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Awareness and Knowledge of Breast Cancer Screening Methods among Women in Al-Qunfudah, Saudi Arabia

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Authors' contributions

This work was carried out in collaboration among all authors. Author KAY contributed to communication and arrangement with authorities, supervision for data collection, data entry, statistical analysis, discussion, interpretation, and final report preparation. Author SJA contributed to overall coordination and communication. Authors SJA, RHA, LMA and BJA contributed to study concept, design, prepared questionnaires, planned and implemented the ideas, done the coordination of data collection, and data entry, discussion, interpretation, and final report preparation. Author MAM contributed to statistical analysis, discussion, interpretation, and final report preparation. All authors wrote the first draft of the manuscript and reviewed it. All authors read and approved the final manuscript.

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ABSTRACT

Objectives: Breast cancer is the most common malignancy affecting women in Saudi Arabia. Screening helps in early detection and prompt treatment of breast cancer, leading to a better prognosis. Lack of knowledge and awareness of its screening methods can lead to bad outcomes. So far, little is known of women's knowledge of breast cancer screening. This study was conducted to assess the knowledge, attitudes, and practice of breast cancer screening among Saudi women in Al-Qunfudah.

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Methods: This is a cross-sectional study including 203 adult Saudi women aged 18 years and above. Data were collected through a self-administered questionnaire from Saudi women in Al-Qunfudah, Saudi Arabia in 2019. The data were entered and statistically analyzed using SPSS software.

Results: Findings revealed that all the participants in this study heard of breast cancer, and their awareness of breast self-examination was high (93.6%). Awareness levels were lower concerning clinical breast examination (63.1%) and mammography (65.5%). However, only 43.3% correctly practiced breast self-examination, and 5.9% had ever heard of a mammogram. Knowledge of breast cancer screening with mammography screening was significantly related to participant age (P=0.04), marital status (P=0.008), and occupation (P=0.04). Furthermore, the relation between participants who underwent mammography and age was significant (P=0.001).

Conclusion: Our data indicate that the knowledge, awareness, and practices were insufficient, and educational interventions are required in Al-Qunfudah to encourage young women to practice screening for early detection.

Keywords: Awareness; knowledge; practice; attitude; breast cancer; screening; early detection of cancer; Al-Qunfudah; Saudi Arabia.

1. INTRODUCTION

Breast cancer remains the most frequent malignancy worldwide and the most frequent leading cause of cancer-related deaths in women [1]. In Saudi Arabia, it is the most common cancer among women, accounting for 17.3% of cancers and more than 30% of newly diagnosed cases in 2016 [2]. In the upcoming decades, we anticipate an increase in breast cancer cases mostly due to population growth and an increased life span [3].

Patients with breast cancer especially younger and pre-menopausal women in Saudi Arabia present routinely at advanced stages compared to Western countries [4]. Although management of breast cancers is progressing, the prognosis in Saudi Arabia remains poor [5]. Late diagnosis is the most probable cause of poor prognosis. Early diagnosis of breast cancer decreases morbidity and mortality rates [6]. Hence, actions must be taken to ensure early detection through screening and prompt treatment [7].

Screening methods for breast cancer include mammography, clinical breast examination (CBE), and breast self-examination (BSE) which are well-known preventive measures [8]. Guidelines of the American Cancer Society (ACS) report that BSE is not beneficial for women in their 20s as it shows no improvements in the survival rate [9,10]. Instead, the ACS recommends that women in their twenties and thirties have periodic CBEs at least every three years by health-care professionals [9,10]. Women aged 40 and above should have a CBE annually [9,10]. CBE helps in the detection of masses at early stages, and this can lead to early treatment. Above 40 years when mammography is recommended, CBE is an adjunct to mammography [10]. Lack of knowledge and awareness of breast cancer and its screening tools can lead to late detection and consequently, difficulty in treatment [11]. Thus, early identification has a vital role in the outcome of patients with breast cancer [12]. The five-year survival rate for breast cancer increases to 85% if detected early, and late detection decreases the survival rate to 56% [13].

Several studies assessed the knowledge and practice of breast cancer screening methods in Saudi Arabia. A study carried out in Riyadh showed that women with good awareness of breast cancer and BSE have a better chance of early diagnosis and treatment [14]. However, Saudi women's knowledge of BSE is still inadequate, as reported by a study conducted in Jeddah [15]. A more recent study from Najran showed that most women have a low level of knowledge on screening methods including mammography, CBE, and BSE [16]. In a study conducted in Abha, Saudi Arabia, it was found that among 1092 participating women, only 8.3% had CBEs [17]. Also, several studies on breast cancer screening behaviors among women have demonstrated that a low percentage of women go for mammography [18,19].

