	165	29.00	404	71.00	569	
Education level	Illiterate	45	21.03	169	78.97	214	188, p<0.05
	Primary Education	110	53.14	97	46.86	207	
	Secondary Education	187	45.83	221	54.17	408	
	Higher Education	172	87.31	25	12.69	197	
Marital status	Married	484	49.85	487	50.15	971	2.03, p>0.05
	Unmarried	30	54.55	25	45.45	55	
Total		514	50.10	512	49.90	1,026	

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Figure 2. Positive Finding on I breast Examination as Per Quadrant

IBreast Examination Findings

Forty-two participants had positive breast findings, including all those who were positive on CBE. The Distribution of positive breast findings was almost equal on both sides and all four quadrants except the Areolar region, which showed positive findings among 1.25% of participants on the right and 2.2 % on the left side (Figure 2).

All participants having some positive finding in either of two (CBE / IBE) were referred to the Integrated Women Cancer Centre. Forty participants underwent consultation, and 37 underwent ultrasonography with mammography. Among the 37 participants who underwent USG/ Mammography, 17 (45.95%) showed to have BI-RADS 1, 12(32.43%) BI-RADS 2 and 4(10.8%) BI-RADS 3. Among the 3 participants who indicated to have BI-RADS 4, one with 4a was lost to follow-up, one with 4b was planned for surgery, and the other with 4c, pregnancyassociated breast cancer, had no follow-up due to death. One patient who had BI-RADS 5 with stage 3 breast cancer was planned for surgery (Figure 1).

Discussion

Out of 1095 study participants recruited for intervention, a negligible percentage of participants knew the risk factors, signs, and symptoms of breast cancer, and only 15% of the participants had limited knowledge about BSE. The proportion of participants with knowledge and practise of BSE was also shown to improve post-intervention. Around 50% (514) patients attended the CBE + IBE session, of which 42 were detected positive and referred to IWCC. Four out of 37 participants underwent mammography. The large cohort was a strength of this study. The assessment after three months helped to understand knowledge retention over a long period.

Like the present study, a systematic review of the Indian population reported that 62.99% of females did not know about breast cancer [10]. Similar results were observed in various studies conducted in Nigeria, Iran and Sri Lanka [11, 12]. A study from Uttarakhand also showed there is a significantly lower knowledge among the rural population than the urban population regarding breast cancer [8]. This shows the need for health education and awareness campaigns regarding breast cancer in India. Improvement in post-intervention was consistent with other studies conducted in various countries [7, 11]. A study conducted in India also showed similar results in the improvement of knowledge regarding breast cancer followed by education interventions [12]. Few studies reported no improvement in certain knowledge domains related to BC prevention following educational interventions, attributing this to use of medical terminologies [7]. Involving peer groups and health workers in educational interventions can enhance understanding and communication, making the efforts more effective [9].

Even though 43% of participants had heard about BSE before the intervention, very few knew about it. This is in line with various studies conducted in rural and urban India [9, 13]. In the current study, most participants (91.2%) did BSE once in the last three months, whereas only 58% did so in the previous study. This difference might be due to the difference in the educational status of the study participants, as most of participants have secondary or above education. Similar improvements in knowledge and practises of BSE following educational interventions were found in various studies [7, 14]. A study conducted in Rajasthan, India, states that the educational intervention using a printed booklet and dummy breast models was effective, as evidenced by follow-up phone calls for BSE compliance and reporting of the suspect case [15].

Attendance to screening camps in present study was 47 % (i.e. 514 / 1095) but still is much higher than Chairaiya project in Jammu where only 1500 were screened over a period of 5 years [16]. This proves that creating breast awareness is important before initiating screening programmes. Like the previous project, the proportion of patients found to have risk factors of breast cancer was low [9]. Age (30-45 yrs) and higher educational attainment was associated with higher attendance to screening camp

which is in line with NFHS secondary data analysis, except marital status which was not found to be significant in current study [17].

In an earlier phase, where only CBE was used, 19 were referred for mammography/ USG, while in the current phase with CBE plus IBE, 42 were referred. This is because IBE and CBE used in parallel may have increased sensitivity and decreased false negatives. We cannot comment on prevalence as out of five suspected cases, only two could be confirmed by FNAC, and the rest were lost to follow-up or died.

In conclusion, we observed that the knowledge and practice of breast cancer had increased with the educational intervention. Engaging community health workers is a powerful strategy for fostering awareness of breast health. This approach encourages women to proactively seek breast cancer screenings and facilitates their access to screening services. However, once diagnosed, continued care and support must be emphasised to avoid loss of follow-up.

Author Contribution Statement

MK conceived the idea, study design and procured funding, MK, RK, AA carried community intervention, FH and AS data collection from hospital, MK, RK, AA did analysis. All authors discussed the results and contributed to the final manuscript.

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Availability of data (if apply to your research)

The data that support the findings of this study are available from the corresponding author, [author initials], upon reasonable request.

Conflict of interest None.

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