RESEARCH ARTICLE

Perceived Barriers to Breast Cancer Screening among Saudi Women at Primary Care Setting

Shaimaa Baher Abdel-Aziz[1]*, Tarek Tawfik Amin[1], Mohammed Baqir Al-Gadeeb[2], Abdullah I Alhassar[2], Ali Al-Ramadan[2], Mohammed Al-Helal[2], Mohammad Bu-Mejdad[2], Lubna Abdulaziz Al-Hamad[3], Eman Hussain Alkhalaf[3]

Abstract

Background: Screening for breast cancer (BC) is of low rate in Saudi Arabia; although it is provided in the country free of charge to the population. This cross-sectional study aimed at investigating the perceived barriers towards BC screening in Al Hassa, Saudi Arabia. It is crucial for increasing the rate of utilization of screening to identify the possible barriers for seeking BC screening in order to enhance early diagnosis and improve outcome. **Materials and Methods:** A total of 816 adult Saudi women aged ≥ 30 years attending for routine primary health services or accompanying patients at the selected primary health care centers (PHCs) were randomly selected from 12 PHCs (8 urban and four rural) using multi-stage sampling method. Participants were invited to personal interview using semi-structured data collection instrument including inquiries about socio-demographics, reproductive history, previous histories of diagnosed breast lesions and breast cancer. The perceived individual barriers towards screening, their attitudes, the reasons for not attending previously held screening campaigns in Al Hassa, were also included. **Results:** Low utilization of BC screening has being significantly associated with woman's age (OR=2.55; 95% CI= 1.71-3.83), higher educational status (OR=2.98; 95% CI=2.05-4.34), higher family income (OR=1.96; 95% CI=1.31-2.93), using hormonal contraception (OR=1.46; 95% CI=0.99-2.13) and positive history of previous breast (OR=12.16; 95% CI=6.89-21.46), as shown by the results of the logistic regression model. Exploratory factor analysis showed that personal fears (especially fear of doctors/ examiners, fear of hospitals and health facilities and fear of consequences/results) were the major factors that hinder women from utilizing the free of charge BC screening with high loading eigenvalue of 3.335, explaining 30.4% of the barriers. **Conclusion:** Educational interventions aim at improving breast cancer knowledge and addressing barriers should be incorporated as core component of the screening program in Saudi Arabia.

Keywords: Breast cancer- cancer screening- perceived barriers- primary care- Saudi Arabia

Introduction

Breast cancer (BC) is a public health problem globally, and it became the most common cancer among women contributing to a substantial death among them worldwide (Radi , 2013).

BC is the most common type of cancer among Saudi females and accounted for more than 25% of all newly diagnosed cancer (Al-Eid, 2014). It has been estimated that BC is the ninth leading cause of death among females in the Kingdom of Saudi Arabia (KSA) year 2010 (Mokdad et al., 2014). The incidence of BC is expected to increase over the coming decades in Saudi Arabia due to the population's growth and aging (Ibrahim et al., 2008).

In KSA mammography has been introduced prior to 2002 (Alkhenizan et al., 2013). In 2007, a nationwide BC screening center was constructed in Riyadh, and 1,215 were screened in the first year (Abulkhair et al., 2010).

Another regional mammography screening program, targeted women 35-60 years old, was conducted in 2007 in Al Qasim, and preceded by an awareness campaign (Akhtar et al., 2010). Although mammography has been available in all regions of KSA since 2005, the national Saudi Health Interview Survey (SHIS) 2015, had reported a very low rate of breast cancer screening (BCS) where out of 10,735 participants, 1,135 were 50 years or older women, 89% of them reported not having a clinical breast examination (CBE) and 92% never had mammogram in the past year (El Bcheraoui et al., 2015).

Early detection of BC plays a crucial role in reducing both its morbidity and mortality. Both mammography and CBE are screening methods for early detection of BC (Allen et al., 2010). It has been reported that mammographic screening reduces BC mortality by 23% (Wang et al., 2014). Despite the effectiveness of BCS in reducing mortality, low uptake rates have been reported

[1]Public Health and Community Medicine, Faculty of Medicine, Cairo University, Egypt, [2]College of Medicine, King Faisal University, [3]Ministry of Health, Al Hassa Health Directorate, Saudi Arabia. *For Correspondence: shaimaabaher@yahoo.com

among Arab women (Keten et al, 2014).

