

A KAP STUDY ON BREAST CANCER AND ITS SCREENING AMONG FEMALE HEALTH WORKERS AND MEDICAL STUDENTS OF NARAYAN MEDICAL COLLEGE AND HOSPITAL, BIHAR

Swati Suman¹, Sweta Suman², Margaret Roshni Dhan³, Sanjeev Kumar Sinha⁴

Received : 02/06/2025
Received in revised form : 01/08/2025
Accepted : 16/08/2025

Keywords:

Breast cancer, screening, knowledge, attitude, practice, medical students, female healthcare workers.

Corresponding Author:

Dr. Sweta Suman,

Email: drswetasuman.psm@gmail.com

DOI: 10.47009/jamp.2025.8.2.126

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2026; 8 (2); 677-681



¹Associate Professor, Department of Anatomy, Narayan Medical College & Hospital, Jamuhar, Bihar, India.

²Assistant Professor, Department of Community Medicine, Narayan Medical College & Hospital, Jamuhar, Bihar, India.

³Assistant Professor, Department of Anatomy, Medinirai Medical College & Hospital, Medininagar, Palamu, Jharkhand, India.

⁴Professor, Department of Anatomy, Narayan Medical College & Hospital, Jamuhar, Bihar, India.

ABSTRACT

Background: Breast cancer has emerged as the most common cancer among women in India, surpassing cervical cancer, particularly in urban areas. Despite the availability of early detection methods like breast self-examination (BSE), clinical breast examination (CBE), and mammography, late-stage diagnosis remains prevalent due to poor awareness and inadequate screening practices. This study aimed to assess the knowledge, attitude, and practices (KAP) related to breast cancer and its screening among female health workers and medical students at a tertiary care institution in Bihar. **Materials and Methods:** A cross-sectional, questionnaire-based study was conducted between September 2024 and February 2025 among 587 female participants, including undergraduate (n=413) and postgraduate (n=89) medical students, female staff (n=38), and nurses (n=47). A pretested, self-administered structured questionnaire assessed sociodemographic characteristics and responses to 10 knowledge, 5 attitude, and 5 practice items related to breast cancer. Data were analyzed using SPSS v21.0. Chi-square tests were used to compare responses across groups, with p<0.05 considered statistically significant. **Results:** Postgraduate students and nurses demonstrated significantly higher levels of correct knowledge, favorable attitudes, and appropriate screening practices compared to undergraduates and female staff (p<0.001). Awareness of key risk factors such as family history, obesity, and high-fat diet was highest among PGs (≥98%), while BSE practice was lowest among female staff (15.8%). Despite moderate awareness, overall screening practices remained suboptimal. **Conclusion:** Significant gaps exist in breast cancer literacy and screening behavior, particularly among undergraduates and support staff. Targeted educational interventions are needed to promote early detection practices across all healthcare worker groups.

INTRODUCTION

The global cancer burden continues to escalate, largely attributed to the increasing age and size of the population, coupled with the rising prevalence of risk behaviors such as smoking, poor diet, and sedentary lifestyles—particularly in low- and middle-income countries (LMICs) undergoing rapid urbanization and epidemiological transition.^[1] Among all cancers affecting women, breast cancer has emerged as the most commonly diagnosed malignancy, and it remains a leading cause of cancer-related mortality, accounting for approximately 23% of all cancer cases and 14% of cancer deaths worldwide.^[2]

In recent years, India has witnessed a concerning rise in breast cancer incidence, surpassing cervical cancer as the most prevalent cancer among women in urban regions. Several socio-demographic factors—such as delayed childbearing, reduced breastfeeding, sedentary habits, and increased life expectancy—have contributed to this upward trend.^[3] Alarmingly, a significant proportion of Indian women are diagnosed at advanced stages of the disease, which drastically diminishes their chances of survival and increases treatment complexity and cost.^[4] Early detection of breast cancer significantly improves treatment outcomes and survival rates. However, the lack of an organized national screening

program and poor participation in opportunistic screening programs are key barriers to early diagnosis in India.^[5] If the current scenario persists, breast cancer may reach epidemic proportions in the country within the next decade.

