A Cross-sectional Survey on Knowledge regarding Breast Cancer and Breast Self-examination among Bangladeshi Women

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Abstract: *Breast cancer (BC) is considered as one of the most prevalent cancers among women in Bangladesh. The aim of the present study was to investigate the knowledge about BC, risk factor prevalence and breast self-examination (BSE) practices among female populations of Bangladesh. After taking verbal consent, 1051 females of age ≥20 years from different districts of Bangladesh were interviewed using a pre-tested questionnaire in 2015. Among the respondents, three-forth (77.74%) knew (heard or read) about BC and their main source of information was electronic media (74.54%). Most of them could identify at least one sign and symptom (73.93%) and one risk factor of BC (71.55%). But only 34.16% and 52.14% correctly identified at least one option for early detection and treatment, respectively. Although early screening of BC was very important according to 58.90% respondents and BSE procedure was known to 21.69%, only 13.13% actually performed BSE. Major risk factors prevailing among the respondents were a BMI ≥25 (35.39%), menarche at <12 years age (21.03%), contact with radiation to chest or face (15.89%) and age ≥40years (20.08%). Using paired t-test, BC knowledge was found to be significantly (p<0.05) related to being unmarried, having higher education levels and positive family history. Practice of BSE was also significantly associated with increase in age, higher education levels, being married and perception of importance about early screening. The results of this study reflect the need for educating Bangladeshi women about BC to improve their knowledge level and to increase their practice of early screening strategies.*

Keywords: *Bangladesh; breast cancer; breast self-examination; knowledge; practice.*

I.   Introduction

Breast cancer (BC) is the most common cancer and the major cause of cancer death among women worldwide as well as in Bangladesh. In 2012, approximately 1.7 million new BC cases were reported which was about one-fourth of all newly diagnosed cancer cases. Increase in BC incidence rates remained highest in more developed regions, while increase in mortality rate was relatively much higher in less developed countries due to lack of early detection as well as access to treatment facilities [1]. BC incidence is expected to increase in developing countries due to increasing lifespan and increasing westernization of life style [2]. Moreover, malignancies were found to be the leading cause of death among adult Bangladeshi female in 2010 [3]. In developing countries including Bangladesh, most of the BC patients are diagnosed at an advanced stage due to lack of awareness and inadequate access to health care facilities [2]. Inadequate knowledge about BC is a crucial obstacle in diagnosis and treatment initiation which ultimately increases the morbidity and mortality rate [4]. More than 3 months delay in diagnosis and treatment from first detection of symptomatic BC may result in diagnosis of the disease at an advanced stage, poor treatment outcome and decreased survival length [2, 5].

Due to lack of health resources and high expenditure of mammography, the 'National Cancer Control Strategy and Plan of Action 2009-15' of Bangladesh suggests to promote clinical breast examination (CBE) and Breast self-examination (BSE) as early detection strategy of BC for down staging the disease and improving survival [6, 7]. This is also the recommendation of the Breast Health Global Initiative (BHGI) for low- and middle-income countries at the basic level [8]. Although improper performance of BSE can give false satisfaction and can reduce the chances of detection through mammography, BSE is still treated as a valid and practical option for early screening of BC in women [9]. Interestingly, most of the early breast tumors are self-discovered and majority of early self-discoveries are done by BSE performers [5].

Very few studies have been conducted in Bangladesh regarding BC awareness [10-12]. The present study was aimed at investigating levels of BC awareness, prevalence of major risk factors and practices towards early detection strategies among female populations of Bangladesh.

II.   Methods

A pre-tested structured questionnaire about BC was used as data collection instrument. The questionnaire included socio-demographic characteristics, knowledge on BC, prevalence of risk factors and behavior towards early detection strategies. The questionnaire was prepared in English language and translated to Bengali (local language) and translated back to English to maintain the data consistency. The study was carried out in 2015 at different areas of Dhaka, Gazipur, Comilla and Noakhali districts of Bangladesh. After taking verbal consent, data were collected from 1051 females of age ≥ 20 years using convenience sampling technique. This particular age range was targeted because almost all BC screening techniques are applicable to them [13]. Three investigators visited the respondents' houses and collected data from them through face-to-face interview. The collected data were analyzed with the help of Microsoft Office Excel 2007 and GraphPad prism (Version 5.01).

