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ORIGINAL ARTICLE

Assessment Awareness of Public About Breast Cancer and its Screening Measurements in Asir Region, KSA

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Abstract

Breast cancer (BC) has a major impact on women's health worldwide. The Kingdom of Saudi Arabia is no exception, where it is considered the most common malignancy, embodying the second leading cause of cancer deaths after lung cancer. In today's world, people are more health conscious and more aware of different medical specialties. Despite the tremendous advancements in education, there seems to be a limited knowledge among the public regarding this issue. Various studies have been conducted in many regions to determine the perception/awareness about breast cancer. The present study is of the first of its type in our region, assessing the awareness of the public about breast cancer and its screening measurements. As per our knowledge, there is no study that estimated the awareness of breast cancer and its screening measurements among the public in the Asir region. Therefore, this study aims to estimate the awareness of breast cancer and its screening measurements among public and assess the knowledge about Breast Self-Examination (BSE) and their opinion about its effectiveness in early diagnosis of breast cancer to detect the relationship between awareness and socioeconomic status. This study is a cross-sectional prospective study, with a sample of 1046 participants aged between 12 and 80 years (male and female) from the Asir region evaluated by questionnaire after attaining consent. The selection of participants was based on the simple random sampling method. The majority of participants were of age 20 to less than 30 years (56.9%). About half of them were males (52.7%). The majority was single (61.2%). Most of them (74.0%) have a high education level (University and more). About one-third of the participants (32.7%) worked in the medical field, and most of them worked in the non-medical field (46.6%). Regarding general knowledge, the score was 60.2%, which represented a relatively good knowledge. The overall knowledge regarding breast cancer as recorded by our population reported that only 18.8% had good knowledge. Participants of this resettlement colony have poor knowledge about breast cancer, be it about risk factors, signs, and symptoms, or early detection procedures, where the overall knowledge score was only 18.8%.

Keywords Breast Cancer · Awareness · Assessment · Knowledge · Breast self-examination · Screening · Asir Region · Saudi Arabia

Introduction

Breast cancer (BC) is a serious disease and a leading cause of deaths among females worldwide [1]. Approximately 1.67 million new cases of breast cancer, representing 25% of all cancers, were diagnosed among women in 2012 [2]. Its incidence is the highest in developed countries, with rates as high as 92 per 100,000 people in North America compared with 27 per 100,000 people in Middle Africa and Eastern Asia [2].

In 2010, breast cancer was the ninth leading cause of death for females in the Kingdom of Saudi Arabia (KSA) [3, 4]. Moreover, 1308 new breast cancer cases were reported in 2009, and about 25% of all new cancer cases were registered among Saudi women [5]. The incidence of breast cancer, it is expected, will increase in the coming decades in KSA due to the population's growth and aging [6].

A breast lump, one of the most common presentations of breast lesion, can be detected through breast self-examination

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Table 1 Personal and family data of general population participants from the Asir region, Saudi Arabia, 2018

Personal data		No.	%
Age in years	< 20 years	124	11.9
	20–	595	56.9
	30–	168	16.1
	40+	159	15.2
Gender	Male	551	52.7
	Female	495	47.3
Marital status	Single	639	61.1
	Married	391	37.4
	Divorced/widow	16	1.5
Educational level	Below university	272	26.0
	University/more	774	74.0
Work field	Not working	217	20.7
	Non-medical field	487	46.6
	Medical field	342	32.7
Nationality	Saudi	1031	98.6
	Non-Saudi	15	1.4
Monthly income	Less than 5000 S.R	199	19.0
	5000–15,000 S.R	543	51.9
	15,000–30,000 S.R	243	23.2
	More than 30,000 S.R	61	5.8
History of breast cancer	Yes	11	1.1
	No	1035	98.9
Family history of breast cancer	Yes	140	13.4
	No	906	86.6

(BSE), clinical breast examination (CBE), and mammography. Early detection and prompt treatment offer the greatest chance of long-term survival in breast cancer patients [7, 8]. Mammography, CBE, and BSE are the secondary preventive methods used for screening in the early detection of breast cancer [7]. Cancer-screening tests play a pivotal role in reducing breast cancer-related mortalities [7]. The American Cancer Society (ACS) recommends CBE and mammography for the early detection of breast cancer [9]. According to ACS recommendations, women should know how their breasts normally feel and report any changes promptly to their health care providers. BSE is an option for women starting from the early 20s [7, 9–11].

