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Knowledge and perception of breast cancer among women of reproductive age in Chattogram, Bangladesh: A cross-sectional survey

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Abstract

Background and Aims: Breast cancer is the second leading cause of cancer death in women worldwide. The significantly higher mortality rate has been considered due to poor knowledge of women, delay in diagnosis, and initiation of treatment. Therefore, this hospital-based cross-sectional study aimed to understand the knowledge and perception of women with breast cancer in Bangladesh.

Methods: Data was collected using a questionnaire-based interview from 357 women aged 15–49 years attending two tertiary care hospitals in Chattogram city of Bangladesh.

Results: Neighbors (18.6%) and relatives (18.1%) were the leading sources of information on breast cancer. Among the total, 69.5% knew about breast cancer however, only 14% of them knew about screening tests and 61.5% were unaware of risk factors for developing breast cancer. Pain in the breast, painless lump, and nipple discharge were the most recognized clinical symptoms by the participants. Exercise and weight control, the practice of breastfeeding, and taking medicine were the three most known prevention practices. Women perceived wrong conceptions that Breast cancer is only found in older age (42.3%) and women (15.7%) and that it causes losing one's breast (3.1%). A significant correlation was found between the education level of participants and their knowledge of risk factors related to breast cancer.

Conclusion: Although the majority of the participants have heard about breast cancer, they do not possess enough knowledge regarding the risk factor, symptoms, and preventive methods of breast cancer. We suggest interventions targeting a community-based awareness program

KEYWORDS
breast cancer, knowledge and perception, prevention methods, risk factor, symptoms, women of reproductive age

1 | INTRODUCTION

Breast cancer is one of the major hidden burdens worldwide which develops tumors in the mammary gland and disrupts the usual function of breast tissue. It is the most common cancer in females in more than 150 countries including the developed and developing world. It has mostly been diagnosed among women and a study conducted in the United States showed that women are 100 times more likely to develop breast cancer than men.[1] Globally, 2.1 million females were diagnosed with breast cancer in 2018[2] and the number was over 2.3 million in 2020, accounting for nearly 11.7% of all new cancer cases worldwide.[3] The World Health Organization (WHO) reported that almost 627,000 women have died of breast cancer which accounted for 15% of total cancers death worldwide in 2018.[4] A study in South Asian countries found a total of 200,000 breast cancer cases among which 97,500 patients had died only in 2012.[5] The prevalence of breast cancer has been 32.8% in Bangladesh for the last 5 years and is responsible for about 69% of women's death.[6] There were 12,764 new cases had detected only in the year 2018. A recent study found the overall incidence of breast cancer was 22.5 per 100,000 women.[4] However, women of reproductive age (15- 49) are most vulnerable to developing breast cancer possessing an occurrence rate of 19.3 per 100,000[7] and the death rate was 21% in 2010 in Bangladesh.[8] The presence of a lump in the breast and bloody discharge from the nipple are two major symptoms of breast cancer.[9] It can be detected at an early stage using screening tests like breast self-examination (BSE), clinical breast examination (CBE), and mammography.[10] Therefore, knowledge about breast self-examination is essential for women living in areas with fewer diagnostic facilities like Bangladesh.

Age is a potential risk factor for developing breast cancer and the risk increases with increased age. The literature stated that 30 years older women are 10 times more and 40 years older are 40 times more likely to develop breast cancer compared to those who are 20 years old.[11] A verbal autopsy report stated that, due to breast cancer, the mortality rate was 62% among women who are under 50 years old in Bangladesh.[5] The genetic mutation of two genes called BRCA1 and BRCA2 influences the development of breast cancer in humans.[12] Other genetic factors implicated in the development of breast cancer include mutations in the p53gene, various cell cycle checkpoints in the kinase gene (CHEK2), and phosphatase and tensin homolog (PTEN) gene.[13] Apart from the genetic factor, different reproductive and nonreproductive factors are strongly associated with the development of breast cancer. The reproductive factors included menopausal hormone therapy, first pregnancy, breastfeeding, parity, and so forth, whereas, nonreproductive factors include a personal history of breast cancer, family history, gender, body mass index (BMI), and others.[12] The lack of knowledge, limited access to proper treatment, and negligence of community towards breast cancer are also responsible for the higher mortality rates of breast cancer in Bangladesh. Despite being a burden on society, this disease is getting less discussed among the people. As a result, they have reported possessing improper knowledge regarding the causes and associated risk factors. Furthermore, communities are unaware of the self-diagnosis and available treatment of breast cancer which caused a delay in starting treatment. In addition, unfriendly society and surroundings, make it difficult for women to discuss any initial symptoms or changes in their breasts with others. For that reason, delay in presentation in the advanced stage is very common in Bangladesh.[6] A study found that 50% of breast cancer patients have died due to their late presentation with advanced stages.[14]

