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RESEARCH ARTICLE

Are We Breast Aware Yet? A Cross-Sectional Study of Nursing Staff in Western India

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Abstract

Introduction: Breast cancer is the most common cancer globally, and nurses play a critical role in promoting early detection through health education. This study assessed breast cancer awareness and screening knowledge among nursing staff at Apollo Hospital, Ahmedabad, India. **Aim:** To evaluate the knowledge of breast cancer risk factors and screening methods among nursing staff. **Methods:** A cross-sectional survey was conducted among 200 nursing staff using a self-administered Google Form questionnaire covering personal data, risk factor knowledge, and screening method awareness. Participation was voluntary, and male nurses were included to reflect their role in household decision-making in India. **Results:** Of the respondents, 65% were female, and 73.5% were aged 21–30 years. Knowledge of risk factors varied, with 73% correctly identifying family history and 77.5% recognizing obesity as risk factors. Only 47.5% knew the correct frequency of breast self-examination (BSE), and 52.5% were aware that mammography should begin at age 40–45. No significant differences were found between male and female nurses' knowledge. **Conclusion:** Gaps in breast cancer awareness among nursing staff highlight the need for enhanced training and curriculum modifications to strengthen their role in public health education. Further studies are needed to address these gaps across diverse settings.

Keywords: Breast cancer- nursing staff- awareness- screening, India

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Introduction

Breast cancer is the most common malignancy worldwide [1]. Even in India, it is the leading cancer among women, with advanced-stage presentations common even in urban settings, contributing to high mortality rates [2]. A multidisciplinary approach to breast cancer, including awareness programs, preventive measures, screening programs and availability of treatment facilities are vital for reducing both incidence and mortality in Indian women [3]. Early detection through breast self-examination (BSE), clinical breast examination (CBE), and mammography is critical for improving outcomes, yet awareness remains low among both the general population and healthcare professionals. Nurses, as frontline healthcare providers, are uniquely positioned to deliver health education and promote screening. However, limited studies have assessed their knowledge of breast cancer risk factors and screening methods in India. This study evaluates the awareness levels among nursing staff at Apollo Hospital, Ahmedabad, including male nurses, given their influential role in household decision-making in Indian families. By identifying knowledge gaps, this study aims to inform targeted educational interventions to enhance nurses' contributions to breast cancer awareness.

Materials and Methods

A cross-sectional survey was conducted among 200 nursing staff at Apollo Hospital, Ahmedabad, India, from September 1 to September 30, 2022, following approval from the hospital administration and nursing department. A self-administered Google Form questionnaire was developed based on a literature review of breast cancer awareness which consisted of three sections: personal demographics, knowledge of breast cancer risk factors,

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and awareness of screening methods (BSE, CBE, and mammography). The questionnaire was in English language and included 20 multiple-choice and true/false questions designed to assess basic awareness. The questionnaire was not translated to any local language as the nursing curriculum is in English language and the nursing staff are reasonably well versed with the language. Content validity was established through review by a panel of surgical oncologists, medical oncologists, and senior nursing faculty, with revisions based on feedback. A pilot test on 20 nursing staff (excluded from the final study) ensured clarity and cultural appropriateness.

The sample size was calculated using the formula:

$$N = (Z^2 \times P \times (1-P)) / E^2$$

where Z = 1.96 (95% confidence level), P = 0.5 (assumed proportion to maximize sample size), and E = 0.07 (margin of error), yielding a minimum of 196 participants. Confidence intervals were calculated using Wilson score interval for proportions.

The first 200 complete responses were analyzed to ensure feasibility. Participants provided verbal informed consent and consent was also implied via questionnaire completion. Participation was voluntary and no incentives were offered and no participant was forced to complete the questionnaire.

Data were collected anonymously. Departmental nursing in-charges facilitated questionnaire distribution, with follow-up reminders via telephone and in-person requests. Data were entered into Microsoft Excel, and descriptive statistics and chi-square tests were performed using SPSS version 25. The study adhered to STROBE guidelines, and Institutional Review Board approval was not required as it involved knowledge assessment without sensitive personal data.

Results

Of the 200 nursing staff surveyed at Apollo Hospital, Ahmedabad, 65% were female, and 73.5% were aged 21–30 years. Most (51.5%) held a General Nursing and Midwifery (GNM) qualification, followed by 39.5% with a B.Sc. in Nursing. One-quarter (25.5%) reported a family history of breast cancer.