Given that the exact etiology of breast cancer remains multifactorial, emphasis must be placed on early detection strategies such as breast self-examination (BSE), clinical breast examination (CBE), and mammography, which are known to improve prognosis and reduce mortality.^[6,7] Studies have demonstrated that early-stage breast cancer can have a five-year survival rate of nearly 85%, whereas this drops significantly to around 56% in late-stage diagnoses.^[8]

Despite various awareness campaigns, India currently lacks a dedicated national program specifically for breast cancer screening. Moreover, existing literature reveals a gap between awareness and practice—many women may possess some knowledge and express a positive attitude toward screening but fail to translate it into actual practice.^[9] Thus, increasing breast cancer literacy, particularly among women in the health sector who can act as change agents in society, is critical.

With this background in mind, the present study was conducted to assess the knowledge, attitude, and practices (KAP) related to breast cancer and its screening among different cadres of female health workers and medical students at Narayan Medical College & Hospital, Bihar.

MATERIALS AND METHODS

This observational, cross-sectional study was conducted at Narayan Medical College and Hospital, Bihar, over a period of six months from September 2024 to February 2025. The study population included four distinct groups of female participants: Undergraduate medical students (UG), Postgraduate medical students (PG), nursing staff and female staff (ward sahayikas and Class IV employees).

Participants were recruited using a census sampling method. All eligible female members from the identified categories who were present during the study period and gave informed consent were included. As census enumeration was used, sample size calculation was not required.

The study was conducted after obtaining approval from the Institutional Ethics Committee (IEC) of Narayan Medical College and Hospital. Participation in the study was voluntary. Consent was implied through completion of the self-administered questionnaire distributed via Google Forms. Confidentiality and anonymity were maintained throughout the study.

Data were collected using a pre-designed, pre-tested, structured, and self-administered questionnaire, developed based on review of existing KAP literature on breast cancer screening. The tool was prepared in English and delivered online via Google Forms,

ensuring ease of access, anonymity, and self-paced responses.

The questionnaire consisted of two parts:

- **Part 1** captured sociodemographic details including age, marital status, and work experience (for PG students, nurses and female staff).
- **Part 2** assessed KAP through three distinct sections:
 - **Knowledge:** 10 items related to risk factors, symptoms, and screening methods of breast cancer with “Yes/No/Don’t Know” response options.
 - **Attitude:** 5 items measured on a 3-point Likert scale (Agree/Disagree/No comment).
 - **Practice:** 5 items related to actual practices of breast self-examination (BSE), clinical breast examination (CBE), and mammography, with “Yes/No” responses.

The questionnaire was self-administered without external assistance. Participants were instructed to answer independently to avoid response bias. The identity of the study respondents was maintained anonymous at various stages of the study.

Data Analysis: Only those participants who submitted completely filled questionnaire were included in the final analysis. Data were compiled using Microsoft Excel 2016 and analyzed using IBM SPSS version 21.0. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize the data. Categorical variables were presented as absolute numbers and column percentages. Chi-square test was employed to assess associations between KAP responses and participant categories (UG, PG, staff, nurses). A p-value of <0.05 was considered statistically significant.

The study adhered to the STROBE guidelines for reporting observational research.

RESULTS

A total of 587 female participants responded to the questionnaire. The majority were undergraduate medical students (n=413, 70.4%), followed by postgraduate students (n=89, 15.2%), nurses (n=47, 8.0%), and female staff including ward assistants and Class IV workers (n=38, 6.5%).

