

Knowledge, and Screening Behaviours of Saudi Female Teachers Towards Breast Cancer in Description Buraydah, Saudi Arabia

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Research article

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Abstract

Background Breast cancer is the second commonest cause of cancer-related deaths in Saudi Arabia and the commonest type of female cancer. However, unfortunately several women bypass early discovery and management possibilities related to the shortage of data, knowledge, and recognition of breast cancer, as well as cancer screening manners in general. This study aims to assess the knowledge, and screening behaviour of female teacher regarding breast cancer.

Methods This cross-sectional study was conducted in the governmental secondary girls' schools in Buraydah city, Saudi Arabia, during the period 2018–2019. A cluster multistage random sampling technique was used to recruit female teacher. The data were collected through a self-administered questionnaire.

Results The study included 316 female teachers. The age of 55.4% of them was below 40 years. The total breast cancer knowledge score was abnormally distributed, as evidenced by significant Shapiro-Wilk test, $p < 0.001$. The mean \pm SD score was 10.66 ± 3.73 (maximum possible score was 15) and the median (IQR) was 11 (8–13). Less than half (42.7%) of the teachers reported performing BSE while only 9.5% went to a clinic for clinical breast examination. BSE was performed on monthly basis by only 14.8% of those practiced it. Ignorance of the examination and fear to discover a tumour were mentioned by 24.9% for each as a reason for not performing BSE whereas 42.5% of those who did not practice it had no reason for that. Mammogram was ever practiced by 22.5% of the female teachers. About one-third of the participants (33.5%) claimed that they will perform mammogram in the coming year. Older teachers (40–50) reported higher rates of performing mammogram compared to those aged < 40 , $p = 0.012$. Also, teachers who had friends with breast cancer were practiced mammogram at higher rated than their counterparts, $p = 0.025$.

Conclusions The study indicates that breast cancer knowledge among governmental female secondary school teachers in Buraydah city, Saudi Arabia is overall insufficient, regarding risk factors and clinical presentation. Performance of breast cancer screening techniques is not enough. Improving knowledge regarding breast cancer risk factors, presentation and screening tools as BSE and mammogram through educational programs is highly recommended for prevention and early detection.

Background

Breast cancer (BC) is the commonest cancer of women worldwide with nearly 1.7 million new cases of BC were diagnosed in 2012 which represents 25% of all women cancers and fifth most common cause of death in women¹. The worldwide rate for mortality from BC ranged between 6 per 100,000 in Eastern Asia to 20 per 100,000 in Western Africa².

Breast cancer is the second commonest cause of cancer-related deaths in Saudi Arabia and the commonest type of female cancer^{3–5}. In Saudi Arabia, the incidence rate of breast cancer was 1% according to the Saudi Cancer Registry (2001–2008)⁶, and the overall survival rate was lower than those reported in United Kingdom and United States of America⁷; mostly this attributed to due to the non-existence of a standard nationwide breast screening program in the kingdom and low uptake of screening⁸.

According to the recommendations from the Society of Breast Imaging and the ACR,⁹ women have a sense to recognize and describe any breast abnormalities immediately to their healthcare providers through breast self-examination (BSE). In order to slow down the rising incidence of breast cancer, hindering of the increasing prevalence of its risk factors accompany improving economic conditions is recommended. The most effective method that can control this is the early detection of breast cancer. Early detection was seen as one of the most promising long-term strategies for preventing disease-related deaths¹⁰.

In Saudi, primary healthcare centers are the primary centers communicate with the patient and providing free public healthcare. However, unfortunately several women bypass early discovery and management possibilities related to the shortage of data, knowledge, and recognition of breast cancer, as well as cancer screening manners in general¹¹.

Among local published health literacy studies. Few studies were found that examined the knowledge of female teachers in Saudi Arabia particular Buraydah. Therefore, our objectives are to assess the knowledge and screening behaviour of female teacher regarding breast cancer

Methods, Study Design And Setting

Study setting

A cross-sectional study was conducted using a self-administered questionnaire among female teacher working at governmental secondary girls' school in Buraydah, Saudi Arabia, during the period from September 2018 to March 2019.