Many women miss early detection and treatment opportunities owing to lack of information, knowledge, breast cancer awareness, and cancer-screening practices [12]. A significant number of women have advanced stages of the disease due to lack of information, knowledge, and awareness of early detection measures. Two previous studies showed limited knowledge about breast cancer screening, and few women performed screening for early detection purposes [13–15].

This study aims to assess breast cancer knowledge, beliefs, and practices among Saudi women and men related to (i) disease-associated risk factors, (ii) causes (including myths and folklore), (iii) early detection, and (iv) existing and preferred sources of information. The ultimate goal of the work is to inform the development of effective breast cancer educational resources for Saudi women aimed at removing barriers to evidence-based prevention and early detection interventions. Hence, we undertook this study with an aim to ascertain awareness among the public about breast cancer.

Materials and Methods

This study is a cross-sectional prospective study, with a sample of 1046 participants aged between 12 and 80 years (male and female) from the Asir region evaluated by a questionnaire after taking their consent. The participants were selected based on the simple random sampling method. The consent form was given to participants after the purpose and method of the study was explained to each one of them. Participants who refused were excluded. We invited them to participate in a 31-question survey to assess their attitude, knowledge, perception, and understanding of breast cancer and its screening measurements. The information sought in the questionnaire also included demographics

Table 2 Breast cancer knowledge domains as recorded by the general population in the Asir region, Saudi Arabia, 2018

Knowledge domain	Poor		Good		Score (%)
	No.	%	No.	%	
General knowledge	592	56.6%	454	43.4	60.2
Knowledge about signs and symptoms	539	51.5%	507	48.5	51.4
Knowledge about risk factors	944	90.2%	102	9.8	31.8
Knowledge about BSE	688	65.8%	358	34.2	49.8

Poor: score % < 60%.

Good: score % 60–100%.

BSE breast self-examination.

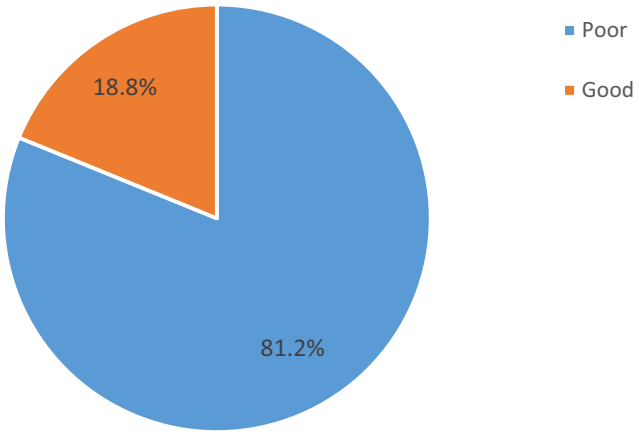

Fig. 1 Overall knowledge regarding breast cancer as recorded by the general population in the Asir region, Saudi Arabia, 2018

of the participants. The personal information about the students was kept confidential. The study was performed from Nov. 2018 to Mar. 2019. The study protocol was approved by the Ethics Committee of King Khalid University, and this research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Statistical Analysis

The collected data was revised, coded, and fed to the statistical software IBM SPSS version 20. The given graphs were constructed using Microsoft Excel. All statistical analysis was done using two-tailed tests and with an alpha error of 0.05. A p value less than or equal to 0.05 was considered to be statistically significant. For knowledge domains, each correct answer was given one point score, and the total domain score was assessed by summing the discrete scores for each item. The score was then transferred into score percent of maximum by dividing over the total score and multiplying it by 100. The score percentage was then categorized into poor level if it was less than 60% of the maximum score and good if more. Chi-square/Mont Carlo exact test and Fisher's exact test were used to test for the association between different patients' factors and knowledge level. Exact tests were used if there were small frequencies where chi-square was invalid. Multiple logistic regression models were used to estimate the adjusted effect of different participants' data on their knowledge level.