The risk of breast cancer could be reduced especially the modifiable risk factors, through controlling weight, alcohol consumption, regular physical activity, and proper diet.[15] However, previous studies found a low level of knowledge of symptoms and risk factors of breast cancer among women in the community which shot-up the rate of incidence.[16] Considering all these scenarios, it is crucial to evaluate the knowledge of breast cancer among the risk groups. In this regard, this study aimed to determine the knowledge and perception of women regarding different aspects of breast cancer in an area with a scarcity of literature. To our knowledge, no other study has been conducted on this topic in the Chattogram region. Therefore, this study will help to understand the present status and provide a baseline for future research work and strategies to reduce the incidence of breast cancer.

2 | METHODS

2.1 | Study design

This hospital-based descriptive cross-sectional survey on knowledge and perception of breast cancer was conducted among women of reproductive age in the Chattogram district of Bangladesh. The study was carried out between December 2020 and June 2021 and covered two tertiary care hospitals located in Chattogram city – Chittagong Medical College hospital and Maa-O-Shishu General hospital. A good number of women have regularly visited in outpatient units of these hospitals to pursue various reproductive health care services. The patients as well as other females attending with them, were interviewed in this study

2.2 | Study population

Our target participants were women with the inclusion criteria of 15–49 years age range. This range is considered the reproductive age of women in Bangladesh.[17–19] Therefore, the participants out of this age range have been excluded from this study. A nonprobability convenient sampling technique where samples have been used based on the inclusion and exclusion criteria. The sample size of 377 was estimated based on a 50% response distribution, a 5% margin of error, and a 95% confidence interval. The expected response proportion of 50% was assumed based on the fact that both responses and response rates were completely unknown since there are no previously published similar studies in the study area.[16,20–22]

2.3 | Questionnaire design and data collection

In this study, data was collected through questionnaires between January 2021 and March 2021. A comprehensive literature review had performed before designing the questionnaire. Although the questionnaire was designed in English later it has been translated into the Bengali language for collecting the data from the participants (see Online Supporting File). The questionnaire was divided into three parts where the first part included participants' socio-demographic characteristics. In the second part of the questionnaire, their basic knowledge about the cause, clinical signs, and prevention of breast cancer was checked. Finally, their perception of breast cancer was investigated in the third part of the questionnaire.

The knowledge regarding breast cancer had assessed by questioning about mammary tumor virus, modes of transmission of breast cancer, sources of their information, knowledge of preventive methods; attitudes and misconceptions towards breast cancer; and symptoms of breast cancer (for instance nipple discharge, pain in breast, discoloration, lump, change in breast shape, etc.). Most of the questions were close-ended questions with Yes and No answers. Few questions were designed based on the multiple-choice options where participants were allowed to choose more than one answer. These questionnaires were provided to those people who have selective criteria matched with this study. This survey has been conducted as a questionnaire-based interview. Before starting the interview, respondents were given detailed knowledge regarding this study so that people can understand the importance of this study and feel interested to participate. Moreover, every question has been asked by the primary researcher to avoid all sorts of biases.

The draft questionnaire was revised by a physician and an epidemiologist to identify ambiguity and assess content validity. After that, the questionnaire was tested among 10 respondents to check the language suitability and the appropriateness of the questions. Slight modifications of language were recorded during the pilot phase, and were addressed in the final questionnaire. The pilot responses were excluded from the current analysis.

2.4 | Data management and analysis

Data from the questionnaires were analyzed using Microsoft Excel and Statistical Package for Social Sciences (SPSS version 20; IBM Japan). Data were summarized by using descriptive statistics and presented in tables and figures. Inferential analysis has been employed for accepting or rejecting the hypothesis of the study. Through reviewing previous literature on risk factors of breast cancer we identified the three most significant risk factors – obesity, menopause, and oral contraceptives for developing breast cancer.[23–27] Therefore, this paper used these three risk factors to assess the knowledge of participants regarding the risk factors of breast cancer. The participants who self-reported knowing the following risk factors were given one score and marked with zero scores for not knowing about a risk factor. Finally, participants were categorized as having good and poor knowledge based on three responses. Participants possessing two to three positive responses were considered to have had "good knowledge" of risk factors. On the other hand, participants with none to only one positive response were marked as having poor knowledge. The socio-demographic variables were considered as indicator variables whereas the knowledge of the risk factors was considered as outcome variables. Pearson's Chi-squared or Fisher exact tests were used to assess the associations between patients' socio-demographic variables and their knowledge about the three most important risk factors of breast cancer with a p-value < 0.05 considered statistically significant.

