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Breast Carcinoma Awareness and Practice of Breast Self Examination among Reproductive Age Group Female Out Patients in an Urban Primary Health Center, Thoothukudi: A Cross Sectional Study

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Abstract

Background: Breast cancer is a severe illness that significantly lowers women's mortality and quality of life globally. It is the most prevalent cause of cancer-related death in women and the fifth most common cause of cancer-related mortality worldwide. **Methods:** The current study was conducted among the women of reproductive age group attending OPD at Theresapuram UPHC for a period of 6 months. The exclusion criteria includes: known case of benign or malignant breast conditions, had prior breast surgery, currently antenatal and lactating mothers. Before the study was carried out, informed oral consent and approval from the ethical committee were acquired. A semi-structured questionnaire that had been developed beforehand was used to gather data. **Results:** 220 women between the ages of 15 and 49 who were in the reproductive age range were interviewed. 184 (83.64%) of them had heard about breast cancer at some point. The majority (76.4%) did not know enough about the risk factors for breast cancer. Only 92 (41.8%) of the ladies had heard about BSE. Just forty-five (20.4%) of the study participants regularly practiced BSE out of the total. The most frequent excuse for not performing BSE was discovered to be fear. There was a statistically significant ($p < 0.05$) correlation between the practice of breast self-examination and socioeconomic status, occupation, and education. **Conclusion:** Breast cancer awareness and self-breast inspection practices are essential for early detection and improved prognosis. The incidence and death of breast cancer in women can be significantly decreased by raising awareness and promoting regular breast self-examination. Comprehensive healthcare services should incorporate educational initiatives.

Keywords: Awareness, Breast Cancer, Breast Self-Examination, Reproductive Age Women

1 Introduction

Breast cancer is a severe illness that significantly lowers women's mortality and quality of life globally. It is the most

prevalent cause of cancer-related death in women and the fifth most common cause of cancer-related mortality worldwide¹. Treatment delays resulting from delayed diagnosis are one of

the primary causes of breast cancer death². The incidence has significantly increased in India. In 2022, 2.3 million women worldwide received a breast cancer diagnosis, and 670000 of them lost their lives to the disease³. Breast cancer causes 10.6% (90408) of all deaths and 13.5% (178361) of all cancer cases in India, according to GLOBOCAN data from 2022⁴. The National Medical Journal of India reports that, from 2012 to 2016, Chennai's annual cancer burden was 6100, or 55,000 new cases in Tamil Nadu⁵. Research has shown that screening practices have decreased breast cancer death rates. A 5-year survival rate of 85% is achieved with early discovery, compared to roughly 56% with late detection⁶. Low awareness, stigma, fear of the disease, gender inequity, lack of screening tools and infrastructure, low literacy, and low socioeconomic status are some of the factors contributing to late detection of breast cancer^{7, 8}.

One effective method for screening for breast cancer is the Breast Self-Examination (BSE). Self-breast examination raises awareness of breast abnormalities in addition to helping with early breast cancer identification⁹. It can inadvertently increase the woman's awareness of breast cancer risk factors. Self-breast examination is cheap and easy to perform. The intervention is non-invasive. The sensitivity of self-breast inspection is 78%¹⁰. Despite being straightforward, self-breast inspection rates vary greatly between nations; in India, they ranged from 0% to 52%^{11, 12}. Despite the existence of self-breast examination and clinical breast examination, the prevalence of breast cancer has not decreased. This could be the result of a lack of practice, attitude, or information. We seek to raise women's understanding and awareness of the disease because early identification can be affordably accomplished by self-breast examination, favoring early treatment before the disease progresses to higher stages.

In order to assess the level of knowledge about breast cancer, the practice of breast self-examination, and the factors that influence it, this study was conducted. To reduce the burden of breast cancer, the government has developed a number of initiatives and programs. For example, the NPCDCS was introduced in 2010 to promote greater awareness and screening. Despite this, the numbers have not decreased, and most cases are discovered at a somewhat advanced stage. The only way to lessen this increase in instances is to raise awareness about BSE and screening.

The purpose of this study is to assess the level of awareness that women of reproductive age (15–49 years) have about breast cancer and the practice of Breast Self-Examination (BSE), as well as to assess the different factors that affect these features.

