

# Knowledge of secondary-school female students on breast cancer and breast self-examination in Jeddah, Saudi Arabia

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معارف طالبات المدارس الثانوية حول سرطان الثدي والفحص الذاتي للثدي في جدة بالمملكة العربية السعودية  
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**خلاصة:** تم توزيع استبيان يجاب عليه ذاتياً، على 6380 طالبة بالمدارس الثانوية (العمر الوسطي لهن = 18.1 سنة) في مدينة جدة، وذلك لمعرفة مستوى معارفهن حول سرطان الثدي، ومواقفهن تجاه الفحص الذاتي للثدي. وتبين أن معرفتهن بعوامل الاختطار والشكوى التي تتقدم بها المريضة كانت ضئيلة للغاية. فقد فشلت 80% من الطالبات في إعطاء إجابات صحيحة عن 50% من الأسئلة. ولوحظ ارتفاع مستوى المعارف مع ارتفاع السن ومع الزواج والإنجاب. كما أن الطالبات اللاتي سبق لهن تصوير الثدي أو أجريهن جراحة بالثدي أو حدثت إصابة بالمرض في عائلتهن، كانت لديهن مستويات عالية بدرجة يعتد بها إحصائياً من المعرفة. وقد أفادت 39.6% فقط من الطالبات بأنهن قد سمعن عن الفحص الذاتي للثدي. أما سن عرض التواتر الصحيح للفحص الذاتي وتوقيته المناسب فلم يتجاوزن 14.4% و 7.1% على التوالي. ومن ناحية أخرى أبدت 82.4% من الطالبات موقفاً إيجابياً تجاه تعلم الفحص الذاتي للثدي.

**ABSTRACT** A self-administered questionnaire was given to 6380 female secondary-school students (mean age = 18.1 years) in Jeddah to identify their knowledge of breast cancer and attitude towards breast self-examination (BSE). Knowledge of risk factors and presentation was very low. Over 80% of students failed to answer 50% of the questions correctly. A higher knowledge level was associated with older age, marriage and having children. Also students who had undergone mammography, had been exposed to breast surgery or had a positive family history of breast cancer showed significantly higher knowledge levels. Only 39.6% reported ever hearing of BSE and only 14.4% and 7.1% respectively knew the correct frequency and timing. However, 82.4% had a positive attitude towards learning BSE.

## Connaissances des étudiantes du secondaire en ce qui concerne le cancer du sein et l'auto-examen des seins à Djeddah (Arabie saoudite)

**RESUME** Un questionnaire à remplir soi-même a été donné à 6380 étudiantes du secondaire (âge moyen = 18,1 ans) à Djeddah pour identifier leurs connaissances relatives au cancer du sein et leur attitude vis-à-vis de l'auto-examen des seins. La connaissance des facteurs de risque et des manifestations de la maladie était très faible. Plus de 80% des étudiantes n'ont pas réussi à répondre à 50% des questions correctement. Un niveau plus élevé de connaissances était associé avec un âge plus élevé, le mariage et le fait d'avoir des enfants. De plus, les étudiantes qui avaient eu une mammographie, avaient été exposées à une chirurgie du sein ou avaient des antécédents familiaux positifs montraient de plus hauts niveaux de connaissance. Seuls 39,6% ont signalé avoir déjà entendu parler de l'auto-examen des seins et seuls 14,4% et 7,1% respectivement en connaissaient la fréquence et le moment corrects. Toutefois, 82,4% avaient une attitude positive vis-à-vis de l'apprentissage de l'auto-examen des seins.

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## Introduction

Breast cancer is a common malignancy in the Arab world [1]. Health education activities and early screening programmes are two measures that complement each other to raise the level of knowledge among females and to modify behaviour for early detection of breast mass. It is expected that such activities and programmes are more effective among younger groups such as school students. It has been documented that younger women show a more positive attitude toward health education about breast cancer and early screening [2]. School health education programmes, therefore, can be very effective in this regard.

Little is known about the knowledge level and awareness of breast cancer and breast self-examination (BSE) of female students in the Arab world. Thus, the aims of this study were:

- to assess the knowledge level of young women in secondary schools on the risk factors associated with breast cancer and early signs of presentation.
- to identify their awareness of the use of BSE as a means of screening for breast masses and to assess their attitudes to this method.

The study was performed prior to the introduction of a health education programme in female secondary schools in Jeddah, Saudi Arabia.

## Participants and methods

A self-administered questionnaire was given to all final-year secondary-school female students before the start of the health educational programme in their schools. The questionnaire had been previously piloted to a group of second grade (pre-final

year) female secondary students and had been reviewed for language and easy comprehension accordingly.

