Knowledge of breast cancer and its risk and protective factors among women in Riyadh

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BACKGROUND: We conducted this study to assess knowledge of breast cancer and sources of information about breast cancer among women in Riyadh. We also analyzed whether associations existed between demographic variables, knowledge of breast cancer, and the practice of breast self-examination and use of mammography screening.

METHODS: Women interested in participating in this community-based descriptive study provided data by completing a pre-tested structured questionnaire.

RESULTS: Of 864 participating women, 84% were Saudi, 45% were married and 67.8% had a university level education. Eighty percent were between the ages of 20 to 50 years. Knowledge of breast self examination (BSE) was high; 82% (95% confidence intervals [CI], 79.2%-84.4%) knew about BSE, while 61% (95% CI: 57.9%-64.5%) knew about mammography, but only 41.2% (95% CI, 37.9%-44.5%) had performed BSE and 18.2% (95%CI, 15.5%-20.8%) had had mammography screening. Knowledge of breast cancer, risk factors and protective factors for breast cancer was moderate. There was a statistically significant association between the demographic characteristics (marital status, educational status and family history of breast cancer) and knowledge and practice of BSE and mammography.

CONCLUSION: Though it has limitations, this study revealed an imbalance between the knowledge and practice of BSE among women. It also showed that there is only moderate knowledge of risk and protective factors for breast cancer and that knowledge and practice of BSE and mammograms vary according to marital and educational status. Hence, frequent community-based awareness programs are needed so that all women can know and practice BSE, which in turn helps to prevent breast cancer.

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Breast cancer continues to be a major cause of morbidity and mortality throughout the world. With 1 million new cases in the world each year, breast cancer is the commonest cancer in women, comprising 18% of all female cancers. Of every 1000 women 50 years of age, two will have recently had breast cancer diagnosed and about 15 will have had a diagnosis made before the age of 50 years, giving a prevalence of breast cancer of nearly 2%.¹ The incidence of breast cancer increases up to the age of 80 years, plateaus between the ages of 80 to 85 years, and then declines. However, the measured decline after the age of 85 years is difficult to interpret and may reflect the inadequacy of the epidemiologic data. The prevalence of breast cancer in recent years has prompted women to seek medical advice randomly with minimal breast symptoms, but only a small number of women are aware of the

proper methods of conducting breast self examination (BSE) or are aware of the importance of radiological screening for breast cancer.² Breast cancer is known to be the most common malignancy among women internationally and the Kingdom of Saudi Arabia is no exception.³ Certain social factors and demographic findings contribute to the pattern of disease of the breast encountered in Saudi Arabia.⁴ Saudi Arab females tend to marry at a young age, according to the traditional conservative values of the society, with childbearing extending practically over the entire reproductive period of life. Due to the conservative nature of the society, many females will refrain from seeking medical advice out of shyness until their disease becomes far advanced, particularly in cases of carcinoma of the breast. Often they fear the treatment more than the disease itself.⁴ Breast cancer engenders an exceptional level of fear among women, most probably because of its external location on the body, with all of the obvious cosmetic and psychosocial implications, coupled with the major concern with all types of cancer, namely loss of life. This places an even greater burden upon the healthcare system to convince such patients to undergo screening for not only will earlier disease be more curable, it will more likely be treatable without loss of the breast. Paramount to early detection in an organized screening program is physician examination, at appropriate intervals, coupled with patient self-examination where this is acceptable,⁵ and the efforts of the nursing staff in various clinics to encourage females to seek medical help if they feel a breast lump. However, such efforts are more successful among younger females who are using the available facilities, such as the breast clinic and most importantly, mammography.⁴ In the United States, factors considered statistically "protective" against breast cancer include early child bearing, multiparity and breastfeeding. All of these factors are commonly present among Saudi women, yet not only do they get breast cancer anyway, but frequently at an age more than a decade younger than their American counterparts.⁵