2 Materials and Methods

A six-month, analytical cross-sectional study was conducted at the Therespuram Urban Primary Health Centre (UPHC), which is connected to the Government Thoothukudi Medical College's Department of Community Medicine, between March and September 2023. All women who visited the Therespuram UPHC Outpatient Department (OPD) between the ages of 15 and 49 were included in the study. Women who refused to participate, those who had received a breast cancer diagnosis in the past, those under treatment for breast cancer, and those who had previously had breast surgery of any kind for any reason were all excluded. Women who were pregnant or nursing were not allowed to participate in the study because of the physiological changes that occur in the breast at these times, which might make self-examination painful, diminish comparability with non-pregnant participants, and increase the chance of false-positive results or excessive anxiety. Using the standard formula for estimating a single proportion, the required sample size was calculated by taking $p = 14$, $q = 100 - p = 86$, and the allowable error $d = 5\%$, based on the findings of Kumarasamy H *et al.*, who reported that 14% of the study participants were aware that breast self-examination should be performed once a month^{13, 14}.

$$N = Z^2 pq / d^2$$

where $p = 14$, $q(100 - p) = 86$, $d = 5\%$

To the obtained sample size, a 10% nonresponsive rate is added. Thus, the study included 220 women who met the eligibility requirements and were enrolled in the UPHC OPD. The eligible women were interviewed until the ultimate sample size of 220 was reached using the convenient sampling technique. Ethical clearance for the study was granted by the Institutional Ethical Committee, and informed consent was obtained from all participants before initiating the study. A pre-designed, pre-tested, semi-structured questionnaire was used to gather data through in-person interviews with the goal of evaluating participants' knowledge and behaviors about breast cancer and breast self-examination (BSE). Once rapport was established and confidentiality was guaranteed, the interviews were held in Tamil, the participants' native tongue.

There were six sections to the questionnaire: (1) sociodemographic traits, such as age, income, occupation, and level of education (socioeconomic class was assessed using Modified Kuppaswamy Classification – 2024)¹⁵, (2) general information such as breast cancer's type, curability, and early diagnosis, (3) risk factors such as age, early menarche, late menopause, nulliparity, breastfeeding, age at first childbirth, OCP pill use, estrogen replacement therapy, and physical activity, (4) symptoms such as a painless lump, bleeding, nipple retraction, nipple discharge, asymmetrical breast swelling, and an armpit lump, (5) Breast cancer treatments, such as surgery, chemotherapy, and radiation therapy; and (6) information about breast self-examination, including when

and how often BSE should occur, as well as how early diagnosis and treatment can increase the survival rate of breast cancer. The responses came in both yes/no and multiple-choice formats. Every right answer to knowledge-based questions received a score of 1, while every wrong answer received a score of 0. The final score was calculated by summing all individual item scores, with a minimum possible score of 0 and a maximum possible score of 28. Three categories were created from the total score. The scores were divided into three categories: inadequate (less than 50%), moderately adequate (between 50% and 75%), and adequate (more than 75%). After collecting, the data was compiled and entered into a Microsoft Excel sheet. Analysis was done using SPSS software version 16. Quantitative variables were expressed as mean and standard deviation (SD) for normally distributed data, or median and interquartile range (IQR) for skewed data. Categorical variables were expressed as frequency and percentage. The chi-square test was used to assess the association between independent and dependent variables, and statistical significance was assessed if the p-value was less than 0.05, at a 95% confidence interval.

3 Results

The study participants' average age was 31.4 ± 10.5 years (95% CI), and the highest percentage (18.6%) were in the 31–35 age range. 188 (85.5%) of the 220 women were married. Most of the participants (75.5%) were homemakers, and 29.5% had a diploma. Socioeconomic class IV included 65.9% of the women, according to the Modified Kuppaswamy Classification. 54.9 percent of those surveyed said they were Hindu. [Table 1](#) provides specific information about the participants' sociodemographic traits.

Of the study participants, 15 women (6.8%) had a family history of breast cancer, and the mean age of menarche was 13.35 ± 0.24 years (95% CI). Eight (14.8%) of the 54 women who surveyed had taken oral contraceptive pills (OCPs). Women who had given birth provided information on breastfeeding. One hundred and twenty-three (71.5%) of the 172 eligible participants had exclusively nursed their children. Among these mothers, the average breastfeeding duration was 9.67 ± 0.834 months (95% CI) (See [Table 2](#)).

Eighty-four percent (184) of the 220 women who were part of the study had heard about breast cancer. Nevertheless, only 12% and 8%, respectively, had sufficient knowledge of the signs and treatment of breast cancer, while the majority (76.4%) showed insufficient knowledge about its risk factors ([Table 3](#)). Only 92 participants (41.8%) knew about Breast Self-Examination (BSE), having learnt about it from friends, family, professional healthcare providers, or the media ([Fig. 1](#)). Only roughly 6% of the women were sufficiently informed about BSE and breast cancer overall. Additionally, only 55 women (25%) had got prior health education exposure about doing BSE correctly.