Many barriers to BCS with the underutilization of services have been studied worldwide (World Health Organization, 2008). Factors affecting screening compliance can be grouped into patient, health care system, provider, and policy factors (Gimeno and Garcia, 2012). Barriers to access to health services, incomplete information, difficulties in infrastructure, socioeconomic, ethnic and geographical conditions are some of the factors affecting behavior toward screening (Nigenda et al., 2009).

In Saudi Arabia, a significant number of women were presented with the advanced stages of disease due to lack of information, knowledge and awareness of early detection measures (Mahfouz et al., 2104). It is still unclear with scarcity of literature about the possible predictors responsible for the late presentation of BC among Saudi women despite the availability of free of charge screening program. Barriers and facilitators that influence women's BCS practices need to be examined in order to effectively promoting BCS programs (Alkhenizan et al., 2013).

Needless to mention the pivotal role of health care providers posted at primary health care centers (PHCs) in promoting the screening programs (Demyati, 2014) as they have a major role in screening practice due to their frequent encounter with large population groups.

The objective of this study was to define the perceived personal barriers to BCS among Saudi women aged 30 years or more years and attending the primary care facilities (PHCs) in Al Hassa, Saudi Arabia. Findings from this study can help in formulating and tailoring culturally sensitive educational and other relevant interventions for women in Saudi Arabia in order to promote the uptake of breast cancer screening.

Materials and Methods

Subjects and Methods
Setting and design

A cross-sectional study that was carried out in Al Hassa Governorate, located in Eastern Province of Saudi Arabia; 50 km from The Gulf, 450 km from the capital Riyadh, and populated by about 1.5 million. Al Hassa is comprised of three regions; urban, populated by about 60% of the total population, rural consisting of 23 villages (35% of the population) and "Hegar" Bedouin scattered communities making up the remaining 5%. The Ministry of Health provides primary care through 54 PHCs, while the rest of the population are provided with similar services through other sectors e.g., National Guard, ARAMCO (oil company), military and others.

Population and sampling

Adult Saudi women aged ≥ 30 years attending primary health care centers in both urban and rural areas in Al Hassa were targeted for inclusion and they were constituted around 350,000 registered at the PHCs for year 2013 as reported by the local health directorate.
Sample size

Epi-Info TM version 3.5.3, year 2008 (CDC, Atlanta, GA, U.S.A) (CDC, 2009) was used to calculate the sample size. Assuming the percentage with perceived barriers towards screening among Saudi women (aged ≥30 years) of 50%, with a precision of ±5%, employing a 95% confidence interval, 80% power, and with a design effect of 2.0, the minimal sample size required was accounted for 768 participants. Adding 20% to compensate for potential non- response, the final total sample size was estimated to be 925 women.

Sampling method

An updated list of all primary care centers in Al Hassa distributed by districts from which eight primary health care centers were randomly selected from urban areas (Hofuf and Mubaraz four for each) and four from rural areas (from 15 centers serving the major villages), (PHCs at Hegar 'Bedouin' were excluded due to transportation problem). All Saudis women aged ≥ 30 years or more, attending for routine services at the selected PHCs during the period from January 13th 2015 to July 2nd 2015 were invited to participate through personal approach after receiving proper orientation. Of 1013 women personally approached, 923 agreed to participate.

Data collection

Women agreed to participate were invited to personal interview using semi-structured data collection instrument, the interviews were conducted by trained investigators with medical bachelor degrees. Each woman was interviewed on solicited base in a separate room or clinic within each PHC at the conclusion of their visits. The following information was gathered during the interview:

- Socio-demographic and reproductive history: age in years, residence, educational and employment status, marital status, age at marriage, age at first birth, number of living children, intake and duration of hormonal contraception, age at menarche, and age at menopause (if any).

- History of previous breast lesions: personal and family history of any breast lesions, their nature and age at diagnosis.

- Previous history of breast cancer screening: methods, reasons, who recommended, age at screening and the results (if any).

