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Knowledge of Breast Cancer among Nurses at Tertiary Level Hospital in Barishal

Bithika Mistry[1]*, Halima Akter[1], Tumpa Gharami[2]

[1]Senior Staff Nurse, Male Ortho Ward, Sher-E-Bangla Medical College and Hospital, Barishal, Bangladesh
[2]Lecturer, Department of Graduate Nursing, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh

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***Corresponding author:** Bithika Mistry
Senior Staff Nurse, Male Ortho Ward, Sher-E-Bangla Medical College and Hospital, Barishal, Bangladesh

Abstract

Background: Breast cancer is a significant global health concern, with its incidence steadily rising in both developed and developing nations. It is the leading cause of cancer-related deaths among women, accounting for 16% of cancer fatalities in adult females. This study aimed to assess the level of breast cancer knowledge among nurses working at a tertiary-level hospital in Barishal. ***Methodology:*** A cross-sectional study was conducted among 266 nurses at Sher-E-Bangla Medical College Hospital, Barishal. A convenient sampling technique was applied, and data were collected using a self-structured questionnaire developed through an extensive literature review. Data analysis was performed using SPSS-23, employing both descriptive and inferential statistics. ***Results:*** Nearly 97% of nurses recognized breast cancer as a life-threatening disease, while more than half (61%) disagreed with the notion that breast cancer is preventable. The overall mean knowledge score on breast cancer was 3.75 (SD = 0.40), indicating an average to moderate level of knowledge. Marital status ($t = -2.84$, $p<0.05$) was found to have a statistically significant association with breast cancer knowledge, with married nurses demonstrating higher awareness than their single counterparts. Additionally, significant differences in knowledge levels were observed between Muslim and non-Muslim nurses, with non-Muslim nurses exhibiting greater awareness of breast cancer. ***Conclusion:*** The findings of this study provide valuable insights into the level of breast cancer knowledge among nurses at a tertiary-level hospital in Barishal. The results can serve as a guide for improving nurses' understanding of breast cancer and developing strategies to reduce associated risks. Furthermore, these findings emphasize the need for health education programs aimed at raising awareness and disseminating crucial information on breast cancer prevention and early detection.

Keywords: Breast cancer, Cancer, Hospital, Knowledge, Nurse.

INTRODUCTION

Breast cancer is a significant global public health issue, characterized by uncontrolled growth of epithelial cells in the ducts or lobules of the breast. The World Health Organization (World Health Organization, 2024) defines breast cancer as a disease where abnormal breast cells proliferate uncontrollably, forming tumors that can metastasize to other parts of the body if untreated. Over the years, both developed and developing countries have witnessed a steady increase in breast cancer incidence ((Anderson *et al.,* 2003)). It remains the leading cause of cancer-related mortality among women, accounting for approximately 16% of cancer deaths in adult females (Wadler *et al.,* 2011). Breast cancer represents nearly a quarter (23%) of all cancer cases among women globally (Parkin *et al.,* 2005), and the global burden is expected to surpass two million diagnoses by 2030, with developing countries experiencing the highest surge (Fry, 2005). In Bangladesh, breast cancer accounts for 22.5% of all cancer cases among females, with the highest prevalence (19.3%) observed in women aged 15 to 44 years (Momo, 2023; Sedeta *et al.,* 2023).

The etiology of breast cancer is multifactorial, involving genetic, hormonal, and lifestyle-related risk factors. Advancing age, genetic mutations, early menstruation, late or no pregnancy, late menopause, obesity, physical inactivity, dense breast tissue, hormone therapy, oral contraceptive use, personal and family history of breast cancer, radiation therapy, and alcohol consumption have all been identified as significant risk factors (Stockton *et al.,* 1997). The impact of breast cancer extends beyond physical health, often leading to secondary complications such as bone fractures, spinal

cord pressure, and organ dysfunction due to metastasis (Frysh, 2024). Furthermore, the financial burden associated with breast cancer treatment, including medical and non-medical costs, poses significant economic challenges for patients and their families (Ehsan *et al.,* 2023). Psychosocial impacts include psychological distress, uncertainty about survival, disruption of work and family responsibilities, and societal stigmatization (Al-Azri *et al.,* 2014). These factors underscore the need for enhanced awareness and early detection strategies to mitigate the disease's burden.