Community awareness of breast cancer and screening methods is fundamental to early detection and treatment of breast cancer. Only a few studies conducted in Saudi Arabia addressed breast cancer screening awareness, and most of them revealed a suboptimal level of

understanding. Therefore, the purpose of this study was to evaluate the knowledge, attitudes, and practice of breast cancer screening methods among women in Saudi Arabia.

2. METHODS

This cross-sectional study was conducted in Al-Qunfudah, Saudi Arabia, in 2019. Data were collected using a face-to-face questionnaire. The study population comprised 203 participants recruited by convenience sampling. Recruitment was from various sources, including the ministry of education, schools, colleges, and healthcare facilities, in Al-Qunfudah, Saudi Arabia. Saudi women aged ≥18 years who agreed to participate in the study were included, and no exclusion criteria were used.

The study used a validated, pretested, and self-administered questionnaire to collect the data. The survey was designed based on a questionnaire used in a previous study conducted among health-care professionals [20]. Some questions were modified to meet our population's needs. The questionnaire was designed in English and then translated to Arabic. It was validated through a pilot study. It comprised 38 questions divided into five parts: sociodemographic characteristics, knowledge of breast cancer, knowledge and practice of BSE, knowledge and practice of CBE, and knowledge and practice of mammography.

The questionnaires were examined to clean data, which was then entered and analyzed using IBM SPSS (version 25). Data were expressed in frequencies to summarize the participants' demographic and baseline characteristics and knowledge towards breast cancer and screening practices. The women's practice of breast self-examination, clinical breast examination, and mammography were assessed and compared with the women's characteristics using a chi-square test. There was a cross-tabulation of variables with a level of statistical significance set at a 95% confidence interval. Any variable with a P-value of ≤0.05 was considered statistically significant. The King Abdulaziz University College of Medicine Research Committee approved the study protocol. This study was performed according to the tenets of the Declaration of Helsinki.

3. RESULTS

The sociodemographic characteristics of participants are shown in Table 1. The average age of the participants was 34.96 ±8.555 (range: 20–60) years. A total of 117 (57%) women were married, and 163 (83%) had completed tertiary school.

Table 1. Respondents' sociodemographic data

Variables	n (%)
Age (years) (N=203)	
20-29	57 (28.1)
30-39	74 (36.5)
40-49	66 (32.5)
50-59	5 (2.5)
≥60	1 (0.5)
Mean±SD	34.96±8.555
Marital Status (N=203)	
Married	117 (57.6)
Single or never married	71 (35.0)
Separated	4 (2.0)
Widowed	2 (1.0)
Divorced	9 (4.4)
Educational Level (N=203)	
No formal education	2 (1.0)
Primary school completed	2 (1.0)
JSS completed	10 (4.5)
SSS completed	23 (11.3)
Tertiary school completed	163 (80.3)
Master's degree	3(1.5)
Occupation (N=203)	
Nurse	10 (4.9)
Pharmacist	2 (1.0)
Laboratory staff	12 (5.9)
Office staff	42 (20.7)
Ward maid	33 (16.3)
Teacher	43 (21.2)
Medical student	25 (12.3)
Security	2 (1.0)
Technical supervisor	1 (0.5)
Educational supervisor	9 (4.4)
College student	6 (3.0)
Unemployed	9 (4.4)
Vice dean	1 (0.5)
College professor	1 (0.5)
Social worker	1 (0.5)
Retired	1 (0.5)
Trainee	1 (0.5)
Assistant director of the exhibition	1 (0.5)
Customer service	1 (0.5)
Gallery director	1 (0.5)
Special education specialist	1 (0.5)

Abbreviations: JSS, junior secondary school; SSS, senior secondary school

Table 2 shows that all the participants had heard of breast cancer. Fig. 1 mostly from the media

(75.9%), a lecture (42.4%), friends (40.4%), the hospital (36.5%), a conference (30.0%), or books (29.6%). As shown in Table 3, a large percentage (93.6%) had heard of BSE. Approximately three-quarter of the participants (70.9%) knew how to perform BSE as taught by their doctor in most of the cases, friends, or mothers. The participants' knowledge of the best time to start BSE varied; only 19.4% knew that it should be started at age 20, and 56.3% responded that BSE should be carried out monthly. Moreover, 64.6% knew the best time to examine their breasts.