- Ever heard about the previously held breast cancer campaigns in Al Hassa, year 2010, and 2012 respectively, reasons of attendance and reasons for non-attending such campaigns.

- Attitudes towards breast cancer screening: three close ended questions (responses ranged from strongly agree, agree, not sure, disagree and strongly disagree) were used to assess their attitudes towards breast cancer screening including:

a. Early detection of breast cancer is necessary for prevention of complications and mortality.

b. I am seriously planning to go for breast cancer screening in the near future.

c. I will go for mammography if it is free, available and comfortable and in the presence of female providers.

- Perceived personal barriers to breast cancer screening: possible barriers to breast cancer screening including both clinical breast examination and mammography were

evolved from the available literature (El Bcheraoui et al., 2015; Abolfotouh et al., 2015), expert opinions and the results of pilot study. For each barrier multiple options were provided in the form of yes, no and not sure with instructions to the participants to choose all the possible barriers they perceived. Open-ended questions were provided to include the other possible barriers beyond the previously mentioned.

Pilot testing

The provisional data collection form was tested on 41 Saudi women attended for primary health services at a nearby primary center beyond the sample size with the following objectives:
- Training on conducting personal interview.
- Clarity and Comprehension of the terms and questions.
- Absence of ambiguity (if any).
- The perceived barriers were initially formulated and listed from the available literature and expert opinions; further addition of the possible barriers was considered after pilot testing.

Data analysis

Of the 923 Saudi women agreed to participate, 56 refused to give responses on items related to their screening history, and another 51 women did not complete the interview, 816 interview sessions were eligible for final analysis with a response rate of 88.4%. There were no difference in relation to the socio-demographics and other characteristics between those responded and the non-respondents. Data analysis was carried out using SPSS 21.0 (SPSS Inc, IBM, U.S.A). For categorical data, frequency, proportions and percentage were used for reporting, Chi square and Fisher Exact were used for comparison. For continuous data; mean, standard deviation, and median were used, t-test, and Mann Whitney tests were used for comparison. Logistic regression model was generated to determine possible predictors for the uptake of breast cancer screening (dependent variable) by inclusion of significant independent variables revealed at univariate analysis reporting Odds ratio and 95% confidence intervals. P value of ≤ 0.05 was considered significant.

Exploratory Factor Analysis

Principal components analysis with an orthogonal (Varimax) rotation was used to identify the factors underlying the different perceived barriers to the uptake of breast cancer screening among the sampled Saudi women. Eigenvalue of 1 was used for factor inclusion with examination of scree plots to confirm appropriate number of possible factors. The criteria used for item elimination to maintain simple structure included were the primary factor loading below 0.4 and/ or the presence of cross-loading (Kim and Mueller, 1978). Following the process of items elimination, the remaining items were included in the factor analysis with examination of their loadings. The retained factors were assessed for reliability using Cronbach's alpha as a measure of internal consistency (Cronbach, 1951). The factorability

of the included barriers (n=24) was examined at the outset of the analysis. Criteria (Hair et al., 1998) employed to determine the factorability of the correlation included: the result of the intercorrelation matrix which showed that 16 (out of 24 items) were correlated (correlation coefficient r= 0.35 with at least one item) suggested reasonable factorability. In addition to the Kaiser-Meyer-Olkin measure of sampling adequacy (0.763) which was above the commonly recommended value of 0.6, with significant the Bartlett's test of Sphericity (Chi square =855.35, P=0.001), confirming that each item shared some common variance with other items. Based on the above indicators, principal component analysis was warranted suitable for these 16 items.

The encountered barriers were categorized into the following types:

a. Personal including: fears of hospitals and health facilities, fears of screening consequences, feeling uneasy (distressed when come close to health providers, breast cancer is not a serious disease, previous bad experience with screening, fears of physicians and health care providers, screening for breast cancer is painful, and lack of time).

b. Cultural-social barriers including: it is unacceptable touching my breasts, embarrassing to tell people (family and relatives) about it, bad impression about what others might think about it, stigma following the diagnosis, breast examination is considered a taboo by the community and I might feel ashamed to uncover my breasts for examination or mammography.

c. Health facilities-service barriers including: breast cancer awareness program is deficient, lack of trust in health providers, physician and providers conducting screening are not adequately trained, health facilities offer screening are far with transportation problems, health providers can't conduct clinical breast examination properly, lack of specialized clinics, cost of screening, and it is not right to be examined by male physician or provider.