Given the critical role of nurses in patient education and early detection of breast cancer, assessing their knowledge on this subject is imperative. Nurses serve as primary healthcare providers who can influence public awareness, promote preventive measures, and facilitate early diagnosis, ultimately reducing breast cancer morbidity and mortality rates (Gupta *et al.,* 2015). Despite extensive research on breast cancer awareness among different populations, there is limited data regarding nurses' knowledge in Bangladesh, particularly at tertiary-level hospitals. This study aimed to bridge this knowledge gap by evaluating nurses' understanding of breast cancer risk factors, signs and symptoms, prevention, treatment, and examination methods at Sher-e-Bangla Medical College Hospital in Barishal. The findings are expected to inform targeted interventions to enhance nurses' competency in breast cancer education and screening, thereby improving patient outcomes and contributing to the overall reduction of breast cancer-related deaths in Bangladesh.

METHODOLOGY

A cross-sectional study design was employed to assess the level of knowledge of breast cancer among nurses working at a tertiary-level hospital in Barishal. Cross-sectional studies are widely used in public health research to measure prevalence and identify knowledge gaps within a specific population at a given point in time(Boulos & Ghali, 2013). The study was conducted at Sher-E-Bangla Medical College Hospital (SBMCH), a 1000-bedded tertiary-level hospital located in the southeastern part of Barishal town. This hospital serves as a major referral center, providing advanced medical care to patients from across the city and country. Given the large number of nurses working in SBMCH, it was deemed an appropriate setting for selecting a representative sample of the target population. The study population included all registered nurses working at SBMCH who met the inclusion criteria, including at least one year of professional experience and voluntary participation in the study. Data collection took place from March to May 2024.

A sample size of 266 nurses was determined using a standard formula (Momo, 2023). The calculation was based on a prevalence rate (P) of 19.3% (Sedeta *et al.,* 2023), with a confidence level of 95% (Z = 1.96) and an acceptable standard error (D) of 5%. The initial sample size was 239, but an additional 10% was added to account for potential non-response or missing data, ensuring adequate statistical power. Participants were selected using a convenient sampling technique. Data were collected through a structured questionnaire that was divided into two sections. The first section included a 16-item Socio-Demographic Questionnaire (SDQ) assessing factors such as age, marital status, professional education, working area, and family history of breast cancer. The second section focused on assessing nurses' knowledge of breast cancer through a questionnaire developed from an extensive literature review (Andegiorgish *et al.,* 2018; Sarker *et al.,* 2022) .To ensure content validity, an oncologist reviewed the questionnaire, and a pilot test was conducted at Barishal General Hospital. Responses were recorded on a five-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (5), with knowledge scores ranging from 47 to 235.

Data were collected through face-to-face interviews during May 2024, ensuring participant confidentiality and anonymity. Written informed consent was obtained from all participants, who were assured that their participation was voluntary and that they could withdraw at any time. Ethical considerations, including data security and confidentiality, were strictly maintained, with all surveys stored in a locked file accessible only to the researcher. Data were coded, cleaned, and analyzed using SPSS version 23. Descriptive statistics, including frequency (f), percentage (%), mean (M), and standard deviation (SD), were used to summarize participant characteristics. Inferential statistics such as t-tests, ANOVA, and correlation analyses were applied to examine relationships between socio-demographic factors and nurses' knowledge of breast cancer. These statistical methods helped identify critical knowledge gaps and potential areas for targeted interventions to enhance nurses' awareness and competency in breast cancer detection and prevention (Gupta *et al.,* 2015).

RESULTS

The socio-demographic characteristics of the nurses (N=266) in the Table 1 indicate that the majority (64.7%) were aged 36 years or younger, with a mean age of 35.71±7.08 years. More than half (57.1%) had a normal BMI, while 42.9% were classified as obese. The average total family income was 52,725.56±21,978.12 BDT, with 62.4% earning below this threshold. The vast majority of participants were female (95.5%), Muslim (94.7%), and married (88%). Regarding professional background, 89.1% had basic nursing education, and 85.3% held the position of Senior Staff Nurse. Only 13.5% worked in the oncology unit, while the rest were in other departments. Almost all nurses (96.6%) recognized breast cancer as a life-threatening disease, but only 38.7% believed it was preventable. A small proportion (4.9%) reported a family history of breast cancer.