According to the database of the Menstrual of education in Buraydah, approximately 1739 female teacher work in 40 governmental secondary girls' school in the city of Buraydah. All female teacher working at governmental secondary girls' school primary in Buraydah were eligible for inclusion. All female teacher who were on an extended leave of duty, and teachers who declined to participate were excluded.

A cluster multistage random sampling technique was employed. For the purpose of the study, governmental secondary girls' school were clustered according to the city's geographic divisions into tow region (southern and northern), with 25–15 secondary girls' school in each region. Of these secondary girls' school, 10 schools' in each region were randomly chosen. Therefore, 20 secondary girls' school were included in the study.

Sample size

The sample size was calculated using a standard sample size equation " $n = z^2p(1-p)/e^2$ " and an assumed proportion of 50% (proportion of high school females' teacher who had correct knowledge, and recognition of breast cancer, as well as cancer screening). Using a 95% confidence interval and a 5% margin of error, the sample size was estimated to be 316 and was adjusted to 378 to compensate for the non-response rate.

Participants and survey instrument

All females' teacher present at the time of data collection in the selected schools were included; hard copies of
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complete the anonymous self-administered survey in Arabic in order to assess their basic background knowledge.

The data were collected using a valid pretested structured self-administered questionnaire, adopted from a similar study carried out by Al-Zalabani et al. 2018¹². The questionnaire is divided into three parts with a total of 39 questions. The first part includes socio-demographic data covered age, marital situation and family or friend's history of breast cancer. The second part assesses breast cancer knowledge and information associated to the practice based on 21 questions, including questions regarding the breast cancer risk factors (16 questions) and its clinical presentation (5 questions). The final question inquiries about the best time to perform BSE. The source of information about breast cancer was added. A score of "1" was assigned to correct answers while a score of "0" was assigned to wrong or don't know answers. The total score was computed for each participant and tested for normality using Shapiro-Wilk statistical test. The third part includes questions about participants practice concern such as BSE, clinical breast examination and mammogram. At the end of this part, barriers towards performing mammography were identified in 11 questions which marked as: 1 as totally disagree; 2 as disagree; 3 as neutral; 4 as agree; and 5 as totally agree. Their responses were re-coded as follows: totally agree and agree = 1, whereas totally disagree, disagree, and neutral = 0.

Data management and analysis plan

Data were coded and entered using SPSS 25.0 version statistical software. Descriptive statistics (mean, standard deviation, frequencies and percentages) were used to describe the quantitative and categorical variables. Pearson's Chi-square test was used to assess the association between the categorical variables. Non-parametric statistical tests (Mann-Whitney and Kruskal-Wallis) were applied to compare groups since the knowledge about breast cancer score was abnormally distributed as evidenced by significant Shapiro-Wilk test. A p-value of ≤ 0.05 was used to

report the statistical significance and precision of the results.

Ethical considerations

Approval for the study was obtained from the Institutional research committee, College of Medicine, Qassim University (no. 20180615), AL Qassim, Saudi Arabia. Official approval letters were obtained from the minister of education in AL Qassim. Each participant received the questionnaire and was informed about the objective of the present study. The Institutional research committee has agreed that completing the questionnaire will imply consent.

Results

Sample characteristics

Three hundred and sixteen of female teachers completed the questionnaires (response rate of 100%).

Table 1 shows participants' socio-demographic characteristics. More than half of the participants (55.4%) were married (91.8%) whereas 4.1% were single. Family history of

breast cancer was reported among almost a quarter of them (25.9%) while friend history of breast cancer was mentioned by 22.5% of the teachers.