The mean age of undergraduate students was 21.4 ± 1.2 years, while postgraduate students had a mean age of 27.8 ± 2.3 years. Female staff were the oldest group with a mean age of 39.2 ± 5.8 years, followed by nurses (29.4 ± 3.7 years). Most participants in the undergraduate group were unmarried, with only 8.7% (n=36) reporting marital status as married. In contrast, 67.4% (n=60) of PG students, 92.1% (n=35) of female staff, and 80.9% (n=38) of nurses were married. Work experience of ≥ 5 years was observed in 84.2% (n=32) of female staff and 68.1% (n=32) of nurses, while among PG students only 25.8% (n=23) had ≥ 5 years of experience (Table 1).

Table 1: Baseline characteristics of study participants (N=587)

Characteristic	UG Students (n=413)	PG Students (n=89)	Female Staff (n=38)	Nurses (n=47)
Age (years); mean ± SD	21.4 ± 1.2	27.8 ± 2.3	39.2 ± 5.8	29.4 ± 3.7
Married; n (%)	36 (8.7%)	60 (67.4%)	35 (92.1%)	38 (80.9%)
Work experience ≥5 years; n (%)	—	23 (25.8%)	32 (84.2%)	32 (68.1%)

Across the 10 knowledge items assessed, postgraduate students consistently demonstrated the highest levels of correct responses, followed by nurses. Undergraduate students showed moderate awareness, whereas female staff had the lowest correct response rates across all knowledge indicators (Table 2). Awareness that family history is a risk factor was highest among PGs (100.0%), followed by nurses (59.6%), undergraduates (52.8%), and female staff (39.5%) (p<0.001). Similarly, knowledge about mammography as a screening tool was reported by

100.0% of PGs and 80.9% of nurses, compared to 65.4% of UGs and 28.9% of staff (p<0.001). Postgraduate students also had the highest awareness of the recommended age to start BSE (92.1%) and monthly frequency of BSE (89.9%), followed by nurses (70.2% and 74.5%, respectively). In contrast, awareness of these BSE practices was lower among undergraduates (48.7% and 36.8%) and lowest among female staff (23.7% and 26.3%) (p<0.001) (Table 2).

Table 2: Knowledge about breast cancer and its screening among study participants (N=587)

Knowledge items	UG students (n=413)	PG students (n=89)	Female staff (n=38)	Nurses (n=47)	p-value#
High-fat diet is a risk factor	241 (58.3%)	88 (98.9%)	8 (21.1%)	32 (68.1%)	<0.001*
Family history as a risk factor	218 (52.8%)	89 (100.0%)	15 (39.5%)	28 (59.6%)	<0.001*
Lump in breast as a symptom	292 (70.7%)	87 (97.7%)	12 (31.6%)	35 (74.5%)	<0.001*
Early detection improves survival	350 (84.7%)	88 (98.9%)	14 (36.8%)	41 (87.2%)	<0.001*
Mammography is a screening tool	270 (65.4%)	89 (100.0%)	11 (28.9%)	38 (80.9%)	<0.001*
BSE should start at 20 years	201 (48.7%)	82 (92.1%)	9 (23.7%)	33 (70.2%)	<0.001*
Monthly BSE is recommended	152 (36.8%)	80 (89.9%)	10 (26.3%)	35 (74.5%)	<0.001*
Obesity is a risk factor	280 (67.8%)	89 (100.0%)	7 (18.4%)	32 (68.1%)	<0.001*
Late menopause increases risk	190 (46.0%)	83 (93.2%)	8 (21.1%)	29 (61.7%)	<0.001*
Breastfeeding is protective	256 (62.0%)	84 (94.4%)	6 (15.8%)	39 (83.0%)	<0.001*

Based on Chi-square test; *Significant at p<0.05

Postgraduate students and nurses demonstrated more favorable attitudes toward breast cancer and its screening. A positive attitude that “any woman can get breast cancer” was expressed by 87.6% of PGs and 91.5% of nurses, compared to 60.5% of UGs and 44.7% of female staff (p<0.001). Similarly, belief in

the usefulness of early detection was reported by 91.0% of PGs and 93.6% of nurses, versus only 68.0% of UGs and 50.0% of staff. Willingness to teach others about BSE was again highest in nurses (80.9%) and PGs (77.5%) compared to only 48.4% of UGs and 26.3% of staff (p<0.001) (Table 3).