In the Cancer Incidence Report for Saudi Arabia, published in May 1999, breast cancer accounted for 19.1% of cancers among females whose mean age at diagnosis was 48.3 years. Diagnosis of in situ carcinoma was almost nil, while infiltrating ductal carcinoma was diagnosed in 76.1 %.⁶ In a study of 130 women with invasive breast cancer in Saudi Arabia, 82% were under 50 years of age and 16% were under 30 years of age. This suggests that the

lower age limit for breast cancer screening, when undertaken in Saudi Arabia, should be younger than the European recommendation, which states that breast screening could start at age 40, but the most beneficial age is 50 years and older.⁷ El-Harith et al concluded that BRCA1 and BRCA2 mutations are likely to contribute to the pathogenesis of familial breast cancer in female patients from Saudi Arabia.⁸ Breast and lung cancer share the second position as leading causes of death from cancer among Saudi females, with each being responsible for 10% of the total deaths from cancer.³ Delays in diagnosis and management are associated with advancing disease and consequently poorer results with any appropriate treatment.⁹ The incidence of breast carcinoma is increasing in the Kingdom. According to the 2001 Tumor Registry Annual Report published by King Faisal Specialist Hospital and Research Center, 348 cases were seen in 2001 compared with 131 cases seen in 1985.¹⁰ The incidence rate of cancer in Saudi Arabia is predicted to continue rising, partly due to rapid changes in lifestyle, the increasing consumption of cigarettes, the high caloric and fatty diet intake observed during the last decade, and partly due to the natural aging of this young Saudi population in the years to come.¹¹

For mammography to be useful, it must be available to the population of women at risk. There must be sufficient numbers of well-trained, experienced mammographers to interpret the films, and there must be methodology available to define and diagnose mammographically detected lesions. Physicians must also emphasize the critical application of screening mammography to the early detection and treatment of breast cancer. Therefore, the care of patients should be enhanced as should the education of those in training in this area. It provides a richer professional environment for all involved in the care of breast cancer patients, and provides a fertile ground for exchange of ideas for research. Ongoing research projects are enhanced by this exchange, and ideas for new projects have been spawned.⁵

Generally, classical medical care for patients with breast and ovarian cancers is easily accessible in most of the major medical centers of Saudi Arabia. The diagnostic facilities available in this country are quite adequate and they include, other than mammography, routine medical examination, fine needle aspiration and other advanced histopathological techniques. However, genetic testing for assessment of predisposing to breast cancer is presently not offered.³ The spectrum of treatment services offered

includes lumpectomy, mastectomy with or without breast reconstitution, chemotherapy and/or radiotherapy.

The greatest advantage to the women of the Kingdom will be the development of more widespread screening and educational programs. Currently, lectures in a major hospital in Riyadh that foster public awareness of breast cancer are given every two months and certified nurses provide workshops on breast-examination.¹¹ Breast cancer awareness programs (BCAP) are meant to help in the prevention and early detection of breast cancer. This study was carried out with the objectives of (i) assessing the knowledge of breast cancer and its associated factors (risk and protective) among the women of Riyadh city, (ii) assessing the source of knowledge of breast cancer, (iii) observing any association between family history of breast cancer, marital status and educational level of study participants versus their knowledge and practice of breast self examination and mammography.

Materials and Methods

A community-based descriptive study was conducted on a sample of 864 adult women during a health education campaign held in October 2003 in the Ladies Kingdom Mall in Riyadh. Women willing to participate, regardless of their age or educational level were included in the study.

A questionnaire was distributed to participants that asked about sociodemographic factors such as age, nationality, occupation, marital status, and level of education. It also included questions about the changes that occur in relation to breast cancer, risk factors that increase susceptibility, management practices for breast cancer, protective factors against breast cancer and sources of knowledge. The data was analyzed using SPSS-PC statistical software. For descriptive statistics, 95% confidence intervals were used to show the precision of the estimates. The chi-square test was used to test for association.

