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Original Research Article

Knowledge, Attitudes, Practices, and Risk Factors Related to Breast and Cervical Cancer Among Female Medical Students in Comilla, Bangladesh

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ABSTRACT: ***Background:*** Breast and cervical cancers are significant public health concerns worldwide, especially in developing countries like Bangladesh. Early detection through routine screening can greatly improve outcomes, yet screening uptake remains low, even among medical professionals who play a key role in cancer prevention. Understanding the knowledge, attitudes, and practices (KAP) of medical students toward cancer screening is crucial to addressing these gaps. Objective: This study aims to assess the knowledge, attitudes, and practices regarding breast and cervical cancer screening, explore risk factors, and identify barriers to screening among female medical students in Comilla, Bangladesh. ***Methods:*** A cross-sectional study was conducted from January to September 2024 in Cumilla, Bangladesh. Data were collected from 300 female medical students of 3rd to 5th year MBBS across three medical colleges: Cumilla Medical College, Cumilla Central Medical College, and Cumilla Eastern Medical College. A structured questionnaire was used to assess their knowledge, attitudes, practices, and barriers to breast and cervical cancer screening. Statistical analyses, including chi-square tests and p-values, were applied to identify significant associations. ***Results:*** The study found that 83.3% (n=250) of students were aware of mammograms, 73.3% (n=220) knew about Pap smears, and 60% (n=180) were familiar with HPV testing. However, only 33.3% (n=100) had undergone any form of cancer screening. Fear of screening results (60%, n=180), cost (50%, n=150), and lack of awareness about screening facilities (40%, n=120) were the major barriers. Positive attitudes towards screening were noted, with 86.7% (n=260) of students participating in awareness programs. ***Conclusion:*** While knowledge about cancer screening among female medical students is high, their screening practices remain inadequate. Addressing barriers such as fear, cost, and awareness is crucial for improving cancer prevention efforts.

Keywords: Breast Cancer, Cervical Cancer, Cancer Screening, Medical Students, Bangladesh.

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INTRODUCTION

Breast cancer (BCa) is the most prevalent malignancy, consistently showing the highest fatality rates among women globally1. The incidence, morbidity, and mortality rates of breast cancer have escalated in both developed and developing regions due to increased life expectancy, urbanization, and the adoption of Western lifestyles [1, 2]. According to the global cancer statistics report of 2020, breast cancer

emerged as the leading cause of global cancer incidence, with an estimated 2.3 million new cases, accounting for approximately 11.7% of all new cancer diagnoses worldwide [3]. The World Health Organization (WHO) reported that an estimated 685,000 women died from breast cancer in 2020 [4]. Breast cancer has also reached epidemic levels in South Asian nations, with both incidence and mortality rates rising rapidly. Approximately 588 million women aged 15 years and older are confronting an increasing breast cancer epidemic in these regions. In India, around 100,000 women are diagnosed with breast cancer annually, with a mortality rate of 21.5% [5, 6]. In Pakistan, 34,066 women were diagnosed in 2018, and the mortality rate was 26.76% [7, 8]. Bangladesh, a relatively small country with nearly 160 million people, is the seventh most populous nation globally [9]. The prevalence of breast cancer has surged dramatically in recent years, although the absence of a national central cancer registry prevents complete nationwide data collection. As a result, the exact incidence and mortality of breast cancer remain largely unknown. However, based on the cancer registry report from 2015–2017 at the National Institute of Cancer Research and Hospital (NICRH), 4,930 new breast cancer cases were registered during that period [10]. According to GLOBOCAN, 13,028 new breast cancer cases were diagnosed in 2020, with an age-standardized incidence rate (ASR) of 17 per 100,000 [11]. Data from NICRH also revealed that the mean age of breast cancer patients was 41.8 years, with over 56% of cases occurring among reproductive-aged women. This reflects a higher prevalence of premenopausal cases, with approximately 90% of patients diagnosed at stages III–IV [12]. Delays in diagnosis and treatment may be due to limited healthcare access, where one physician serves roughly 3,300 people in urban areas and over 15,000 in rural regions [13]. Furthermore, socio-cultural factors significantly contribute to delays in seeking medical care, as breast cancer remains a taboo subject in public discourse. Additionally, insufficient knowledge, low education levels, and ignorance among women are primary reasons for the late detection of breast cancer [14]. Cervical cancer is a global public health issue that imposes a significant social and economic burden [15, 16]. The World Health Organization identified cervical cancer as the fourth most prevalent cancer in women, responsible for approximately 0.31 million deaths worldwide in 2018, with nearly 90% of fatalities occurring in low- and middle-income countries [17, 18]. This high mortality rate can be attributed to several factors, including a lack of awareness and knowledge regarding cervical cancer, as well as inadequate organized and high-quality cervical cancer screening and treatment programs [19]. Cervical cancer is primarily caused by specific strains of the human papillomavirus (HPV), which is the most common reproductive tract infection. Persistent infection with one of about 15 carcinogenic genotypes of HPV underlies the vast majority of cervical cancer cases [20, 21]. In Bangladesh, cervical cancer is the second most common malignancy among women, with approximately 12,000 new cases and over 6,000 deaths each year [22]. The high mortality rate is because most women diagnosed with cervical cancer present at advanced stages of the disease when curative interventions are no longer feasible [23]. However, this alarming mortality rate is also linked to limited access to primary and secondary prevention strategies in developing nations like Bangladesh [24-26]. In contrast, cervical cancer is almost entirely preventable through effective screening and vaccination against HPV [18, 19]. In 2004, Bangladesh initiated a national, opportunistic cervical cancer screening program known as visual inspection with acetic acid (VIA) for women over 29 years of age [25, 26]. This initiative revealed that a lack of awareness and understanding of cervical cancer, along with limited knowledge of the screening process, constitutes significant barriers to screening uptake among women in Bangladesh [27].