2.5 | Ethical consideration

This study was conducted following the Asian University for Women (AUW) ethical guideline. An application has been submitted to both of the hospital authorities and obtained formal permission to conduct the survey. Participants have been verbally briefed about the objective of the study. Moreover, all the participants have been assured that confidentiality will be maintained strictly and the data will be used for research purpose only. Participants had the right to leave the study at any time.

3 | RESULTS

Nearly 380 women were approached for data collection in this study, where 23 refused to participate. As a result, completed data were obtained from a total of 357 participants where 173 (48.5%) were from rural and 184 (51.5%) were from urban areas. The age range was 15–49 years with a mean of 28.70 years and a standard deviation of 8.79.

3.1 | Demographic characteristics of the study participants

In Table 1, various demographic characteristics of the respondents were presented with their corresponding residence in the area. In sum, 83.8% ($n = 299$) were married and 6.4% ($n = 23$) were divorced. Most of their education status was up to secondary or higher secondary level (75.9%) and only 12.3% ($n = 44$) had graduation degrees. The rate of graduation was observed higher (19%) among urban women. Among the total, 76.2% ($n = 272$) women were housewife in occupation whereas, 10.6% ($n = 38$) were different service holder and 9% ($n = 32$) marked as students. The number of women engaged in service was comparatively higher among urban participants (17.4%) however, rural participants were mostly housewives (82.7%).

TABLE 1 Socio-demographic characteristics of rural and urban participants

Variable name	Rural (%)	Urban (%)	Total (%)
Age			
≤30 years old	105 (60.7)	113 (61.4)	218 (61.1)
31–49 years old	68 (39.3)	71 (38.6)	139 (38.9)
Marital status			
Married	141 (81.5)	158 (85.9)	299 (83.8)
Never married	17 (9.8)	18 (9.8)	35 (9.8)
Divorced	15 (8.7)	8 (4.3)	23 (6.4)
Participant's education			
Primary	21 (12.1)	21 (11.4)	42 (11.8)
Secondary and higher secondary	143 (82.7)	128 (69.6)	271 (75.9)
Graduation and above	9 (5.2)	35 (19.0)	44 (12.3)
Participant's occupation			
Housewife	143 (82.7)	129 (70.1)	272 (76.2)
Service holder	6 (3.5)	32 (17.4)	38 (10.6)
Student	14 (8.1)	18 (9.8)	32 (9.0)
Other	10 (5.8)	5 (2.7)	15 (4.2)
Husband's education			
Primary	83 (58.9)	45 (28.5)	128 (42.8)
Secondary and higher secondary	39 (27.7)	52 (32.9)	91 (30.4)
Graduation and above	16 (11.3)	54 (34.2)	70 (23.4)
Do not know	3 (2.1)	7 (4.4)	10 (3.3)
Husband's occupation			
Unemployed	2 (1.4)	4 (2.5)	6 (2)
Service holder	54 (38.3)	82 (51.9)	136 (45.5)
Business	40 (28.4)	49 (31.0)	89 (29.8)
Other	45 (31.9)	23 (14.6)	68 (22.7)

3.2 | Source used to know about breast cancer by participants

The bar diagram in Figure 1 represents the source of getting information about breast cancer marked by the participants where it shows that almost 18.6% and 18.1% of the participants identified neighbors and relatives as the leading sources of information respectively. Furthermore, television (14.8%) and social media (14.2%) were also important sources. On the other hand, 7.1% had known from newspapers and 1.6% from books. Apart from that, nearly 8.2% of the participants heard about this cancer from doctors and 1.4% from infected persons.

3.3 | General knowledge of participants in breast cancer

Table 2 represents that most of the participants (69.5%) were familiar with breast cancer however the percentage of knowledge about the virus causing breast cancer was close to zero (0.6%) among the women from both urban and rural areas. A significant number of women (40.1%) were aware of the early detection of breast cancer whereas the proportion of urban women (45.7%) was comparatively higher than the rural participants (34.1%). Of the total, 50% of urban women and 41% of rural women acknowledged that breast cancer is preventable. On the other hand, a small proportion of participants (14%) have known about screening tests for breast cancer and they mostly recognized breast ultrasound (44.4%) and self-examination of the breast (34.9%) for detecting breast cancer. Apart from this, mammography had also been identified by 19.4% of urban women.