Table 1
Socio-demographic characteristics

Categorical variables		N	%
Age	< 40	175	55.4%
	≥ 40	141	44.6%
Marital status	single	13	4.1%
	Married	290	91.8%
	Divorced/Widowed	13	4.1%
Family history of breast cancer	Yes	82	25.9%
	No	234	74.1%
Friend history of breast cancer	Yes	71	22.5%
	No	245	77.5%
Main source of information	Reading	40	12.65%
	Tv	24	7.59%
	Educational lecture	73	23.1%
	Family/Friends	44	13.92%
	Internet	135	42.72%

Knowledge of Breast cancer

The majority of teachers had adequate knowledge about breast cancer risk factor the most knowledgeable factors were oral contraceptive pills (76.9%), smoking (72.5%) and having the first baby after the age of 30 years (63.9%). On the other hand, early menarche (< 12 years) and late menopause (> 55 years) were recognized as risk factors by only 8.5% and 23.1% of the teachers, respectively. Moreover, majority of the teachers could recognize concerning symptoms and signs of breast cancer, breast mass (92.1%), changes in colour of breast skin (75.6%) and nipple discharge (72.5%). The best time to perform BSE was correctly identified by 61.7% of the respondents (Table 2). The main source of information about breast cancer was the internet (42.7%), followed by educational lectures (23.1%).

Table 2
participants knowledge statements to breast cancer (N = 316)

	Correct Answer	
	No.	%
Risk factors	155	49.1%
Total duration of breast feeding (< 1 year)	229	72.5%
Smoking	132	41.8%
Obesity	202	63.9%
Had first baby after 30 years	78	24.7%
Have no children	106	33.5%
Age between 50 and 70 years	27	8.5%
Early menarche (< 12 years)	73	23.1%
Late menopause (> 55 years)	110	34.8%
Antibiotics	243	76.9%
Oral contraceptive pills	99	31.3%
High dose of vitamins	144	45.6%
Hormonal replacement therapy	140	44.3%
Calcium therapy	150	47.5%
Iron therapy	133	42.1%
Vitamin D		
Symptoms and signs	291	92.1%
Breast mass	229	72.5%
Nipple discharge	208	65.8%
Nipple ulcer	239	75.6%
Changes in color of breast skin	184	58.2%
Breast pain		
The best time to perform BSE	195	61.7%

The total knowledge score was abnormally distributed, as evidenced by significant Shapiro-Wilk test, $p < 0.001$. The mean \pm SD score was 10.66 ± 3.73 (maximum possible score was 15) and the median (IQR) was 11 (8–13), (Fig. 1).

Table 3 demonstrate a statistically significant association between non-married teachers and low breast cancer knowledge in compare to others, $p = 0.047$. Other studied factors (age, family and friend history of breast cancer) were not significantly associated with knowledge score.

Table 3
Factors associated with breast cancer knowledge among governmental secondary girls' schools' female teachers, in Buraydah city, Saudi Arabia

	Total Breast cancer knowledge score			p-value
	Median	IQR	Mean rank	
Age	11	8-13	158.47	0.995*
< 40	11	8-13	158.54	
40-50				
Marital status	8	5-11.5	97.42	0.047*
Single	11	8-13.25	160.94	
Married	10	9.5-14	165.15	
Divorced/widowed				
Family history of breast cancer	11	8.75-13	166.39	0.362
Yes	11	8-13.25	155.74	
No				
Friend history of breast cancer	11	8-13	160.97	0.795*
Yes	11	8-13	157.78	
No				
*significant at p < .05				

Attitude practice

The participants' practice towards breast screening examination are illustrated in Table 4. The majority (57.3%) of the teachers are not performed BSE. Seventy-seven (42.5%) of the teachers reported no actual cause prevent them from doing BSE. On the other hand, half (24.9% and 24.9%) of them reported ignorance and afraid to discover a tumour are other reasons for not performing and 7.7% don't believe on BSE. In contrast, 42.7% of teachers are performing BSE, and half of them (49.6%) are performed it irregularly.

