

Impact of Health Education Intervention on Breast Cancer Awareness among Rural Women of Tamil Nadu

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Abstract

Background: The most common cancer among Indian females is breast cancer. Limited access to early detection and treatment is responsible for more than half of the deaths, primarily in rural areas, where organized mammography screening is neither affordable nor feasible. Therefore, imparting awareness on breast health and breast self-examination (BSE) is highly recommended. This study aimed to assess the impact of a health education interventional program on breast health awareness and BSE among rural women of Tamil Nadu. **Methodology:** A quasi-experimental study was conducted among 266 women. A pre-interventional survey was done using a pretested validated questionnaire. A multipronged breast health education intervention was administered and its effectiveness was measured after 3 months using the same tool. **Results:** There was a statistically significant ($P = 0.0001$) improvement in the knowledge of breast health, perceived susceptibility, and reasons for practice and proficiency of BSE practice of the interventional group from pre- to post-test. After the interventional program, 71.8% of increase in knowledge about breast health and BSE was observed. In addition, 64.7% of the women practiced BSE compared to 7.14% pretest. **Conclusion:** This study highlights the awareness needs by the women and application of extensive strategies to increase the acceptance of cancer screening programs.

Keywords: Breast cancer awareness, breast self-examination, health education, impact, quasi-experimental, rural women

INTRODUCTION

In India, breast cancer (BC) is presented with an incidence of 162,468 cases and mortality of 87,090 deaths occurring annually.^[1] Inadequate access to early detection and treatment of BC is accredited to almost half of the deaths, mainly in low- and middle-income countries, where systematized mammography screening is neither affordable nor feasible.^[2]

Breast self-examination (BSE) minimizes cost and also it is a less invasive tool to detect any deviation. Even though its efficiency remains debatable, it nonetheless has its own advantage.^[3] It increases awareness and empowers women to take attention of their health and also inspires them to seek help from the health-care personnel immediately. Hence, proper tutoring on BSE is important in determining women's knowledge, attitude, and practice (KAP) on BC.^[4]

Considering the two-thirds of population living in rural areas^[5] and less doctor–population ratio in India, it is apt and essential to bring about awareness among them.^[6] Even though few studies had been conducted on the awareness of BSE, none

of them had health educational intervention and their impact among rural women in India. Hence, the present study aimed at improving the impact of a health educational intervention on BC and BSE among rural women.

METHODOLOGY

A quasi-experimental, pre- and post-test study was conducted among women in the age group of 20–60 years^[3] who are residing in the rural field practice area of a tertiary care medical college hospital in Kanchipuram district of Tamil Nadu, India, after taking approval from the institutional ethics committee. A total of 279 women were surveyed for a period of 1 year. Women with a history of BC, previous mastectomy, and if

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unable to communicate even after three visits were excluded from the study. The estimated sample size needed to compare two paired proportions was calculated to be 279 with an alpha error of 0.05, power of 90%, and delta (difference) of 0.1, including 10% attrition rate using StatCalc Epi Info7 developed by Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia (US). Multistage random sampling was used to select the study population, with the first stage being a simple random sampling with replacement using lottery method for selecting three villages out of the 12 listed under the rural field practice area and the second stage being simple random sampling using computer-generated random numbers for selecting the study population from the three villages using the family household survey register maintained at the rural health-care center.

The study method constituted the following three phases.

First phase (preinterventional phase): (preinterventional data collection from all the 279 women)

Data collection tool

- Part 1: A pretested semi-structured questionnaire with three sections such as sociodemographic data, risk factors of BC-related characteristics, and BC-related determinants
- Part 2: A validated instrument.

Toronto Breast Self-Examination Instrument^[7]

- Section 1: Frequency and proficiency of practice (proficiency) – 11 items
- Section 2: Perceived susceptibility and reasons for practice (motivation) – 16 items
- Section 3: Knowledge of BC and BSE (knowledge) – 20 items.