A total of 43.3% of the participants answered the questions on BSE. Only 29.5% examined their breasts monthly, and 80.3% agreed that BSE is useful for early detection of breast cancer. Abnormalities were discovered during BSE by 14.8% of the women; 46.2% of them saw a doctor. The greater proportion of our participants did not practice BSE, and the two most common reasons were that they did not care (45.2%) and did not know (24.3%) [Table 4]. Associations between some of the participants' characteristics and their practice of BSE were not significant [Table 5].

Table 6 shows that 63.1% were aware of CBE. Approximately three-quarter of the women (74.4%) agreed that CBE is useful for the detection of breast cancer; and most of them correctly stated that CBE should be carried out by a doctor (82.3%) or trained nurse (8.9%).However, 4.9% said that CBE is performed by the individual. Only 25.1% knew that CBE is carried out using the examiner's hand, while 41.4% responded that it is carried out using mammography, 22.7% by ultrasound, and 10.8% did not know. The percentage of those who correctly answered that CBE should be carried out yearly was 27.6%. Table 7 shows that the respondents' demographic characteristics were not significantly associated with their awareness of CBE.

Table 2. Respondents' knowledge of breast cancer

Variables	n (%)
Ever heard of breast cancer (N=203)	
Yes	203 (100.0)
No	0 (0.0)
Have any of your relatives been diagnosed with breast cancer? (N=203)	
Yes	22 (10.8)
No	181 (89.2)
If above answer is YES, what is their relationship to You? (N=22)	
Mother	6 (27.2)
Aunt	4 (18.2)
Sister	7 (31.8)
Cousin	4 (18.2)
Friend	1 (4.5)

** Multiple responses*

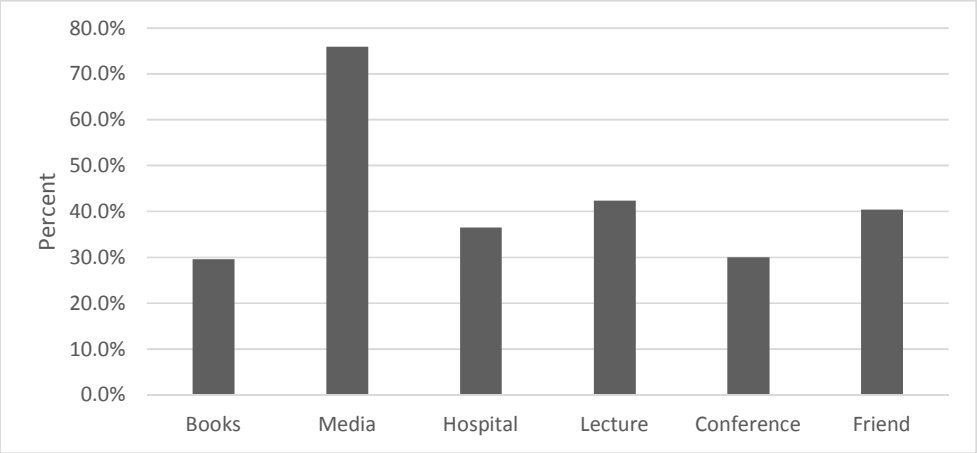

Fig. 1. The sources of breast cancer knowledge among the study sample (n = 203)

Table 3. Respondents' knowledge of breast self-examination

Variables	n (%)
Ever heard of BSE? (N=203)	
Yes	190(93.6)
No	13 (6.4)
Is BSE a useful tool for early detection of breast cancer? (N=203)	
Yes	199(98.0)
No	4 (2.0)
Do you know how to do BSE?	
Yes	144(70.9)
No	59 (29.1)
If yes, who taught you?* (n=144)	
Parents	4 (2.0)
Teacher	14 (6.9)
Doctor	78 (38.4)
Nurse	20 (9.9)
Friends	27 (13.3)
Other	33 (16.3)
If other, please choose	
Mother	29 (14.3)
Aunt	1 (0.5)
Campaigns	1 (0.5)
Conferences	1 (0.5)
My sister	1 (0.5)
At what age should BSE be started?(n=144)	
From birth	0 (0.0)
From puberty	39 (27.1)
From 20 years	28 (19.4)
From 30 years	44 (30.6)
After menopause	15 (10.4)
No idea	18 (12.5)
How often should BSE be done? (n=144)	
Daily	0 (0.0)
Weekly	2 (1.4)
Monthly	81 (56.3)
Yearly	31 (21.5)
No idea	30 (20.8)
What is the best time to do BSE? (n=144)	
During menstrual flow	12 (8.3)
A week after period	93 (64.6)
During pregnancy	4 (2.8)
During breast feeding	0 (0.0)
No idea	35 (24.3)
BSE should be done by (n=144)	
Doctor	81 (56.3)
Trained nurse	17 (11.8)
The individual	27 (18.8)
Other	0 (0.0)
By me	17 (11.8)
Don't know	2 (1.4)
BSE is done by* (n=144)	
Inspecting the breast in the mirror	74 (51.4)
Feeling the breast with the hand	123(85.4)
Feeling the armpit with the hand	72 (50.0)
Doing ultrasound of the breast	23 (16.0)
Mammography	29 (20.1)
Other	0 (0.0)

