

## BREAST CANCER, BREAST SELF-EXAMINATION KNOWLEDGE AMONG FEMALE HIGH SCHOOL STUDENTS IN RIYADH CITY

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### Abstract

**Breast cancer (BC) is the most prevalent form of cancer in the Kingdom of Saudi Arabia, accounting for 11% of all female cancers. It is considered to be a progressive disease with a poor prognosis if detected late. The low level of knowledge and practice of breast self-examination is an important method of prevention. The study was aimed at assessing the knowledge of breast cancer and practice of Breast Self-Examination (BSE) among female secondary school students in Riyadh city.**

**Material & Methods :** A cross-sectional descriptive correlation design was used in this study. A representative probability sample was recruited (Sample Size = 917 Students). A self-administered questionnaire was prepared by the researcher. It consists of four parts. Data was analyzed using the SPSS software package (version 16) for data entry and analysis.

**Results:** The results of the study indicated that none of the secondary school students had an excellent knowledge regarding breast cancer; 98.8% of the participants had a fair level of knowledge about breast cancer. The mass media was the most common source of information about breast cancer. The majority of participants did not perform breast self-examination 80.8%; only 3.4% perform (BSE) on monthly basis. There

was a statistically significant relation between level of breast cancer knowledge and secondary school type, nationality, family history of breast cancer and secondary school levels but there was no significant relation between knowledge of breast cancer and age groups, marital status and family income level. Logistic regression analysis revealed that a negative family history of breast cancer was a significant predictor for lower scores on the level of knowledge of breast cancer. However, age group, family history of breast cancer were significant predictors of performance of breast self-examination.

**Conclusions :** This study revealed that most of the female secondary school students in Riyadh, Saudi Arabia had very low knowledge about breast cancer. We recommended developing a health educational program about breast cancer for students, teachers and the community, to raise awareness.

**Key words :** Breast cancer, Knowledge & Practice, Secondary school.

## Introduction

Breast cancer is the most common cancer among Arab women. Breast cancer incidence rates in Arab women have increased during the last 24 years, and women are now being diagnosed with breast cancer at more advanced stages of the disease(1). In 2008, the Saudi Ministry of Health reported that BC among females constituted the highest percentage of cancers, 26.9% of total number of malignant tumors in Riyadh and 31.9% in Jeddah (2).

Young breast cancer patients have a lower rate of survival than older breast cancer patients due to being diagnosed at an advanced stage, but if discovered early breast cancer can usually be cured, however, early detection through screening is the only way to reduce mortality (3). The women who are in the process of transitioning from adolescence to adulthood offer a unique, critical window of opportunity for change in (or impact on) health behavior.

Students in secondary schools, mainly teenagers, are considered a vulnerable group passing through a critical period of physiological and mental development that requires special health care. The adolescent period is a time of rapid change that provides teaching opportunities for shaping health behaviors into adulthood. Teaching breast self-care may encourage positive behaviors such as performing breast self-examination and seeking regular professional breast examinations (5,6,7). Health behaviors such as BSE can help empower women to take some control and responsibility over their health promotion (4). For younger women, BSE education and adherence to clinical breast examination and mammography screening later in life provides for early detection.

Educating young women about early diagnostic methods of breast cancer is critically important to increase their breast cancer awareness. Acquiring the behavior and practice of BSE at an early age will also increase the probability of continuing it later (8,9).

Regular performance of BSE does not mean that breast cancer is necessarily self-detected. BSE increases body awareness, so that there is heightened awareness of changes that may be detected during BSE or at some other time. Although the American Cancer Society, 2007 recommended that women beginning in their 20s should be told about the benefits and limitations of BSE, this procedure is not considered the best method for early detection but the best option for interval screening among women of all ages(8,10). The poor knowledge and wrong beliefs about breast cancer prevention among teenagers are responsible for a negative perception of the curability of a cancer detected early and of the efficacy of the screening tests.

Many studies have shown that nurses have positive influence on women's breast cancer knowledge and BSE practice (11). Women who were advised about BSE by health care providers demonstrated greater knowledge, and confidence and were likely to practice it routinely . Although there were a lot of studies about knowledge of breast cancer and practice of BSE in female university students (3,14,15 ), there were few studies about the knowledge of breast cancer and practice of BSE in the age group of 15-20 years (5,12). The role of the nurse ,therefore, is to empower women by providing information, advice and support. Breast cancer awareness includes knowledge of breast cancer risk factors, signs, symptoms, and screening methods(12,13).