Results

The sample consisted of 864 women of different ages, with 80% between the ages of 20 to 50 years. Details of the age structure of participants and other sociodemographic characteristics are shown in Table 1. Saudi nationals represented 724 (83.8%), while 129 (14.9%) were non-Saudi. Of the total participants, only 21.5% (95% CI, 18.8-24.2) had a family history of breast cancer.

Breast self examination was known to 697 (81.8%)

Table 1. Sociodemographic characteristics of the study sample (n=847).

Characteristic	Count	Percentage
Age		
Below 20	131	15.2
20 – 24	260	30.1
25 – 29	134	15.5
30 – 34	113	13.1
35 – 39	74	8.6
40 – 44	61	7.1
45 – 49	49	5.7
50 +	30	3.5
Unknown	12	1.4
Marital Status		
Single	433	50.3
Married	391	45.4
Divorced	26	3.0
Widow	11	1.3
Educational level		
Illiterate	10	1.2
Primary-Secondary	268	31.0
University	586	67.8
Occupation*		
Students	206	29.3
Housewives	195	27.7
Health workers	71	10.1
Educational workers	115	16.3
Others	117	16.6

*n=704

participants whereas only 518 (61.2%) of the study subjects had knowledge of mammography. All participants had moderate knowledge of the changes that occur in breast cancer, but only 49.5% knew about the size changes, 49% were aware of heaviness under the armpit, 47% knew about touch, 45.4% had knowledge of discharge from the nipple and only 40.9% of the sample knew about the change in the shape of the nipple.

The level of knowledge of risk factors that increase susceptibility and knowledge of protective factors is shown in Table 2. The main sources of knowledge were television (59.4%), the internet (26.4%), magazines (55%), books (29.1%), relatives (16.3%), friends (19.2%) and the doctor (24.5%). Some of the participants had more than one source of information. Breast self examination had been performed by 41.2% (95% CI, 37.9-44.5) of the participants and 18.2% (95% CI, 15.5-20.8) had undergone mammography.

The univariate analysis showed that there was a highly statistically significant association between marital status, educational status and family history of breast cancer of the participants and knowledge of BSE, mammography and the practice of BSE and use of mammography. Married women had sig-

nificantly greater knowledge and practiced BSE and mammography more than single and other women. Women with a university level education had significantly greater knowledge and practice of BSE and mammography than the women of other levels of educational status. Women with a family history of breast cancer had significantly greater knowledge and practice of BSE and mammography (Tables 3 and 4).

Discussion

The etiology of breast cancer is still uncertain and as a result adequate primary prevention is difficult. Hence, early detection remains the first priority for national health promotion programs. These measures include breast self-examination, which is a unique procedure in many ways because it is inexpensive, non-invasive, involves little time and physical energy, is simple and does not depend on professional help. Knowledge of breast cancer risk factors and protective factors are also very important in the health of women. Regardless of family history, women still need to be "breast aware" and to accurately identify breast symptoms in order to receive treatment as quickly as possible.

In the present study, it was found that knowledge of breast self-examination was high when compared with knowledge of mammography. In contrast, the practice of BSE was low and a high rate for having had a mammogram was observed only in women who had a family history of breast cancer. Maha and Hadi¹² showed that 78% of 300 women had previously performed BSE, but only 42.7% had agreed to a mammography screening. This is in contrast to our finding, where it was found that 41.2% women had performed BSE and only 18.2% had mammography screening. Hadi's study also rated the level of knowledge of methods to detect breast cancer as low and found that 3.3% of 300 of those who had a positive family history had performed BSE while 6.7% had a mammography screening. In this study, 51.6% of 184 of those who had a positive family history had performed BSE while only 24.3% had a mammography screening. The results imply that even women with a previous family history of breast cancer were not performing BSE and mammography testing.