Ethical considerations

Permissions were obtained from the local Health Authorities and institution. Participants were provided with full explanation of the study with the emphasis on their right if didn't want to participate. Informed consent forms were obtained and data confidentiality was maintained all though

Results

Socio-demographic characteristics and previous history of breast cancer screening of the study participants were shown in Table 1. Mean age of the study sample was 43.8±6.6years, nearly half of them (52.3%) were of the age category between 40- <50 years, 63.6% were urban. Almost sixty percent had secondary school education or more, 56.1% were housewives, 82.4% were married, out of those having children (n=558), 48% had more than 4 children, 47.2% had family income ranged from 6,000-<10,000 (monthly in Saudi Riyals). Only 7.4% had a previous history of benign breast lesions, 18.9%

Table 1. Socio-Demographics, Previous Screening for Breast Cancer of the Included Participants (N=816)

Characteristics	Number	%
Age in years (mean± SD)	43.8±6.6	
Age groups categories:		
30- <40	216	26.5
40- <50	427	52.3
≥ 50	173	21.2
Residence:		
Urban	519	63.6
Rural	297	36.4
Educational status:		
Illiterate/read and write	54	6.6
Primary/preparatory	194	23.8
Secondary	262	32.1
College or higher	306	37.5
Working status:		
Employed	178	21.8
Unemployed but able to work	120	14.7
Housewives	458	56.1
Students	48	5.9
Retired	12	1.5
Marital status:		
Married	672	82.4
Single	126	15.4
Divorced/widowed	18	2.2
Number of children: (n=558)		
< 4	290	52
≥ 4	268	48
Family income: (monthly in Saudi Riyals):		
<6,000	243	29.8
6,000-<10,000	385	47.2
≥ 10,000	188	23
Had a benign breast lesions	60	7.4
History of breast cancer among relatives/ family	154	18.9
Ever screened for breast cancer	132	16.2
Methods used for screening:		
Mammography	18/132	2.2
Clinical Breast examination	54/132	6.6
Both	56/132	6.9
Screening advised by:		
Self	52/132	
Family/friends/relatives	34/132	
Health care providers	46/132	

SD, standard deviation

mentioned having relatives with breast cancer. Out of the total (n=816), only 16.2% (n=132) had been ever screened for breast cancer. Among those previously screened (n=132), methods used for screening was both Mammography and CBE, 46% out of them mentioned that they were advised by the health care providers for

screening.

The results of univariate analysis to define the independent variables associated with women's screening status showed that living in the urban region (Odds ratio 'OR'=1.51; 95% confidence intervals 'CI'= 1.01-2.71), those aged >50 years (OR=2.55; 95% CI= 1.71-3.83), having college education or more (OR=2.98; 95% CI=2.05-4.34), with monthly family income >10,000 Saudi Riyals (OR=1.96; 95% CI=1.31-2.93), ever used hormonal contraception (OR=1.46; 95% CI=0.99-2.13) and women previously complained of benign breast lesions (OR=12.16; 95% CI=6.89-21.46) had higher likelihood of being screened for BC. Whereas working, marital status and history of breast cancer among relatives/ family members were not significantly associated with BCS (Table 2).

The logistic regression model showed that women's age (>50 years), having college education or more, with monthly family income ≥10000 Saudi Riyals and having a previous benign breast lesions were the significant positive predictors for the uptake of screening among the included women (Table 2).

Perceived barriers towards BCS are demonstrated in Table 3. Barriers mentioned by women who never screened included efficiency of the health care providers due to lack of training (HCPs), their ability to conduct CBE, they aren't trusted and use scary tools and painful maneuvers.