METHODOLOGY

This cross-sectional study was conducted in Cumilla, Bangladesh, targeting female medical students from three medical colleges: Cumilla Medical College, Cumilla Central Medical College, and Cumilla Eastern Medical College. 300 female MBBS students from the 3rd to 5th academic years participated in the study. Data were collected over nine months, from January to September 2024. The data collection process involved structured self-administered questionnaires, designed to assess the students' knowledge, attitudes, and practices regarding breast and cervical cancer. The questionnaire included closed and open-ended

questions, covering demographic information, awareness of risk factors, health-seeking behavior, and knowledge about breast and cervical cancer screening practices. Before data collection, informed consent was obtained from all participants, ensuring confidentiality and anonymity throughout the process. Data were collected in a face-to-face setting, with trained research assistants facilitating the distribution and collection of the questionnaires. Participants were given sufficient time to complete the surveys, and the research assistants on site addressed any questions or clarifications.

RESULT

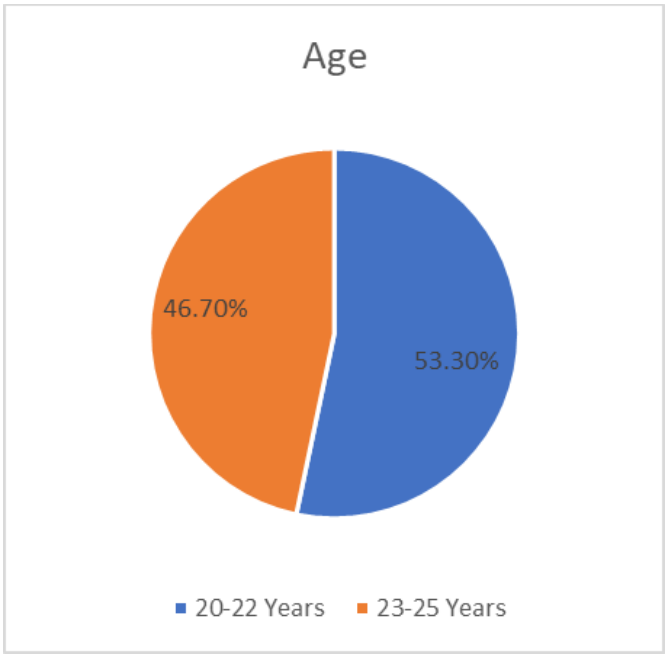

Figure 1: Age of female students

Figure 1 illustrates the age distribution of the participants in the study. The majority of participants fall within the 20-22 age range, accounting for **53.3%** (n=160) of the sample. The remaining **46.7%** (n=140) of participants are in the 23-25 age range.