Table 3 Distribution of breast cancer knowledge of the general population by their personal and family data, Asir region, Saudi Arabia, 2018

Factors		Overall knowledge				p
		Poor		Good		
		No.	%	No.	%	
Age in years	< 20 years	114	91.9	10	8.1	.001*
	20–	448	75.3	147	24.7	
	30–	147	87.5	21	12.5	
	40+	140	88.1	19	11.9	
Gender	Male	467	84.8	84	15.2	.002*
	Female	382	77.2	113	22.8	
Marital status	Single	508	79.5	131	20.5	.208
	Married	327	83.6	64	16.4	
	Divorced/widow	14	87.5	2	12.5	
Educational level	Below university	238	87.5	34	12.5	.002*
	University/more	611	78.9	163	21.1	
Work field	Not working	180	82.9	37	17.1	.001*
	Non-medical field	426	87.5	61	12.5	
	Medical field	243	71.1	99	28.9	
Monthly income	less than 5000 S.R	172	86.4	27	13.6	.018*
	5000-15,000 S.R	446	82.1	97	17.9	
	15,000–30,000 S.R	187	77.0	56	23.0	
	More than 30,000 S.R	44	72.1	17	27.9	
History of breast cancer	Yes	8	72.7	3	27.3	$^{FE}P = .472$
	No	841	81.3	194	18.7	
Family history of breast cancer	Yes	106	75.7	34	24.3	.076
	No	743	82.0	163	18.0	

P Pearson χ^2 test, *FEP* Fisher exact probability

*$p < 0.05$ (significant)

Table 4 Multiple logistic regression model for predictors of breast cancer knowledge among the general population in the Asir region, Saudi Arabia, 2018

Factor	*B*	SE	*P*	AOR	95% C.I. for OR	
					Lower	Upper
Age in years	− .267	.144	.064	.766	.58	1.02
Female	1.013	.185	.000	2.76	1.92	3.96
Married	.111	.254	.661	1.12	.68	1.8
High education	.089	.043	.040	1.09	1.01	1.19
Medical field work	.666	.141	.000	1.95	1.48	2.56
Income	.249	.104	.017	1.28	1.05	1.57
History of BC	.785	.727	.281	2.17	0.52	9.09
Family history of BC	.389	.228	.088	2.33	0.94	2.42
Constant	− 2.696	1.536	.079	.068		
Model pseudo R^2; significance	12.3%; .003*					
Model fit	81.5%					

SE standard error, *AOR* adjusted odds ratio, *CI* confidence interval

Results

Table 1 shows the distribution of 1046 participants according to some of their socio-demographic characteristics. The majority of them were of age 20 to less than 30 years (56.9%). About half of them were males (52.7%). The majority was single (61.2%). Most of them (74.0%) have a high education level (University and more). About one-third (32.7%) worked in the medical field, and most of them worked in non-medical fields (46.6%). Approximately, all of them were from Saudi (98.6%), and one-half belonged to intermediate monthly income families of 5000–15,000 Saudi Riyals (51.9%). Almost all of them have no breast cancer history (98.1%). Breast cancer in their family history was reported by 13.4% of the participants.

Table 2 shows the distribution of participants according to knowledge and BSE issues of breast cancer. Regarding general knowledge, the score was 60.2%, representing a relatively good knowledge. With regard to knowledge of signs and symptoms, risk factors, and BSE. The scores were 51.4%, 31.8%, and 49.8% respectively, reflecting poor knowledge.

Fig. 1 illustrates the overall knowledge regarding breast cancer as recorded by our population; as reported, only 18.8% had good knowledge.

The associations between socio-demographic characteristics and BC knowledge scores are illustrated in Table 3. Knowledge of BC was significantly associated with age, gender, educational level, the field of work, and monthly income (p value = 0.001, 0.002, 0.002, 0.001, and 0.018 respectively). The good knowledge scores were lowest among participants whose age was less than 20 years (8.1%), male gender (15.2%), participants with below university educational level (12.5%), non-medical field workers (12.5%), and participants whose income was less than 5000 SR (13.6%). Conversely, the good knowledge scores were highest among participants of age 20 to less than 30 years (27.4%), female gender