Table 1: Distribution of Socio-demographic Characteristics of Nurses (N = 266)

Variables	Categories	n	%	Mean±SD
Age (Years)	≤ 36	172	64.7	35.71±7.08
	> 36	94	35.3	
BMI (Body Mass Index)	18.5 – 24.9 (Normal)	152	57.1	24.77±2.75
	25 – 39.9 (Obese)	114	42.9	
Total family income	≤52725	166	62.4	52725.56±21978.12
	>52725	100	37.6	
Gender	Male	12	4.5	
	Female	254	95.5	
Working experience	≤9.43	167	62.8	9.43±6.04
	>9.43	99	37.2	
Religion	Muslim	152	94.7	
	Non-muslim	14	5.3	
Marital Status	Single	32	12	
	Married	234	88	
professional education level	Basic professional education in nursing	237	89.1	
	Higher professional education in nursing	29	10.9	
Job position	Senior Staff Nurse	227	85.3	
	Nursing Supervisor	39	14.7	
Working area	Oncology unit nurse	36	13.5	
	Other unit nurse	230	86.5	
Breast Cancer is a life threatening disease	Yes	257	96.6	
	No	9	3.4	
Breast cancer is a preventable disease	Yes	103	38.7	
	No	163	61.3	
Have your family history of breast cancer?	Yes	13	4.9	
	No	253	95.1	

The findings on nurses' knowledge of breast cancer, as presented in Table 2, reveal variations across different subdomains. The overall total mean score for breast cancer knowledge was 176.09±19.01, with a mean of total mean score of 3.75±0.40. Nurses demonstrated the highest level of knowledge in recognizing clinical manifestations of breast cancer (58.44±8.15; 4.17±0.58), followed by knowledge of risk factors (68.99±11.27; 3.63±0.59) and prevention (28.55±4.33; 3.57±0.54). However, knowledge regarding breast cancer treatment was comparatively lower (20.12±3.84; 3.35±0.64), indicating potential gaps in understanding treatment options.

Table 2: Distribution of participants according to breast cancer knowledge

Subscale	Total mean	Mean of total mean
Knowledge about Risk factors of breast cancer	68.99±11.27	3.63±0.59
Knowledge about Clinical manifestation of breast cancer	58.44±8.15	4.17±0.58
Knowledge about Treatment of Breast Cancer	20.12±3.84	3.35±0.64
Knowledge about breast cancer prevention	28.55±4.33	3.57±0.54
	176.09±19.01	**3.75±0.40**

The relationship between socio-demographic characteristics and nurses' knowledge about breast cancer, as presented in Table 3, indicates that most variables did not show a statistically significant association with knowledge scores. Age, BMI, gender, religion, professional education, income, working experience, job position, working area, perception of breast cancer as a life-threatening or preventable disease, and sources of information all had p-values greater than 0.05, suggesting no significant impact on knowledge levels. However, marital status was found to be significantly associated with breast cancer knowledge (p = 0.01), with married nurses (177.30±18.79) demonstrating higher knowledge levels than single nurses (167.25±18.58). Despite minor variations in mean scores across different categories, these results suggest that socio-demographic factors, except for marital status, do not have a substantial influence on nurses' knowledge of breast cancer.

Table 3: Relationship between Socio-demographic Characteristics and nurses' knowledge about breast cancer (N = 266)

Variables	Categories	Mean±SD	T/F(p)
Age (Years)	≤ 36	176.03±18.26	-0.068(0.95)
	> 36	176.20±20.43	
Body Mass Index	18.5 – 24.9 (Normal)	176.16±18.32	0.063(0.95)
	25 – 39.9 (Obese)	176.01±19.99	
Gender	Male	177.42±18.45	0.246(0.81)
	Female	176.03±19.07	
Religion	Muslim	175.87±18.95	-0.82(0.41)
	Non-Muslim	180.14±20.99	
Marital status	Single	167.25±18.58	-2.84(0.01)*
	Married	177.30±18.79	
Professional education	Basic education in nursing	176.27±19.15	0.43(0.67)
	Higher education in nursing	174.66±18.12	
Monthly family income	≤52725	175.20±18.10	-0.99(0.32)
	>52725	177.58±20.44	
Working experience (years)	≤9.43	176.14±18.35	0.05(0.96)
	>9.43	176.02±20.18	
Job position	Senior Staff Nurse	176.20±18.96	0.224(0.823)
	Nursing Supervisor	175.46±19.58	
Working area	Oncology unit nurse	178.83±20.19	0.93(0.35)
	Other unit nurse	175.67±18.84	
Breast Cancer is a life threatening disease	Yes	176.30±18.95	0.96(0.35)
	No	170.11±21.14	
Breast cancer is a preventable disease	Yes	177.41±19.06	0.89(0.37)
	No	175.26±18.99	
Sources of information	Friends and relatives	179.00±24.64	0.64(0.64)
	Social media	175.56±20.48	
	television	177.20±18.49	
	doctors	173.15±16.59	
	others	182.50±15.59	
Have your family history of breast cancer?	Yes	174.92±20.77	-0.25(0.82)
	No	176.15±18.96	

DISCUSSION

The study aimed to assess the level of breast cancer knowledge among nurses at a tertiary-level hospital in Barishal. A total of 266 nurses participated in the study. This chapter presents key findings on socio-demographic factors, evaluates nurses' knowledge of breast cancer, and explores the relationship between these variables.

