

Breast cancer knowledge and awareness among females in Al-Qassim Region, Saudi Arabia in 2018

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ABSTRACT

Aim: This study aimed to measure breast cancer (BC) awareness among women in Al-Qassim and to compare the results to previous studies in Saudi Arabia and international studies. **Method:** This is a cross-sectional study conducted in Al-Qassim region, Saudi Arabia. All women above 18 years of age were included and those who could not complete the questionnaire for any reason were excluded. The data were collected by using a valid pretested structured questionnaire taken from previous studies. Descriptive statistics were presented using frequency and proportion for all categorical variables and mean \pm standard deviation for continuous variable. The relationship between dependent variable versus independent variables had been conducted using Chi-square test. *P* value of ≤ 0.05 was considered as statistically significant. **Results:** Nearly all participants were highly aware of BC (95.4%) and half of them correctly identified that not only females are affected by BC. With regards to personal breast assessment, more than a half of them have done breast self-examination; however, only one out of four females had done clinical breast examination and mammography test. The most common risk factor of BC was family history and the commonest signs and symptoms were the size and shape changes of the breast. The prevalence of poor knowledge was 202 (38.9%) while good knowledge was 317 (61.1%). Age group in years and use of oral contraceptives were the independent significant factors of poor knowledge. **Conclusion:** The overall knowledge of women about BC in this study was inadequate. While half of the women performed breast self-examination on the contrary, the actual clinical breast examination found to be low. The most common risk factor being identified was family history of BC and smoking. Size and shape changes of breast as well as breast lump were the most common signs and symptoms. Age group in years and the use of contraceptives pills were being identified as the significant factors of knowledge toward BC.

Keywords: Awareness, breast cancer, contraceptives, females, knowledge

Introduction

Breast cancer (BC) is considered among the top cancers in both developed and developing countries worldwide. It occupied nearly 25% of all cancer types in females globally in 2012.^[1]

The increasing incidence in the developing world may be due to increased urbanization, life expectancy, and the adoption of western lifestyles.^[2]

In 2002, the number of BC cases reported worldwide was 10.9 million with 6.7 million deaths caused due to BC. Rate expected to rise by 50% with 15 million new cases being reported by 2020.^[3]

Focusing on the Kingdom of Saudi Arabia (KSA), covering an area of 2,240,000 km², variations could be expected in the prevalence and pattern of breast diseases. According to the Saudi

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Cancer Registry, the total number of cases was 6,922 females between January 2001 and December 2008. The number of cases reported in 2001 was 545 cases and its raised to 1,473 cases by 2010 that occupied 27.4% of all new cancer cases (5,378) in the same year.^[4] It has been noticed that the age of diagnosis of females in Saudi Arabia was younger as compared to females in other countries.^[5]

General awareness has two aspects; first is the knowledge of risk factors associated with the disease and the second being familiar with the concept of screening.^[6] Due to increasing trends in BC cases, studies are required to find out the awareness level about BC among the community.^[7] Factors that related to women knowledge and background about BC and its management may contribute significantly towards improving medical help-seeking behaviors which will help in early detection of any breast mass.^[8]

Statistical Analysis Method

Descriptive statistics was presented using frequency and proportion for all categorical variables and mean ± standard deviation for continuous variable. The relationship between the dependent variable versus independent variables had been conducted using Chi-square test. *P* value of ≤0.05 was considered as statistically significant. The likelihood ratio of independent predictors versus outcome predictor had been calculated using binary logistics regression analysis where the odds ratio, as well as 95% CI, were also being reported. All the data analyses were performed using Statistical Packages for Social Sciences (SPSS) version 20, Armonk, NY: IBM Corp.

The assessment of overall knowledge was based on knowledge questionnaires that consisted of 11 questions, wherein we identified the most appropriate answer for each question which we coded as 1 while the wrong answer was coded as 0. Based on the result, a score range of 0–11 had been generated. By using a cutoff point of 60%, poor knowledge was classified if the participants obtained a score of 6 points or less and good knowledge if participants obtained a score of more than 6 points.

Results

We recruited 519 female participants to be representative of this study. Age range was from 18 to more than 40 years old and the majority was in the younger age group (18–24 years). Nearly all participants were Saudi's (96.3%) with most of them being professionals (66.1%) while more than half of them being low earners (<5000 SAR). Of the 519 females, more than 60% of them were above 12 years of age at the time of first menstruation while the rest before or during 12 years of age. About 51.8% of them were having children while about half of the subjects preferred not to use oral contraceptives. Only 15.8% of them had a traced of ancestral history of BC. On the other hand, 35% of them were having regular exercise however, most of them were still either overweight or obese (54.9%) [Table 1].