The objective of this study was to assess the knowledge of breast cancer and Practice of Breast Self-Examination (BSE) among female high school students in Riyadh city.

## Material & Methods

**Study design:** Cross-sectional descriptive correlation design was used in this study.

**Settings :** The study was conducted at secondary girls' schools, both governmental and private in Riyadh city.

**Study subjects :** A representative probability sample of secondary school girls, both Governmental and private in Riyadh city was recruited for conducting this study. The total number of the study subjects was 917 female students.

**Sample criteria :**

**1- Inclusion criteria :** Female secondary school students in Riyadh city.

**2- Exclusion criteria:** Those who were absent or couldn't complete the questionnaire for any reason.

**Tools for data collection :**

A self-administered questionnaire prepared by the researcher after the review of literature was used. It consists of four parts as following;

### Part I :

**1- Socio-demographic characteristics** such as age, secondary school type, marital status ....etc.

**2- Personal and family history for breast cancer:** It is composed of 4 questions; the answers are ?Yes, No, or I don't know.

### Part II:

Knowledge of students about breast cancer composed of 5 questions :

**1- General knowledge about breast cancer:** It is composed of 4 questions; the answers are ?Yes, No, or I don't know.

**2- Knowledge about the risk factors of breast cancer** was assessed by 11 questions, the answers were ?Yes,

No, or I don't know?. This part assesses the presence of breast cancer risk factors with reference to guidelines of the American Cancer Society (2008)(40).

- 3- Knowledge about the signs & symptoms of breast cancer, it consists of 7 questions, the answers are ?Yes, No, or I don't know..
- 4- Knowledge about the methods of early detection of breast cancer, it consists of 5 questions, the answers are ?Yes, No, or I don't know.
- 5- Knowledge about the methods of breast cancer treatment, it consists of 5 questions, the answers are ?Yes, No, or I don't know.

### Part III:

Knowledge about breast self-examination practice, it is composed of 4 questions; the students were asked whether they performed breast self-examination and if they answered ?yes, they were asked some skills performed during their examination.

### Part IV:

About source of information about breast cancer.

#### Ethical Consideration :

Permission was obtained from the Director of School Education affiliating with the Ministry of Education after asking for permission to carry out this study in 12 schools throughout the academic year (2013/2014). The students who were given information about the study and who accepted to participate in the study were included. They were informed about the aim and potential benefits of the study and their consent was taken and their confidentiality was ensured.

#### Statistical analysis :

Data was analyzed using the SPSS software package (version 16) for data entry and analysis. Descriptive statistics with cross -tabulations were performed. The Chi-squared test, was used to examine the association between variables. Linear regression models were used to assess the relation between the demographic variables and level of knowledge.

Scores on knowledge level were predicted from the following variables (7 predictors): school type (coded 1 = private, 2 = governmental), age groups (coded 1 = 15-16 yrs., 2 = 17-18 yrs., 3 = 19-20 yrs., 4 = more than 20 yrs.), nationality (coded 1 = Saudi, 2 = non-Saudi), marital status (coded 1 = single, 2= married), secondary level (coded 1 = first, 2 = second, 3 = third), family income (coded 1 = good, 2 = medium, 3 = poor), family history (coded 1 = yes, 2 = No). The total N was 917. The significance level used was being with  $p < 0.05$ .

For the total knowledge of breast cancer, the total score was 38. A score of 0- 25 was considered a fair level of knowledge; 26-29 was considered a good level of

knowledge, 30-33 was considered a very good level of knowledge, while 34-38 was considered an excellent level of knowledge. A score of 1 was assigned to each correct answer while zero was assigned to incorrect answer.

### Results

Out of the 1000 questionnaires administered to the respondents, 917 were fully completed giving a response rate of (91.7%). Table 1 (next page) shows the sociodemographic characteristics of the participants. Most participants, 491 (53.5%), were aged between 17 and 18 years old. A majority of female secondary school participants were from governmental secondary schools, (67.1%). A greater percentage of secondary school participants were Saudi citizens, (81.7%), while (18.3%) were non-Saudi participants. A majority of female secondary school participants were single, (98%). Little more than one half of the participants, (58.9%) considered their financial status as medium between (5000-8000 SR).

