

## Awareness and Knowledge of Breast Cancer Among University Students in Al Madina Al Munawara Region

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### Abstract

**Background:** Breast cancer, a critical health problem, is considered to be a progressive disease with a poor prognosis if detected late. Public education about the disease plays a pivotal role in early detection and subsequent improvements in prognosis. The present study assesses the knowledge and awareness about various aspects of breast cancer among female university students.

**Methods:** The knowledge of various aspects of breast cancer including incidence, early warning signs, risk factors, screening, early detection measures and sources of information was evaluated among female students in different faculties of Taibah University, Al Madina Al Munawara, Saudi Arabia, from December 1 to 31, 2008. A self-structured validated questionnaire that contained 23 itemized questions about breast cancer was randomly distributed to the participants. Respondents' levels of knowledge were determined and transferred to electronic spreadsheets for further analysis.

**Results:** Of 301 students, 247 (82%) were available for final analysis with a mean age of 27 years (SD 12.1; age range: 18 to 39 years). Two hundred eleven (85.4%) respondents were single, 218 (88%) nulliparous and 213 (86%) had no family history of breast cancer. Their knowledge about the incidence of the disease was poor; only 34% replied correctly. A total of 148 (59.9%) respondents mentioned swelling in the skin/axilla while 123 (49.7%) suggested skin changes as early warning signs of breast cancer. None of the participants expressed knowledge about all established risk factors of the disease. One hundred fifty-nine (64.4%) did not know the proper way to perform a breast self-examination and 104 (42.2%) had never performed this test. Additionally, 128 (51.8%) knew that mammography was a screening tool for breast cancer. Sources of information about the disease were: television and radio (139, 56.2%), printed material in journals and newspapers (86, 34.8%) and family physicians (13, 15.2%).

**Conclusion:** This study revealed that respondents showed deficient knowledge about key issues concerning breast cancer and its early detection measures. It also revealed that health workers were not the main source of information in the community, thereby posing a challenge for community health services to provide basic required information about breast cancer.

**Keywords:** Breast cancer, Breast cancer awareness, Breast self-examination

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## Introduction

Breast cancer is the most common malignancy in women and the global incidence is escalating.<sup>1</sup> Worldwide, there were 10.9 million new cases of breast cancer, 6.7 million deaths and 24.6 million women living with cancer in the year 2002.<sup>2</sup> Rates could further increase by 50%, to 15 million new cases of breast cancer by the year 2020.<sup>3</sup> Although the incidence of breast cancer is lower in Asian countries, the cause-specific mortality in most Asian countries is much higher compared to Western countries.<sup>3</sup> Higher proportions of breast cancer patients in developing Asian countries are younger than those in developed Asian and Western countries.<sup>4,5</sup> Given the huge population in developing Asian nations, and the fact that up to 25% of all breast cancer patients are young, there is a large number of young breast cancer patients in Asia. Young age, by itself, is a known indicator of poor prognosis among breast cancer patients.

In 2007, the population of the Kingdom of Saudi Arabia was estimated to be 27 million, including approximately 6 million expatriate residents. Currently, half of the Saudi population is under the age of 20 years.<sup>6</sup> According to the National Cancer Registry in 2005, the total number of all reported cancer cases was 7761 among Saudis and 2453 among expatriates.<sup>7</sup> During the same year, 52% of male and 34% of female patients over the age of 59 years, were diagnosed, while this age group accounted for only 5.2% of the Saudi population. Breast cancer was the most frequent cancer among females, which accounted for 21% of all cancer sites.

Worldwide, breast cancer ranks less highly (fifth) as a cause of death due to its relatively favorable prognosis where the mortality-to-incidence ratio is 0.35.<sup>8</sup> The overall pattern of breast cancer mortality reveals high rates for Western, industrialized nations, and lower rates for less industrialized and Asian nations.<sup>9</sup> The high incidence in more affluent world areas is likely because the presence of screening programs and better public awareness favor the early detection of invasive cancers.<sup>10</sup> Recently, however, breast

**Table 1.** Demographic characteristics of the study sample (N=247).

Features	Number	%
<b>Age group (years)</b>		
Less than 20	59	24.2
20-29	170	68.8
30-39	18	7
<b>Marital status</b>		
Single	211	85.4
Married	26	10.5
Divorced	10	4.1
Widowed	0	
<b>Family history of breast cancer</b>		
Yes	34	24
No	213	86
<b>Parity</b>		
Nulliparous	218	88
Single parity	19	7.6
Multiparous	10	4.4

cancer mortality rates in selected countries have declined.<sup>11,12</sup> Better socioeconomic conditions, health awareness, and the availability of breast cancer screening programs seem to be the major causes of a favorable clinical picture and outcome.<sup>13</sup> Breast health awareness appears to be a pragmatic and simple tool which can play an important role in the detection of early breast cancers with a favorable prognosis.