Table 1: Participants sociodemographic characteristics

Study Data	n (%) (n=519)
Age group in years	
18-24 years	170 (32.8%)
25-30 years	101 (19.5%)
31-35 years	46 (08.9%)
36-40 years	55 (10.6%)
>40 years	147 (28.3%)
Nationality	
Saudi	500 (96.3%)
Non-Saudi	19 (03.7%)
Educational level	
Illiterate	35 (06.7%)
Elementary	31 (06.0%)
Intermediate	16 (03.1%)
High school	94 (18.1%)
Bachelor	343 (66.1%)
Marital Status	
Single	205 (39.5%)
Married	272 (52.4%)
Divorced	20 (03.9%)
Widowed	22 (04.2%)
Monthly income (SAR)	
<5000	296 (57.0%)
5000-10000	132 (25.4%)
11000-20000	79 (15.2%)
>20000	22 (04.2%)
Age of menstruation (years)	
≤12 years	200 (38.5%)
>12 years	319 (61.5%)
Having children	
Yes	269 (51.8%)
No	250 (48.2%)
Use of Oral contraceptives	
No	250 (48.2%)
Often	154 (29.7%)
Regularly	115 (22.2%)
Family history of Breast cancer	
Yes	82 (15.8%)
No	437 (84.2%)
Exercise	
Yes	182 (35.1%)
No	337 (64.9%)
BMI	
Underweight	35 (06.7%)
Normal	199 (38.3%)
Overweight	163 (31.4%)
Obese	122 (23.5%)

BMI – Body Mass Index

Table 2 presented the general awareness of participants toward BC. Almost all participants were highly aware of BC (95.4%) and half of them correctly identified that not only females are affected by BC. About 93.6% of them certainly agreed that BC cannot be transmitted to another whereas most of them know that BC is the commonest type of cancer among women in Saudi Arabia while 85.2% of the participants were aware that women who breastfeed had low risk of BC. Nearly 41.2% of them correctly detected that lump in the breast could be due to hormonal changes

Table 2: Awareness of participants toward breast cancer

Statements	n (%) (n=519)
K1. Ever heard about BC	
Yes*	495 (95.4%)
No	24 (04.6%)
K2. Only females are affected by BC	
Correct	256 (49.3%)
Incorrect*	263 (50.7%)
K3. BC can be transmitted from one person to another	
Correct	33 (06.4%)
Incorrect*	486 (93.6%)
K4. BC is the commonest type of cancer among women in KSA	
Correct*	449 (86.5%)
Incorrect	70 (13.5%)
K5. Women who breastfeed have a low risk of BC	
Correct*	442 (85.2%)
Incorrect	77 (14.8%)
K6. A lump in the breast could be due to	
Old frozen milk	75 (14.5%)
Hormonal changes*	214 (41.2%)
Do not know	230 (44.3%)
K7. Have you done breast self-examination before	
Yes*	269 (51.8%)
No	250 (48.2%)
Yes, for what purpose [†]	
Advice from a health worker	123 (45.7%)
Medical reason	42 (15.6%)
Notice of breast lump	41 (15.2%)
One of the family members had cancer	15 (05.6%)
Routine medical examination	48 (17.8%)
No, Why? [‡]	
Not for my age group	18 (07.2%)
I would like to do it but I do not know how	81 (32.4%)
I know about it but I do not do it or have no time	86 (34.4%)
I do not know why I should do it	65 (26.0%)
K8. Have you done clinical breast examination?	
Yes*	127 (24.5%)
No	392 (75.5%)
Yes, for what purpose [†]	
Advice from a health worker	13 (10.2%)
Medical reason	46 (36.2%)
Notice of breast lump	51 (40.2%)
One of the family members had cancer	06 (04.7%)
Routine medical examination	11 (08.7%)
No, Why? [‡]	
Not for my age group	49 (12.5%)
I know about it but I do not do it or have no time to do it	92 (23.5%)
I do not have enough information	136 (34.7%)
I do not know why I should do it	115 (29.3%)
K9. Have you done Mammography before?	
Yes *	145 (27.9%)
No	374 (72.1%)
Yes, for what purpose [†]	
Advice from a health worker	46 (31.7%)
Medical reason	35 (24.1%)
Notice of breast lump	55 (37.9%)

Continued...