Barriers mentioned also difficulty to communicate with foreign physicians and it is not right to be examined by male physician or provider. Of those women never screened 29.2% considered people's thoughts, 28.9% complained of transportation problems and 21.1% with perceived fears from hospitals and health care facilities. Significantly encountered barriers perceived by those never screened were stigma following the diagnosis of cancer (P=0.010), shyness (P=0.020), lack of specialized clinics (P=0.002), being busy with lack of time for screening (P=0.001) and being an expensive procedure (P=0.013). Fear of consequences (P=0.050) and previous bad experience with HCPs (P= 0.009) were significant perceived barriers among those ever screened. Lack of awareness program was mentioned as a possible barrier more by women who ever screened compared to those never screened (36.4% vs. 30.7%), BC isn't dangerous (6.1% vs. 0.9%), breast screening (mammogram) and examination are painful (33.3% vs. 1.5%) and being a taboo as viewed by the community (6.1% vs. 2.3%) (Table 3).

Exploratory factor analysis

The three components model explained 75.7% of the variation in the perceived barriers towards BCS among the included Saudi women. A predefined barrier was considered as being loaded on a specific component when its absolute factor loading was < 4. Exploratory factor analysis with three factors solution showed that personal fears (especially fear of consequences/results and fear of hospitals and health facilities) was the major factor that hinder BCS with high loading eigenvalue of 3.335,

Table 2. Predictors of Breast Cancer Screening among the Included Women (n=816)

| Independent variables | Ever had Breast cancer screening (Clinical breast examination and Mammography): no. (%) | | | | | |
| | Univaraite analysis | | | | Multivariate logistic regression analysis | |
	Yes (n=132)	Never (n=684)	Odds ratio (95% C.I)	P value	Odd ratio (95% C.I)	P value
- Residence:						
Rural	38 (28.8)	259 (37.9)	Reference	0.047	Reference	0.606
Urban	94 (71.2)	425 (62.1)	1.51 (1.01-2.71)		1.12 (0.73-1.71)	
- Age groups in years:						
30-<40	25 (18.9)	91 (27.9)	Reference		Reference	
40-<50	59 (44.7)	368 (53.8)	0.69 (0.47-1.01)	0.055	0.67 (0.44-1.01)	0.812
>50	48 (36.4)	125 (18.3)	2.55 (1.71-3.83)	0.0001	2.82 (1.77-4..51)	0.009
- Educational status:						
≤Secondary	58 (43.9)	452 (66.1)	Reference		Reference	
College or higher	74 (56.1)	232 (33.9)	2.98 (2.05-4.34)	0.0001	2.81 (1.99-3.97)	0.001
- Working status:						
Yes	30 (22.7)	148 (21.6)	1.06 (0.68-1.67)			
No	102 (77.3)	536 (78.4)	Reference	0.781		
- Marital status:						
Single	20 (15.2)	106 (15.5)	Reference			
Married	106 (80.3)	566 (82.7)	0.85 (0.53-1.36)	0.499		
Divorced/widowed	6 (4.5)	12 (1.8)	2.66 (0.80-7.83)	0.093		
- Family income in Riyals:						
<6,000	21 (15.9)	222 (32.5)	Reference	0.478	Reference	
6,000-<10,000	66 (50.0)	319 (46.6)	1.14 (0.79-1.66)	0.009	1.03 (0.70-1.53)	0.661
≥10,000	45 (34.1)	143 (20.9)	1.96 (1.31-2.93)		1.79 (1.28-2.50)	0.023
- Use hormonal contraception:						
Yes	56 (42.4)	228 (33.3)	1.46 (0.99-2.13)			
Never	76 (57.6)	452 (66.7)	Reference	0.05		
- Previous benign breast lesions:						
Yes	38 (28.8)	22 (3.2)	12.16 (6.89-21.46)	0.0001	15.90 (8.57-29.52)	
Never	94 (71.2)	662 (96.8)	Reference		Reference	0.0001
Breast cancer family and relatives:						
Yes	32 (24.2)	122 (17.8)	1.47 (0.94-2.29)	0.852		
No	100 (75.8)	562 (82.2)	Reference			

C.I, Confidence Intervals; % predicted for the logistic regression model was 82.8%, Hosmer-Lemeshow Chi-Square test,7.225, P=0.513.

explaining 30.4% of the barriers of the included sample toward utilization of BCS. The second factor with high eigenvalue of 2.778, and explaining 25.3% of the barriers to BCS was related to cultural and community barriers, including items related to shyness from been uncovered or touched by others, embarrassing from telling people about their disease or to be examined by male physician, the third factor included health care related barriers mainly difficult in communication with foreign providers, deficiency in awareness programs and lack of specialized clinics (Table 4).