While we expected that more women who performed BSE would have a previous family history, our results showed the opposite, which might be either the result of lack of knowledge of BSE or poor technique or it may be due to the larger sample of those participants without a previous family history.

Table 2. Participants knowledge about breast cancer and its associated risk and protective factors.

	Count (%)	95% Confidence Intervals
Knowledge of breast cancer		
Knowledge of BSE (n = 852)	697 (81.8)	79.2-84.4
Knowledge of mammography (n = 847)	518 (61.2)	57.9-64.5
Heard of BSE (n = 695)	569 (81.9)	79.0-84.8
Heard of mammography (n = 687)	434 (63.2)	59.6-66.8
Changes that occur in relation to breast cancer (n = 864):		
Size changes	428 (49.5)	46.2-52.8
Heaviness under armpit	423 (49)	45.7-52.3
Touch	406 (47)	43.7-50.3
Discharge from nipple	392 (45.4)	42.1-48.7
Shape of nipple	353 (40.9)	37.6-44.2
Knowledge of Risk Factors (n=864):		
Contraceptive pills	261 (30.0)	27.1-32.9
HRT	411 (47.6)	44.3-50.9
Exposure to excess radiation	410 (47.5)	44.2-50.8
Smoking	472 (54.6)	51.3-57.9
Hereditary	338 (39.1)	35.9-42.3
Age	119 (13.8)	11.5-16.1
Nutrition	353 (40.9)	37.6-44.2
Lack of physical exercise	137 (15.9)	13.5-18.3
Irregular cycles	54 (6.3)	4.7-7.9
Race	45 (5.2)	3.7-6.7
Infertility	140 (16.2)	13.7-18.6
Knowledge of protective factors(n=864)		
Breast feeding	597 (69.1)	66-72.1
Nutrition	536 (62.0)	58.8-65.2
Exercise	322 (37.3)	34.1-40.5
Regularity of menstrual cycle	256 (29.6)	26.6-32.6
Pregnancy earlier than 40 years	217 (25.1)	22.2-28.0
Early marriage	103 (11.9)	9.8-14.0

The marital status of women was useful in acquiring knowledge of BSE and its practice, which leads in knowing about mammogram also to perform mammogram.

It is generally interesting to know how education reflects on the knowledge and practice of BSE and if higher education would make women more aware of the disease. Our results revealed that women who reached a primary-secondary educational level had less knowledge and practiced BSE poorly, while women who had at least a bachelors degree had better knowledge and practice. Knowledge of breast changes that occur when disease develops was below 50% for all the symptoms.

Knowledge of risk factors is the essence of prevention. The results of our study show a low-to-moderate level of knowledge, regardless of the women's educational status, marital status and their family history of breast cancer. The same pattern was

Table 3. Association between characteristics of sample with their knowledge and practice of breast self examination.

Characteristics of sample	Know BSE Count (%)		Practice BSE Count (%)	
	Yes	No	Yes	No
Marital status				
Married	374 (53.8)	53 (34.2)	223 (63.7)	202 (40.5)
Single	294 (42.3)	94 (60.6)	110 (31.4)	278 (55.7)
Others	27 (3.9)	8 (5.2)	17 (4.8)	19 (3.8)
Educational level				
Primary	6 (0.9)	2 (1.4)	2 (0.6)	5 (1.0)
Intermediate	29 (4.2)	7 (4.9)	12 (3.4)	34 (6.8)
High School	153 (22.0)	53 (36.8)	64 (18.3)	145 (28.9)
University	474 (68.3)	77 (53.5)	254 (72.8)	298 (59.5)
Others	32 (4.6)	5 (3.5)	17 (4.9)	19 (3.8)
Family history				
Yes	153 (22.5)	31 (20.3)	95 (27.7)	89 (18.2)
No	527 (77.5)	122 (79.7)	248 (72.3)	401 (81.8)

† Marital status, $\chi^2 = 19.5$, $P < 0.0001$; Educational level, $\chi^2 = 25.9$, $P < 0.0001$; $\chi^2 = 0.245$, $P = 0.62$