Table 2: Continued...

Statements	n (%) (n=519)
One of the family members had cancer	03 (02.1%)
Routine medical examination	06 (04.1%)
No, Why? [‡]	
Not for my age group	48 (12.8%)
I know about it but I do not do it or have no time to do it	78 (20.9%)
I do not have enough information	124 (33.2%)
I do not know why I should do it	124 (33.2%)
K10. When do you have to go for Mammogram	
When I have a breast problem (eg, rash, pain, lump...etc.)	157 (30.3%)
When the doctor recommends it	143 (27.6%)
Routinely after the age of 40 even if I have no symptoms *	219 (42.2%)
K11. Have you had breast counseling before?	
Yes *	123 (23.7%)
No	396 (76.3%)
Knowledge Total Score (mean±SD) [§]	06.9±01.6
Level of knowledge	
Poor	202 (38.9%)
Good	317 (61.1%)

*Indicates most appropriate awareness answer. †Excluded participants with a negative answer. ‡Excluded participants with a positive answer. § Result was based on 11 knowledge questionnaires. BC – Breast Cancer.

while others were unaware about it. With regards to personal breast assessment, more than half of them had done breast self-examination. Of those who had done self-breast assessment, majority of them did it as per advice from a healthcare worker, others for medical reason (15.6%) or due to breast lump (15.2%), or routine medical examination (17.8%), and by the influence of having family member with cancer (5.6%). Of those who had not done breast self-examination, the majority of them indicated reasons of busy schedules, followed by insufficient knowledge of doing it, and unaware about the reason behind. Only one out of four females had done clinical breast examination. Out of those who had done clinical breast examination, majority of them stated that it is because of a lump in the breast (40.2%) followed by medical reason (36.2%). There were relatively few cases pertaining to advice from a health worker, routine medical examination and family history of cancer. Of those who have not done clinical breast examination, 34.7% of them stated that they do not have enough information, 29.3% did not find a reason for doing it, 23.5% did not have free time, and 12.5% said it was not in their age group. With regards to the mammography test, only 27.9% of the participants underwent the test. Out of those who underwent, 37.9% of them were due to the lump on the breast, followed by advice from a health worker (31.7%), medical reason (24.1%) and few cases on family history of cancer, and routine medical examination. Out of those who had not undergone mammography test, the most common reason was about not having enough information and did not find a reason for doing it. The commonest reason for going to mammogram test was if age was above 40 without any symptoms (42.2%) followed by if there is a problem with breast (30.3%) and if the doctor recommends it (27.6%). When asked if they had

breast counseling before, only 23.7% of them confirmed about the subject. Based on our analysis, the mean knowledge score according to 11 domain questions was 6.9 (SD 1.6). By using 60% cutoff points to determine the level of knowledge, poor knowledge was accounted for 202 (38.9%) of the participants whereas good knowledge was accounted for 317 (61.1%).

Figure 1 shows the sources of BC information. The most common source of information was TV/internet (69.7%) followed by a friend and family (52.5%), and health worker (26.1%) while the least of them was radio (7.3%).

Figure 2 depicted the risk factor of BC. Based on our analysis, the commonest of them was regarding the family history of BC (77.8%), followed by the use of oral contraceptives (43.5%), and smoking (36.4%) while the least of them was related to breastfeeding (2.9%).

Figure 3 elaborated the signs and symptoms of BC where the size and shape changes of breast was the commonest of them (65.7%), followed by lump or thickening in one breast or armpit (62%) and lump in the breast (59.5%) while the least of them was rashes on or around the nipple (34.7%).

Table 3 shows the characteristics of participants diagnosed with BC. The most common event which led to the diagnosis of cancer was regarding the bodily change which led them to see a doctor and the most common symptoms of BC patients which frequently experience was the lump swelling or thickening in breast or armpit, followed by changes in the appearance of the breast. Majority of the patients obtained an appointment with the doctor less than a week whereas it took them more than 3 days to get an appointment with the specialist after doctor’s referral. Patients identified chemotherapy as the most common method of treatment followed by surgery and radiotherapy. The mean number of visit to the general physician during the investigation of symptom was 01.4 times (SD 01.4) while the mean for hospital visit was 02.2 times (SD 03.6) whereas the mean for consultant/ specialist outside the hospital was 0.9 (SD 1.2).