Figure 2 shows the comparison of the awareness regarding the symptoms of breast cancer between rural and urban people. People living in urban areas were found to be more aware of breast cancer symptom than rural women. The symptom of pain in the breast was found to be well known among both rural (11.6%) and urban (11.5%) women. A higher number of urban women also recognized painless lumps (8.6%), breast shape change (4.2%), discoloration of the skin (3.9%), and nipple discharge (8.1%) in comparison to those living in rural areas. However, some respondents in both rural (15%) and urban places (16.9%) were still unaware of the symptoms of breast cancer.

Figure 3 depicted that the level of knowledge of the prevention of breast cancer was almost similar between rural and urban women in the study area. Exercise & weight control, the practice of breast-feeding, and taking medicine were three prevention practices highly recognized by participants of both groups. Rural women mostly marked the importance of exercise & weight control (50.0%) and taking medicine (23.6%). On the other hand, a higher number of urban women recognized the practice of breast-feeding (31.9%), regular checkups (7.6%), and vaccination (6.6%) in comparison to rural women.

3.4 | The perception of participants on breast cancer

The overall perception of participants regarding breast cancer has illustrated in Figure 4. The respondents had a misconception that Breast cancer is a sickness that can only be found in older age (42.3%) it only affects women (15.7%) and breast cancer means losing one's breast (3.1%). While 17.8% of them correctly perceived that women are more vulnerable than men, 14.4% it as a communicable disease, and 1.5% believed condensed breast may be more susceptible.
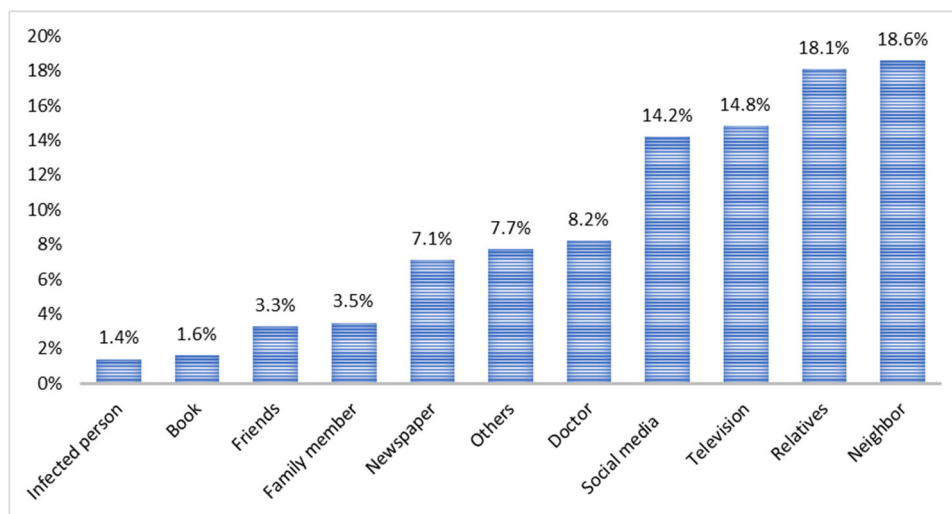
FIGURE 1 Sources of information on breast cancer reported by the participants.

TABLE 2 The knowledge of participants about breast cancer

Variables	Rural (%)	Urban (%)	Total (%)
Know about breast cancer			
Yes	109 (63.0)	139 (75.5)	248 (69.5)
No	64 (37.0)	45 (24.4)	109 (30.5)
Know that Mouse mammary tumor virus can cause breast cancer			
Yes	1 (0.6)	1 (0.6)	2 (0.6)
No	172 (99.4)	183 (99.5)	355 (99.4)
Breast cancer can be detected at primary stage			
Yes	59 (34.1)	84 (45.7)	143 (40.1)
No	114 (65.9)	100 (54.3)	214 (59.9)
Breast cancer is curable			
Yes	71 (41)	92 (50)	163 (45.7)
No	102 (59)	92 (50)	194 (54.3)
Knowledge about breast cancer screening test			
Yes	15 (8.7)	35 (19)	50 (14)
No	158 (91.3)	149 (81)	307 (86)
Know the name of any screening test			
Mammogram	1 (7.1)	7 (19.4)	8 (12.7)
Breast self-examination	5 (35.7)	17 (47.2)	22 (34.9)
Breast ultrasound	9 (64.3)	19 (52.8)	28 (44.4)
Biopsy	0 (0.0)	1 (2.8)	1 (1.6)
Breast MRI	1 (7.1)	3 (8.3)	4 (6.3)

Abbreviation: MRI, magnetic resonance imaging.