This instrument is validated and reliable for assessing the KAP of BSE.^[7] Only one (true, false, and don't know) answer was required for every question in each domain; a score of "0" is given to false and don't know answers and a score of "1" is given to the right answer. The scores of each domain were calculated separately. The total score ranged between 0 and 47 and was leveled as poor, average, and good. The principal investigator and other research assistants were trained in health education including BSE, and a surgeon was trained in clinical breast examination for a period of 1 week before the commencement of the interventional phase.

Interventional phase (implementation phase)

A health education program was focused to improve the knowledge about BC and BSE and to promote the practice and performance technique of BSE as recommended by the World Health Organization–International Agency for Research on Cancer^[8] adapted for the local study population. Out of the 279 women, only 266 respondents were subjected to health education intervention, as rest of the participants did not give consent.

Details of intervention ("breast health education – An early detection plan")

A multipronged intervention which included interactive

learning sessions using PowerPoint presentation, flipcharts, true story narration, brainstorming, and distribution of pamphlets in local language was constructed using standardized guidelines such as Centers for Disease Control and Prevention BC^[9] and National Comprehensive Cancer Network guidelines^[10] as shown in Table 1. Evaluation and validity of this intervention plan was done by independent experts from medicine, surgery, and community medicine fields, and the conceptual mistakes on the adequacy, appropriateness of information, and its presentation style from readers' perspective were revised before implementation. The flow and ease of understanding and simplicity of the language was validated by language experts. Besides, pilot testing was done with ten respondents from the target population for testing the educational tool, following which vocabulary indicating the difficult terms and appropriates of illustrations was reviewed.

Third phase (postinterventional phase) (evaluation of the program)

Evaluation of the impact of the established intervention package was carried out by a house-to-house visit at the end of 3 months' interval post intervention. All the 266 women were exposed to the same preliminary questions in the pretest questionnaire.

The impact of the intervention phase was assessed by the following parameters:

- Self-reported frequency of performance (monthly) of BSE
- Breast clinic visitation (35 years and above)
- Mammography screening (40 years and above).

Data were tabulated in Microsoft Excel (2010) and were analyzed using the Statistical Package for the Social Sciences (SPSS) software version 21.0. The test of normality (Kolmogorov–Smirnov test) was applied on the Toronto BSE Instrument scores and was found to be nonnormally distributed ($P < 0.05$), hence median and interquartile range were used to describe the data. "Wilcoxon signed rank test" was used to find the association between pre- and post-test scores, and "Mann–Whitney U-" test was used to find the association between selected demographic variables with posttest scores. "McNemar Chi-square test" (matched binomial variables) was used to ascertain the differences between pre- and post-test changes.

RESULTS

The study comprised 266 women, with a mean age of 42.29 years (standard deviation \pm 11.07). Most of the women (223 [83.8%]) were married. Based on the socioeconomic strata (SES) (modified B.G. Prasad's socioeconomic classification), majority were in Class III (36.7%). Based on educational qualification, majority (27.4%) completed high school followed by illiterates and primary schooling of 24.8% each. In view of the distribution of risk factors of BC, few (3.4%) women attained menarche at an earlier age of <11 years. In addition, 3% of the respondents' age at first child birth was more than 30 years. Among 241 women,

Table 1: “Interactive Learning Session Plan” of health education intervention

| | Interactive learning techniques | Contents | Duration (min) |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------|
| Introduction | PowerPoint Presentation using projector on plain white wall | Basic breast health and BC facts | 5 |
| Causes of BC (Centre for Disease Control and Prevention) | PowerPoint Presentation using projector on plain white wall Think-pair-share (scenically represented question was asked, participant was allowed to think alone and then discuss with neighbor before settling on a final answer) | Risk factors - Unavoidable and preventable | 5 |
| Symptoms and signs (Centre for Disease Control and Prevention) ^[9] | PowerPoint Presentation using projector on plain white walls A true story of a young woman surviving BC was narrated to help make BC seem more real to participants | All common signs and symptoms were discussed with illustrations | 10 |
| Early Detection and Diagnosis (NCCN Guidelines) ^[10] | Power-Point Presentation using projector on plain white wall | Discussed various methods of early detection (CBE, mammography, breast ultrasound) and diagnosis methods were mentioned | 5 |
| Importance of Breast Self-Examination and demonstration (WHO - IARC) ^[8] | Demonstration of breast self-examination using audio-visual aids Tactile skills were emphasized using indigenous breast model Re-demonstration was encouraged | | 25 |
| Myths and Facts | Discussion | Helped to reinforce facts and dispel common myths about breast health and BC | 5 |
| | Brain storming - To summarize the discussed information, provide feedback on what was understood or learned | | 10 |
| Conclusion/summary | Power-Point Presentation using projector on plain white walls Distribution of detailed leaflets/flyers to reinforce what has been taught | | 5 |
| | | | 5 |