Table 4
Participant's Attitude toward breast cancer screening(N = 316)

	No.	%
Frequency of BSE(n = 135)	20	14.8%
Monthly	18	13.3%
Every 3 months	14	10.4%
Every 6 months	16	11.9%
Every > 6 months	67	49.6%
Irregular		
Reasons for non-practicing BSE (n = 181)	45	24.9%
Ignorance	45	24.9%
Fear to discover tumor	14	7.7%
Don't believe in its benefit	77	42.5%
Don't know a reason		
Date of last mammogram	25	8.0%
During this year	13	4.1%
Last year	33	10.4%
Before two years or more	245	77.5%
Never		
You will perform mammogram in the future?	41	13.0%
Yes, within the coming month	53	16.8%
Yes, within the coming 6 months	106	33.5%
Yes, within the coming year	6	1.9%
Yes, within the coming 2 years	19	6.0%
No	91	28.8%
I don't know		

Table 5 illustrate no significant association between the following studied factor and the studied factors including (age, marital status, family and friend history of breast cancer, main source of information and level of breast cancer knowledge) with performing BSE or clinical breast examination. However, older teachers (40–50) reported higher rates of performing mammogram compared to those aged < 40 (29.1% versus 17.1), $p = 0.012$. Also, teachers who had friends with breast cancer were practiced mammogram at higher rated than their counterparts (25.3% versus 12.70, $p = 0.025$).

Table 5
Association between socio-demographic data and performing BSE, clinical breast examination.

	BSE			Clinical BE			Mammogram		
	No N = 181 N (%)	Yes N = 135 N (%)	p- value	No N = 286 N (%)	Yes N = 30 N (%)	p- value	No N = 245 N (%)	Yes N = 71 N (%)	p- value
Age									
< 40 (n = 175)	95 (54.3)	80 (45.7)	0.231	163 (93.1)	12 (6.9)	0.075	145 (82.9)	30 (17.1)	0.012
40–50 (n = 141)	86 (61.0)	55 (39.0)		123 (87.2)	18 (12.8)		100 (70.9)	41 (29.1)	
Marital status									
Single (n = 13)	10 (76.9)	3 (23.1)	0.256	12 (92.3)	1 (7.7)	0.948	11 (84.6)	2 (15.4)	0.822
Married (n = 290)	165 (56.9)	125 (43.1)		262 (90.3)	28 (9.7)		224 (77.2)	66 (22.8)	
Divorced/widowed (n = 13)	6 (46.2)	7 (53.8)		12 (92.3)	1 (7.7)		10 (76.9)	3 (23.1)	
Family history of breast cancer									
Yes (n = 82)	40 (48.8)	42 (51.2)	0.071	73 (89.0)	9 (11.0)	0.590	59 (72.0)	23 (28.0)	0.159
No (n = 234)	141 (60.3)	93 (39.7)		213 (91.0)	21 (9.0)		186 (79.5)	48 (20.5)	
Friend history of breast cancer									
Yes (n = 71)	41 (57.7)	30 (42.3)	0.928	66 (93.0)	5 (7.0)	0.424	62 (87.3)	9 (12.7)	0.025
No (n = 245)	140 (57.1)	105 (42.9)		220 (89.8)	25 (10.2)		183(74.7)	62 (25.3)	

The Participant's barriers toward breast screening are illustrated in Table 5. Most of them strongly agreed with the following statements: fear to discover something abnormal; being busy, don't know how to arrange to perform it; exposed to more unneeded radiation (22.1%, 20.5%, 13.6%, 13.6%; respectively). Table 6

Table 6
Participant's barriers toward breast screening (N = 316)

Strong agreement toward the following statement	No.	%
Fear to discover something abnormal	70	22.1%
I don't know how it will be performed	41	12.9%
I don't know how to arrange to perform it	43	13.6%
It is shameful for women	30	9.4%
It needs a long time	28	8.8%
It is a painful procedure	29	9.1%
Poor communication with mammography personnel	19	6%
Women are exposed to more unneeded radiation	43	13.6%
I am busy	65	20.5%
Some issues in my life are more important	41	12.9%
I am old and don't need such scan	11	3.4%

Discussion

The purpose of this study was to assess the knowledge, and screening behaviour of female teacher regarding breast cancer.