3.5 | Knowledge of participants regarding the risk factors of breast cancer

The bar diagram in Figure 5 shows that majority of participants (61.5%) were not aware of the risk factor of breast cancer. 11.7% of the participants identified no breastfeeding as one of the significant risk factors for breast cancer. The other three risk factors mostly recognized by the study participants were genetic (9.4%), smoking (7.2%), and menopause (3.5%)

Participants' knowledge about risk factors for breast cancer has demonstrated in Table 3. Analysis shows that the overall knowledge of women on the three most significant risk factors of breast cancer was very poor. A total of 3.9% (n = 14) of the women had acknowledged that menopause could be a significant risk factor, whereas, 4% were rural and 3.8% were urban participants. Only 2.3% of rural and 3.3% of urban women were aware of the risk associated with oral contraceptives. On the other hand, both groups of women were less aware of the risk of obesity (rural 0.6% and urban 1.6%) for developing breast cancer.

3.6 | Influence of socio-demographic factors on the knowledge of women about breast cancer

The influence of socio-demographic characteristics of participants on the level of their knowledge were illustrated in Table 4. The majority of participants from both rural (94.8%) and urban areas (96.2%) possessed poor knowledge regarding the risk factors of breast cancer. The participants who had an educational qualification of graduation or above had a better understanding of the risk factors of breast cancer (9.1%). However, the association was not found significant. On the other hand, never-married single women (8.6%) demonstrated good knowledge than others. Among different occupational groups, students (9.4%) and housewives (4.4%) were recorded to have good knowledge. This analysis found no significant association for any variable.
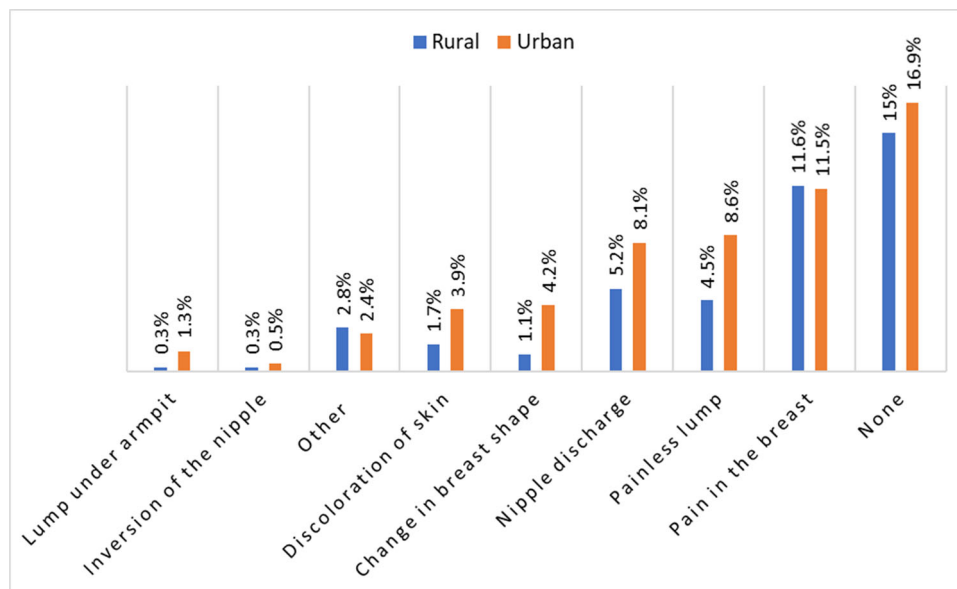
FIGURE 2 Knowledge of rural and urban women about the symptoms of breast cancer.
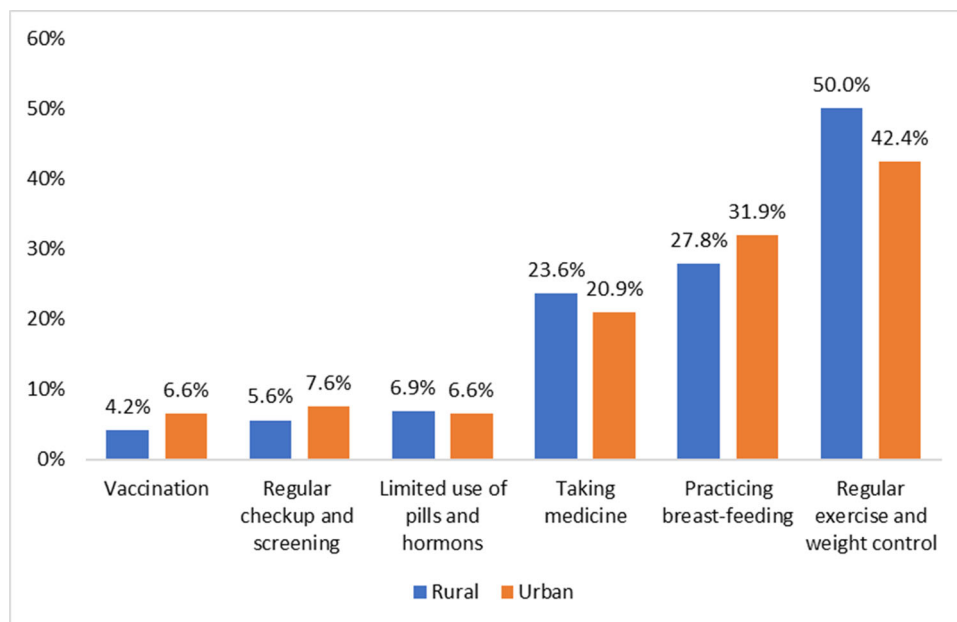