Table 3: Attitude about breast cancer and its screening among study participants (N=587)

Attitude items	UG students (n=413)	PG students (n=89)	Female staff (n=38)	Nurses (n=47)	p-value#
Any woman can get breast cancer	250 (60.5%)	78 (87.6%)	17 (44.7%)	43 (91.5%)	<0.001*
Early detection is important	281 (68.0%)	81 (91.0%)	19 (50.0%)	44 (93.6%)	<0.001*
BSE is a useful method	261 (63.2%)	80 (89.9%)	16 (42.1%)	44 (93.6%)	<0.001*
Mammography should be promoted	215 (52.1%)	73 (82.0%)	13 (34.2%)	41 (87.2%)	<0.001*
Willing to teach others about BSE	200 (48.4%)	69 (77.5%)	10 (26.3%)	38 (80.9%)	<0.001*

Based on Chi-square test; *Significant at p<0.05

Screening-related practices were more common among postgraduate students and nurses. Ever practiced BSE was reported by 72.0% of PGs and 76.6% of nurses, while only 28.3% of UGs and 15.8% of female staff reported the same (p<0.001). Monthly BSE practice was also highest among nurses (63.8%) and PGs (58.4%). Undergoing clinical breast

examination was reported by 43.8% of PGs and 46.8% of nurses, compared to just 14.0% of UGs and 10.5% of female staff. Notably, mammography uptake was still limited across all groups but highest in nurses (31.9%) and PGs (26.9%) (p<0.001) (Table 4).

Table 4: Practice about breast cancer and its screening among study participants (N=587)

Practice items	UG students (n=413)	PG students (n=89)	Female staff (n=38)	Nurses (n=47)	p-value#
Ever practiced BSE	117 (28.3%)	64 (72.0%)	6 (15.8%)	36 (76.6%)	<0.001*
Practices BSE monthly	85 (20.6%)	52 (58.4%)	4 (10.5%)	30 (63.8%)	<0.001*
Undergone clinical breast exam	58 (14.0%)	39 (43.8%)	4 (10.5%)	22 (46.8%)	<0.001*
Ever had mammography (if eligible)	26 (6.3%)	24 (26.9%)	8 (21.1%)	15 (31.9%)	<0.001*
Teaches BSE to others	67 (16.2%)	47 (52.8%)	2 (5.3%)	28 (59.6%)	<0.001*

Based on Chi-square test; *Significant at $p < 0.05$

DISCUSSION

This study aimed to evaluate the KAP related to breast cancer and its screening among different cadres of female healthcare workers and medical students at a tertiary medical institution in Bihar. The findings reveal important gaps in breast cancer literacy, with significant variations across occupational groups.

Knowledge of breast cancer and its screening

Our study observed that postgraduate medical students had the highest level of knowledge, followed by nurses and undergraduate students, while female staff consistently demonstrated the lowest awareness across all knowledge items. These findings are consistent with previous studies conducted in similar settings, which reported that healthcare workers with higher educational attainment tend to have better awareness of breast cancer risk factors and screening modalities.^[10,11]

For instance, 100% of PGs in our study correctly identified family history as a major risk factor, and all of them were aware that mammography is a screening tool. In contrast, only 39.5% of female staff recognized family history as a risk factor, and 28.9% identified mammography as a screening tool. This mirrors findings from a study in Saudi Arabia, where clinical and allied health care professionals had significantly higher knowledge scores compared to technical staff.^[12] Another Indian study among healthcare professionals in North India reported that awareness about risk factors such as obesity, delayed first childbirth, and lack of breastfeeding was significantly lower among ancillary staff.^[3]

Alarmingly, less than one-fourth of the female staff in our study recognized high-fat diet, late menopause, or lack of breastfeeding as risk factors. These gaps are concerning, especially because women in such roles often serve as first points of contact in patient care or community interactions. Their limited knowledge may hinder breast cancer education at the grassroots level.^[13]