WHO-IARC: World Health Organization - International Agency for research on Cancer, CBE: Clinical breast examination, NCCN: National Comprehensive Cancer Network, BC: Breast cancer

only ten (3.8%) did not breastfed their children and among the participants who breastfed, 86 (32.3%) women breastfed their children for <1 year. Out of 266 women, only 14 (5.3%) participants had a past history of any other cancer and eight respondents (3%) had a family history of BC. Majority of the participants (89.1% [237]) have heard of BC before the start of the study, whereas only 77 (28.9%) have heard of BSE in the preinterventional phase. Out of 148 women above 40 years of age, only eight (5.4%) underwent mammography screening.

Only 7.14% of the women were practicing BSE before the intervention. However, it increased statistically significantly to 64.7% ($P = 0.0001$, McNemmar’s Chi-square test) after the intervention. The median scores of attitude and practice domains during pretest were found to be “0” as more than half of the study population were neither practicing BSE nor did have the acceptance to practice BSE [Table 2]. The median scores of all the three domains (KAP) increased statistically significantly ($P < 0.05$, Wilcoxon signed rank test) after the intervention [Table 1]. The association of demographic characteristics with posttest score of the respondents was ascertained using the Mann–Whitney U-test. Practice domain scores were significantly associated with education status. Knowledge and attitude domain scores were significantly associated with occupation status [Table 3].

Among 64.7% of women practicing BSE, only 21.4% were practicing regularly (monthly once) during the follow-up period, and the rest were practicing irregularly (once or twice). The impact of health educational intervention was also assessed with the proportion of women who underwent

clinical breast examination (23.7%) and mammography screening (16%) [Figure 1].

Out of 279 women, four were found to have carcinogenic changes by clinical breast examination and mammography; after subjecting to further confirmatory tests, one woman was found to have Stage 1 BC and one had Stage 2 BC. They were referred to higher centers for further treatment. Rest of them were reassured and insisted on vigilant follow-up.

DISCUSSION

The findings of this study portray an extensive breach in information about BC, BSE, and its danger aspects. An overall 57.46% escalation in the awareness matter-of-fact in the study group after health educational intervention was observed. Nearly 176/266 (64.7%) of the women performed BSE following the intervention. This was found predominantly among married women, multiparous women, and those belonging to middle or upper SES. In comparison, this finding is not significant with the number of studies from several other countries.^[6,11,12]

The health educational intervention program of the study was grounded in the behavioral change model and the process of teaching based on the communication and ideologies of adult learning methods, which significantly intensified the perceived susceptibility to breast health and declined the perceived barriers to BSE among the studied participants. This significant improvement by the intervention is coherent with studies shown among diverse clusters of women in India.^[6,13,14]

In the present study, it was found that women with higher school level education had appropriate and frequent BSE practices when compared with low-educated women after health education [Table 3]. Many other studies have also informed that health behavioral change education training to educated women upsurges their knowledge on BSE and increases the proficiency and frequency of BSE performance among women.^[13,15] This similar finding with health education was noted in a study conducted in Egypt among university college students.^[16]

However, age related to the increase in the effectiveness of interventional program was not significant to the posttest scores by the study participants [Table 2]. A study conducted by Gupta SK *et al.*, among semi-urban women in Madhya Pradesh, India, has demonstrated an association between the age group of 20–30 years which is a younger age group, and it was found that their knowledge about BSE increased statistically significantly after health educational intervention ($P < 0.05$).^[6]

On the other hand, women’s occupational status was significantly associated with practice and attitude toward BSE and BC among rural women in the present study [Table 2].