The questionnaire included questions on 10 factors which people might associate with breast cancer, such as contraceptive pills, repeated X-ray of the breast, use of skin creams, smoking, fatty foods and a family history of breast mass, in addition to 2 questions on common presentations of the disease. Personal characteristics of the students and their history, which might have given them some knowledge of breast cancer, such as age, nationality, family history of breast cancer, exposure to mammography and history of breast problems or breast surgery, were also queried. Knowledge of students on the frequency and timing of BSE in relation to menstrual period was also investigated. Their attitude to BSE was assessed by questioning their desire to learn and practise the method.

Using the SPSS statistical program, frequencies were generated for correct and incorrect answers in the knowledge items on risk factors associated with breast cancer and its presentation. The knowledge index for these items was calculated for each student by summing the number of correct answers then dividing by the total scores of the questions multiplied by 100. The mean index for all students was calculated and an arbitrary cut-off point of 50% or more correct answers was used to divide the knowledge level of the students into "good" or "poor". Comparison of knowledge levels of the various subgroups of students according to personal characteristics and history was performed using the chi-squared test to determine the significance of various factors associated with a high knowledge level. Frequencies of correct answers on timing and frequency of BSE and their attitude towards it were also calculated.

## Results

The knowledge level of all students ( $n = 6380$ ) of the risk factors associated with breast cancer and its presentation was very low. Although 47.1% of students reported that they had heard of or read some scientific information about breast cancer in various media forms, only a very low percentage of them (15.4%) were found to have a good knowledge level and to have identified 50% of the correct answers. The mean knowledge index for all students was 22.9%.

The mean age of the students was 18.1 years (SD = 1.9). Students with a good knowledge level had a significantly higher mean age (18.4 years, SD = 2.9) compared with the students with low knowledge levels (18.0 years, SD = 1.6) ( $t = 6.04$ ,  $P = 0.0001$ ).

Personal characteristics of all students and the significance level of association with knowledge level are given in Table 1. Married students and those who had children had a significantly higher knowledge level on breast cancer and its presentation. Other factors in the student's history which were expected to influence their awareness of breast cancer and their association with knowledge level are presented in Table 2

Students with a history of breast problems, who had had a mammogram and who had a family history of breast mass showed significantly higher knowledge levels. While 51.9% of students recognized correctly that breastfeeding has no negative association with the disease, only 10.1% of them knew of the possible association of breast cancer with a high-fat diet. Presentation of breast cancer as a breast mass was answered correctly by 39.7% of the stu-

**Table 1 Knowledge levels of the female secondary-school students according to their personal characteristics**

Characteristic	Knowledge level		$\chi^2$	P-value
	High level No. %	Low level No. %		
<i>Nationality</i>				
Saudi	562 73.5	3069 73.8	0.02	0.88
Non-Saudi	203 26.5	1090 26.2		
<i>Married</i>				
Yes	99 10.9	372 7.5	11.7	0.006*
No	811 89.1	4607 92.5		
<i>Have a child</i>				
Yes	65 7.3	164 3.8	21.2	0.001*
No	830 92.7	4676 96.2		
<i>Cigarette smoker</i>				
Yes	39 3.7	162 3.3	0.2	0.65
No	862 96.3	4711 96.7		
<i>Shisha smoker</i>				
Yes	49 5.7	201 4.4	2.4	0.12
No	806 94.3	4317 95.6		

\*Significant

**Table 2 Knowledge levels of the female secondary-school students according to their history related to breast problems**

Characteristic	Knowledge level		$\chi^2$	P-value
	High level No. %	Low level No. %		
<i>Had a mammogram</i>				
Yes	20 2.2	47 0.9	9.7	0.002*
No	899 97.8	4992 99.1		
<i>Visited a doctor for a breast problem</i>				
Yes	32 3.5	113 2.2	4.7	0.03*
No	880 96.5	4928 97.8		
<i>Had any breast problem before</i>				
Yes	35 4.0	135 2.9	2.7	0.09
No	845 96.0	4578 97.1		
<i>Had breast surgery</i>				
Yes	14 1.5	29 0.6	8.5	0.004*
No	904 98.5	5011 99.4		
<i>Have a relative with a breast mass</i>				
Yes	141 15.7	465 9.4	31.4	0.0001*
No	755 84.3	4456 90.6		

\*Significant

dents but only 16.2% knew that breast cancer could appear as a change of or bleeding from the nipple. Table 3 shows the frequency of correct answers on all 12 questions on risk factors and presentation of breast cancer.

Only 39.6% reported that they had ever heard about BSE. This group had a significantly higher knowledge level on breast cancer risk factors and presentation ( $\chi^2 = 72.8, P = 0.0001$ ). Although the general attitude of the students towards learning BSE was positive and 82.4% requested to learn it, only 14.4% and 7.1% of them respectively knew the correct frequency and timing of BSE in relation to menstrual period.