FIGURE 3 Knowledge of rural and urban women in the prevention of breast cancer.

Table 5 represents the correlation of demographic variables with the level of knowledge of the study participants. All the variables show a weak relationship where marital status and type of residence had a negative correlation. However, the level of education of women represented a significant correlation with the rank of knowledge.

4 | DISCUSSION

This study investigated the knowledge of different aspects of breast cancer among Bangladeshi women and focused on the awareness of the factors that could significantly increase their risk of developing breast cancer. In light of the findings of the study, more than half of the participants had no idea about the risk factors of breast cancer and the knowledge was noticeably low which was supported by previous studies in Bangladesh and Ethiopia.[4,28]

Results show that neighbors and relatives were the most important sources from which the majority of the respondents came to know about this disease. It indicates that neighbors and relatives play an important role to make other people more aware of breast cancer. In addition, television and social media were also marked by the study participants which was consistent with the previous study conducted in India where television played a vital role in increasing the awareness among the participants.[16] Although three-fourth of
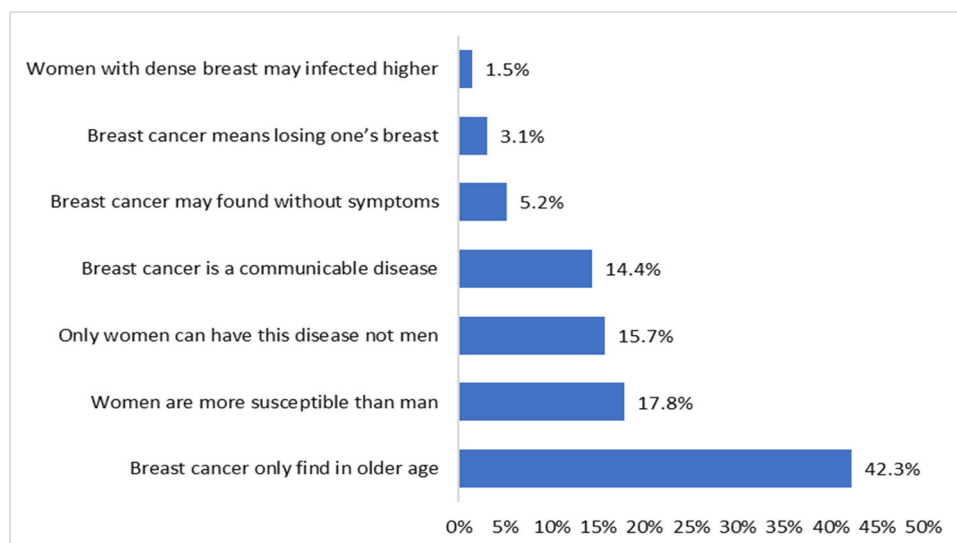
FIGURE 4 Perception of women regarding the breast cancer.
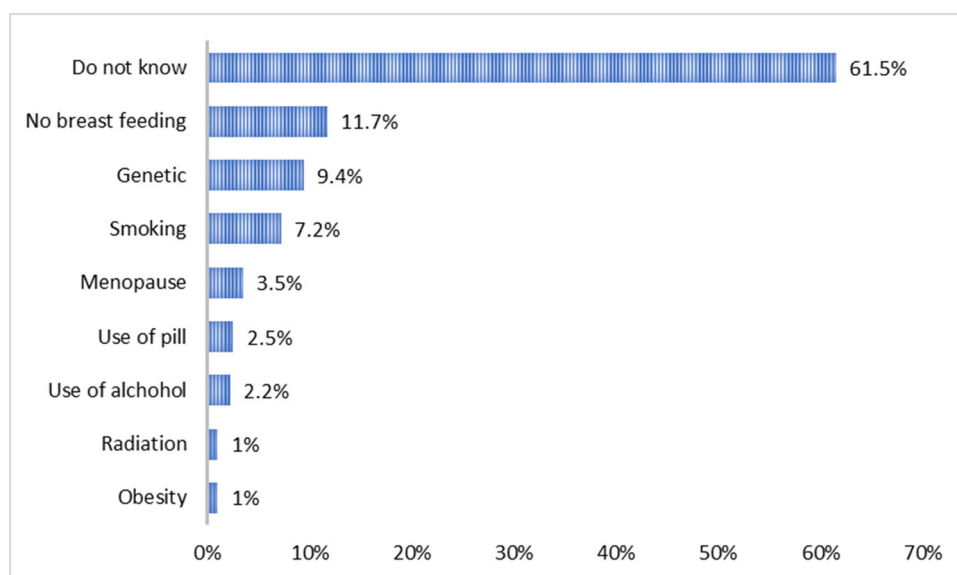