The relationship between the level of knowledge and the sociodemographic characteristics of participants are elaborated at Table 4. It has been identified that age group in years has significant relationship on the level of knowledge ($P = 0.041$). Monthly income also shows a significant difference ($P = 0.012$) and family history of BC also revealed statistical differences ($P = 0.001$). While other sociodemographic variables such as nationality, educational level, marital status, age of menstruation, having children, use of oral contraceptives, exercise, and BMI level showed no significant relationship to the level of knowledge.

To avoid potential confounders a multivariate regression analysis has been conducted at Table 5 to determine which independent significant factors were closely related to the poor knowledge. Regression analysis was adjusted in the model such as age group in years, marital status, monthly income, having children, use of

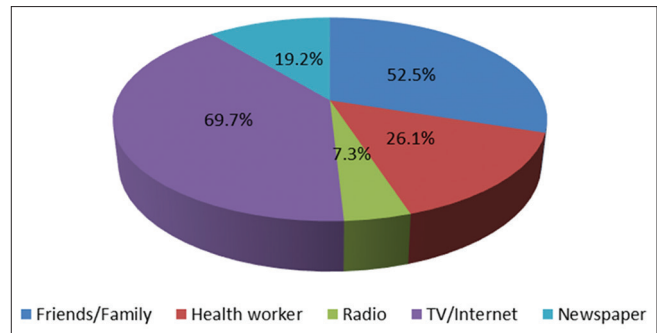


Figure 1: Sources of BC information

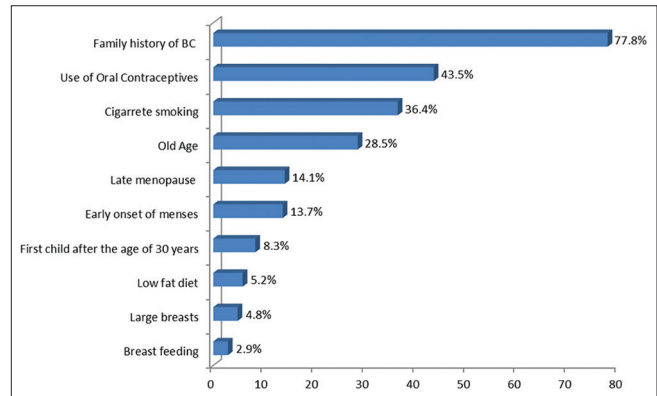


Figure 2: Risk Factors of BC

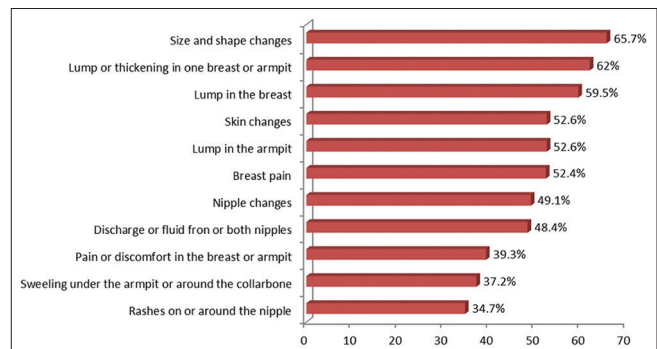


Figure 3: Signs and symptoms of BC

oral contraceptives, and family history of BC. The results revealed that it is more likely that those participants who were aged 40 years above were 3 times more prone to have poor knowledge compared to those aged 40 years or less (AOR = 3.828, $P = 0.009$). On the other hand, those who are not taking oral contraceptives are more likely i.e., 3 times higher to have poor knowledge compared to those who are taking oral contraceptives (AOR = 3.246, $P = 0.018$). Other variables included in the model such as marital status, monthly income, having children, and family history of BC were not statistically significant after adjustments.