The majority of participants in this study have a moderate knowledge of breast cancer risk factors and clinical presentation as the median score (IQR) was 11 (8–13) out of a maximum possible of 15. The good knowledge was observed regarding some risk factors such as oral contraceptive pills, smoking and having the first baby after the age of 30 years. In a study carried out previously in Riyadh¹⁴, quite similar results were reported. In contrast; another similar study was performed in Buraydah⁸ that compared the Knowledge, Attitudes, and Practices of Breast Cancer and Screening in Female Teachers. They concluded the majority (90%) of the participants have a low knowledge score. This represent significant improving the level of knowledge of female teachers. Therefore, our findings could promote the implementation of training programs on breast knowledge. Internationally, an intermediate level of knowledge about risk factors related to breast cancer was observed among majority of female university students In Uganda¹⁵.

It has been documented that BSE practice makes women more aware of their breasts, which consequently may result in earlier diagnosis of breast cancer¹⁶. In the present study, 42.7% of the teachers reported performing BSE; among them, it was performed on monthly basis by only 14.8%. In a recent study carried out in Al-Madinah¹² among attendees of primary healthcare centers, the rate of performing BSE was 38.5%. Different rates were reported elsewhere. In Hong Kong (52%)¹⁷, in KSA nursing students (66%)¹⁸, in Jordon (37.5%)¹⁹ and in Uganda (76.5%)¹⁵. The difference in rates between various studies could be attributed to

Loading [MathJax]/jax/output/CommonHTML/jax.js , the cultural and religious background of the community.

The rate of previous performing of mammogram in the present study was 22.5%, despite mammogram facility is usually provided free to Saudi women. This figure is slightly lower than that has been reported by AlAl-Zalabani AH et al (27.7%)¹². Restricting analysis to teachers ages over 40 years showed rates of 39% and 29.1% for BSE and mammogram, respectively. In a study carried out Riyadh region among women attended primary health centers, BSE and mammogram performance were reported by 23.1% and 14.8% of them, respectively²⁰. The same low rate of mammogram performance has been observed in another Saudi study carried out in Dammam²¹. Al-Wassia et al (2017) reported that around 40% of the Saudi women ever having a mammogram²². Ahmed et al (2015) reported that 13% of the Saudi females have performed mammography²³. El Bcheraoui and colleagues (2015) reported that 92% of Saudi women aged 50 years or older never having a mammogram²⁴. Therefore, routine mammography screening is not always possible in developing countries, including Saudi Arabia. Thus, an emphasis should be directed to encourage Saudi women to practice periodic clinical breast examination and BSE. Although a debate still exists concerning the effectiveness of BSE in reducing mortality from breast cancer²⁵, it remains an important tool for early detection of breast cancer in many parts of the world²⁶.

In the current study, the commonest reported barriers of breast cancer screening were fear to discover something abnormal (50.9%), being busy (49.4%), they don't know how to arrange to perform it (40.8%) and they don't know how it will be performed (37.3%). In a study carried out in Al-Madinah among primary healthcare centers attendees,¹² incorrect beliefs about mammography as being a painful procedure and the exposure of women to more unneeded radiation were the main barriers, However, also, bad communication with mammography personnel and the perception of mammography as being shameful were also important barriers in that study. The difference between results of the two studies is expected due to difference in the characteristics of the target population.

Conclusions

This study indicates that breast cancer knowledge among governmental female secondary school teachers in Buraydah city, Saudi Arabia is overall insufficient, regarding risk factors and clinical presentation. Performance of breast cancer screening techniques is not enough. Therefore, according to this conclusion, improving knowledge regarding breast cancer risk factors, presentation and screening tools as BSE and mammogram through educational programs is highly recommended for prevention and early detection. Primary health care professionals should have a role in conveying correct information regarding breast cancer and its early detection during regular physician office visits for other health problems. Encouraging practice of BSE through the audio-visual media, lectures and symposia is needed.