Awareness of Breast Self-Examination (BSE) was also suboptimal. While 92.1% of PGs correctly identified the recommended starting age (20 years), only 23.7% of female staff did so. Similarly, only 36.8% of undergraduates and 26.3% of staff knew that BSE should be done monthly. These results reinforce earlier findings from a study in Karnataka, which reported that only 33.3% of nurses effectively practiced BSE despite being aware of it.^[14]

Attitudes toward breast cancer and screening

Positive attitudes were most prominent among PGs and nurses, with over 90% agreeing that early detection improves survival and that breast cancer can affect any woman. Conversely, only 44.7% of female staff agreed that any woman is at risk. The lower attitudinal scores among staff likely stem from limited education and lack of structured sensitization programs.

An encouraging finding was the willingness of PGs (77.5%) and nurses (80.9%) to teach others about BSE, which underscores their potential as health educators. However, this willingness was reported by less than 30% of undergraduates and staff, suggesting that positive attitude does not always translate into readiness to engage in community health promotion unless reinforced by knowledge and training.^[15]

Practices related to screening

Despite relatively high awareness among PGs and nurses, actual practice of breast cancer screening was inadequate. While 76.6% of nurses and 72.0% of PGs had practiced BSE, only 28.3% of undergraduates and 15.8% of staff had ever done so. This gap between knowledge and practice is well-documented. In a study from Ethiopia, although over 64% of female university students had heard of BSE, only 28.3% performed it regularly.^[16]

Clinical Breast Examination (CBE) and mammography uptake were similarly low, with only 26.9% of PGs and 31.9% of nurses having undergone mammography. This low utilization is consistent with findings from a multicentric study in Saudi Arabia, which cited factors such as cost, fear of diagnosis, lack of female radiologists, and poor health-seeking behavior as barriers to mammography.^[17] Cultural stigmas, fear of cancer diagnosis, and lack of privacy also contribute to poor uptake, particularly among women from rural and socioeconomically disadvantaged backgrounds.^[18]

Implications for policy and practice

The findings highlight an urgent need for structured breast cancer awareness and screening training programs, especially targeting undergraduates and lower-cadre staff. Institutions should incorporate routine breast health modules into orientation sessions for nurses, support staff, and medical students. Furthermore, incorporating peer education models, where PGs and nurses lead BSE and screening awareness workshops, could be an effective and sustainable strategy.

This study also supports the need for broader system-level interventions, including accessible screening services, public health messaging in vernacular languages, and inclusion of BSE training in community health programs. Integrating breast cancer literacy into existing maternal and child health platforms can also help reach underserved populations more effectively.

Strengths and limitations

This study is one of the few from Eastern India that comprehensively evaluates KAP related to breast cancer screening among different cadres of female health workers and medical students within a single institutional setting. Its strength lies in the inclusion of diverse groups—undergraduates, postgraduates, nursing staff, and female support staff—allowing a comparative understanding of awareness and behavioral gaps across educational and occupational strata. The use of a structured, pre-tested self-administered questionnaire and a sufficiently large sample further adds to the robustness of the findings. However, the study is not without limitations. The reliance on self-reported practices may introduce social desirability and recall biases. Moreover, the findings from one institution may not be generalizable to other regions of India, especially rural or non-teaching hospital settings.

CONCLUSION

The study highlights substantial disparities in breast cancer awareness and screening practices among female health workers and medical students. Postgraduate students and nurses displayed better knowledge and more favorable attitudes and practices compared to undergraduates and female support staff. Despite fair awareness levels among some groups, the overall practice of breast cancer screening remains suboptimal, especially among undergraduates and non-clinical staff. These findings underscore the need for targeted educational interventions and institutional training programs aimed at enhancing breast cancer literacy and promoting early detection behaviors. Empowering all tiers of female healthcare workers with accurate knowledge and practical skills can contribute significantly to improving community-level awareness and ultimately reducing the burden of breast cancer in India.