FIGURE 5 Participants' responses regarding the risk factors of breast cancer.

the total participants had ever heard of breast cancer, a majority of them had no detailed knowledge about it. A previous study conducted in Bangladesh also found a good number of respondents (77.4%) were acquainted with breast cancer.[29] Similarly, in another study, 71.8% of the women have found to know about breast cancer.[30] However, the scenario was observed completely different in a community-based study, conducted in Mumbai, India where nearly half of the participants did not hear about this type of cancer.[16] The difference could be due to the difference in target participants and study location.

Analysis revealed that a good proportion of women believed that breast cancer is detectable at an early age. Along with that, participants thought it can be cured if people take treatment on time. This finding was found to be concordant with a study done in Dhaka Medical

College Hospital, Bangladesh where 51.43% of the women reported breast cancer is possible to cure if it is detected early.[31] Regarding the knowledge of screening tests, only a small proportion of the people reported having proper knowledge about breast cancer examination. A cross-sectional study conducted in a small area of Bangladesh also demonstrated that 19.7% of the participants had a good knowledge of breast cancer examination.[3] However, this percentage was found to be higher (64.2%) in another study done in seven districts of Bangladesh.[32] A small number of women were recognized that they know about screening tests for breast cancer and a few of them were found to have heard of different screening tests in which breast ultrasound and breast self-examination were most familiar. Similarly, a cross-sectional study done in Delhi, India found limited knowledge of women in breast self-examination.[22] However, this finding was opposite to a previous study

TABLE 3 Knowledge regarding the risk factors of breast cancer

Variables	Rural (%)	Urban (%)	Total
Do you know that menopause can be a risk factor of breast cancer?			
Yes	7 (4.0)	7 (3.8)	14 (3.9)
No	166 (96.0)	177 (96.2)	343 (96.1)
Do you know that oral contraceptive can be a risk factor of breast cancer?			
Yes	4 (2.3)	6 (3.3)	10 (2.8)
No	169 (97.7)	178 (96.7)	347 (97.2)
Do you know that obesity can be a risk factor of breast cancer?			
Yes	1 (0.6)	3 (1.6)	4 (1.1)
No	172 (99.4)	181 (98.4)	353 (98.9)

TABLE 4 Association between the socio-demographic variables of participants and their level of knowledge of risk factors of breast cancer

	Knowledge level regarding the risk factors		
Variable	Good knowledge (%)	Poor knowledge (%)	p value
Area of residence			0.351
Rural	9 (5.2)	164 (94.8)	
Urban	7 (3.8)	177 (96.2)	
Age			0.437
≤30 years old	9 (4.1)	209 (95.9)	
31–49 years old	7 (5)	132 (95)	
Education level			0.125
Primary	0 (0)	42 (100)	
Secondary and higher secondary	12 (4.4)	259 (95.6)	
Graduation and above	4 (9.1)	40 (90.9)	
Marital status			0.467
Married	12 (4.0)	287 (96.0)	
Never married	3 (8.6)	32 (91.4)	
Divorced	1 (4.3)	22 (95.7)	
Occupation			0.423
House-wife	12 (4.4)	260 (95.6)	
Service holder	1 (2.6)	37 (97.4)	
Student	3 (9.4)	29 (90.6)	
Other	0 (0)	15 (100)	