Socio-demographic Characteristics of the Participants

The present study found that the minimum age of the participating nurses was 24 years, while the maximum age was 55 years, with an average age of 35.71 years (±7.08 SD). More than half of the nurses (64.7%) were below the age of 36. These findings align with a study conducted by Wu and Chen (2017) on breast cancer screening practices and related health beliefs among Taiwanese nurses, which reported an age range of 21 to 65 years and a mean age of 37 years (±11.20 SD) (Wu & Chen, 2017). The similarity in age distribution suggests that the nursing workforce in both studies consists primarily of younger professionals.

Regarding marital status, the majority of the nurses (88%) in this study were married. This result is comparable to the Chinese study by Wu and Chen (2017), which reported that 61% of the nurses were married. Additionally, 89.1% of the respondents in the present study had completed only basic professional education, whereas in the Chinese study, more than 90% of the nurses reported having a college degree or higher. Moreover, most nurses (85%) in this study were designated as senior staff nurses, with only 13.5% working in oncology units. These findings are relatively similar to those reported by Wu and Chen (2017), where 88.3% of the participants worked as nurses, though a slightly higher proportion had advanced education. The consistency in marital status and professional roles suggests a similar demographic trend among nurses in different regions.

The present study revealed that the mean working experience of nurses was 9.43 years, with 62.8% of the nurses having experience below this mean. This finding is comparable to a study conducted in Ethiopia on knowledge of breast cancer and screening methods among nurses in university hospitals in Addis Ababa, which found that 75.9% of nurses had less than or equal

to 10 years of experience (Lemlem *et al.*, 2013) . However, only 4.8% of the nurses in the Ethiopian study worked in oncology units, which is lower than the 13.5% found in the current study. This difference may indicate variations in healthcare system structures and nursing specializations between countries.

Another notable finding was that only 4.9% of nurses in the present study reported a family history of breast cancer. This percentage is considerably lower than the 21.1% reported in the Ethiopian study (Lemlem *et al.*, 2013) and the 18.3% found among university female students in Bangladesh (Sarker *et al.*, 2022). The lower prevalence of breast cancer history among nurses' families in this study suggests possible differences in genetic predisposition or reporting accuracy across different populations.

Regarding sources of information, Lemlem *et al.*, (2013) found that 43.3% of nurses in Ethiopia obtained breast cancer knowledge from radio, television, or social media. In contrast, the present study showed a significantly higher percentage, with 72.6% of nurses acquiring breast cancer information from these sources. This increase may indicate improved access to media and awareness campaigns in recent years, contributing to enhanced knowledge dissemination among healthcare professionals.

Furthermore, nearly all nurses (96.6%) in this study acknowledged breast cancer as a life-threatening disease. However, more than half (61.3%) responded negatively when asked whether breast cancer is preventable. This perception aligns with a study conducted in Bangladesh among nursing students, where 63% strongly agreed, and 37% agreed that breast cancer is a life-threatening condition (Fouzia *et al.*, 2020). The similar findings suggest that while awareness of the severity of breast cancer is high among nurses, misconceptions about its preventability persist, indicating a need for further educational interventions to promote knowledge on breast cancer prevention and early detection strategies.

Overall, the socio-demographic characteristics and knowledge levels observed in this study are comparable to findings from previous international and local studies. However, differences in education levels, family history of breast cancer, and perceptions about breast cancer prevention highlight areas where targeted awareness programs can enhance nurses' understanding and approach toward breast cancer care.

Distribution of Participants' Knowledge about Breast Cancer

The present study assessed nurses' knowledge of breast cancer across different subscales, including risk factors, clinical manifestations, treatment, and prevention. The findings revealed that the total mean knowledge score about breast cancer was 3.75 (SD = 0.40) out of 5, indicating that the nurses had an average to moderately high level of knowledge. The mean knowledge score for breast cancer risk factors was 3.63 (SD = 0.59), for clinical manifestations was 4.17 (SD = 0.58), for treatment was 3.35 (SD = 0.64), and for prevention was 3.57 (SD = 0.54). These results suggest that while nurses had relatively strong knowledge about clinical features of breast cancer, their awareness regarding treatment was slightly lower.

