Breast cancer awareness among female school teachers in Makkah region, Saudi Arabia- A cross-sectional study

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Abstract

Introduction: Breast cancer (BC) is the most frequent malignancy of women and second leading cause of cancer related death worldwide. In Saudi Arabia, is the ninth cause of death. Few studies have been conducted to address BC awareness in KSA in general and to our knowledge, this is the first to be conducted in Makkah region.

Aim: To assess the level of awareness knowledge, attitude of Saudi female teachers towards BC in primary, intermediate and secondary schools in Makkah region.

Method and materials: The study proposal was approved by the Research Ethical Committee in faculty of medicine, Umm Al-Qura University. A self-administered questionnaire on BC was designed and tested. Questionnaire consisted of 23 items covered four domains (awareness about the aetiology, knowledge about BC risk factors, symptoms, knowledge about diagnosis and treatment & attitude toward screening). A sample of 400 female school teachers working in primary, intermediate and secondary schools was selected by multistage random sampling. Forty schools in Makkah were selected randomly, and a convenient sample of 10 teachers from each school was randomly selected as well. Proper permission was obtained from the authorities. The collected data statistically analyzed using SPSS version 21.

Results: The results showed significant knowledge & attitude about BC among the female teachers differed significantly by their age and marital status. Those aged 46-55 (F = 8.5, $p > 0.00$) and those who are married (F = 2.7, $p > 0.04$) had more knowledge about BC than others. The majority of respondents had limited level of knowledge and understanding of BC symptoms. However, it also showed that the teachers are very enthusiastic to learn about BC, and its prevention. Most participants reported that they did not perform any breast exam before (40/%).

Conclusions and recommendation: This study indicated that Saudi female teachers' level of knowledge of BC is inadequate. This might be an obstacle to screening program. Public-awareness interventions are needed in order to overcome an ever-increasing burden of this disease among Saudi females and introducing and develop an effective health education program in female schools in KSA is recommended.

Introduction

Brest Cancer (BC) as a multifactorial disease is the most common cancers and the second leading cause of deaths among women worldwide [1]. The incidence of BC is rising more rapidly in the population group that use to enjoy low incidence of the disease and it reduces the life expectancy of the population at risk especially those between 31 and 50 [2].

Global statistics show that the annual morbidity and mortality of BC are increasing, in which over 1.15 million women worldwide (representing 10 percent of all diagnosed cancers and 23 percent of cancers diagnosed in women) are diagnosed with BC each year and more than 502,000 of them die from this disease (more than 1.6% of all female mortality worldwide) [3].

Women in the Middle East face a significant risk of high mortality rate from BC due to the delay in the diagnosis and the advanced stages of the disease at the time of diagnosis. In kingdom of Saudi Arabia; BC usually diagnosed at late stage and more frequently in young pre-menopausal women under age of 45 years in comparison to western countries [4].

The aetiology of the majority of BCs is unknown with only about 25% to 40% of them may be attributed to well known risk factors [5].

Awareness of BC risk factors (gender, age, family or personal history, racial factor, radiation exposure, breast changes, early menarche, late menopause, prolonged null parity, overweight, diet, alcohol consumption, tobacco smoking, excessive estrogenic exposure, oral contraceptive use, stress and anxiety.) and perception of personal risk are important factors for motivation, prevention, and/or early detection of the disease [6-8], knowledge about screening methods and warning signs and of the disease plays an important and effective role towards developing and employing screening programs in a community, which can effectively improve the chances of early detection of BC in early stages witch result in improvement in survival rate and quality of life [9].

However, late diagnosis of BC is mainly due to lack of awareness in the population and barriers to access to health services (WHO, 2012) [10].

Early detection of BC can be achieved through: Implementing effective screening programs and annual mammography in targeted population; and improve public awareness about signs and symptom of BC and encouragement of females to take a prompt action [10–13].

In Saudi Arabia, unfortunately we don't have any national screening program; however, there are several local / regional programs / activities such as: the public awareness of BC, through lectures, in a major hospital in Riyadh [14], a year-round, well-designed public awareness program, and the first organized population-based screening mammography program in Alqassim region [15].

There is very little information exists on the perception and believes of females in Saudi Arabia about BC and its control; and it is well-known that to improve cancer control, it is important to understand what they know about the disease and its screening, early detection and treatment [16].

In KSA, studies related to knowledge, attitudes, and practices around BC are scarce. Milaat et al. [17] found a very low level of knowledge of BC and its associated risk factors among female high-school students. However, an older female population from Riyadh was found to be more knowledgeable about BC. Among 864 women aged 20–50 years old and living in Riyadh, 82% knew about breast self-examination, and 61% knew about mammography. However, only 41.2% had performed breast self-examination, and only 18.2% had ever had a mammogram [8]. In Al Hassa governorate, a population-based study found even lower rates of mammography, 5.1% among 1,315 women aged 18–65 years old [9]. Another study of teachers in their thirties also showed low levels of breast-cancer-related knowledge, with only 32.4% being aware of breast self-examination [10]. Whether Saudi women know about BC screening and whether those above 50 years are being screened for BC at least once every two years is unknown. We conducted a regional survey to investigate knowledge and practices of BC screening among school teachers in order to asses stress the need BC and cancer awareness national health programs.