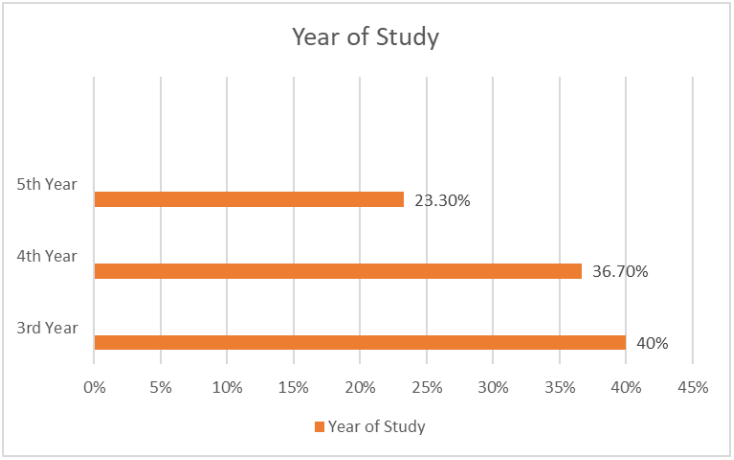

Figure 2: Year of Study of Participants

Figure 2 displays the distribution of participants by their year of study. **40.0%** (n=120) of participants are in their 3rd year, followed by **36.7%** (n=110) in the 4th year, and **23.3%** (n=70) in the 5th year.

Table 1: Marital Status and Family Income of Female Medical Students (n=300)

Variable	Number (n)	Percentage (%)
Family Income (BDT/month)		
<40,000	90	30.0
40,000-60,000	150	50.0
>60,000	60	20.0
Marital Status		
Unmarried	240	80.0
Married	60	20.0

Table 1 illustrates about half of the students came from families with an income ranging between 40,000-60,000 BDT per month.

Table 2: Knowledge of Breast and Cervical Cancer Risk Factors (n=300)

Risk Factor	Aware (n)	Percentage (%)	p-value
Family history of breast cancer	210	70.0	0.012
HPV infection as a cause of cervical cancer	160	53.3	0.045
Smoking as a risk factor	250	83.3	0.001
Early onset of menstruation	90	30.0	0.089
Late menopause	110	36.7	0.065
Use of contraceptives	170	56.7	0.032

Table 2 displays the students' awareness of key risk factors for breast and cervical cancer. Awareness was highest for smoking as a risk factor (83.3%, p=0.001) and lowest for early onset of menstruation (30.0%). The p-values indicate statistically significant associations for family history, HPV infection, smoking, and contraceptive use.

Table 3: Health-Seeking Behavior Regarding Cancer Screening (n=300)

Behavior	Number (n)	Percentage (%)	p-value
Ever undergone breast self-examination	200	66.7	0.023
Attended cervical screening (Pap smear)	90	30.0	0.001
Heard of mammography	240	80.0	0.008
Visited a gynecologist in the last year	100	33.3	0.045
Vaccinated for HPV	80	26.7	0.001

Table 3 outlines the health-seeking behaviors of students about breast and cervical cancer screening. A significant percentage (66.7%, p=0.023) of students had performed breast self-examinations, while only 30.0% had attended cervical screening. HPV vaccination rates were particularly low (26.7%, p=0.001).

Table 4: Attitude Toward Cancer Screening and Prevention (n=300)

Attitude	Agree (n)	Percentage (%)	p-value
Regular screening reduces cancer risk	250	83.3	0.003
Fear of results prevents people from seeking screening	180	60.0	0.012
Early detection improves treatment outcomes	270	90.0	0.001
Lack of time as a barrier to screening	140	46.7	0.045

Table 4 examines students' attitudes toward cancer screening and prevention. The overwhelming majority (90.0%, p=0.001) agreed that early detection improves treatment outcomes, while 60.0% felt that fear of results prevents screening. The belief that regular screening reduces cancer risk was also prominent (83.3%).