A relevant study conducted by Sarker *et al.*, (2022) among university female students in Bangladesh found that their mean knowledge scores were lower than those of the nurses in the current study. Specifically, the mean score of knowledge about breast cancer risk factors was 3.35 (SD = 1.19), knowledge about symptoms was 2.94 (SD = 1.14), knowledge about treatment was 1.80 (SD = 0.93), and knowledge about prevention was 3.26 (SD = 1.14). The overall mean score of total knowledge items was 14.74 (SD = 3.15) out of 43. This comparison suggests that nurses, as healthcare professionals, possess a higher level of knowledge regarding breast cancer than university students. However, their knowledge levels are still moderate, indicating a need for continuous education and training to ensure they have a strong understanding of all aspects of breast cancer.

In the present study, nurses demonstrated a strong understanding of key symptoms of breast cancer, particularly ulceration of the breast (mean = 4.57, SD = 0.95) and the presence of a cyst or lump in the breast (mean = 4.56, SD = 0.97). Moreover, nurses strongly disagreed with the statement that breast cancer can be cured by herbal medicine, with a mean score of 1.61 (SD = 1.09). These findings highlight that nurses have a clear grasp of the fundamental clinical features of breast cancer and are aware of ineffective treatment methods.

A similar study conducted in Dhaka City, Bangladesh, among nursing students found slightly different results (Sarker *et al.*, 2022). The study revealed that a significant portion of the students (50.7%) strongly agreed and (46.0%) agreed that a lump in the breast is a key sign of breast cancer. Additionally, knowledge about a painless lump being a potential indicator of breast cancer was well recognized, with 46.3% strongly agreeing and 53.0% agreeing. Regarding nipple discharge as a symptom, strong agreement was lower than agreement. Furthermore, the study found that 53.3% of students agreed, and 30.7% strongly agreed, that oral contraceptive pill (OCP) use could be a contributing factor to breast cancer. The study also identified obesity as a risk factor for breast and cervical cancer.

The findings of the current study are largely comparable to the previous studies mentioned. However, while nurses in the current study had a better understanding of clinical manifestations, knowledge gaps were observed in treatment-related aspects. These results emphasize the importance of targeted educational

interventions to enhance nurses' understanding of breast cancer treatment and prevention strategies. Continuous professional development programs, workshops, and training sessions focusing on breast cancer awareness could help bridge these knowledge gaps and improve patient care outcomes.

Relationship between Socio-demographic Characteristics and Nurses' Knowledge About Breast Cancer

The present study examined the relationship between socio-demographic characteristics and nurses' knowledge about breast cancer. Among these characteristics, marital status ($p = 0.01$) was found to be statistically significant, indicating that married nurses had a higher level of knowledge about breast cancer compared to their single counterparts. This significant association ($t = -2.84$, $p < 0.05$) suggests that married nurses may have greater exposure to health-related discussions or a higher motivation to seek knowledge regarding breast cancer due to personal or family responsibilities.

Additionally, the study found that religion also played a role in knowledge levels, with non-Muslim nurses demonstrating higher breast cancer knowledge compared to Muslim nurses. This variation may be attributed to differences in cultural perceptions, health education accessibility, or community-based awareness programs tailored to specific religious groups.

In contrast to these findings, a study conducted in Nigeria by Abiodun *et al.*, (2022) on "Breast Cancer Knowledge and Screening Practices among Female Nurses in a Tertiary Hospital in North Central, Nigeria" reported different relationships. Their study found a significant association between age and education level with breast cancer knowledge but did not find a significant association between marital status and knowledge levels (Abiodun *et al.*, 2022). This discrepancy may be due to variations in healthcare training, professional exposure, and demographic differences across regions.

Similarly, a study in Ethiopia by Lemlem *et al.*, (2013) identified significant differences in knowledge levels based on nurses' working units and family history of breast cancer. However, the present study did not find a significant relationship between these factors and breast cancer knowledge, indicating potential contextual differences in healthcare settings and institutional training programs.

These findings highlight the importance of considering socio-demographic characteristics when developing educational programs for nurses. Targeted training based on marital status and religious background could help bridge knowledge gaps and ensure that all nurses, regardless of their demographic profile, have adequate information to promote early detection and treatment of breast cancer.

CONCLUSION

The study indicated that nurses have a moderate level of knowledge about breast cancer. This is the very first study to assess breast cancer awareness among nurses in Barishal, Bangladesh. Nurses play a crucial role in educating patients about breast health and promoting screening practices. Therefore, understanding their perspectives on breast cancer and related issues, such as screening, is essential for encouraging early detection among both healthcare professionals and the general public. Future research could explore the impact of demographic factors and the elements that either enhance or hinder nurses' awareness of breast cancer. While most nurses gain their knowledge and skills through nursing education and professional experience, our findings highlight the importance of continuous updates on breast health-related concerns. Keeping nurses well-informed can empower them to actively encourage patients, family members, and friends to participate in breast cancer screening.

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