The personal and family history related to breast cancer was summarized in four questions. The first question was about any previous problems in the breast; the majority of participants did not complain of any breast problems. Only (8%) participants complained of a breast problem. The second question was about the history of breast surgery; the majority of the participants, had no breast surgery. The third question was about family history of breast cancer; the majority of participants have a negative family history of breast cancer and only (6%) participants had a positive family history of breast cancer. The fourth question was about having a family history of other kinds of cancers; (79%) had negative family history of other types of cancers. while (12%) had positive family history of other types of cancers.

Regarding general knowledge about breast cancer nearly half of the samples (53.3%) answered not all breast tumors are cancer while more than half of samples they did not know of Metastasis (57%) and the causes of breast cancer (52.2%), and if it can be prevented completely (43.3%).

Regarding the risk factors of breast cancer, the most widely known risk factors for breast cancer was exposure to radiation (41.9%), smoking (49.4%), but most of them didn't know the association between breast cancer and late menopause (70.9%), late age at first pregnancy (more than 30 years ) (69.7%) early menarche (less than 12 years.) (51%) , use of OCP (58.5%) woman who do not breast feed 48.6% and eating fatty food 48.4%, increasing age (47.5%) , obesity (44.3%).

Regarding knowledge about the signs and symptoms of breast cancer, when they were asked about the symptoms the samples answered correctly, the presence of a mass in the breast (66.6%), sense of mass under

**Table 1: Distribution of the female students according to their Socio-demographic Characteristics**

Parameter	Category	No	%
Total		917	100
Age	15-16 years	328	35.8
	17-18 years	491	53.5
	19-20 years	84	9.2
Secondary School Type	Private	302	32.9
	Governmental	615	67.1
Nationality	Saudi	749	81.7
	Non-Saudi	168	18.3
Marital Status	Single	899	98.0
	Married	18	2.0
Secondary school levels	First	268	29.2
	Second	290	31.6
	Third	359	39.1
Family income	Good	31	3.4
	Medium	540	58.9
	Poor	346	37.7

**Table 2: Distribution of the female students according to their total degree of Knowledge about Breast Cancer**

Variable	( n = 917)	
	No	%
Excellent	0	0
Very Good	3	0.3
Good	8	0.9
Fair	906	98.8

the armpit (48.4%), pain in the breast area (64%) are the warning signs of breast cancer, while more than half of the sample did not know the warning signs of breast cancer such as bloody discharge(50%), wrinkling in the skin of the breast(57%) and inverted nipples (71.4%).

Concerning the screening methods for detection of breast cancer, more than two thirds of the sample mentioned that blood test (64%), breast exam by the doctor (78.3%), and breast self-examination (70.4%) are the methods used for early detection of breast cancer, while one third of the participants have information about mammography (38.5%) and magnetic resonance imaging of the breast (38.3%).

Regarding the line of treatment of breast cancer, more than half of the samples (52.1%) mentioned that surgical treatment is only the method of treatment and less than half of sample (48.4%) mentioned chemotherapy is the treatment while more than two -thirds did not know that radiotherapy (64.3%) hormonal therapy(67.3%), and immunotherapy(67.4%) are methods of treatment of breast cancer.

Regarding the knowledge of breast self-examination practice, Table 3, the majority of samples (86%) don't know how to do BSE . Only (2.3%) participants were doing breast self-examination on a regular basis and (16.9%) performing it on a non-regular basis, while (80.8%) did not perform breast self-examination. (3.4%) participants were doing breast self-examination once

Table 3: Distribution of the female students according to their Knowledge about Breast Self-Examination Practice

Item/Questions	Categories	( n = 917 )	
		No	%
<i>Do you know how to do the breast self-examination?</i>	Yes	127	13.8
	No	790	86.2
<i>Do you do breast self-examination?</i>	No	741	80.8
	Yes, regularly	21	2.3
	Yes, but non regularly	155	16.9
<i>How many times do you perform BSE?</i>	Every day	4	2.3
	Every month	6	3.4
	Every week	89	50.6
	Every year	73	41.5
	I don't know	4	2.3
<i>When do you perform breast self-examination?</i>	Premenstrual	58	33.0
	During the menstrual cycle	8	4.5
	After one week of the menstrual cycle	9	5.1
	On any day	96	54.5
	I don't know	5	2.8

Table 4: Results of Chi-square test significance for variables with degree of knowledge with breast cancer

Variables	$\chi^2$	P
School type (private, governmental)	10.04	.007
Age groups (15-16, 17-18, 19-20, more than 20 years)	7.44	.282
Nationality (Saudi, non-Saudi)	40.82	.001
Marital Status (single, married)	.223	.895
Secondary Level (first, second, third)	21.10	.001
Family Income (good, medium, poor)	7.77	.100
Family History of Breast Cancer	45.0	.001

per month. A small percentage of the students had knowledge about appropriate time for BSE (5.1%).