Table 5: Practice of Cancer Screening (n=300)

Practice	Number (n)	Percentage (%)	p-value
Regular breast self-examination	140	46.7	0.035
Underwent Pap smear in the last 3 years	80	26.7	0.001
Discussed cancer risks with a healthcare provider	100	33.3	0.048
Encouraged friends/family to undergo screening	120	40.0	0.015

Table 5 provides insight into the practical application of cancer screening knowledge. Only 26.7% of the students had undergone a Pap smear in the last 3 years, with regular breast self-examination practiced by 46.7%. Encouraging others to undergo screening was reported by 40.0% of participants.

Table 6: Knowledge of Breast and Cervical Cancer Screening Methods (n=300)

Screening Method	Aware (n)	Percentage (%)	p-value
Mammogram for breast cancer	250	83.3	0.002
Pap smear for cervical cancer	220	73.3	0.001
Clinical breast examination	200	66.7	0.013
HPV testing for cervical cancer	180	60.0	0.045
Ultrasound for breast lumps	230	76.7	0.006

This table highlights the students' awareness of different screening methods for breast and cervical cancer. The majority were familiar with mammograms (83.3%) and Pap smears (73.3%). HPV testing awareness was relatively lower at 60.0%, indicating a need for increased education on this vital screening tool.

Table 7: Barriers to Cancer Screening Among Female Medical Students (n=300)

Barrier	Reported (n)	Percentage (%)	p-value
Lack of awareness about where to get screened	120	40.0	0.034
Fear of screening results	180	60.0	0.002
Cultural stigma related to cancer	90	30.0	0.045
Cost of screening	150	50.0	0.012
Lack of time	140	46.7	0.023

Table 7 outlines the barriers that prevent students from undergoing cancer screening. The most reported barrier was fear of screening results (60.0%, p=0.002), followed by the cost of screening (50.0%, p=0.012). Awareness about where to get screened and cultural stigma were also significant factors.

Table 8: Sources of Information on Breast and Cervical Cancer (n=300)

Source	Number (n)	Percentage (%)	p-value
Medical school lectures	250	83.3	0.001
Internet/social media	200	66.7	0.004
Healthcare professionals	180	60.0	0.013
Family/friends	90	30.0	0.045
Television/radio	70	23.3	0.001

Table 8 showcases the students' sources of information on breast and cervical cancer. Medical school lectures were the most cited source (83.3%, p=0.001), followed by the internet and social media (66.7%). Healthcare professionals were also a notable source of information for 60.0% of the students.

Table 9: Attitudes Toward Cancer Prevention Programs and Health Campaigns (n=300)

Attitude	Agree (n)	Percentage (%)	p-value
Participation in cancer awareness programs	260	86.7	0.005
Importance of integrating cancer screening in routine check-ups	270	90.0	0.001
Need for more health campaigns on cancer screening	280	93.3	0.002
Willingness to promote cancer awareness among peers	250	83.3	0.004

Table 9 assesses students' attitudes toward cancer prevention programs and health campaigns. A large proportion (93.3%) felt there is a need for more health campaigns on cancer screening, and 86.7% had already participated in cancer awareness programs. The willingness to promote awareness among peers was also strong (83.3%).

Table 10: Practice of Preventive Measures Against Cancer (n=300)

Preventive Measure	Reported (n)	Percentage (%)	p-value
Regular use of sunscreen (for skin cancer)	160	53.3	0.012
Maintenance of a healthy diet	200	66.7	0.008
Physical activity (30 minutes/day)	180	60.0	0.034
Avoidance of smoking	240	80.0	0.001
Routine cancer screenings (any type)	100	33.3	0.002

Table 10 illustrates the students' engagement in preventive measures against cancer. Most participants reported avoiding smoking (80.0%, p=0.001) and maintaining a healthy diet (66.7%, p=0.008). However, only 33.3% reported undergoing routine cancer screenings, suggesting a gap in preventive healthcare practices.