TABLE 5 The correlation of demographic variables with the level of knowledge of the participants

	Spearman rank correlation	
Variables	Correlation coefficient	p value
Marital status	−0.05	0.346
Occupation	0.008	0.88
Residence	−0.034	0.525
Education	0.108	0.042*
Age	0.021	0.687

Participants were identified a number of symptoms where pain in the breast had taken as the most known symptom which was supported by the similar finding of a previous study in Pakistan.[35] On the other hand, a low percentage of women considered pulling inversion of the nipple, lump under the armpit, discoloration of the breast, and change in shape as the symptom of breast cancer. The literature stated that the majority of the participants were not aware of changes in breast shape, nipple inversion, change in color of the nipple, etc. as dangerous symptoms.[36] Nonetheless, a study in North India assessed that two-fourths of the population identified a change in shape, and less than half was detected nipple discharge.[34] A lump in the breast was found to be the most common symptom in another study conducted in Southeast Ethiopia among women.[21]

The knowledge regarding the preventive method was found more likely to be similar among rural and burdened women where nearly half of the respondents considered regular physical exercise and weight control as the best methods to prevent this type of cancer. A descriptive cross-sectional study also delineated a similar finding where 42.7% of the population agreed being physically active could be one of the most effective measures against breast cancer.[30] Among the study participants, approximately half of the women thought breast cancer can only be found in older age which contradicts the result of another study done in Saudi Arabia where the older people did not consider themselves as more vulnerable than the other.[20] Furthermore, a large proportion of the women thought

conducted in rural Egypt where 91% of the participants were familiar with breast self-examination.[33] However, another study demonstrated that 60% of the participants were not aware of the breast self-examination.[34]

breast cancer can only be detected in women but not in men. However, some women also reported that breast cancer could be a communicable disease. Nonetheless, the finding of a previous study was not concordant with our result where most of the women strongly replied that breast cancer cannot be restricted to women and more than half of them also reported breast cancer as a non-communicable disease.[30]

This study highlighted a low level of knowledge regarding the potential risk factors of breast cancer among the respondents. Only a small proportion of women acknowledged that not breastfeeding could be one of the risk factors followed by other risks including genetic factors, smoking, and menopause. The finding was found to be similar to previous studies.[37,38] Previous literature reported menopause, obesity, and the use of oral contraceptives as the most significant risk factor for breast cancer.[26,27,39,40] This study found a correlation between educational status and knowledge of significant risk factors (menopause, obesity, and oral contraceptive) for breast cancer. Literature also stated that a higher educational level was associated with the good performance of women in breast self-examination.[41,42] Results suggest that educating the community could be used as a tool for increasing awareness of breast cancer and implementing prevention strategies.[43] Hence, this study found no significant association between the socio-demographic variables and the risk factors of breast cancer. This could be because women had no or very little knowledge about the risk factor and didn't feel informed enough to form an opinion. However, a study in Southeast Asia found income level was significantly associated with knowledge level.[21]

One of the big strengths of this study was the good number of participants. Since this was a cross-sectional study, these results cannot be interpreted as clear evidence of a causal association between the significant risk factor and an increased risk of breast cancer. The study was also lack of probability sampling. Moreover, as the study participants were mostly experienced with reproductive problems and visited outpatient units of hospitals their level of knowledge would be different from general women. Other than that, there was a chance of recall biases in this study. Finally, the findings of this study would contribute to promoting interventions aimed at increasing women's awareness and knowledge about breast cancer and its associated significant risk factors.

5 | CONCLUSION

Analysis revealed poor knowledge of breast cancer in both rural and urban women. Although the majority of the participants have heard about breast cancer, only a small percentage of them have a thorough understanding of the disease. In these consequences, breast cancer awareness programs on the symptoms, screening, and prevention should be initiated especially at the community level. Additionally, health education might play a significant role in promoting good practices among young women especially personal hygiene, self-examination of breasts, and other screening programs for ensuring early detection and starting of the treatment.

AUTHOR CONTRIBUTIONS

Fatema Mehejabin: Conceptualization; data curation; formal analysis; investigation; writing – original draft; writing – review & editing. **Md. Sahidur Rahman**: Conceptualization; formal analysis; methodology; supervision; validation; visualization; writing – review & editing.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The authors confirm that the data supporting the findings of this study are available within the article and its supplementary materials.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.