The stated reasons for not attending the previously held BCS campaigns included that screening is only for those aged > 50 years (41.7%), not interested (26%), transportation problems (20.1%) and fear of diagnosis results (17.6%) (Table 5). Attitudes towards breast cancer screening among the participants in relation to their screening status showed that the majority of those not screened before (99.4 %) agreed that early breast cancer detection is the cornerstone for its prevention, 86.5% were seriously planning to have breast cancer screening in the near future, and 80.4% of them willing to go for mammography if it is free, painless, and the examiner is a female provider (Table 6).

Discussion

The results of this study showed that women in Saudi Arabia perceived several types of barriers toward BCS, only 16.2% of the studied participants were ever screened for BC in a country where health services are provided free of charge to the population.

Table 3. Barriers Towards Breast Cancer Screening as Perceived by Participants According to Their Screening Status (N=816)

Barriers *	Total (N=816) No. (%)	Ever screened (N=132) No. (%)	Never screened (N=684) No. (%)	P value **
1- Unacceptable touching to my body	116 (14.2)	14 (10.6)	102 (14.9)	0.194
2- Embarrassing to tell people about	92 (11.3)	14 (10.6)	78 (11.4)	0.79
3- No idea about what other people think	224 (27.5)	24 (18.2)	200 (29.2)	0.791
4- Stigma following the diagnosis of cancer	22 (2.7)	2 (1.5)	20 (2.9)	0.010!
5- Taboo as viewed by the community	24 (2.9)	8 (6.1)	16 (2.3)	0.563
6- Ashamed-shy to uncover my breasts	112 (13.7)	14 (10.6)	98 (14.3)	0.02
7- Fear of hospitals and health facilities	162 (19.9)	18 (13.6)	144 (21.1)	0.256
8-Fear of consequences	276 (33.8)	54 (40.9)	222 (32.5)	0.05
9- Felt uneasy-distressed when come close to HCPs	46 (5.6)	8 (6.1)	38 (5.6)	0.06
10- Breast cancer is not dangerous	14 (1.7)	8 (6.1)	6 (0.9)	0.947
11- Previous bad experience with HCPs	14 (1.7)	3 (2.3)	11 (1.6)	0.009!
12-Fear of physicians and examiners	92 (11.3)	10 (7.6)	82 (12.0)	0.154
13- Breast screening (mammogram) and examination are painful	54 (6.6)	44 (33.3)	10 (1.5)	0.59
14- Busy, no time to do it	220 (27.0)	30 (22.7)	190 (27.8)	0.001
15- Awareness program are deficient	258 (31.6)	48 (36.4)	210 (30.7)	0.231

HCPs, health care providers, *, Not mutually exclusive; **, Chi-square test for independence; !, Fisher Exact.

Table 4. Summary of Items and Factor Loadings for Three Factor Solution for the Perceived Barriers to Breast Cancer Screening Among the Included Saudi Women

Barriers to breast cancer screening*	Factor loadings**			Communality
	1 Personal fears	2 Cultural and community barriers	3 Health care related barriers	
Fear of doctors/ examiners	0.787			0.738
Fear of hospitals and health facilities	0.855			0.656
Fear of consequences/ results	0.868			0.686
Ashamed/shay to uncover your breast		0.745		0.795
Unacceptable touching to my body		0.793		0.775
Embarrassing to tell people about		0.656		0.528
It is not right to be examined by male physician		0.653		0.627
HCPs are not trustworthy			0.486	0.551
Not easy to communicate with foreign providers			0.713	0.727
Awareness programs are deficient			0.685	0.551
Lack of specialized clinics			0.662	0.598
HCPs are not competent			0.455	0.603
Cronbach's alpha	0.731	0.651	0.503	
Eigenvalue	3.335	2.778	1.911	
% variance explained	30.39	25.25	20.06	

*, Not mutually exclusive; **, Principal Component Analysis; Varimax with Kaiser Normalization; Kaiser-Meyer-Olkin for sample adequacy , 0.763; Bartlett's test for sphericity; Chi, 855.35; P, 0.001