Discussion

BC has been widely regarded as the most common cancer among women. There were different articles that investigated

Table 3: Characteristics of participants diagnosed with breast cancer

Statements	n (%) (n=128)
Best describes the events which led to the diagnosis of cancer	
I had symptoms/I noticed a bodily change and went to see a doctor	105 (82.0%)
I had symptoms/I noticed a bodily change and went/was taken to A and E	09 (07.0%)
I had seen a doctor with symptoms, but went/was taken to A and E when things worsened	01 (0.80%)
I was being investigated by my doctor for another problem during which time the cancer was discovered	06 (04.7%)
I had a cancer screening test (mammogram) as part of a breast screening program	03 (02.3%)
Other	04 (03.1%)
Health or symptoms that are commonly experienced with BC [†]	
Changes in the appearance of the breast (e.g. nipple, the shape of the breast, etc.)	73 (57.0%)
Nipple discharge including bleeding	27 (21.1%)
Lump swelling or thickening in breast or armpit	88 (68.8%)
Fatigue	43 (33.6%)
Unexplained weight loss	25 (19.5%)
Loss of appetite	25 (19.5%)
Duration before getting an appointment with the doctor	
Less than a week	80 (62.5%)
1-2 weeks	48 (37.5%)
Duration before getting an appointment with the specialist	
≤3 days	38 (29.1%)
>3 days	90 (70.9%)
Method of treatment for cancer [‡]	
Surgery	81 (63.3%)
Chemotherapy	95 (74.2%)
Radiotherapy	41 (32.0%)
Other	41 (32.0%)
Frequency of visitation for the investigation of symptoms before your cancer was diagnosed?	Mean±SD
General physician	01.4±01.4
Hospital	02.2±03.6
Consultant/specialist outside hospital	0.90±01.2

AE – Accident and Emergency; BC - Breast Cancer. [†]Variable with multiple answers

the phenomena of this disease and yet the prevalence is still increasing. In this study, we aim to measure breast cancer knowledge and awareness among women. The findings of this study show that 38.9% of women have poor knowledge about BC while only 61% had good knowledge about the disease. This result was consistent with the study published by Habib *et al.*^[3] providing “awareness and knowledge of breast cancer among university students.” They found out that among 301 students being involved, poor knowledge was accounted for 34% of the students. This result has been further validated by Ahmed *et al.*^[9] wherein they assessed the BC awareness level among Saudi medical students; out of 254 medical students, poor knowledge was found on 33.4% of the students. In the eastern region of Saudi Arabia, low knowledge about BC was observed in 29.3%

Table 4: Relationship between knowledge and sociodemographic characteristics of participants (n=519)

Factor	Level of knowledge		P [§]
	Poor n (%) (n=202)	Good n (%) (n=317)	
Age group in years			
≤40 years	155 (76.7%)	217 (68.5%)	0.041 **
>40 years	47 (23.3%)	100 (31.5%)	
Nationality			
Saudi	197 (97.5%)	303 (95.6%)	0.251
Non-Saudi	05 (02.5%)	14 (04.4%)	
Educational level			
High school or below	62 (30.7%)	114 (36.0%)	0.216
Bachelor degree	140 (69.3%)	203 (64.0%)	
Marital Status			
Unmarried	106 (52.5%)	141 (44.5%)	0.075
Married	96 (47.5%)	176 (55.5%)	
Monthly income (SAR)			
<5000	129 (63.9%)	167 (52.7%)	0.012 **
≥5000	73 (36.1%)	150 (47.3%)	
Age of menstruation (years)			
≤12 years	70 (34.7%)	130 (41.0%)	0.147
>12 years	132 (65.3%)	187 (59.0%)	
Having children			
Yes	94 (46.5%)	175 (55.2%)	0.054
No	108 (53.5%)	142 (44.8%)	
Use of oral contraceptives			
Yes	98 (48.5%)	171 (53.9%)	0.228
No	104 (51.5%)	146 (46.1%)	
Family history of breast cancer			
Yes	19 (09.4%)	63 (19.9%)	0.001 **
No	183 (90.6%)	254 (80.1%)	
Exercise			
Yes	64 (31.7%)	118 (37.2%)	0.197
No	138 (68.3%)	199 (62.8%)	
BMI			
Abnormal	128 (67.4%)	193 (65.6%)	0.695
Normal	62 (32.6%)	101 (34.4%)	

[§]P value has been calculated using Chi-square test. BC – Breast Cancer; BMI – Body Mass Index. ******Significant at P≤0.05 level

of the Saudi female^[10] while in the central region, poor knowledge was determined among 23.6% of female students.^[11] This was in accordance to our study finding. However, Al-Suroj *et al.*^[12] as well as Al Shareef and colleagues^[13] in their study, reported that the prevalence of poor knowledge toward BC was more (69.3% and 67%, respectively) which further indicated a higher incidence of poor knowledge. Moreover, in abroad, poor knowledge has been highly discovered by researchers.^[14-17] In China, Liu *et al.*,^[16] exemplified the highest prevalence of poor knowledge (81.4%). This is contrary to the paper published by Hadi *et al.*,^[18] wherein they reported 20.4% of poor knowledge among female university students which was deemed as the least prevalence of poor knowledge being recorded in a study.

