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 ± 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.\[8] It has been noticed that the age of diagnosis of females in Saudi Arabia was younger as compared to females in other countries.\[9]

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.\[9] 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 logistic 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 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%) |
| K8. Have you done clinical breast examination? | |
| Yes* | 127 (24.5%) |
| No | 392 (75.5%) |
| K9. Have you done Mammography before? | |
| Yes * | 145 (27.9%) |
| No | 374 (72.1%) |

*Indicates most appropriate awareness answer. Excluded participants with a negative answer. Excluded participants with a positive answer.

### 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%) |

‡ Excluded participants with a negative 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...
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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 0.14 times (SD 0.1) while the mean for hospital visit was 0.22 times (SD 0.3) 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 difference ($P = 0.001$). 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 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...
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., 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., 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% of the Saudi female while in the central region, poor knowledge was determined among 23.6% of female students. This was in accordance to our study finding. However, Al‑Suroj et al., as well as Al‑Shareef and colleagues exemplified the highest prevalence of poor knowledge (81.4%). This is contrary to the paper published by Hadi et al., 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.

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**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                                   | 73 (57.0%)    |
| (e.g. nipple, the shape of the breast, etc.)                              |               |
| 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±0.14     |
| Hospital                                                                  | 02.2±0.36     |
| Consultant/specialist outside hospital                                    | 0.90±0.12     |

†Variable with multiple answers

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

| Factor                                      | Level of knowledge | Poor n (%) (n=202) | Good n (%) (n=317) | P*   |
|---------------------------------------------|--------------------|--------------------|--------------------|------|
| 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 (63.0%)        | 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 (99.4%)         | 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
Various published articles in the same subject are also indicated TV or internet as the most common source information about BC.[13,14,15,19] 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] 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 women[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.[3,12,13,15-17,20,28] 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.[13,15,17,19,20,22,23] Previous reports were not in agreement from the study published by Habib et al[29] 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.[10,13,15,16,20]

### 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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