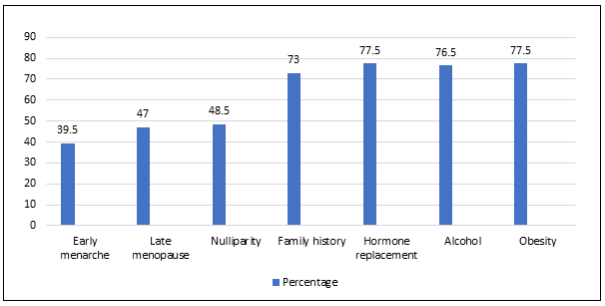

Figure 1. Chart Showing Percentage of Nursing Staff who Correctly Identified Risk Factor

Knowledge of breast cancer risk factors was variable (Figure 1). Family history was correctly identified by 73% (95% CI: 68.3–77.7%), while early menarche and late menopause were recognized by 39.5% (95% CI: 33.4–45.6%) and 47% (95% CI: 40.9–53.1%), respectively. 69 % (95% CI: 63.9% – 74.1%) of the nursing staff were aware that the most common symptom of breast cancer was lump (Figure 2). But awareness of screening methods was limited: 47.5% (95% CI: 42.5–52.5%) knew BSE should be performed monthly, 35% (95% CI: 29.5–40.5%) knew CBE should be yearly, and 48.5% (95% CI: 44.0–53.0%) knew mammography should be yearly (Figure 2). The study also analysed whether there was any difference between male and female nurses regarding correct identification of more than 3 risk factors and found that there was no statistically significant difference between the 2 groups with a p value of 0.929 (Table 1 and 2). Also, there was no statistically significant difference between male and female nurses in the knowledge about correct frequency of BSE, CBE and mammography with a p value of 0.693 (Table 3). The primary source of information was the hospital (44%), followed by books (22%) and training (13%).

Discussion

The variable knowledge of breast cancer risk factors among nursing staff at Apollo Hospital, Ahmedabad, aligns with findings from other developing countries. For instance, a study in Nigeria [4] reported that 50% of nurses were well-informed about risk factors, similar to the findings in our study. However, awareness of early menarche and late menopause was lower than expected, possibly due to limited emphasis on primary prevention

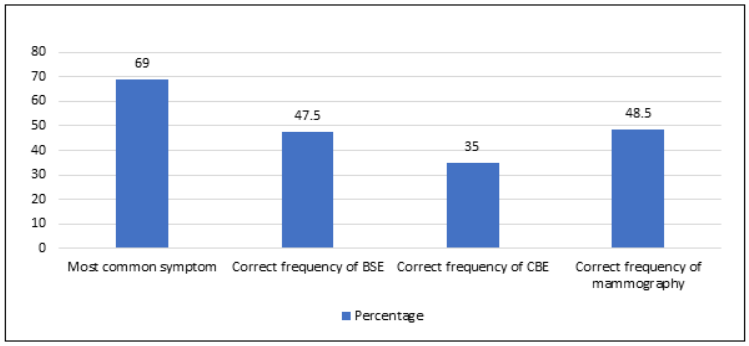

Figure 2. Chart Showing Percentage of Nursing Staff who Correctly Identified the Most Common Breast Cancer Symptom and the Correct Frequencies of BSE, CBE and Mammography

Table 1. Knowledge about Most Common Symptom, Frequency of BSE, CBE and Mammography

Knowledge about most common symptom		Knowledge about correct frequency of BSE		Knowledge about correct frequency of CBE		Knowledge about correct frequency of mammography	
Symptom	No. of response (Total =200)	Frequency	No. of response (Total = 200)	Frequency	No. of response (Total = 200)	Frequency	No. of response (Total = 200)
Lump	138	Daily	23	Monthly	63	Monthly	20
Pain	16	Weekly	40	6 monthly	48	6 monthly	49
Nipple discharge	29	Monthly	95	Yearly	70	Yearly	97
Redness	12	6 monthly	24	Don't know	19	5 yearly	8
Don't know	5	Yearly	10			Don't know	26
		Don't know	8				
Percentage of correct response: 69%		Percentage of correct response: 47.5%		Percentage of correct response: 35%		Percentage of correct response: 48.5%	

Table 2. Difference of Knowledge of more than 3 Risk Factors between Male and Female Nurses

	Correct	Incorrect	Total
Male	36	34	70
Female	66	64	130
Total	102	98	Grand Total 200

The chi-square statistic is 0.0079. The p-value is .929108. Not significant at $p < .05$.