Several studies have shown inadequate levels of knowledge towards risk factors awareness and cancer screening like clinical breast examination and mammography, even among educated women [18,19].

In Saudi Arabia, few studies have been carried out to assess awareness towards risk factors of BC with some methodological limitations [11,19]. While none exist assessing distribution of various risk factors implicated in BC as well as screening behaviour. Consequently, the objective of this study was to assess level and determinants of knowledge about, risk factors behaviour and utilization of screening methods used for BC.

Cost and availability of health insurance have been found to act as barriers to BC screening in the U.S. and other parts of the world, but not in Saudi Arabia where mammography is usually either free or covered by insurance [17,19].

We aim in this study to assess knowledge, awareness, attitude and practice of Saudi female towards BC and screening for BC. We picked school teachers as our sample because they constitute a large number in the population and the result of the study, we believe, can be applied to the whole population of Saudi Arabia.

Also, school teachers are classified as well-educated sector in the country and it is expected that they are very well aware and oriented about BC.

Finally, we couldn't find any similar study done in Makkah region and we hope by this study that we can attract some attention to develop awareness and screening programs for BC here.

Methods and materials

Study Design

Cross-sectional survey in the Makkah city.

Study population and sample size

A total sample of 400 school teachers working in primary, intermediate and secondary schools was selected by multistage random sampling. Forty schools in the city of Makkah city were selected randomly, and a convenient sample of 10 teachers from each school were randomly selected as well. Sample size was determined using sample size determination tables as ministry of education website total number of teachers is 12905 sample size is 365. However, considering 10% non-response rate the final sample size is 400.

Instruments

A questioner was developed based on a comprehensive review of literature to include questions on women's awareness level about different aspects of BC. The original questionnaires were in English for which translation into Arabic with back translation to English was done to preserve the original construct. Content validity was reviewed by two experts in the field. Twenty-three questions covering the important aspects of BC that the public should know including: risk factors, signs, screening, treatment methods and screening centers in Makkah and the source of each information. Questions assessing knowledge score was given a value of one if correct and zero if incorrect. Total knowledge score was 37.

Data collectors were recruited and trained for two days. In the training session the data collectors were oriented about the subject itself, we give them a workshop to explain objectives of the study and data collection process. All collected data were reviewed by the supervisors and principle investigators.

Initially, we did a pilot study on 10 school teachers to ensure quality, clarity and completeness of data.

Statistical analysis

Data were analyzed using SPSS software, version 21. Scores of knowledge items were summed to obtain the mean total knowledge score on BC total scores were found to be normally distributed. Descriptive tests (frequency, mean, standard deviation (SD) and percentages) were done to characterize different variables. Parametric test (T-test and ANOVA test) were applied to compare knowledge across the socio-demographic variables. Multiple linear regression analysis was performed to obtain the significant predictors of BC knowledge. The level of significance was set below 5% ($p < 0.05$).

Ethical consideration

Participants were informed about the study nature. Written consent was obtained. All information obtained from participants were anonymous. Approval from Research Ethical Committee in the faculty of medicine was obtained, Umm Al-Qura University, and the study was conducted after approval.

Results

The response rate was 100% as all participants responded to the questionnaire; the majority of the respondents were between 36 and 45 years old (49%), married (70%) and hold a bachelor's degree (77%). Seventy eight percent of them didn't have a family history of BC and 81% haven't had any breast disease before (Table 1).

Table1. Socio-demographic characteristics of the respondents (n=400)

Characteristic	N	%
Age		
25-35	145	36.3
36-45	197	49.3
46-55	58	14.5
Marital status		
Single	71	17.8
Married	282	70.5
Divorced	32	8
Widowed	15	3.8
Educational level		
Diploma	66	16.5
Bachelor	311	77.8
Master	15	3.8
Doctorate	2	.5
Others	6	1.5
Family history of breast cancer		
Yes	63	15.8
No	314	78.5
I don't know	23	5.8
***Who had breast cancer in family**		
Mother	21	33.3
Sister	5	7.9
Ant	14	22.2
Grandmother	5	7.9
Others	18	28.6
Had Breast Disease		
No	227	81.5
breast inflammation	15	3.7
breast ulcer	3	0.7
breast tumor	4	1
nipple secretions	23	5.7
breast lump	27	6.7
other breast problem	2	0.5
Have you ever had a mammogram ?(yes)	51	12.8
If yes, why?		
For Screening	36	70.59*
For Diagnosis	15	29.41*
have you ever done breast self-examination? (yes)	169	42.3
if no why?		
I did not know it excited	37	15.7
I don't know how to do it	120	50.8
I don't think it's important	14	5.9
I don't think I need it	65	27.5