** Multiple responses*

Abbreviations: BSE, breast self-examination

Table 4. Respondents' practice of breast self-examination

Variables	n (%)
If you discover any abnormality during BSE, what will you do?* (N=203)	
Pray over it	3 (1.5)
Do some lab tests	60 (29.6)
See a doctor	139 (68.5)
Do nothing	1 (0.5)
Other	0 (0.0)
Benefits of BSE * (N=203)	
To become familiar with breast texture	
Yes	41 (20.2)
No	162 (79.8)
Early detection of breast cancer	
Yes	163 (80.3)
No	40 (19.7)
Detection of abnormal changes	
Yes	114 (56.2)
No	89 (43.8)
A good breast exercise	
Yes	20 (9.9)
No	183 (90.1)
Do you practice BSE? (N=203)	
Yes	88 (43.3)
No	115 (56.7)
If yes, how often? (n=88)	
Weekly	1 (1.1)
Monthly	26 (29.5)
Occasionally	36 (40.9)
Rarely	25 (28.4)
If no, why not? (n=115)	
Don't care	52 (45.2)
Don't know	28 (24.3)
I didn't notice any change in my breast	8 (7.0)
It never crossed my mind	5 (4.3)
I didn't see the necessity for that	9 (7.8)
Fear of discovering an abnormality	5 (4.3)
I don't have time	4 (3.5)
I Forgot the way to do it	2 (1.7)
The more I did it the more I get the disease	1 (0.9)
I didn't master the right way	1 (0.9)
If you have been practicing BSE, have you ever discovered an abnormality in your breast? (n=88)	
Yes	13 (14.8)
No	75 (85.2)
If yes, what did you do? (n=13)	
Prayed over it	1 (7.7)
Did some lab tests	1 (7.7)
Saw a doctor	6 (46.2)
Did nothing	5 (38.5)
Other	0 (0.0)
Do you think BSE is a good practice? (n=203)	
Yes	198 (97.5)
No	5 (2.5)

Abbreviations: BSE, breast self-examination

Participants' knowledge and practice concerning mammography are presented in Table 8. A total of 65.5% had heard of mammography, but only 5.9% had mammograms. The main reasons for not having mammograms were the belief that they were not old enough (40.8%)

and mammography was available (16.2%). Also, 64.0% of the women knew that mammography is a useful method for early detection of breast cancer, and 38.9% reported the correct recommended age for starting mammography. The rest gave incorrect responses. Only 29.1% of the participants knew that mammography should be carried out yearly.

Knowledge regarding mammography varied significantly with age (P=0.04), marital status (P=0.008), and occupation (P=0.04). Furthermore, no significant difference was observed between awareness of mammography and educational level. The results are given in Table 9. However, a significant difference was noted between women who had undergone mammographic screening according to age (P=0.001) and occupation (P=0.009). See Table 10.

3. DISCUSSION

With the rise in the incidence rate of breast cancer, it is the most prevalent cancer affecting women in Saudi Arabia. Knowledge and awareness are essential for early detection and prevention of breast cancer. Women's knowledge levels and attitudes towards screening methods for breast cancer are vital elements affecting their adherence to these methods. This study was conducted to estimate women's awareness and knowledge of breast cancer screening methods in Al Qunfudah. We evaluated 203 women who were all aware of breast cancer. Awareness of BSE, CBE, and mammography as screening methods were reported by 93.6%, 63.1%, and 65.5% of the women, respectively. The low level of knowledge detected in this study concerning breast cancer screening was consistent with results observed in similar studies performed in Saudi Arabia [14,16-19]. and other studies performed outside Saudi Arabia [21,22,23,24,25, 26,27,28].