Table 3. Difference in Knowledge of Correct Frequency of BSE, CBE and Mammography between Male and Female Nurses

	Correct	Incorrect	Total
Male	26	44	70
Female	52	78	130
Total	78	122	Grand Total 200

The chi-square statistic is 0.1561. The p-value is .692747. Not significant at $p < .05$

in nursing curricula, as noted in a Pakistani study [5].

The limited knowledge of screening frequencies mirrors findings from a study by Kaur et al., where only 29.2% knew the correct CBE frequency [6]. This suggests a gap in practical training on screening methods.

A study by Kumar S, et al. among female healthcare workers in a South Indian tertiary care hospital revealed that while awareness of breast cancer was generally high among the participants, screening practices, particularly breast self-examination (BSE), were low [7]. Another study by Gupta R et al., assessed the knowledge of breast cancer risk factors among nursing students in North India and found that while awareness of breast cancer was relatively good, knowledge about specific risk factors, symptoms, and breast self-examination (BSE) was poor [8]. Barriers such as lack of time and privacy highlight the need for workplace interventions to facilitate screening practices.

The reliance on hospital-based information underscores the importance of institutional training. Workshops, as demonstrated by Yousuf et al. [9], can significantly improve nurses' knowledge and BSE competency. A study by Mansour HH et al., showed that previous education sessions positively affect the knowledge of early detection methods of nursing staff [10]. Another study by Sharma P et al. assessed the knowledge and practices of breast cancer screening among nurses in a rural Indian setting and complemented the urban focus in the present study and reinforced the need for training of nurses [11]. Integrating preventive oncology into nursing curricula and implementing regular training modules could address these gaps. Displaying educational posters at nursing stations, as suggested, is a practical strategy to reinforce awareness.

The identified gaps in breast health awareness among nursing staff underscore a vital need for targeted intervention. Given nurses' central role in patient education, clinical screening, and health promotion, these knowledge gaps may directly impact early detection efforts and timely referrals. Enhancing their competencies through targeted curriculum reform and scalable training programs could enhance nurses' capacity to educate patients and communities, thereby promoting earlier diagnoses and potentially improving breast cancer outcomes in the region.

Understanding various treatment strategies for breast cancer, as highlighted in studies like those by Sedighi Pashaki et al. (2021, 2023) on melatonin's effects on fatigue, Salek et al. (2021) on crocin's role in reducing anxiety, depression, and chemotherapy-related toxicity, and Fadavi et al. (2021) on hypofractionated breast irradiation with intraoperative electron boost, is crucial for nursing staff to enhance breast cancer awareness and screening knowledge. This knowledge equips nurses with insights into innovative and integrative therapies, enabling them to educate patients about potential side effects, management options, and emerging treatments. By staying informed about these strategies, nurses can better advocate for early screening, provide holistic patient care, and address patient concerns with evidence-based information, ultimately improving patient outcomes and fostering proactive engagement in breast cancer prevention and management [12-15].

The study's reliance on voluntary participation may introduce self-selection bias, with more motivated nurses potentially overestimating awareness levels. Self-reported data may also be subject to recall bias. Usage of a Google form questionnaire limits participation to those who have

internet access and digital literacy. The single-center design limits generalizability, particularly to rural settings. Future studies should include multicenter designs and assess the impact of training interventions.

In conclusion, this study at Apollo Hospital, Ahmedabad, revealed significant gaps in nursing staff's knowledge of breast cancer risk factors and screening methods. The findings of this study underscore the need for enhanced nursing education and scalable hospital-based training to equip nurses for their role in promoting early detection. Modifying nursing curricula to emphasize preventive oncology and conducting regular workshops could bridge these gaps. Empowering nurses through structured education is essential to advancing early detection efforts and strengthening the fight against breast cancer in India. Future research should explore rural-urban differences and evaluate the impact of training interventions on nurses' knowledge and patient outcomes.

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Conflict of interest

Authors declare no conflict of interest.

Author contribution

All authors have contributed to implementation of this research.

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