We hypothesized that age, levels of education, marital status and positive family history might have an impact on BC knowledge and thus performed paired t-test to find out the p-values. The same statistical test was employed to investigate if BSE practice) was influenced by age, education levels, marital status and knowledge about the importance of screening. In both cases, p-values of < 0.05 (at 95% CI) were considered significant.

III.   Results

3.1 Socio-demographic characteristics

Table 1 shows socio-demographic characteristics of the study population. The mean age the study participants was 32.34 ($\pm$ SD 9.86) and most (45.67%) of them were below 30 years. Majority (45.10%) of the respondents completed graduation while 11.99% were illiterate. Most of them were married (72.03%) and mother of children (62.80%).

Table 1: Socio-demographic Characteristics of the Respondents

Variables	No.	%
Age distribution		
20-29 years	480	45.67
30-39 years	360	34.25
40 years and above	211	20.08
Educational qualification		
Illiterate	126	11.99
Primary School	133	12.65
SSC	81	7.71
HSC	236	22.45
Graduate	357	33.97
Post-graduate	117	11.13
Others	1	0.10
Marital status		
Married	757	72.03
Unmarried	294	27.97
No. of children		
None	97	9.23
One	149	14.18
Two	275	26.17
Three or more	236	22.45

3.2 Breast cancer knowledge and information sources

More than three-forth (77.74%) of the study participants reported that they knew (either heard or read) about BC and further questions regarding knowledge and early screening strategy of BC were asked only to them. Their main source of knowledge about the disease was electronic media followed by educational institute (Table 2).

Table 2: Knowledge about Breast Cancer among the Respondents

Variables	No.	%
Knowledge about breast cancer		
Yes	817	77.74
No	234	22.26
Source of knowledge[a]		
Electronic media	609	74.54
Journals	177	21.66
Books	126	15.42
Educational institution	184	22.52
Conference	52	6.36
NGOs	27	3.30
Others	129	15.79
Sign & symptoms of breast cancer[a]		
Changes in size or shape of breast	413	39.30
New lump or thickening in breast or armpit	442	42.06
Changes in breast skin	235	22.36
Inversion, difference in shape or pointing in nipple	222	21.12
Rashes on or around nipple	150	14.27
Discharge of fluid (not milky) from nipples	147	13.99
Pain or discomfort in breast or armpit	287	27.31
Risk factors of breast cancer[a]		
Genetics	432	41.10
Lack of breast feeding	406	38.63
Higher levels of certain hormones	170	16.18
Obesity	107	19.70
Alcohol consumption	87	8.28
Radiation	115	10.94
Smoking	60	5.71
Menarche at <12 years age	133	12.65
Treatment options for breast cancer[a]		
Chemotherapy	465	44.24
Surgery	428	40.72
Hormonal therapy	37	3.52
Radiation	80	7.61
Others	1	0.10
Early detection methods for breast cancer[a]		
Breast self-examination (BSE)	275	26.17
Clinical breast examination (CBE)	162	15.41
Mammography	172	16.37
Others	8	0.76
Don't know	7	0.67
Importance of breast cancer screening		
Very important	619	58.90
Less important	29	2.76
Not necessary	14	1.33
Don't know	155	14.75

[a]Multiple answers were given by respondents

Most of the respondents mentioned at least one sign and symptom (73.93%) while more than 50% of them were aware of at least two signs and symptoms. Lump or thickening in breast or armpit and changes in size or shape of breast were mostly mentioned signs and symptoms. At least one risk factor of BC was known to 71.55% respondents while only 38.44% could identify two risk factors. Genetics and lack of breast feeding were mostly identified by the study participants (Table 2). About 53% respondents were aware of BC treatment and 52.14% correctly identified at least one treatment option. Among the various treatment options, chemotherapy and surgery were known to 44.24% and 40.72% respondents, respectively. When the study participants were asked about early detection methods of BC only 34.82% of them responded positively and 34.16% correctly mentioned at least one method. BSE was known to only 26.17% of the respondents and mammography to a lower proportion (16.37%) (Table 2).

3.3 Prevalence of breast cancer risk factors

Female gender, older age, obesity, menarche at <12 years of age, radiation therapy to the chest or breasts, having a first-degree relative with BC [14-18] etc. increases the risk of developing BC. One of the major risk factors (35.39%) prevailing among the respondents was found to be a BMI ≥25 (30.16% overweight and 5.23% obese). Besides, menarche at <12 years of age, contact with radiation to chest or face and age ≥40 years were identified as prominent risk factors among the study participants (Table 3). About 6.09% respondents declared having a positive family history of BC but only 40.63% of them mentioned genetics as a risk factor (Table 3).