Awareness of BSE was generally high, much higher than results obtained in similar studies [14,17]. Even though the performance of BSE by participants in this study was low (43.3%), it was higher compared to a study performed in Abha with 1,092 participating women, in which 29.7% said they practiced BSE [17]. However, we also found similar studies demonstrating lower percentages of women who practice BSE [16,18,19]. Regarding the frequency of BSE, our findings showed that less than a third of our participants (29.5%) examined their breasts monthly. A similar result was obtained from another study among Saudi women (27.3%) [18]. However, a study involving Iranian women revealed a 10.1% performance of regular BSE [21]. The CBE uptake was remarkably low among women living in the Bangkok metropolis and municipal areas of other regions of Thailand. Breast screening behaviors were associated with the socioeconomic status of the study area in Singapore. These findings might partially be due to the level of health service utilization and economic elements in various geographic areas [23]. The level of awareness, regardless of breast cancer, in rural Bangladesh is lower than that in other countries and is related to less media coverage, poverty, and low literacy. In other countries, enhanced health education has increased breast cancer awareness [26,27]. In contrast, in Bangladesh, Malaysia [28], and Qatar [26], greater breast cancer awareness among older women has been reported.

The practice of BSE in this study was suboptimal. Reasons as reported by participants were that they did not care or did not know how to examine their breasts. A study involving 124 women reported that lack of awareness of BSE was the most common reason for its nonpractice [19]. Another study stated that 69% did not know the method of BSE [18]. A research performed in King Abdulaziz Medical City in Riyadh, Saudi Arabia, explained that the reason for not practicing BSE as reported by 235 women was that they did not know how to [14]. However, many of our participants (70.9%) had been taught how to examine their breasts. A study from Najran showed that only 20.6% had been trained to perform BSE [16]. While our data found no significant relationship between participant demographics and whether they practiced BSE, other studies showed that age, educational level, family history, and income are predictors for the practice of BSE [19]. A study in Australia found that employment status was a significant factor that influences women’s breast self-examination behavior [22]. The positive connection between instruction and breast cancer awareness is not unexpected and is consistent with the latest studies in India and Malaysia [24,25].

Table 5. Respondent characteristics and whether they practiced breast self-examination

Variables	Yes	No	X^2	P
Age (years)				
20-29	22 (25.0)	35 (30.4)	1.635	0.803
30-39	34 (38.6)	40 (34.8)		
40-49	30 (34.1)	36 (31.3)		
50-59	2 (2.3)	3 (2.6)		
≥60	0 (0.0)	1 (0.9)		
Marital Status				
Married	56 (63.6)	61 (53.0)	6.587	0.159
Single or never married	27 (30.7)	44 (38.3)		
Separated	3 (3.4)	1 (0.9)		
Widowed	0 (0.0)	2 (1.7)		
Divorced	2 (2.3)	7 (6.1)		
Educational Level				
No formal education	0 (0.0)	2 (1.7)	9.434	0.093
Primary school completed	1 (1.1)	1 (0.9)		
JSS completed	5 (5.7)	5 (4.3)		
SSS completed	4 (4.5)	19 (16.5)		
Tertiary school completed	76 (86.4)	87 (75.7)		
Master's degree	2 (2.3)	1 (0.9)		
Occupation				
Nurse	4 (4.5)	6 (5.2)	28.187	0.105
Pharmacist	1 (1.1)	1 (0.9)		
Laboratory Staff	9 (10.2)	3 (2.6)		
Office staff	17 (19.3)	25 (21.7)		
Ward maid	17 (19.3)	16 (13.9)		
Teacher	15 (17.0)	28 (24.3)		
Medical student	7 (8.0)	18 (15.7)		
Security	0 (0.0)	2 (1.7)		
Technical supervisor	0 (0.0)	1 (0.9)		
Educational supervisor	7 (8.0)	2 (1.7)		
College student	1 (1.1)	5 (4.3)		
Unemployed	4 (4.5)	5 (4.3)		
Vice dean	0 (0.0)	1 (0.9)		
Collage professor	1 (1.1)	0 (0.0)		
Social worker	1 (1.1)	0 (0.0)		
Retired	1 (1.1)	0 (0.0)		
Trainee	0 (0.0)	1 (0.9)		
Assistant director of the exhibition	1 (1.1)	0 (0.0)		
Customer service	1 (1.1)	0 (0.0)		
Gallery director	1 (1.1)	0 (0.0)		
Special education specialist	0 (0.0)	1 (0.9)		
Have any of your relatives been diagnosed with breast cancer?				
Yes	7 (8.0)	15 (13.0)	1.336	0.248
No	81 (92.0)	100 (87.0)		

**Statistically significant*

Abbreviations: JSS, junior secondary school; SSS, senior secondary school

The level of knowledge of CBE among the participants was low. Only 25.1% knew that CBE is carried out using the examiner's hand, and the proportion who knew that CBE should be carried out yearly was 27.6%. These data indicated that our participants' knowledge of CBE was poor, corresponding to findings from multiple studies performed in Saudi Arabia [16,17]. A very low proportion of women attending primary healthcare centers were examined by CBE in Abha (8.3 %) [17]. A similar rate was noticed with participants in another study wherein 8.8% of the participants visited the doctor regularly for CBE [19]. Furthermore, less than one-third had CBEs in Najran [16]. Al Zalabani et al. [18] reported even lower rates.