REFERENCES

1. Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. Global cancer statistics *CA Cancer J Clin*. 2011;61:69–90.
2. Benson JR, Jatoi I. The global breast cancer burden. *Future Oncol*. 2012;8:697–702.
3. Ramakant P, Singh K, Jaiswal S, Singh S, Ranjan P, Rana C, et al. A Survey on breast cancer awareness among medical, paramedical, and general population in North India using self-designed questionnaire: A prospective study *Indian J Surg Oncol*. 2018;9:323–7.
4. Lannin DR, Wang S. Are small breast cancers good because they are small or small because they are good? *N Engl J Med*. 2017;376:2286–91.
5. Singh S, Shrivastava JP, Dwivedi A. Breast cancer screening existence in India: A non-existing reality *Indian J Med Paediatr Oncol*. 2015;36:207–9.
6. Shyyan R, Masood S, Badwe RA, Errico KM, Liberman L, Ozmen V, et al. Breast cancer in limited resource countries: Diagnosis and pathology *Breast J*. 2006;12(Suppl 1):S27–37.
7. Yilmaz D, Bebis H, Ortabag T. Determining the awareness of and compliance with breast cancer screening among Turkish residential women *Asian Pac J Cancer Prev*. 2013;14:3281–8.
8. Kalliguddi S, Sharma S, Gore CA. Knowledge, attitude, and practice of breast self-examination amongst female IT professionals in silicon Valley of India *J Family Med Prim Care*. 2019;8:568–72.
9. Schilling MP, Silva IF, Opitz SP, Borges MF, Koifman S, Rosalina Jorge K. Breast cancer awareness among women in Western Amazon: A population based cross-sectional study *Asian Pac J Cancer Prev*. 2017;18:847–56.
10. Heena H, Durrani S, Riaz M, AlFayyad I, Tabasim R, Parvez G, et al. Knowledge, attitudes, and practices related to breast cancer screening among female health care professionals: a cross sectional study. *BMC Womens Health*. 2019;19(1):122.
11. Nisha B, Murali R. Impact of Health Education Intervention on Breast Cancer Awareness among Rural Women of Tamil Nadu. *Indian J Community Med*. 2020;45(2):149-153.
12. Almutairi M, Callaghan S, Abudari G, Sadler K. Knowledge, Attitudes, and Practices Related to Breast Cancer Screening among Female Staff at a Tertiary Care Center in Saudi Arabia. *Journal of Nursing Science and Professional Practice*. 2024;1(3):102-9.
13. Gupta A, Shridhar K, Dhillon PK. A review of breast cancer awareness among women in India: Cancer literate or awareness deficit? *Eur J Cancer*. 2015;51(14):2058–66.
14. Ansari S, Nandimath PT, Rao NSN. Knowledge and practice of breast self-examination among nursing staff in Bangalore. *Indian J Forensic Community Med* 2020;7(4):176-182.
15. Tewabe T, Mekuria Z. Knowledge and practice of breast self-examination among undergraduate students in Bahir Dar University, North-West Ethiopia, 2016: A cross-sectional study. *J Public Health Afr*. 2019 Jun 4;10(1):805.
16. Birhane K, Alemayehu M, Anawte B, Gebremariyam G, Daniel R, Addis S, et al. Practices of Breast Self-Examination and Associated Factors among Female Debre Berhan University Students. *Int J Breast Cancer*. 2017;2017:8026297.
17. Abdel-Salam DM, Mohamed RA, Alyousef HY, Almasoud WA, Alanzi MB, Mubarak AZ, et al. Perceived Barriers and Awareness of Mammography Screening Among Saudi Women Attending Primary Health Centers. *Risk Manag Healthc Policy*. 2020;13:2553-2561.
18. Albadawi RS, Alsharawneh A, Othman EH. Determinants and barriers to women's participation in breast cancer screening activities in Jordan: an in-depth study. *BMC Public Health*. 2025;25(1):1339.