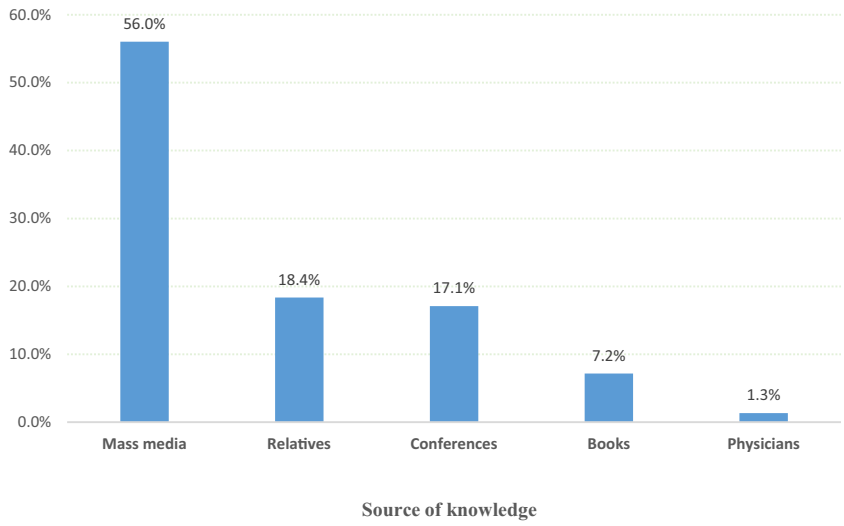

Fig. 2 Sources of breast cancer knowledge among the general population in the Asir region, Saudi Arabia, 2018

Table 5 Breast self-examination practice recorded among the general population in the Asir region, Saudi Arabia, 2018

Practice regarding BSE	No.	%
Previously undergone BSE		
Yes	260	52.5
No	235	47.5
If yes, frequency ($n = 260$)		
Rarely	103	39.6
Sometimes	101	38.8
Weekly	11	4.2
Monthly	45	17.3
Did you find breast changes ($n = 260$)		
Yes	37	14.2
No	223	85.8

BSE breast self-examination

(22.8%), participants with university or more educational level (21.1%), medical field workers (28.9%), and participants whose income was more than 30,000 SR (27.9%).

Table 4 shows the logistic regression analysis of breast cancer knowledge among participants with some independent variables. After adjusting for all possible confounders, the significant predictors to breast cancer were found to be positive females ($p = 0.000$), high education ($p = 0.040$), medical field workers ($p = 0.000$), income ($p = 0.017$), and lower PMS of barrier domain ($p = 0.046$).

Regarding sources of BC knowledge among our population, more than half of them received their knowledge from mass media, 18.4% from relatives, 17.1% from conferences, 7.2% from books, and 1.3% from physicians (Fig. 2).

Table 5 shows the BSE practice recorded among our population. About half of the participants (52.5%) had previously undergone BSE. Regarding the frequency of BSE among participants who had undergone it, only 4.2% had undergone it weekly, and 17.3% monthly; the remaining were varied nearly equally between rarely and sometimes (39.6% and 38.8% respectively). Among those who had undergone BSE, 14.2% found changes in their breast.

Regarding risk factor awareness among our population, the following factors were thought to have risk for occurrence of BC: advancing age (56.1%), exposure to radiation (39.3%), avoiding breastfeeding (57.6%), previous precancerous lesion on breast (49.4%), old primipara (above age of 30 years) (60.0%), breast injuries (40.5%), late menopause (42.4%), obesity (47.2%), smoking (34.3%), wearing of tight brassiere (50.2%), inactivity and sedentary lifestyle (39.7%), and underweight (47.4%) (Table 6).

Table 7 illustrates the level of general knowledge among our population. Almost all of them (95.8%) had heard of breast cancer. Most of them (59.8%) thought that breast cancer was somewhat prevalent and 12.0% thought breast cancer for once prevent subsequent cancer.

Table 6 Risk factor awareness among the general population in the Asir region, Saudi Arabia, 2018

	Yes		No		Do not know	
	Count	Row *N* %	Count	Row *N* %	Count	Row *N* %
Positive family history	139	13.3	331	31.6	576	55.1
Advancing age	587	56.1	257	24.6	202	19.3
Race/ethnicity	310	29.6	417	39.9	319	30.5
Exposure to radiation	411	39.3	294	28.1	341	32.6
Avoiding breast feeding	603	57.6	158	15.1	285	27.2
Previous precancerous lesion on breast	517	49.4	223	21.3	306	29.3
Old primipara (above age of 30 years)	628	60.0	100	9.6	318	30.4
Multiparity and gravidity	203	19.4	342	32.7	501	47.9
Null parity	118	11.3	534	51.1	394	37.7
Early menarche (below age of 11 years)	174	16.6	430	41.1	442	42.3
Recurrent oral contraceptives use	158	15.1	375	35.9	513	49.0
Breast injuries	424	40.5	164	15.7	458	43.8
Late menopause	443	42.4	196	18.7	407	38.9
Hormonal replacement therapy	228	21.8	319	30.5	499	47.7
Obesity	494	47.2	128	12.2	424	40.5
Smoking	359	34.3	239	22.8	448	42.8
Wearing of tight brassiere	525	50.2	189	18.1	332	31.7
Inactivity and sedentary lifestyle	415	39.7	238	22.8	393	37.6
Witchcraft	281	26.9	304	29.1	461	44.1
Underweight	496	47.4	247	23.6	303	29.0