This study showed that women who had had mammograms constituted a very low fraction (5.9%). Few women were aware of mammography (22.0 %) or had undergone mammography (6.2%) in other studies as well [17]. On the other hand, awareness of mammography was much higher (83.8%) in a similar Saudi study carried out in Najran involving 500 women among whom 15% had undergone mammography [16]. In another paper, 27.7% of the women reported that they were examined by mammography [18]. In this study, the most frequent reason for women not having a mammogram was the belief that they were not old enough (40.8%). This might be related to the low mean age of our study participants (34.9±8.5 years) which was below the recommended age for mammography. According to the study from Madinah, the most significant barriers to seeking mammography were the beliefs that mammography is a painful tool and will expose them to more radiation [18]. In another paper, women did not have access to mammography due to several factors: no breast lump, lack of awareness, and no request from their doctors [19].

In our study, few participants knew the correct age to start mammography; 38.9% said that it should begin at 40 years while 29.1% reported that it should be carried out yearly, reflecting women's inadequate knowledge of this screening tool. In terms of demographic characteristics, age, marital status, and occupation in this study were significant factors that affected the participants' knowledge of mammography. Moreover, age variation was a significant and promoting factor to keep performing mammography among the participants. In one study, a significant correlation was found between women who had undergone mammography and their age, nationality, employment, education, family income, and giving history of a friend having breast cancer [18]. As noted by a study carried out in Riyadh, age and occupation significantly increased the rate of screening with mammography among participants [14].

Table 6. Respondents' knowledge and practice regarding clinical breast examination

Variables	n (%)
Ever heard of CBE? (N=203)	
Yes	128 (63.1)
No	75 (36.9)
Is CBE a useful tool for detection of breast CA? (N=203)	
Yes	151 (74.4)
No	52 (25.6)
CBE should be done by (N=203)	
Doctor	167 (82.3)
Trained nurse	18 (8.9)
The individual	10 (4.9)
No idea	8 (3.9)
Other	0 (0.0)
CBE should be done using (N=203)	
Ultrasound	46 (22.7)
Mammography	84 (41.4)
Hand	51 (25.1)
No idea	22 (10.8)
How often should CBE be done? (n=160)	
Daily	1 (0.5)
Weekly	3 (1.5)
Monthly	41 (20.2)
Yearly	56 (27.6)
When an abnormality is found by BSE	41 (20.2)
No idea	61 (30.0)

Abbreviations: BSE, breast self-examination; CBE, clinical breast examination

Table 7. Demographic characteristic of respondents and whether they had knowledge of clinical breast examination

Variables	Yes	No	X^2	*P*
Age (years)				
20-29	40 (31.3)	17 (22.7)	3.453	0.485
30-39	45 (35.2)	29 (38.7)		
40-49	38 (29.7)	28 (37.3)		
50-59	4 (3.1)	1 (1.3)		
≥60	1 (0.8)	0 (0.0)		
Marital Status				
Married	67 (52.3)	50 (66.7)	8.527	0.074
Single or never married	51 (39.8)	20 (26.7)		
Separated	3 (2.3)	1 (1.3)		
Widowed	0 (0.0)	2 (2.7)		
Divorced	7 (5.5)	2 (2.7)		
Educational Level				
No formal education	1 (0.8)	1 (1.3)	8.393	0.136
Primary school completed	1 (0.8)	1 (1.3)		
JSS completed	8 (6.3)	2 (2.7)		
SSS completed	20 (15.6)	3 (4.0)		
Tertiary school completed	96 (75.0)	67 (89.3)		
Master's degree	2 (1.6)	1 (1.3)		
Occupation				
Nurse	7 (5.5)	3 (4.0)	28.868	0.090
Pharmacist	1 (0.8)	1 (1.3)		
Laboratory staff	7 (5.5)	5 (6.7)		
Office staff	28 (21.9)	14 (18.7)		
Ward maid	17 (13.3)	16 (21.3)		
Teacher	21 (16.4)	22 (29.3)		
Medical student	23 (18.0)	2 (2.7)		
Security	0 (0.0)	2 (2.7)		
Technical supervisor	0 (0.0)	1 (1.3)		
Educational supervisor	7 (5.5)	2(2.7)		
College student	4 (3.1)	2(2.7)		
Unemployed	6 (4.7)	3 (4.0)		
Vice dean	1 (0.8)	0 (0.0)		
Collage professor	0 (0.0)	1 (1.3)		
Social worker	1 (0.8)	0 (0.0)		
Retired	1 (0.8)	0 (0.0)		
Trainee	0 (0.0)	1 (1.3)		
Assistant director of the exhibition	1 (0.8)	0 (0.0)		
Customer service	1 (0.8)	0 (0.0)		
Gallery director	1 (0.8)	0 (0.0)		
Special education specialist	1 (0.8)	0 (0.0)		
Have any of your relatives been diagnosed with breast cancer?				
Yes	17 (13.3)	5 (6.7)	2.141	0.143
No	111 (86.7)	70 (93.3)		