The present study evaluated the knowledge and awareness of female university students regarding their awareness about different features of breast cancer.

## Materials and Methods

A randomized single-stage observational study was conducted with female students (age range: 18-39 years) from various faculties in Taibah University, Al Madina Al Munawara, Saudi Arabia from December 1st to 31st, 2008. The objective and protocol of the study were explained to all participants and verbal consent was obtained. The instrument used for data collection was a well-structured Arabic questionnaire which consisted of 23 main questions, each question having subitems. The questions pertained to the participant's demographics, knowledge of breast

cancer screening and epidemiology, knowledge of warning signs and risk factors of breast cancer, and barriers to breast self-examination (BSE). Participants were advised to return the completed questionnaire after two working days. At the end of the study, the questionnaires were translated into English for further analysis. The Statistical Package for Social Sciences v.13 (SPSS) was used for descriptive analysis of the retrieved data.

## Results

Out of 301 women enrolled in this study, 247 were available for the final analysis with a response rate of 82%.

### *Demographic details of the study population*

The mean age of the study population was 27 (SD 12.1; age range: 18-39) years. All were Muslims with a high school education level. About one-third (35%) of the population belonged to the upper-middle socioeconomic class. There were 211 (85.4%) single respondents; 218 (88%) were nulliparous and 213 (86%) had no family history of breast cancer (Table 1).

### *Knowledge of breast cancer incidence*

The majority of the respondents did not have correct knowledge about the epidemiology of breast cancer (50%-60%), the correct worldwide and Saudi Arabia incidence of breast cancer (10%), and benign breast lesions (80%-90%) (Table 2).

### *Knowledge of breast self examination*

One hundred fifty-nine (64.4%) did not know the proper way to perform BSE and 104 (42.4%) women never performed BSE due to certain barriers (Table 3). The majority believed that the frequency for performing BSE was biannual (107; 43.3%) and after menstruation was stated as the most appropriate time to perform BSE (163; 65.9%).

### *Knowledge of breast cancer screening programs*

Forty-seven (19%) marked more than one option in the section of breast cancer screening tools, such as BSE, ultrasound and fine needle

**Table 2.** Respondents' knowledge of breast cancer incidence (N = 247).

Questions	No (%)
<b>What is the incidence of breast cancer all over the world?</b>	
30%	50 (20.2)
50%–60%	168 (68)
80%–90%	29 (11.8)
<b>What is the incidence of breast cancer in Saudi Arabia?</b>	
10%	5 (2)
20%–30%	34 (13)
40%–50%	208 (85)
<b>What is the percentage of benign breast lesions in Saudi Arabia?</b>	
30%	36 (14.9)
50%–60%	148 (59.6)
80%–90%	63 (25.5)
<b>Any previous history of breast cancer investigation?</b>	
Yes	21 (8.6)
No	226 (91.4)

aspiration and cytology (FNAC) of the breast. Most participants knew that mammography was the screening tool for a breast cancer screening program (128; 51.8%), as shown in Table 4. Only 88 (35.6%) knew the technique for performing BSE and 104 (42.2%) never performed BSE (Table 3).

### *Knowledge of early warning signs of breast cancer*

A total of 148 (59.9%) respondents claimed that swelling in the breast/axilla areas were early warning signs, while 123 (49.7%) believed that changes in the skin of the breast were the early signs of breast cancer (Table 4).

### *Knowledge of risk factors for breast cancer*

There were mixed responses to this section. None of the participant identified all the established risk factors. The maximum response was obtained for family or genetic factors as the prime risk factor for breast cancer 137 (55%), as shown in Table 4.

### *Source of information*

Television and radio were found to be the most

common sources of information about breast cancer (139, 56.2%) followed by printed material in journals and newspapers (86, 34.8%). The role of family physicians was mentioned by only 13 (15.2%) respondents.

### **Barriers to breast self examination**

Most respondents 170 (68.8%) were not convinced of the efficacy and usefulness of BSE (Table 5). Lack of knowledge of BSE was the second most common barrier, indicated by 159 (64.4%) participants.