* Marital status, $\chi^2 = 49.3$, $P < 0.0001$; Educational level, $\chi^2 = 19.8$, $P < 0.0001$; Family history, $\chi^2 = 10.1$, $P < 0.001$

Table 4. Association between characteristics of sample with their knowledge and practice of mammography

Characteristics of sample	Know of mammography † Count (%)		Had mammogram* Count (%)	
	Yes	No	Yes	No
Marital status				
Married	289 (56.0)	134 (40.8)	117 (75.9)	303 (44.7)
Single	203 (39.3)	183 (55.8)	26 (16.9)	352 (52.0)
Others	24 (4.6)	11 (3.3)	11 (7.1)	22 (3.2)
Educational level				
Primary	4 (0.8)	2 (0.6)	2 (1.3)	6 (0.9)
Intermediate	15 (2.9)	32 (9.7)	(3.9)	36 (5.3)
High School	106 (20.6)	103 (31.2)	36 (23.5)	167 (24.5)
University	362 (70.4)	185 (56.1)	100 (65.3)	443 (65.1)
Others	27 (5.2)	8 (2.4)	9 (5.9)	28 (4.1)
Family history				
Yes	136 (26.7)	49 (15.3)	44 (29.5)	137 (20.5)
No	374 (73.3)	271 (84.7)	105 (70.5)	532 (79.5)

† Marital status, $\chi^2 = 21.9$, $P < 0.0001$; Educational level, $\chi^2 = 25.9$, $P < 0.0001$; Family history, $\chi^2 = 13.9$, $P < 0.0001$

* Marital status, $\chi^2 = 62.9$, $P < 0.0001$; Educational level, $\chi^2 = 1.4$, $P = 0.70$; Family history, $\chi^2 = 5.28$, $P = 0.02$

observed in relation to the knowledge and practice of mammography. The sources of knowledge among these women was diverse, coming from more than one resource.

In spite of the limitations encountered while conducting this study, the results suggest that knowledge of breast cancer and its associated factors was not that high, and differed in relation to the characteristics of the women. But there is a need to improve knowledge and practice of women regarding issues related to breast cancer prevention, early detection and intervention through continuous awareness programs. And these educative programs will help in preventing the disease and also help women at higher risk for developing breast cancer.

As the total sample were taken from the Ladies Kingdom Mall, a luxurious mall in the north of Riyadh city and since most of the women are from a high social class, therefore this sample cannot be generalized to the total population of Saudi Arabia. Selection bias is unavoidable in any study comparing women with high educational levels to those of lower educational levels. Highly educated women, particularly those with a family history of breast cancer, are more likely to be referred for early screening mammography and to receive a breast examination, therefore allowing their breast cancers to be diagnosed at an earlier stage than others. As a consequence, breast cancer survival in highly educated women with a previous family history should be improved due to the detection of the breast cancer at an earlier stage of the disease.

Recommendations

The results have shown that most women are familiar with BSE, but few perform BSE. Even those considered educated were either not aware of how to perform BSE or were simply not doing it. It is therefore of utmost importance to launch educational programs to increase public awareness of the prevalence of breast cancer, its risk factors and the importance of educating woman. Awareness should be enhanced by all available means. Important tools include news media, schools, social gatherings, hospital waiting areas, and distribution of pamphlets. The Ministry Of Health and educational facilities should play a leading role in increasing awareness. Physicians and surgeons need to make people aware of the increasing incidence of breast cancer during routine patient visits. They should use their influence to promote public education. Mobile units should provide services to people living in remote areas. Health profes-

sionals should be required to provide mammography and genetic counseling for those who are at high risk. Pre-marital medical examination and counseling, which has been made mandatory recently in the Kingdom, is a step in the right direction. It is hoped that women will become more aware of their health

responsibility. Routine check-ups should be encouraged at the primary health care level.

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