Table 2: Distribution of scores on knowledge, attitude, and practice domains (pre- and post-test)

| Scores | Median scores | Percentiles | | P (Wilcoxon signed rank test) |
|--------------------------|---------------|------------------|------------------|-------------------------------|
| | | 25 th | 75 th | |
| Total score on knowledge | | | | |
| Pretest | 4.00 | 3.00 | 6.00 | 0.0001 |
| Posttest | 17.00 | 15.00 | 19.00 | |
| Total score on attitude | | | | |
| Pretest | 0.00 | 0.00 | 4.25 | 0.0001 |
| Posttest | 9.00 | 7.00 | 11.00 | |
| Total score on practice | | | | |
| Pretest | 0.00 | 0.00 | 0.00 | 0.0001 |
| Posttest | 6.00 | 4.00 | 9.00 | |
| Overall scoring | | | | |
| Pretest | 4.00 | 3.00 | 11.00 | 0.0001 |
| Posttest | 34.00 | 29.75 | 38.00 | |

After intervention, few participants (16%) [Figure 1] undertook mammography screening and visited breast clinic for clinical breast examination. Such impact-assessing factors were not cited in any other studies. Hence, it makes a more significant and effective way of delivering and assessing the impact of health educational intervention.

The present study holds a limitation of being a quasi-experimental, pre- and post-test design as there was no control group. However, quasi-experimental study strategies are commonly utilized in the assessment of the effectiveness of educational program when random assignment is not feasible. Furthermore, this study does not cover other aspects of the KAP gap such as family type, availability of information, support of spouse, health-seeking behavior, motivational factors, and their attitude regarding the seriousness of BC. Although this study gives a picture of the knowledge and practice of BSE, the reasons that why a large section of women do not have knowledge about BSE are difficult to elicit completely from this study.

CONCLUSION

Although plentiful BC early detection campaigns have been conducted in urban and metropolitan cities, no such propagandas have made in rural areas, where large commonalities of women in the country reside and also access to information is very rigid. The results of this study highlight the awareness needs by the women using different strategies to increase the acceptance of cancer screening program in

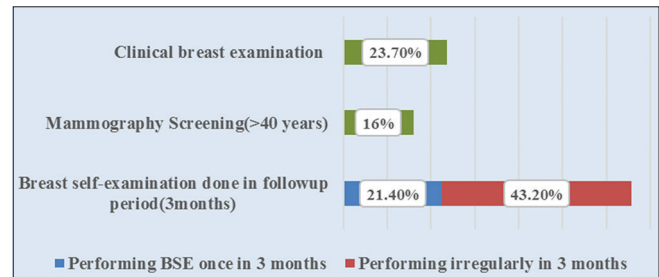


Figure 1: Impact of health educational intervention

Table 3: Association of certain demographic characteristics with posttest scores

| Demographic characteristics | Category | Posttest score on knowledge domain (median) | Posttest score on attitude domain (median) | Posttest score on practice domain (median) |
|-----------------------------|--------------|---------------------------------------------|--------------------------------------------|--------------------------------------------|
| Age (years) | <50 | 17 | 9 | 8 |
| | >50 | 15 | 8 | 6 |
| | P* | 0.391 | 0.247 | 0.243 |
| Education | Illiterate | 15 | 8 | 7 |
| | Schooling | 17 | 9 | 8 |
| | Graduate | 19 | 9 | 9 |
| | P* | 0.654 | 0.663 | 0.001 |
| Occupation | Unskilled | 15 | 8 | 8 |
| | Skilled | 16 | 9 | 8 |
| | Professional | 19 | 9 | 9 |
| | P | 0.001 | 0.01 | 0.342 |

*Test of significance used is “Mann-Whitney U-test”

concordant with unmet needs. This crucial role should be played by the health-care providers including public health practitioners, family physicians, and community health nurses to impart awareness about breast health and BSE.

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Conflicts of interest

There are no conflicts of interest.

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