Declarations

Conflict of interest

The authors have declared no competing interests.

Authors' contributions

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Sharifa Khalid Alduraibi was responsible for the conception of the research idea and the study design, data collection, analysis, interpretation, and drafting of the manuscript.

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Figure

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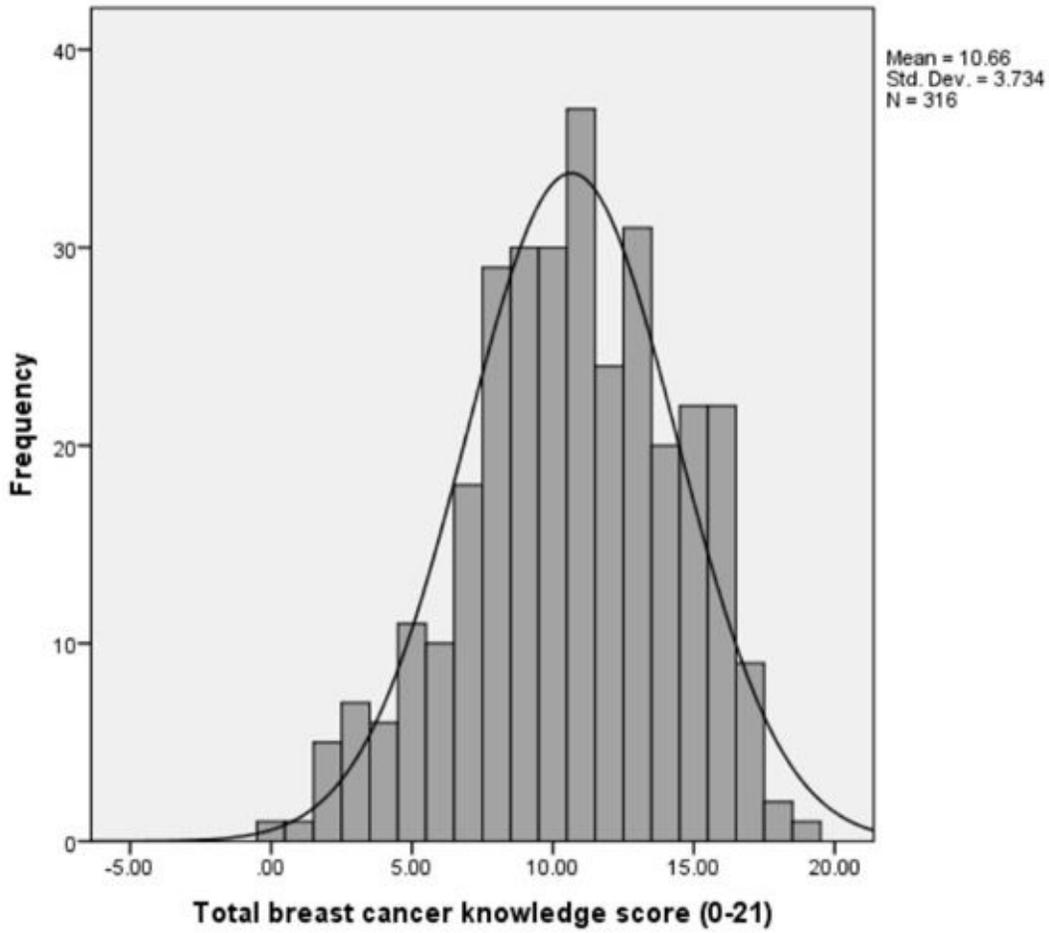


Figure 1

Distribution of the total breast cancer knowledge score among governmental secondary girls' schools' female teachers, in Buraydah city, Saudi Arabia