### **Discussion**

Formal education plays an integral role in understanding various health issues. This research revealed that the majority of the study population had no formal education, as evidenced by their inadequate knowledge about the incidence of breast cancer. This may be partly attributed to the lack of an established healthcare data delivery system in the region. Knowledge about the incidence of breast cancer directly influences the care and attention rendered to such health problems.

Although the use of mammography as a screening tool for breast cancer was selected by the majority of respondents, a high number marked more than one option as a screening tool. Mammography is currently considered to be the forerunner in the detection of early breast cancer.<sup>14-16</sup> According to the American College of Surgeons updated Breast Cancer Screening Guidelines, women are advised to have a mammography yearly starting at age 40, and as long as a woman is in good health she should continue getting mammograms.<sup>17</sup> Women with a higher than average risk for breast cancer (those who already have the disease, with a positive family history, or with a genetic mutation) are encouraged to discuss the possibility of screening at an earlier age. However, in a situation where awareness regarding the disease is itself abysmal and resources are inadequate, health promotion activities need to be considered before embarking on additional health care programs. A breast health awareness

**Table 3.** Respondents' knowledge of different aspects of breast self examination (BSE).

Questions	No (%)
<b>Do you know how to perform BSE?</b>	
Yes	88 (35.6)
No	159 (64.4)
<b>When is the appropriate time to start BSE?</b>	
At puberty	149 (60)
At 20 years	25 (10.1)
After childbirth	50 (20.3)
At menopause	23 (9.6)
<b>Frequency of BSE?</b>	
Weekly	None
Monthly	36 (14.5)
Six months	107 (43.3)
Never	104 (42.2)
<b>Appropriate time to perform BSE?</b>	
Any time	64 (26.1)
Before menstruation	20 (8)
During menstruation	0 (0)
After menstruation	163 (65.9)

campaign could therefore be an important intervention in this direction. This can be carried out by specifically trained female health workers instead of physicians, thereby ensuring cost effectiveness.

Similarly, the findings showed that few participants knew about BSE, and very few women performed BSE, a finding consistent with a report by Somdatta et al.<sup>18</sup> About 75% of the women conduct BSE in the United States;<sup>19</sup> in contrast, only 30.3% of the women from Saudi Arabia have heard of BSE.<sup>20</sup> In Iran, 1402 women were interviewed recently and only 61% of the respondents knew about BSE.<sup>21</sup> Although the role of regular BSE in the prevention of breast cancer mortality has been debated,<sup>22</sup> it can nevertheless be used to enhance breast health awareness among women. In fact, regular BSE has been suggested as a part of the overall breast health promotion concept.<sup>23</sup> Teaching BSE can help women to learn about the structure and composition of their normal breasts, thereby enhancing their sensitivity to any abnormality as soon as it appears. Women should know how their breasts normally look and feel so they can report any new breast changes to a health professional as soon as they are found.

Finding a breast change does not necessarily mean cancer. The best time for a woman to examine her breasts is when the breasts are not tender or swollen. Women who examine their breasts should have their technique reviewed during their periodic health exams by a health care professional. Beginning in their 20s, women should be told about the benefits and limitations of BSE.<sup>24</sup>

While a number of studies have found that BSE has improved early detection and reduced mortality,<sup>25, 26</sup> data from a randomized trial in Russia has suggested that there is no significant difference between those who perform BSE and those who do not in terms of size of the primary tumor and the incidence of metastatic lymph nodes at detection.<sup>27, 28</sup> Also, the Shanghai randomized trial demonstrated no significant stage shift or mortality reduction from breast cancer after 5 to 10 years of follow-up in the BSE group compared to controls.<sup>29</sup> However, despite continuous debate about the efficacy of BSE,<sup>22</sup> it seems that BSE, not as a public health policy but as a preventive measure, remains a method of choice for early breast cancer detection in developing countries. Resource constraints in low- and middle-income regions can limit the application of established guidelines for breast health care in the developing countries.<sup>30</sup>

Although “swelling in the breast or axilla” was the most frequently identified symptom of breast cancer in our respondents, the study results indicate that women had inadequate knowledge about other breast cancer symptoms. For instance, only a few women knew that nipple retraction (69, 27.9%) and nipple discharge (106, 42.9%) are warning signs of breast cancer. This is consistent with other studies from developing countries and in women from minority ethnic groups,<sup>31, 32</sup> whereas a study from the UK indicated that 70% of women were well aware of a “painless lump” and able to identify these symptoms in their BSE.<sup>33</sup> However, although regional and religious differences might contribute to such variations, the role of well-designed breast health awareness campaigns for women should not be neglected.