*For participants' who answered Yes (n = 63)

Table 2 illustrates respondents' knowledge about risk factors and warning signs. Alcohol drink (82%) was the most identified risk factor, followed by family history (69%) and long term oral contraceptive pills use (66%). Increase maternal age at first pregnancy (0.9%) was the least identified risk factor, followed by late menopause (hormonal therapy exposure) (3%) and early menarche (5%). Majority of respondents identified lump under armpit (75%) as a BC warning sign followed by painless breast lump (65%) and bleeding or discharge from the nipple (52%). Wight loss (22%) and nipple pain (35%) were the least identified warning signs of BC.

Respondents' mean scores of their overall knowledge about BC based on some demographical characteristics. It is found that overall mean score for the participants' knowledge levels about BC is 15.6 ± 4.19, most of participants' (67%) had a weak score knowledge, followed by average knowledge score of (24%) lowest percentage of participants' (6%) had a good knowledge score.

School teacher's knowledge about BC differed significantly by their age and marital status, as those aged 46-55 (F = 8.5, $p > 0.00$) and those who are married (F = 2.7, $p > 0.04$) had more knowledge about BC than others (Tables 3 and 4).

Univariate linear regression analysis was done to the age, Marital Status, education level, those with family history of BC and those who had breast disease. Multi-collinearity was checked, and the analysis showed no intercorrelation among the independent variables. Only age was statistically significant ($P < 0.05$) (Table 5).

Forty five percent of participants' knew about BC Screening centers in Makkah city, 93.3% of respondents think that early BC screening is important and 92.3% stated that they would go to see a doctor only if

Table 2. Respondents knowledge about risk factors and warning signs of breast cancer

Item	True	
	n	%
Risk Factors		
Family History	278	69.5%
Early menarche	23	5.8%
Old age of first pregnancy	25	0.9%
Early menopause	101	25.3%
Aging	104	26.0%
Increase maternal age at first pregnancy	25	6.3%
Early menopause	101	3.7%
Number of pregnancies'	84	21.0%
Infertility	68	17.0%
Staying Single	46	11.5%
Obesity	113	28.3%
Fatty foods	134	33.5%
OCP use	265	66.3%
Increased Stress Levels	275	68.8%
X-ray Exposure	315	78.8%
Smoking	251	62.8%
Alcohol drink	331	82.8%
Worming Sings		
Painless Breast Lump	261	65.4%
Changes in the size of breast or nipple	192	48.1%
Changes in the shape of breast or nipple	203	50.9%
Bleeding or discharge from the nipple	210	52.6%
Pulling of the nipple	168	42.1%
nipple pain	142	35.6%
Wight loss	88	22.1%
Redness of the breast skin	171	42.9%
Lump under armpit	300	75.2%

Table 3. Participants' Knowledge Score Toward BC

	Disease knowledge score = 30		Screening knowledge score = 7		Overall knowledge score = 37	
	N	%	N	%	N	%
Weak*	246	61.5	202	50.5	271	67.75
Average*	99	24.7	182	45.5	96	24
Good*	6	1.5	6	1.5	6	1.5
Range	3-24		3-6		6-29	
Mean ± SD	12.27 ± 3.93		3,33 ± 1.11		15.6 ± 4.19	
Chi-square						
X²	286.8		197.60		205.110	
P	< 0.001		< 0.001		< 0.001	

*Weak (score 49-25%), Average (score 50-74%), Good (score ≤75%(.

Table 4. Differences in Respondents Breast Cancer knowledge by Demographic Variables

Characteristic	Mean	SD	F	P-Value
Age				
25-35	17.62	3.608		
36-45	18.81	3.902	8.516	.000
46-55	19.98	4.470		
Marital status				
Single	17.46	3.660		
Married	18.89	4.044	2.780	.041
Divorced	17.94	3.991		
Widowed	18.47	2.669		
Educational level				
Diploma	19.05	4.145		
Bachelor	18.42	3.938		
Master	18.40	3.699	.721	.578
Doctorate	22.00	7.071		
Others	18.67	2.944		
Family history of breast cancer				
Yes	18.73	4.064		
No	17.87	3.348	1.545	.215
I don't know	17.91	3.942		
Had breast disease				
Yes	18.48	3.969	-.162-*	-.083-*
No	18.56	3.963		
Practice breast self-examination				
Yes	19.07	4.121	2.32*	.021*
No	18.13	3.756		
Had mammography				
Yes	19.65	5.047	2.193*	.085*
No	18.36	3.726		

*T-statistic and p-value are based on the results of t-test

Table 5. Predictors of breast cancer knowledge by univariate linear regression (n = 400)

	B	SE	Beta	P value	95% CI	
					Lower	Upper
Age	1.182	.286	.203	.000	.620	1.745
Marital Status	.337	.310	.054	.277	-.273-	.947
Educational Level	-.136-	.334	-.020-	.685	-.792-	.521
Family History	-.572-	.353	-.081-	.106	-1.26-	.122
Had Breast Disease	-.083-	.513	-.008-	.871	-1.09-	.926

they had breast problem and over half of the participants would agree to participate in a BC screening program.