Table 1: Socio-demographic characteristics of the study participants

Characteristic	Category	Frequency (N=220)	Percentage
Age group of the participants	15-20 years	19	8.6
	21-25 years	31	14.1
	26-30 years	57	26
	31-35 years	41	18.6
	36-40 years	32	14.5
	41-45 years	25	11.4
	46-49 years	15	6.8
Religion	Hindu	123	55.9
	Christian	67	30.5
	Muslim	30	13.6
	Illiterate	24	10.9
Education of the participants	Primary School	4	1.8
	Middle School	8	3.6
	High School	48	21.8
	Diploma Holder	65	29.5
	Graduate	10	4.5
	Professional	61	27.7
	House makers	166	75.5
Occupation of the participants	Unskilled	2	0.9
	Semi skilled	5	2.3
	Skilled	47	21.3
	Nuclear	87	39.5
Type of Family	Joint	75	34.1
	Three Generation	58	26.4
	Class I (Upper)	25	11.4
	Class II (Upper Middle)	17	7.7
Socio-economic status (Modified Kuppaswamy's socio-economic scale 2024)	Class III (Lower Middle)	7	3.2
	Class IV (Upper Lower)	145	65.9
	Class V (Lower)	26	11.8
	Married	188	85.5
Marital Status	Unmarried	32	14.5

Of the 92 women who knew about Breast Self-Examination (BSE), only 45 (48.9%) said they did it. Only 45 people (20.4%) out of the entire study group frequently engaged in BSE. The most frequent excuse for not using BSE was found to be fear, which was followed by societal stigma.

A significantly significant association ($p < 0.05$) was found between occupation and breast cancer knowledge, as indicated in ([Table 4](#)). It was also demonstrated that occupation, educational attainment, and socioeconomic status were all substantially associated with the practice of BSE.

Table 2: Risk factors related characteristics of the study participants

Characteristic	Category	Frequency (N=220)	Percentage
Family History of Breast cancer	Yes	15	6.8
	No	205	93.2
Use of contraceptives	Yes	54	24.5
	No	166	75.5
Characteristic	Category	Frequency (n=172)	Percentage
Duration of Breast feeding	> 6 months	123	71.5
	< 6 months	49	28.5

Table 3: Distribution of knowledge score on breast cancer and BSE

Knowledge	Inadequate (%)	Moderately Adequate (%)	Adequate (%)
Knowledge about breast cancer and its treatment	79.4	12.6	8
Risk factors of breast cancer	76.4	17.3	6.3
Knowledge about symptoms of breast cancer	53	35	12

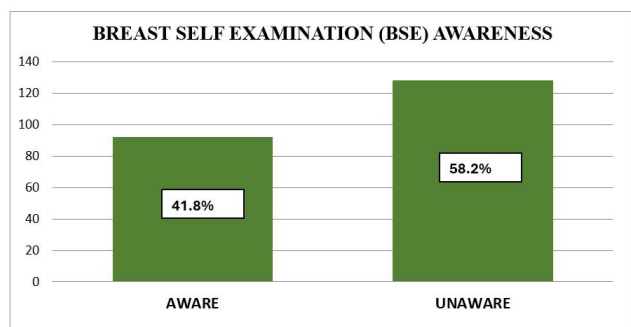


Fig. 1: Distribution of study participants according to their knowledge regarding Breast Self Examination (BSE)

4 Discussion

Every year, the number of cases of breast cancer increases, and the direct medical costs of the disease surpass \$7 billion¹⁶. In national cancer control programs, early detection is still of utmost importance. Reducing mortality rates is mostly dependent on screening, especially for cervical and breast cancers. The success of early diagnosis and screening initiatives may depend on increasing community knowledge and cultivating a favorable attitude toward breast cancer in developing countries like India. The American Cancer Society, however, no longer recommends Breast Self-Examination (BSE) as a screening technique for breast cancer early detection¹⁷.