**Table 4.** Respondents’ knowledge of different aspects of breast cancer.

Response	No (%)
<b>Knowledge about screening program (early detection)</b>	
Breast self-examination	47 (19)
Mammography	128 (51.8)
Breast ultrasound	53 (21.4)
FNAC/biopsy	19 (7.6)
<b>Early warning signs</b>	
Painless lump in the breast or axilla	148 (59.9)
Nipple retraction	69 (27.9)
Change in the breast shape or volume	58 (23.4)
Bloody or any discharge	106 (42.9)
Changes in the skin of the breast	123 (49.7)
<b>Risk factors</b>	
Genetic or family	137 (55)
Early menarche	15 (6)
Late menopause	23 (9)
First baby after 30 years	51 (20)
Infertility	38 (15)
Increased fat intake	40 (16)
Obesity	67 (27)
Oral contraceptive pills	104 (42)
Exposure to radiation	68 (27)
Breast cancer in the other breast	79 (32)
Ovarian cancer	28 (11)
Advanced age (rarely before 20)	43 (17)
<b>Source of information</b>	
Radio, television	139 (56.2)
Printed materials: journals, newspapers	86 (34.8)
Friends	9 (3.6)
Family physician	13 (5.2)
Colleagues	43 (17.4)
Internet	65 (26.3)

Various studies have shown that theoretical education on the awareness of early breast cancer signs was effective even in illiterate and less-educated women.<sup>34, 35</sup>

The majority of participants (137, 55%) knew about a genetic or family history of breast cancer as an established risk factor for the disease. However, knowledge of other risk factors of breast cancer was poor. In the present study, the main sources of information about breast cancer were television and radio (139, 56.2%), followed by printed material (86, 34.8%). Similarly, Patra et al.<sup>36</sup> identified television as the leading medium of information about breast cancer; however other researchers found friends and colleagues to be the

main sources of information.<sup>37</sup> In most developing countries electronic media are state-governed and their use would help to increase awareness about breast cancer. Furthermore, a very low proportion of women indicated that they received any information from their doctors (13, 5.2%). Public awareness campaigns should be feature well-known figures of the community to convey a message that resonates with the target population. Novel channels of delivery such as prime time television programs, commercials and the internet should also be explored. Product advertising studies show that the effects of mass media campaigns tend to be of short duration. Hence, these strategies should be used in combination with other approaches.<sup>38</sup> Training social workers, school teachers and others who are regarded as trusted agents of the community could be beneficial. Primary health care professionals could play an important role in conveying correct information regarding breast cancer.<sup>21</sup> Breast cancer awareness programs have been very successful at several stages, including greater compliance with breast cancer prevention and screening strategies.<sup>39</sup>

Barriers to BSE observed in this study were similar to those reported elsewhere.<sup>40</sup> One hundred seventy (68.8%) participants were not convinced of the usefulness of BSE, a finding which underlines the need for a public awareness campaign highlighting the rationale and effectiveness of BSE.

An apparent limitation of our study is the high literacy rate of our urban target population, which could reflect selection bias. Furthermore, limited aspects pertaining to the beliefs of the participants were investigated; therefore, the possibility of having missed certain issues of greater concern cannot be ruled out.

In conclusion, the results of this study reveal a lack of awareness regarding breast cancer and its screening practices, and a weak patient education efforts by health care professionals. Most women did not practice breast cancer screening. At present, the emphasis is on raising awareness of breast cancer among women to

**Table 5.** Barriers to breast self examinations (BSE).

Barriers	No (%)
Lack of time	21 (8.5)
Never attended any demonstrations of BSE	113 (45.7)
Not at risk hence not required to do so	136 (55)
Fear of finding some abnormality	137 (55.4)
Lack of privacy	154 (62.3)
Not convinced about BSE	170 (68.8)
Don't know the proper way to do it	159 (64.4)

overcome an ever-increasing burden of this disease. It appears that the best way to save women's lives is to increase their awareness of the potential harms of breast cancer and to raise their awareness level about early warning signs, risk factors and early detection procedures for this disease. Health education programs should be initiated to improve women's knowledge and awareness about this potentially fatal disease.

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