Fifty-one participant had mammography and only 31 out of them were for screening. Out of all participants 57% thought that BC treatment depends on the stage (Table 6).

Discussion

In Saudi Arabia, BC is the most common cancer among females. It usually presents at advanced stages and is considered the leading cause of cancer mortality in women (14% of female cancer deaths). Since it is known that education and awareness lead to better screening and subsequently early detection which contribute to better treatment and prognosis, we designed this study to investigate the level of BC awareness among Saudi females teachers in Makkah, and as we can see that only 3.8% know what mammogram is and only 8% know that it should be started at the age of 50, these results unfortunately reflects poor knowledge of the study group and when we looked at the literature there was no similar study asked the same question. When it comes to the treatment options, we found that also there is relatively poor knowledge about treatment choices of breast cancer (57% know that it depends on the stage) (Table 7).

Our findings show that overall mean score for the participants' information levels about breast cancer is 15.6 ± 4.19, most of participants' (67%) had a weak score knowledge of 49-25%, followed by average knowledge score of 50-74% (24%) lowest percentage of participants' (6%) had a good knowledge score of ≥ 75%. Regarding the screening methods 50% of our sample had a weak knowledge and 1.5% had a good score.

Also, this finding support previous study by Alam et al. [11], she reported smoking, hormone replacement therapy and exposure to excess radiation as common BC risk factors noted by women in Riyadh.

Regarding women's' awareness of BC warning signs; painless breast lump was the most frequently identified symptom (65%) followed by bleeding or nipple discharge (52%) and change in the shape of breast or nipple (50%). Knowledge of other warning signs were limited as only few females knew that weight loss (22%) and nipple pain (35%) are warning sign of BC. Radi et al. [20] reported similar findings in their study.

This finding is in agreement with what has been reported by Parisa Parsa et al. [21], in their study they reported that the majority of participants had low level of knowledge (63%).

When we compared the demographic variables of our population, we noted that marital status and age affected significantly awareness level; as older married females learn more about the disease and were more aware about screening methods. However, we found that educational level didn't affect awareness about BC as more educated females didn't necessarily know more about the disease or its screening.

The results were consistent with the literature as published by Dandash et al. [16] & Amin TT et al. [18] but on the other hand these

Table 6. Participants' Attitude Toward Screening Programs

Question	n	%
Do you know any breast cancer screening center in Makkah?	181	45.3
Do you think early breast cancer screening is important?	385	96.3
Would you agree to participate in a Breast Cancer screening Program If offered?	237	59.3
if you or a family member had any breast problem would you go to the doctor?	369	92.3
have you ever had a breast cancer examination by a doctor?	107	26.8

Table 7. Participants' Knowledge About Breast Cancer Screening and Treatment

Question	n*	%*
What percentage do you think the risk of breast cancer in women? (<25%)	155	38.8
What is mammogram? (breast x-ray)	33	3.8
How often should mammogram be done? (annually)	93	23.3
At what age do you think mammogram screening should start? (50)	32	8
Have you ever had a mammogram? (yes)	51	12.8
If yes, why?		
For Screening	36	70.59*
For Diagnosis	15	29.41*
have you ever done breast self-examination? (yes)	169	42.3
if no why?		
I did not know it excited	37	15.7
I don't know how to do it	120	50.8
I don't think it's important	14	5.9
I don't think I need it	65	27.5
What is the treatment of breast cancer?		
Chemotherapy and radiotherapy	69	17.3
Hormonal therapy	16	4
Surgery or removal of the whole breast	84	21
It depends the stage	231	57.7

studies showed significant effect of education as awareness level un like our study which showed no difference, we think that discrepancy is related to this study group itself.

In the last part of the study we measured the response to screening programs in the literature Radi et al. [20], reported better knowledge and in Jeddah city which is not far from makkah and have almost similar population demography.

We think this difference mainly due to the society and awareness campaigning which is usually in Jeddah city.

Conclusions

Brest Cancer is the most common cancers and the second leading cause of deaths among women worldwide but unfortunately there is huge defect in the awareness among females in Makkah and in the country in general.

Recommendation

In order to decrease mortality and morbidity of BC we need better awareness which is done only through awareness and screening programs.

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