Table 5. Stated Reasons for Not Attending the Last Breast Cancer Screening Campaign (N=816)

Reasons *	Number	%
Busy with no time to attend	122	15
Not interested	212	26
Crowded places for the campaign	52	6.4
Distance-transportation problems	164	20.1
Not needed for my age (it is for those aged 50 or above)	340	41.7
Inconvenient time/place	24	2.9
Fear of the results	144	17.6
Personal/family issues	64	7.8
Do not know where about	48	5.9
Already screened	132	16.2
Sickness/pregnancy	24	2.9

Despite the effectiveness of BCS behaviors in reducing mortality (Keten et al., 2014), finding of this study and others that have been published on BCS practices in Saudi Arabia (Alkhenizan et al., 2013; Abulkhair etal., 2010; El Bcheraoui et al., 2015; Amin et al., 2009) reported that the pattern of utilization of BCS was low compared to other studies in both developing and developed countries (Villanueva etal., 2008; Elobaid et al., 2014).

Findings from the current study as well as Patel et al., (2014) indicated the associations between socio-demographic characteristics and BCS behavior. Average age at presentation of BC in Arab countries is 48 years, which is a decade earlier than in the Western countries (Ajjar and Easson, 2010). The role of age is controversial, finding of the present study coincided with

Table 6. Attitudes Towards Breast Cancer Screening Among the Participants in Relation to Their Screening Status (N=816)

Items	Total	Screening for breast cancer: no (%)		P value *
	No. (%)	Yes (n=132)	None (n=684)	
1- Early breast cancer detection is the cornerstone for its prevention:				
Agree	812 (99.5)	132 (100.0)	680 (99.4)	0.378
Disagree	4 (0.5)	0	4 (0.6)	
2- I am seriously planning to have breast cancer screening in the near future:				
Agree	714 (87.5)	122 (92.4)	592 (86.5)	0.227
Disagree	84 (12.5)	10 (7.6)	74 (13.5)	
3- I will go for mammography if it is free, painless, and the examiner is a female provider:				
Agree	644 (81.1)	94 (71.2)	550 (80.4)	0.005
Disagree	150 (18.9)	36 (28.8)	114 (19.6)	

*, Chi square for independent samples

those reported from Villanueva et al., (2008) where old age was a significant predictor for BCS, in contrast Abolfotouh et al., (2015) reported a negative association between age and screening behavior in their study.

In the current study, the educational level of women emerged as a significant determining factor for screening uptake. This finding was in agreement with other studies (Elobaid et al., 2104; Gürdal et al., 2012) but inconsistent with Agboola et al., (2009).

The results of this study as well others (Patel et al., 2014; Vona-Davis and Rose, 2009) found that study participants with low annual household incomes were less likely to have a mammogram compared to those with higher incomes. Our study also showed that women with previous history of breast lesion are more likely to perform screening more frequently, and this was in agreement with other studies from both developed and developing countries (Abolfotouh et al., 2015; Cavdar et al., 2007)

In the present study, personal fears were the main barriers for not practicing BCS; fear of doctors/physicians, fear of consequences/results, fear of hospitals and health facilities are explaining 30.4% of the barriers among the included women towards utilizing screening services as depicted by the results of exploratory factor analysis. These findings are in agreement with the results of previous studies (Abolfotouh et al., 2015; Demirkiran et al., 2007). Of the included women in this study, the significant screening barriers perceived on the part of providers were lack of trust, perceived inadequacy of their training, their ability to conduct CBE and being foreign/male physicians as mentioned by participants, consistently Engelman (2012); Filippi (2013) and Khazaee-pool (2014) reported the similar findings.

Saudi women are more likely to shy away from preventive medical exams resembling breast examination. All clinics in Saudi Arabia have a female section that is operated by female physicians; however the uptake of screening services showed low rates, El Bcheraoui et al., (2015); Amin et al., (2009) and Tavafian et al., (2009) found that traditions, mainly shyness and not wanting to

be examined by a male physician were some of the barriers for not seeking CBE. Preparing environmental conditions and proper messages about the availability of screening carried out by female physicians may ease the women's embarrassment and overcome the shyness issue during breast screening for better program uptake.