Sources of information are necessary to gain more knowledge about BC. In our study, TV and internet are the commonest sources of information being identified by the participants.

Table 5: Multivariate regression analysis to predict the influence of poor knowledge from the selected sociodemographic characteristics of participants (n=519)

Factor	AOR	95% CI	P
Age group in years			
≤40 years	Ref		0.009 **
>40 years	3.828	1.398-10.478	
Marital Status			
Unmarried	Ref		0.170
Married	2.321	0.698-7.718	
Monthly Income (SAR)			
<5000	Ref		0.254
≥5000	0.592	0.240-1.458	
Having children			
Yes	Ref		0.391
No	0.563	0.152-2.091	
Use of oral contraceptives			
Yes	Ref		0.018 **
No	3.246	1.223-8.614	
Family history of breast cancer			
Yes	Ref		0.882
No	0.922	0.316-2.689	

AOR – Adjusted Odds Ratio; CI – Confidence Interval. **Significant at P≤0.05 level

Various published articles in the same subject are also indicated TV or internet as the most common source information about BC.^[3,14,15,19] Moreover, social media, healthcare worker, family, and friends are the most common choices of obtaining knowledge about BC by the other papers.^[12,17,20,21] The finding suggests that the general source of knowledge among women with respect to BC was not acquired directly from doctors since women largely rely on TV, internet, social media, family, and friends which are literally accessible at any given time.

Regular examination of breasts is an important method to find breast cancer early. In our findings, more than a half of women conducted breast self-examination (BSE), however, only 1 out of 4 women underwent clinical breast examination (CBE) and only 27.9% went through mammography test. BSE has been widely practiced by adult woman^[10,11,15,17,19,22-26] but most of them tend to overlook actual CBE either due to lack of information or unseeing the importance of the test. While studies suggest that mammogram test was the least priority among breast assessment.

In this study, family history of BC was the most common risk factor being exhibited by women, followed by smoking and the use of contraceptive pills. This has been further confirmed by different studies.^[3,12,13,15-17,20,25] However, Latif and associates,^[10] indicated old age as the most precipitating factor of BC which was not in agreement from the findings of previous articles. Moreover, our study revealed that breast lump, as well as size and changes of the breast, were the signs and symptoms of BC. Several published articles indicated breast lump as the most common symptoms of BC.^[13,15-17,19,20,22,25] Previous reports were not in agreement from the study published by Habib *et al.*^[20] They elaborated that swelling in the skin or axilla skin changes were the signs of BC. On the other hand, Latif *et al.*,^[10]

reported that nipple discharge, as well as pain the breast, were the symptoms of BC.

When we measured the relationship between the levels of knowledge among sociodemographic characteristics of participants, we found a significant relationship on age group in years, monthly income, family history of BC while when we conducted adjusted regression, we found independent significant factors on both age group in years and the use of contraceptives. Latif *et al.*,^[10] found out that marital status, family history of BC and practice of BSE were significantly correlated to knowledge scores. In Kuwait, it was being reported that age group in years, marital status, contraceptives pills, and history of child death were the significant independent factors of knowledge level.^[20] While in Africa, they found out that education and professional job were significantly associated with the knowledge level.^[22] Moreover, in Egypt, marital status, education, and source of knowledge were being concomitant to the level of knowledge.^[15] Although previously published articles reported significant factors distinctively, the most common independent factors being distinguished were age group and marital status.^[10,13,15,18,20]

Conclusion

The overall knowledge of women about BC in this study was inadequate. While half of the women performed breast self-examination on the contrary, the actual clinical breast examination was found to be low. The most common risk factor being identified was a family history of BC and smoking. Size and shape changes of the breast, as well as a breast lump, were the most common signs and symptoms. Age group in years, monthly income, family history of BC, and use of contraceptives were being identified as the significant factors of knowledge toward BC. Furthermore, BC awareness programs are needed to increase the level of knowledge among women in relation to BC.

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Conflicts of interest

There are no conflicts of interest.

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