Table 4: Association of socio-demographic characteristics on the awareness of breast cancer and practice of BSE

Socio-demographic characteristic	HEARD OF BREAST CANCER			P value	Significance
	Yes	No	Total		
Education					
Above High School	112	24	136	Chi-square=0.43 P=0.51	Not Significant
High School and below	72	12	84		
Total	184	36	220		
Occupation					
Employed	50	4	54	Chi-square=4.2 P=0.04 (p<0.05)	Significant
Housewife	134	32	166		
Total	184	36	220		
Socio-Economic Status					
Class I and II	36	6	42	Chi-square=0.16 P=0.68	Not Significant
Class III, IV, V	148	30	178		
Total	184	36	220		
Socio-demographic characteristic	PRACTICE OF BSE			P value	Significance
	Yes	No	Total		
Education					
Above High School	37	99	136	Chi-square=9.98 P=0.0028 (p<0.05)	Significant
High School and below	8	76	84		
Total	45	175	220		
Occupation					
Employed	41	13	54	Chi-square=135.34 P<0.00001 (p<0.05)	Significant
Housewife	4	162	166		
Total	45	175	220		
Socio-Economic Status					
Class I and II	15	27	42	Chi-square=7.43 P=0.006417 (p<0.05)	Significant
Class III, IV, V	30	148	178		
Total	45	175	220		

In this study, women between the ages of 15 to 49 years were asked to rate their knowledge of breast cancer and breast self-examination (BSE). Despite being the most frequent cancer in women, only 184 (83.64%) of the 220 participants in the poll had heard of breast cancer. The knowledge level in this study is much greater than that of previous studies conducted by Jaswanth *et al.*¹⁷ (44.7%), Sideeq *et al.*¹⁸ (26%) and Somdatta *et al.*¹⁹ (44%). A significant percentage of participants (76.4%) in this study lacked sufficient information of breast cancer risk

factors, while only 12% and 8%, respectively, showed sufficient awareness about the disease's symptoms and treatment. The present results are somewhat consistent with earlier research by Ahmad *et al.*¹⁰ where 63.6% of participants lacked adequate knowledge of various risk factors, and Bakthavatchalam *et al.*¹, where 65.4% of participants lacked adequate knowledge of breast cancer risk factors.

According to the current study, 41.8% of participants knew about BSE, which is in close agreement with Rajini S *et al.*²¹ (40.3%) but different from Bakthavatchalam *et al.*¹ (65%), and Nafissi *et al.*²² (30.8%) findings. Of the 220 women who participated in the survey, only 20.4% said they practiced BSE. This is a little more than the 12.9% of respondents who did so in the study by Nafissi *et al.*²². For 41.8% of respondents in this study, the media was their main source of knowledge on breast cancer, followed by friends and family (31%). Research by Jaswanth S *et al.*¹⁷ (56%) and Somdatta *et al.*¹⁹ (42%), respectively, is consistent with our findings. Furthermore, in line with the findings of research by Rajini S *et al.*²¹ and Nafissi *et al.*²², fear was shown to be the primary obstacle to performing BSE, followed by stigma.

The findings of our study demonstrated that women with higher occupations, educational attainment, and socioeconomic position were better informed about breast cancer and BSE than women with lower qualifications. This aligned with the findings of another research conducted by Jaswanth *et al.*¹⁷, Rajini S *et al.*²¹, Nafissi *et al.*²² and Kalliguddi *et al.*²³.

Strengths and limitations:

This study's focus on a high-risk, service-seeking sample of reproductive-age women who visit a primary health center and were probably in need of preventive education was one of its strengths. Internal validity was further enhanced by explicit inclusion and exclusion criteria, such as the exclusion of

women with a history of breast illness or breast alterations associated with pregnancy or breastfeeding.

Its cross-sectional design made it impossible to establish causation, and selection bias might have been introduced by convenience sampling of OPD attendees. The results of this single-centre, facility-based urban study might not have applied to other groups, particularly women who did not use health services. Self-reported responses might also have been affected by recall bias.

5 Conclusion

It appears that increasing women's knowledge and practice, as well as their awareness of breast cancer risk factors and early detection interventions, is crucial for both disease prevention and early diagnosis. This study highlights the knowledge and practice gaps that currently exist among individuals of reproductive ages.

Recommendations:

This study underscores the need for increased awareness among women through various strategies to promote the acceptance of cancer screening programs and address unmet needs. Health-care providers, including public health practitioners, family physicians, and community health nurses, play a vital role in educating individuals about breast health and BSE. To maximize impact, educational programs should be implemented within workplace settings, providing valuable, life-saving information not only to individuals but also to their loved ones. Future research should focus on evaluating the effectiveness of awareness initiatives and efforts to improve self-breast examination behaviors across diverse demographic groups.

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