Saudi women in this study reported that cultural beliefs and the social stigma of cancer limit their participation in BCS. Similar findings have been revealed by several investigators in different cultures (Doumit et al., 2007; Arevian et al., 2011). The social stigma of cancer revolved around a misunderstanding of cancer, a fear that BC screening practice would lead to getting the disease, and bring shame to the family (Kawar, 2013).

Clinicians should be aware of the culture, traditions, beliefs and practices in different communities and the influence of these factors on their conclusion to contribute in BCS. The health care related barriers reported by participants in the current study included the lack of awareness program, lack of specialized clinics and incompetency of the health care providers, all should be considered both by managers and health professionals in the planning and organization of primary health care education programs. These barriers create not only delays in diagnosis but also in the treatment implementation. (Sharma et al., 2013; Conceição Gonçalves et al., 2014)

Women empowerment is a crucial and necessary component for improving woman's health. Unfortunately, most information on breast screening comes from screening campaigns. Although these campaigns are currently widespread in Saudi Arabia, the knowledge about the disease and the existence of this campaigns is still very low among women (Hagi and Khafiji, 2013). Advances in technology and messaging should be used to reach women everywhere. Moreover, awareness campaigns based solely on marketing are not enough to produce mass screening and increase mammography in other Middle Eastern countries (Adib et al., 2009) Women should be involved and given a voice to gather other around health and society issues to reduce the burden of disease.

It has been reported that breast carcinoma occurs in relatively younger age groups among Saudi patients than in Western patients (Ajjar and Easson, 2010; Westlake and Cooper, 2008). This could be due to the demographic characteristic of the Saudi population, which is characterized by a dominance of a younger population (more than 60% of the population is under 18 years) (Saudi cancer Registry Report, 2005). Despite of this fact, being young and aged less than 50 years was one of the reasons mentioned by the study participants for not attending the last breast cancer screening campaigns in Al Hassa, year 2010, and 2012 respectively (The Health Care Network, Royal Embassy of Saudi Arabia, 2014) this was also mentioned by Elobaid et al., 2014 in their study. The American Cancer Society recommends that women get a mammogram and CBE yearly after the age of 40 years (American cancer Society breast cancer, 2012).

Many women in this study and others (Patel et al., 2014; Khazaee-pool et al., 2014) did not perceive that BC

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screening as a health priority, 15% of the studied women mentioned that they were too busy to attend the last breast cancer screening campaign (The Health Care Network, Royal Embassy of Saudi Arabia, 2014) and 26% were not interested. This can be partially explained by their lower perception for being at risk for BC, the daily life norms, high responsibilities towards their families and lack of time to attend BCS campaigns. It has been reported that the multi-responsibilities of working women and shortage of time forced the working women to postpone their own affairs for the sake of other family members (Sharaa, 2013) although this was not similar to our case as the majority of the studied women were not working.

The results of our study are consistent to those reported by Patel et al., (2014) who found that women reported several reasons for not attending BCS campaigns; some issues related to transportation, lack of information about where to go for screening, and fear of having the diagnosis of cancer. However promising attitude toward screening have been noticed among studied participants, they agreed that, early breast cancer detection is the cornerstone for its prevention, seriously planning to have breast cancer screening in the near future and willing for mammography if it is free, painless, and the examiner is a female provider.

In conclusion, the screening rate for breast cancer among women in Al Hassa, Saudi Arabia is low, the most commonly perceived barriers to BC screening included personal fears, the main barriers for not practicing BCS; fear of doctors/physicians, fear of consequences/ results, fear of hospitals and health facilities. Such fears should be addressed during launching and implementing BC screening programs, community based awareness plans and intensive educational campaign for women based on socio-cultural contexts and culturally sensitive educational materials targeting their influences and stressing the importance of early detection benefits needed to be developed in Saudi Arabia to promote breast cancer screening.

Study limitations

The results of this study can viewed in the presence of the following limitations: Results of the study cannot be generalized as the study included women from Al Hassa, not from all Saudi Arabia regions. The design is a cross-sectional study design with the possibilities of recall-bias, social desirability and interviewer bias. Lack of qualitative component with more in depth elaboration of personally perceived barriers especially the psychological and socio-cultural.

Conflict of interest
None.

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