## Discussion

Breast cancer is the most common of all female cancers in Saudi Arabia [1,3-6]. The

**Table 3 Frequency of correct answers on risk factors and presentation of breast cancer by female secondary-school students**

Risk factor and presentation question	% of correct answers
Breastfeeding	51.9
Cancer appears as a breast mass	39.7
Becoming pregnant at a young age	30.6
Repeated X-raying of the breast	28.4
Eating hot or spicy food	22.7
Having a relative with breast cancer	20.9
Using skin creams on the breast	19.9
Cancer can start as a nipple change and bleeding	16.2
Using contraceptive pills	15.2
Wearing nylon bras	14.5
Eating fatty food	10.1
Smoking	8.1

disease in Saudi Arabia is different from many industrialized countries as it presents in an earlier age group [7].

In Saudi Arabia, where the gross secondary school enrolment for girls is 43 per 100 and the illiteracy rate among females > 15 years is approximately 50% [8], high-school girls in their final year should have a better knowledge than the many other female members of the society with lower education levels. We found that this was not the case as their awareness of the presentation and risk factors of breast cancer was very low. This might be due to a reluctance to discuss such matters and the resistance to health education on breast cancer in the conservative societies of Arab countries.

A high knowledge level was seen more frequently among older students, married students and those who had a child. Important factors associated with high knowledge were family history and personal experience of breast problems. These are known risk factors that increase the chance of developing the disease and are important in raising the awareness of a women and encouraging her to seek information on the subject.

The percentage of students who had visited a doctor for any breast problem before can be used as an indicator of the rate of clinical breast examination. This was very low, i.e. 2.5% of all the students. This finding was expected as even in countries like Sweden, Japan and Australia, the procedure is recommended as a yearly routine for screening purposes only for women who are at least 30–40 years of age [9]. The rate of mammography was also found to be very low in our group. Mammography is a recommended measure for breast cancer screening by American and Canadian task forces as well as in other countries [9,10]. It has proved to be effective in reducing mor-

tality from breast cancer and treatment costs for women over 50 years of age [11]. In Saudi Arabia, there is no national protocol for breast cancer screening programmes and both mammography and clinical breast examination are not carried out except on medical request. Therefore, the low rates of these measures found in our study are to be expected, especially among women of such a young age.

With regard to the risk factors of breast cancer correctly identified by the students, one should remember that many risk factors still do not have a proven link with breast cancer. The disease is still associated with ambiguities and uncertainty of its causes and risk factors. Indeed, for many of the risk factors thought by the general public to have some correlation with breast cancer, such as coffee, cholesterol, smoking and polyunsaturated fats, there is little evidence for possible association [12]. Nevertheless, links of breast cancer to many known dietary and non-dietary items are documented. It is disappointing that 80% of the students failed to recognize the extra risk imposed on a women if she has a close relative with breast cancer and the danger of unnecessary repeated X-ray of the breast. Furthermore, there was little awareness of the students of the presentation of breast cancer in its first stages as nipple changes or discharges. Lack of such knowledge can have a devastating effect as it results in late presentation of advanced breast cancer cases, a finding that has been documented in a previous Saudi study [7].

Very few students knew the correct frequency and timing of BSE, which indicates low rates of practice of this examination. In a Saudi study, Kashgari reported that only 12% of women attending the general clinic had practised BSE before [13]. BSE is not considered mandatory for cancer screening purposes by most preventive programmes,

whereas mammography and periodic clinical examination are highly recommended [9,10]. The US Preventive Service Task Force found insufficient evidence to recommend for or against BSE [10], but the advice of the American Cancer Society is to train women aged 20 years or more to practise it on a monthly basis [14]. In Saudi Arabia, where there is no obligatory screening programme for breast cancer, it can be argued that practising BSE could help raise awareness of the issue of breast cancer among a large group of young women and could help reduce late presentation of advanced breast cancer cases. This might justify its inclusion in health education programmes for breast cancer early detection.

In conclusion, female secondary-school students in Jeddah had very little knowledge of the presentation of breast cancer and its risk factors. Students were also not familiar with BSE. The study indicates the necessity for a health education programme

on risk factors, early signs and methods of diagnosis of breast cancer for this group of easily targeted young women.

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Statistical data from the Region indicate that cancers are becoming a leading cause of death in the Region. During 1999, cancer as a public health problem was addressed in national programmes for cancer prevention and risk factor control. Specifically, the Regional Office provided technical support to establish cancer registers in Bahrain, Iraq, Jordan, Lebanon, Libyan Arab Jamahiriya, Morocco, Oman and Saudi Arabia. Efforts to improve current cancer registries were supported in Egypt, Islamic Republic of Iran, Pakistan, Sudan and Syrian Arab Republic, as were national efforts by individual countries for early detection of cancers, particularly screening for breast cancer.

*Source:* The work of WHO in the Eastern Mediterranean Region. Annual Report of the Regional Director. 1 January-31 December 1999. Page 164.