#### The association between demographic variables and degree of knowledge of breast cancer for female students

A chi-square test was used to test the association of breast cancer knowledge level with secondary school type, age group, nationality, marital status, secondary school levels, and family income Table 4. The variable

of secondary school type (private school) ( $\chi^2=10.04$ ,  $P=.007$ ) was significantly associated with level of knowledge of breast cancer. The variable of nationality (Saudi) ( $\chi^2=40.82$ ,  $P=.001$ ) was significantly associated with level of knowledge of breast cancer. The variable of secondary school level (first) ( $\chi^2=21.10$ ,  $P=.001$ ) was significantly associated with level of knowledge of breast cancer. The variable of family history of breast cancer ( $\chi^2=45$ ,  $P=.001$ ) was significantly associated with level of knowledge of breast cancer. The variable of family

Table 5: Linear Regression Model of Demographic Variables and Level of Knowledge

Variables	B	SE	P
Secondary School type (private, governmental)	.010	.461	.787
Age groups (15-16, 17-18, 19-20, more than 20 years)	.066	.339	.106
Nationality (Saudi, non-Saudi)	-.001	.496	.971
Marital Status (single, married)	-.037	1.406	.285
Secondary school Levels (first, second, third)	.060	.294	.165
Family Income (good, medium, poor)	-.041	.363	.239
Family history of breast cancer (Yes, No)	-.079	.765	<b>.017</b>
N= 917: p < .001: significant values in bold			

Table 6 :Binary Logistic Regression Model for Performance of Breast Self-Exam with Demographic Variables

Variables	B	SE	P	Exp(B)
School type (private, governmental)	-.324	.221	.144	.724
Age groups (15-16, 17-18, 19-20, more than 20 years)	.326	.165	<b>.049</b>	1.385
Nationality (Saudi, non-Saudi)	.063	.234	.786	1.066
Marital Status (single, married)	-.180	.630	.775	.835
Secondary Level (first, second, third)	-.098	.140	.484	.906
Family Income (good, medium, poor)	.154	.179	.387	1.167
Family history of breast cancer (Yes, No)	.745	.450	.098	2.107
N= 917: Cox & Snell's R <sup>2</sup> = 0.053, Nagelkerke's R <sup>2</sup> = 0.084, p < .001: significant values in bold				

history of breast cancer ( $\chi^2=45$ ,  $P=.001$ ) was significantly associated with level of knowledge of breast cancer. The variable of family income ( $\chi^2=8.3$ ,  $P=.016$ ) was significantly associated with breast self-examination practice. Logistic regression analysis revealed that one of seven predictors was significantly predictive of level of knowledge scores; this was family history of breast cancer, ( $\beta = -0.079$ ,  $p < 0.05$ ); the negative of family history indicated that higher scores on family history (e.g., no history of breast cancer) predicted lower scores on the level of knowledge Table 5.

One of seven predictors were significantly predictive of performance of self-examination scores; these included age groups; ( $B = 0.33$ ,  $p < 0.05$ ) the higher scores on age group (e.g., 20 yrs. or more) predicted higher scores on the performance of breast self-exam ( e.g., Yes I perform breast self-exam) Table 6.

## Discussion

A study conducted in Saudi Arabia by Ibrahim et al estimated that the future burden of breast cancer in Saudi Arabia is expected to increase by approximately 350% by 2025(13) .

The results of the study show that students had low knowledge score in relation to breast self-examination; this reflects the needs for targeting educational programs for female secondary schools. This finding was consistent with several studies in Saudi Arabia and in Malaysia (16,17)

Concerning the risk factors about breast cancer, the present study showed that most of the students had low knowledge of breast cancer risk factors. The most widely known risk factors by the students was smoking 49.4% followed by repeated exposure to radiation on the breast (41.9%). This finding is similar to that reported in Saudi Arabia (18) but most subjects didn't know the association between breast cancer and age, using oral contraceptive pills, avoiding breast feeding, obesity and increased

fatty food intake, previous history in the family. However some studies have shown that the incidence of breast cancer is said to be slightly higher in persons that have a first degree relative with a history of breast cancer, persons that have early menarche and late menopause, those that use oral contraceptives, persons who do not breast feed and those women having their first birth after age 35 or in nulliparous women, the incidence is also increased with increasing age of the patient, smoking, obesity, physical inactivity, radiation exposure, intake of alcohol and high fat diet (16,19,20, 21 ). These breast cancer risk factors can be changed with health education. So health care professionals can play an important role in educating students, to enhance their awareness of breast cancer risk factors and influence their behavior. Slightly more than half of the samples (52.2%) did not know the cause of breast cancer. Similar results have been reported in previous studies (19,22).