**Statistically significant*

Abbreviations: JSS, junior secondary school; SSS, senior secondary school

The limitations of this study should be mentioned. First, the study relied on a convenient sample of Saudi women in Al-Qunfudah; therefore, the result may not be generalizable to all Saudi women. Second, although we ensured accuracy when translating the survey to Arabic, we may have failed to accommodate some cultural nuances. Nonetheless, we believe that our study results provide a foundation for devising future breast cancer prevention measures among Saudi women.

Table 8. Respondents' knowledge and practice concerning mammography

Variables	n (%)
Ever heard of mammography? (N=203)	
Yes	133 (65.5)
No	70 (34.5)
Is mammography a useful tool for early detection of breast cancer? (N=203)	
Yes	130 (64.0)
No	12 (5.9)
Don't know	61 (30.0)
At what age should mammography be started? (N=203)	
From birth	0 (0.0)
From puberty	16 (7.9)
From 20 years	27 (13.3)
From 40 years	79 (38.9)
After menopause	5 (2.5)
No idea	76 (37.4)
How often should mammography be done? (N=203)	
Weekly	1 (0.5)
Monthly	17 (8.4)
Yearly	59 (29.1)
Every 3 years	18 (8.9)
When a lump is found on BSE or CBE	46 (22.7)
No idea	62 (30.5)
Have you ever had a mammogram? (N=203)	
Yes	12 (5.9)
No	191 (94.1)
If no, why not? (n=191)	
Not old enough	78 (40.8)
Financial constraints	6 (3.1)
Mammography was not available	31 (16.2)
No need to do it	6 (3.1)
I didn't feel any pain to do it	22 (11.5)
I didn't notice any change in my breasts	10 (5.2)
Breast self-examination is enough	3 (1.6)
I don't know	8 (4.2)
Fear from mammography	4 (2.1)
It never crossed my mind	4 (2.1)
Fear from discovering an abnormality	4 (2.1)
I didn't know its importance	13 (6.8)
I don't have time	2 (1.0)
Other	0 (0.0)

Abbreviations: BSE, breast self-examination; CBE, clinical breast examination

Table 9. Demographic characteristics of respondents and whether they heard of mammography

Variables	Yes	No	X^2	P
Age (years)				
20-29	46 (34.6)	11 (15.7)	9.920	0.042*
30-39	43 (32.3)	31 (44.3)		
40-49	41 (30.8)	25 (35.7)		
50-59	2 (1.5)	3 (4.3)		
≥60	1 (0.8)	0 (0.0)		
Marital Status				
Married	66 (49.6)	51 (72.9)	13.860	0.008*
Single or never married	57 (42.9)	14 (20.0)		
Separated	4 (3.0)	0 (0.0)		