Table 3: Prevalence of Breast Cancer Risk Factors among the Respondents

Variables	No.	%
BMI status		
Underweight	43	4.09
Normal weight	634	60.32
Overweight	317	30.16
Obese	55	5.23
Family history of breast cancer		
Yes	64	6.09
No	870	82.78
Don't know	117	11.13
Age of menarche		
<12 years	221	21.03
>12 years	818	77.83
Don't know	12	1.14
Contact with radiation to chest or face		
Yes	167	15.89
No	866	82.40
Don't know	18	1.71

3.4 Knowledge and practice of early screening methods

According to 58.90% of the study participants, screening of BC is very important while only 26.93% respondents regularly feels/observes their breast for any changes. BSE were known to only 26.17% of the respondents. About 21.69% respondents mentioned that the procedure of BSE was known to them while only 13.13% said they actually performed it. But upon asking, only 6.57% and 6.28% could correctly answer about the recommended age of starting BSE and frequency of performing it, respectively. Some of the respondents also had knowledge about CBE (15.41%) and mammography (16.37%). Among the respondents, only 2.57% had previously attained an appointment for BC screening for having pain, fluid discharge or presence of lump (Table 4).

Table 4: Knowledge and Practice of Early Screening Methods of Breast Cancer among the Respondents

Variables	No.	%
Regularly observing/feeling breasts for any changes	283	26.93
Knowledge about BSE procedure	228	21.69
Knowledge about correct age of stating BSE (20 years)	69	6.57
Knowledge about correct frequency of performing BSE (once/month)	66	6.28
Performance of BSE	138	13.13
Attaining breast cancer screening by health professional	27	2.57

3.5 Factors associated with breast cancer knowledge and BSE practice

We observed an increment of BC knowledge with respect to educational level and this relation was statistically significant. Unmarried respondents were found significantly more aware of BC when compared with married respondents. It was also found that participants with positive family history were significantly more familiar with BC (Table 5).

Table 5: Factors Associated with Breast Cancer Knowledge

Variables	Knowledge about breast cancer		P-value
	Yes (%)	No (%)	
Age			0.3491
20-29 years (n = 480)	390 (81.25)	90 (18.75)	
30-39 years (n = 360)	259 (71.94)	101 (28.06)	
40 years and above (n = 211)	168 (79.62)	43 (20.38)	
Education			<0.001
Illiterate (n = 126)	17 (13.49)	109 (86.51)	
Primary School (n = 133)	54 (40.60)	79 (59.40)	
SSC (n = 81)	50 (61.73)	31 (38.27)	
HSC (n = 236)	217 (91.95)	19 (8.05)	
Graduate (n = 357)	353 (98.88)	4 (1.12)	
Post-graduate (n = 117)	117 (100)	0 (0)	
Others (n = 1)	1 (100)	0 (0)	
Marital status			0.0412
Married (n = 757)	568 (75.03)	189 (24.97)	
Unmarried (n = 294)	249 (84.69)	45 (15.31)	

Positive family history			<0.001
Yes (n=64)	64 (100)	0 (0)	
No (n=870)	710 (81.61)	160 (18.39)	
Don't know (n=117)	43 (36.75)	74 (63.25)	

Our results indicate that the proportion of women performing BSE increases along with age (18.48% for the age group 40 years and above vs. 11.46% for the age group of 20-29 years). The proportion of women who completed post-graduation was found to perform BSE more than that of illiterate women (42.74% vs. 1.59%). BSE practice was found significantly higher in married respondents. Also, a significant relation was found between BSE performance and knowledge about importance of screening (Table 6).