Table 7 General knowledge among the general population in the Asir region, Saudi Arabia, 2018

		Count	Column *N* %
Have you heard of breast cancer?	Yes	1002	95.8
	No	44	4.2
What do you think about breast cancer?	Rare	52	5.0
	Somewhat prevalent	625	59.8
	Highly prevalent	369	35.3
Breast cancer for once prevent subsequent cancer	Yes	125	12.0
	No	447	42.7
	Do not know	474	45.3

Discussion

According to this study, 95.9% of its participants had heard about breast cancer. This is higher than the percentage observed in a group of Ghana [16], Malaysian [17], and Iranian [18] women: 95%, 81.2%, and 64% respectively. It is, however, much lower than the 100% among the female medical students in Harar, Ethiopia [19], and the 98.7% among the female students in the University of Ibadan, Nigeria [20].

Knowledge and awareness of early detection measures of breast cancer, such as the BSE, is also considerable. About half of the participants, as shown by the findings, knew about BSE as an early detection measure, but very few participants practiced it. This results differed from Somdatta et al. [21], results which reported that knowledge and awareness of BSE are low and only a few women practiced it.

Our findings reveal poor understanding and misperceptions of the risk factors for breast cancer. More than half of the respondents identified advancing age, avoiding breastfeeding, old primipara (above age of 30 years), and wearing tight brassier as potential risk factors, while more than one-third identified exposure to radiation, previous precancerous lesion on breast, breast injuries, late menopause, obesity, smoking, inactivity, sedentary lifestyle, and underweight as potential risk factors for breast cancer. Only less than one-third of them identified positive family history, race/ethnicity, multiparity and gravidity, null parity, early menarche (below the age of 11 years), recurrent oral contraceptives use, hormonal replacement therapy, and witchcraft as potential risk factors of breast cancer. These results could be compared with those of Sama et al. [22], which revealed a poor understanding and misperceptions of the risk factors, signs/symptoms, prevention, and treatment. More than two-thirds of the respondents did not identify gender, increasing age, race/ethnicity and positive family history, first child at a late age, early menarche, late menopause, positive personal history, and nulliparity as potential risk factors. Knowledge gaps about risk factors have also been reported elsewhere among the general population [17, 23]: university students in Angola [24], female medical students in Saudi Arabia [25], nurses in Pakistan [26], and female teachers in Malaysia [27] and Kuwait [28].

With regard to misperceptions, 26.9% of participants cited witchcraft as a risk factor of breast cancer. This is in line with a community survey in semi-urban Cameroon [29], studies on rural women [30] and market women [31] in Ibadan, Nigeria, and female medical students in Ethiopia [19], suggesting that women still attribute the occurrence of breast cancer to a mystical origin. Among others, they considered it "a spiritual attack", "God's curse", and "attack from the enemy". This observation was not that different from reports in a more developed setting: female teachers in Saudi Arabia attributed breast cancer to God and a belief in the evil eye [32], while 96.8% of Arab-speaking women in Qatar attributed its occurrence to fate/destiny, and less than one-fifth to Gods' punishment and bad luck [33].

The major contribution of media in educating the public regarding breast cancer observed in this study has also been reported by other researchers from Saudi Arabia [32], Lebanon [34], Nigeria [35], and Iran [18]. This demonstrates the need to pay greater attention to this source of information to ensure that the correct information reaches the target population.

Conclusion

In conclusion, this study has shown that participants of this resettlement colony have poor knowledge about breast cancer, be it about risk factors, signs, and symptoms, or early detection procedures, where the overall knowledge score was only 18.8%. Therefore, it is important to create awareness, educate the community, and remove the misconceptions associated with ignorance through community-based educational/awareness campaigns. Educating health care workers is also a very important aspect. We also have to keep in mind that media exclusively will not be enough; information needs to be disseminated in a form which is appealing to the community.

Compliance with Ethical Standards

Ethical Considerations The official ethical clearance was obtained from the King Khalid University Ethical Committee; the private information of the students was used for research only.

Administrative Considerations The researchers fulfilled all the required official approvals.

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