DISCUSSION

This study aimed to assess the knowledge, attitudes, and practices regarding breast and cervical cancer among female medical students in Cumilla, Bangladesh, and identify risk factors and barriers to screening. The results of this cross-sectional study provide important insights into cancer awareness among a key population group with a potential impact on future cancer prevention strategies. The findings indicate that a majority of the students demonstrated moderate-to-high knowledge of breast and cervical cancer. Awareness of mammograms was notably high, with 83.3% (n=250) of the students being familiar with this screening method, while 73.3% (n=220) were aware of Pap smears for cervical cancer (Table 6). Similar findings have been reported in other studies conducted among healthcare professionals, such as one in India where 80.4% of medical students knew about Pap smears and mammograms as primary cancer screening methods. Despite this relatively high awareness, knowledge of HPV testing (60%, n=180) was lower, underscoring the need to promote HPV-related education, as highlighted in a similar study conducted in Pakistan, where knowledge of HPV testing was only 55% among medical students [28]. Students' attitudes towards cancer prevention and screening were positive, with 86.7% (n=260) of the participants indicating that they had participated in cancer awareness programs, and 90% (n=270) agreeing that integrating cancer screening into routine check-ups is essential (Table 9). However, despite the positive attitudes, only 33.3% (n=100) of the students reported having undergone any form of cancer screening themselves (Table 10). This discrepancy between awareness and practice has also been noted in studies conducted in other South Asian countries, where high awareness of screening often does not translate into practice [29]. The most commonly reported barriers to cancer screening were fear of the results (60%, n=180), followed by the cost of screening (50%, n=150), and lack of awareness about where to get screened (40%, n=120) (Table 7). These findings align with similar research from Nigeria, which found that fear and financial constraints were significant obstacles to screening uptake among healthcare professionals [30]. The stigma associated with cancer, reported by 30% (n=90) of the participants, was another notable barrier, suggesting the need for community-focused campaigns to reduce stigma and normalize

screening practices. Medical school lectures were identified as the primary source of information about breast and cervical cancer (83.3%, n=250), followed by the internet and social media (66.7%, n=200) (Table 8). This highlights the critical role that medical education plays in raising awareness among future healthcare providers [31]. However, the reliance on the internet and social media as sources of information raises questions about the quality and accuracy of the information being consumed, as previously noted in other studies on health information sources. Healthcare professionals and family were lesser sources of information, indicating potential areas for improving cancer communication within families and clinical settings. Preventive behaviors such as maintaining a healthy diet (66.7%, n=200) and avoiding smoking (80%, n=240) were widely reported (Table 10). However, routine cancer screening was low, with only 33.3% (n=100) reporting engagement in any form of screening. This finding is consistent with previous research that points to low participation in preventive health behaviors despite high awareness, particularly among medical students [32]. The results from this study reflect trends seen in other developing countries, where there is an overall moderate-to-high awareness of cancer screening methods among healthcare professionals but low rates of personal screening practice. For instance, a similar study conducted in Ghana showed that 70% of female medical students were aware of Pap smears, but only 28% had ever undergone one. Likewise, a study conducted in Malaysia found that while 75% of medical students were aware of mammograms, only 25% had been screened [33-45]. These comparisons further highlight the need for targeted interventions to close the gap between knowledge and practice.

CONCLUSION

This study demonstrates that female medical students in Cumilla, Bangladesh, possess a high level of knowledge about breast and cervical cancer and its screening methods, but their engagement in preventive screening practices remains low. Fear of results, cost, and lack of awareness about screening facilities are major barriers to screening uptake. Given their future role in healthcare, it is crucial to address these barriers through education and support to encourage routine screening practices among medical students themselves. Public health initiatives should focus on reducing stigma, increasing access to affordable screening, and improving education on lesser-known methods such as HPV testing. Additionally, enhancing the role of healthcare professionals and family as sources of information can further support cancer prevention efforts.

Recommendations

Ensure comprehensive education on both breast and cervical cancer prevention, with an emphasis on practical engagement in screenings. Increase the availability and affordability of screening facilities for both medical students and the general population. Implement widespread cancer awareness campaigns to address misconceptions and stigma related to cancer screening. Enhance awareness of the importance of HPV testing and vaccination as part of cervical cancer prevention efforts.

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