Table 6: Factors Associated with Breast Self-examination (BSE) Practice

Variables	Practice of BSE		P-value
	Yes (%)	No (%)	
Age			<0.001
20-29 years (n = 480)	55 (11.46)	425 (88.54)	
30-39 years (n = 360)	44 (12.22)	316 (87.78)	
40 years and above (n = 211)	39 (18.48)	172 (81.52)	
Education			<0.001
Illiterate (n = 126)	2 (1.59)	124 (98.41)	
Primary School (n = 133)	1 (0.75)	132 (99.25)	
SSC (n = 81)	0 (0)	81 (100)	
HSC (n = 236)	20 (8.47)	216 (91.53)	
Graduate (n = 357)	66 (18.49)	291 (81.51)	
Post-graduate (n = 117)	50 (42.74)	67 (57.26)	
Others (n = 1)	1 (100)	0 (0)	
Marital status			<0.001
Married (n = 757)	92 (12.15)	665 (87.85)	
Unmarried (n = 294)	30 (10.20)	264 (89.80)	
Knowledge about the importance of Screening			<0.001
Very important (n = 619)	129 (20.84)	490 (79.16)	
Less important (n = 29)	3 (10.34)	26 (89.66)	
Not necessary (n = 14)	0 (0)	14 (100)	
Don't know (n = 155)	5 (3.23)	150 (96.77)	

IV. Discussion

It is evident from our study that 77.74% women knew about BC which is almost similar to a previous study on Bangladeshi females [12]. With regard to the source of information, majority mentioned about electronic media (74.54%). Similar observations were revealed in studies conducted on Egyptian, Indian, Ethiopian and Tanzanian women although higher proportion of their study population were found familiar with the term BC [13, 19-21]. The level of knowledge among our study population was not satisfactory. Majority of the respondents who were aware of BC could identify at least one sign and symptom (73.93%) and one risk factor (71.55%) but their knowledge regarding early detection methods and treatment were poor as one option for each area were mentioned by only 38.16% and 52.14% respondents, respectively. The scenario of the other Bangladeshi studies was quite different [10, 12]. Among the signs and symptoms, presence of lump was most commonly known to our study respondents, which is similar to some other studies done in South Asian and African countries [10, 13, 19, 21-23]. Genetics was the highest mentioned risk factor in our study which is in agreement with Malaysian females [23]. But in previous Bangladeshi and Ethiopian studies, respondents identified cigarette smoking as the most common risk factor [10, 13] which was the least known risk factor to our participants.

Majority of our study participants identified BSE as early screening method which is completely different from the previous studies on Bangladeshi women where CBE [12] and mammography [10] was mostly mentioned. This difference might be due to confusion of the respondents about clinical visits with CBE [12] or conduction of study at an urban hospital [10]. Chemotherapy and surgery were identified as the two highest known treatment options by both our and Ethiopian study participants [13].

BC Knowledge was found to have significant association with higher level of education which is in agreement with several other studies [5, 11-13, 19-20, 23]. Also unmarried participants had significantly higher BC awareness which is consistent with other studies [20, 23]. Moreover, respondents with a positive family history had a higher knowledge compared to those with no family history of BC and the difference was significant statistically. But among 6.09% respondents who had family history of BC only two-fifth mentioned genetics as a risk factor. This is in line with the study conducted by Allam and Elaziz [20].

Among the risk factors, being overweight or obese, attaining early menarche and having contact with radiation to chest or face were prevailing among the study participants. However, their knowledge about these particular risk factors was found very poor. Knowledge and practice of early screening strategies were found very low in our study population. Importance of screening was known to 58.90% participants but less than half of them regularly feels/observes their breast for any changes. Although the knowledge and practice of BSE among our respondents were found higher in comparison with other Bangladeshi studies [10, 12], those are still lower than Ethiopian, Indian and Tanzanian women [13, 19, 21-22]. Also, only one-third of those who were aware of the BSE procedure could mention the correct age of starting and frequency of performing BSE. So, the main reason behind low BSE practice could be lack of correct knowledge about the procedure which is supported by Iranian, Kuwaiti and Tanzanian women [13, 21]. Lack of perception about importance of screening could also be a major barrier in BSE practice as mentioned by Kuwaiti women [13]. Higher level of education, increase in age, being married and perception of importance about early screening showed significant association with BSE practice in our study. Similar findings were reported by other investigators relating BSE practice to education level [5, 11-13] and marital status [24]. The scarcity of BSE knowledge can decrease the likelihood of early detection of the disease.

V. Conclusion

From the findings of this study it is clear that the level of knowledge and awareness of the participants regarding BC as well as their BSE practice were poor and inadequate. However, we cannot generalize the data for whole Bangladeshi population as the study was conducted on limited number of respondents and as convenience sampling method was followed. BC education program should be arranged by health care professionals and government to make the population aware about BC.

Acknowledgement

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