Variables	Yes	No	X^2	P
Widowed	1 (0.8)	1 (1.4)		
Divorced	5 (3.8)	4 (5.7)		
Educational Level				
No formal education	2 (1.5)	0 (0.0)	8.148	0.148
Primary school completed	1 (0.8)	1 (1.4)		
JSS completed	9 (6.8)	1 (1.4)		
SSS completed	19 (14.3)	4 (5.7)		
Tertiary school completed	100 (75.2)	63 (90.0)		
Master's degree	2 (1.5)	1 (1.4)		
Occupation				
Nurse	8 (6.0)	2 (2.9)	32.340	0.040*
Pharmacist	2 (1.5)	0 (0.0)		
Laboratory staff	8 (6.0)	4 (5.7)		
Office staff	28 (21.1)	14 (20.0)		
Ward maid	16 (12.0)	17 (24.3)		
Teacher	23 (17.3)	20 (28.6)		
Medical student	24 (18.0)	1 (1.4)		
Security	0 (0.0)	2 (2.9)		
Technical supervisor	1 (0.8)	0 (0.0)		
Educational supervisor	6 (4.5)	3 (4.3)		
College student	5 (3.8)	1 (1.4)		
Unemployed	4 (3.0)	5 (7.1)		
Vice dean	1 (0.8)	1 (1.4)		
Collage professor	1 (0.8)	0 (0.0)		
Social worker	1 (0.8)	0 (0.0)		
Retired	1 (0.8)	0 (0.0)		
Trainee	1 (0.8)	0 (0.0)		
Assistant director of the exhibition	1 (0.8)	0 (0.0)		
Customer service	1 (0.8)	0 (0.0)		
Gallery director	1 (0.8)	0 (0.0)		
Special education specialist	1 (0.8)	0 (0.0)		
Have any of your relatives been diagnosed with breast cancer?				
Yes	14 (10.5)	8 (11.4)	0.039	0.844
No	119 (89.5)	62 (88.6)		

Table 10. Demographic characteristics of respondents and whether they ever had a mammogram

Variables	Yes	No	X^2	P
Age (years)				
20-29	1 (8.3)	56 (29.3)	19.235	0.001*
30-39	4 (33.3)	70 (36.6)		
40-49	6 (50.0)	60 (31.4)		
50-59	0 (0.0)	5 (2.6)		
≥60	1 (8.3)	0 (0.0)		
Marital Status				
Married	9 (75.0)	108 (56.5)	6.439	0.169
Single or never married	1 (8.3)	70 (36.6)		
Separated	1 (8.3)	3 (1.6)		
Widowed	0 (0.0)	2 (1.0)		
Divorced	1 (8.3)	8 (4.2)		
Educational Level				
No formal education	1 (8.3)	1 (0.5)	8.048	0.154
Primary school completed	0 (0.0)	2 (1.0)		
JSS completed	0 (0.0)	10 (5.2)		
SSS completed	1 (8.3)	22 (11.5)		

Variables	Yes	No	X^2	P
Tertiary school completed	10 (83.3)	153 (80.1)		
Master degree	0 (0.0)	3 (1.6)		
Occupation				
Nurse	0 (0.0)	10 (5.2)	24.161	0.235
Pharmacist	0 (0.0)	2 (1.0)		
Laboratory staff	2 (16.7)	10 (5.2)		
Office staff	2 (16.7)	40 (20.9)		
Ward maid	1 (8.3)	32 (16.8)		
Teacher	4 (33.3)	39 (20.4)		
Medical student	0 (0.0)	25 (13.1)		
Security	0 (0.0)	2(2.1)		
Technical supervisor	0 (0.0)	1 (0.5)		
Educational supervisor	1 (8.3)	8 (4.2)		
College student	0 (0.0)	6 (3.1)		
Unemployed	1 (8.3)	8 (4.2)		
Vice dean	0 (0.0)	1 (0.5)		
Collage professor	0 (0.0)	1 (0.5)		
Social worker	0 (0.0)	1 (0.5)		
Retired	1 (8.3)	0 (0.0)		
Trainee	0 (0.0)	1 (0.5)		
Assistant director of the exhibition	0 (0.0)	1 (0.5)		
Customer service	0 (0.0)	1 (0.5)		
Gallery director	0 (0.0)	1 (0.5)		
Special education specialist	0 (0.0)	1 (0.5)		
Have any of your relatives been diagnosed with breast cancer?				
Yes	12 (100.0)	22 (11.5)	1.550	0.213
No	0 (0.0)	169 (88.5)		

**Statistically significant*

Abbreviations: JSS, junior secondary school; SSS, senior secondary school.

5. CONCLUSION

Women's awareness, knowledge, and practice concerning breast cancer screening are inadequate. However, in this study, participants had a reasonably good awareness of the accessibility and benefits of breast cancer screening methods. More health education efforts are needed to create awareness and increase the knowledge levels and practice of breast cancer screening in Al-Qunfudah. Additionally, women should be encouraged to learn BSE techniques and undergo CBE and mammography regularly, depending on their age group, to ensure the timely detection of abnormalities.

CONSENT

Agreement to fill the survey was considered consent to participate in the study. Confidentiality and privacy were ensured for all participants.

ETHICAL APPROVAL

This study was approved by the Research Ethics Committee at King Abdulaziz University. Each participant provided their agreement before completing the questionnaire and after being informed about the study.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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