Regarding to the symptoms of breast cancer, most of the respondents in this study did not know other warning signs of breast cancer such as bloody discharge from nipple (49.6%), dimpling or wrinkling in the skin of the breast (57%) and inverted nipple (71.4%). This observation was also reported in other studies (21,23 ). This reflects their lack of knowledge regarding early symptoms of the disease, which is very important from the point of view of better prognosis.

Concerning the screening methods for detecting the disease, the participants in this study did not know about the use of mammography and magnetic resonance imaging (MRI) as a screening tool for early detection of breast cancer. This finding has also been documented in previous studies (14,19,24,25 )MRI(16). Health education about the benefits of mammography screening for detection of breast cancer should be encouraged. Therefore maternity nurses she have great influence on female students to develop positive perceptions of breast cancer and motivation to practice screening methods for early detection of the disease.

Regarding treatment, the respondents knowledge about the treatment options of breast cancer showed that some of the respondents were aware of treatment modalities of breast cancer the majority of the respondent 52.1%, 48.4% knew that surgery and chemotherapy respectively are the treatment options of breast cancer. This result is similar to a study done by (Tiengo J.2011, Ibrahim N .2009 )(21,26 ).

Regarding knowledge of practice of breast self-examination, in this study about 2.3% of the students who heard about BSE reported having performed it. From this only 3.4% performed BSE monthly and the majority of the students performed BSE irregularly (16.9%). Students knowledge about BSE might have affected their monthly BSE performance. However, only

a small number of students who had knowledge about the BSE procedure were performing BSE monthly. This may be due to insufficiency of education programs organized to increase breast health awareness. In this study, the findings regarding regular BSE are different from a previous study done in Turkey which showed that 20% of the students reported that they performed BSE irregularly and only 6.7% of those who practice BSE performed it regularly every month(27 ). The study done in Kuwait revealed that only 14.0% perform BSE irregularly and only 7.1 % of participants perform BSE monthly(19). In other studies the percentage of monthly BSE performance has been found to be 3.4% among teenagers(28). This observation was also reported in other studies (19,29).

A significant association was seen between family history of breast cancer and overall level of breast cancer knowledge. This finding was relatively consistent with findings in previous research studies (24,30 ), while two studies showed a relation between family history of breast cancer and regular BSE performance (27,29). Another three studies revealed no relation between family history of breast cancer and BSE performance (18,31,32 ). This finding was consistent with conclusions drawn in earlier studies, which found known breast cancer family history influenced women's attitudes about breast cancer and their willingness to engage in breast cancer screening behaviors (33). A negative family history was found to be a significant lower predictor on the level of breast cancer knowledge. But this result is in contraindication with the findings of some other studies that have found a positive family history of breast cancer tends to show better awareness and functions and affected women do more regular breast screening compared with the other women (34,35).

Family income in this result was not significantly associated with level of breast cancer, however family income was significantly associated with BSE practice. In similar studies by (Alsaif A ,2004 ; Dundar E ,2006)(31,36) showed no significant association between family income with level of breast cancer knowledge and BSE practice, unlike the findings of the present study with findings of a previous study by (Dandash K,2007) which found a significant

relation between family income with level of breast cancer knowledge and BSE practice (18).

Linear regression analysis reveals age group was significantly predictive of performance of self-examination. The findings of this study are consistent with those of other studies, as many studies have found age was the most important predictor for BSE practice (37,38,39). The findings of the present study are contrary to the findings of some studies which found that marital status, level of education, positive family history of breast cancer, menarche and menopausal status were predictors for BSE performance (34,37,38).

## Conclusion

It is concluded that most of the female secondary school students in Riyadh, Saudi Arabia had very low knowledge about breast cancer. Recommendations are suggested to raise students' level of knowledge toward breast cancer and practice of breast self-examination among female students through the following activities; Developing a health education programme that should be built into school curricula, regarding breast cancer and BSE practice starting from their secondary school. Developing educational programmes for teachers. School health unit, mass media and Ministry of Health should plan to raise awareness about breast cancer in the community.

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