Available online at **www.ijmrhs.com**

ISSN No: 2319-5886

International Journal of Medical Research & Health Sciences, 2018, 7(1): 65-76

Assessment of Knowledge and Perception towards Breast Cancer Prevention and Early Detection

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ABSTRACT

Background: *Breast cancer was the ninth leading cause of mortality for women in Saudi Arabia, and to reduce the burden of this disease appropriate information about breast cancer and its' early detection measures are highly needed. Therefore, the aim of this study was to assess the knowledge and perception of Northern Saudi Arabia people towards breast cancer prevention and early detection.* ***Methodology:*** *In this cross sectional descriptive study, data about breast cancer were obtained from 566 Saudi volunteers living in the city of Hail, Saudi Arabia.* ***Results:*** *When the level of individual's knowledge about breast cancer was assessed, the majority of the study subjects were found with good knowledge followed by moderate and poor representing 187 (34.3%), 170 (31.2%) and 86 (15.8%), respectively. For females, most of them were found with good knowledge followed by moderate and poor constituting 142 (36.1%), 111 (28.2%) and 62 (15.8%), respectively.* ***Conclusion:*** *The findings of the present study have delivered evidence that women in Northern Saudi Arabia lack appropriate information about breast cancer and its' early detection measures.*

Keywords: Breast cancer, Awareness, Breast self-examination, Mammography

INTRODUCTION

Breast cancer is the most common type of cancer and the most frequent cause of cancer-associated death among women in the world. However, the burden is not consistently distributed, and according to the best accessible statistics, there are huge variations in the incidence, mortality, and survival between different countries and regions and within specific regions. Several multifaceted factors influence these variations, including population structure (e.g., age, race, and ethnicity), lifestyle, environment, socioeconomic status, risk factor prevalence, mammography use, disease stage at diagnosis, and access to high-quality care [1].

Breast cancer is the most common malignancy in women worldwide. It was estimated that 1,671,149 new cases of breast cancer were identified and 521,907 cases of deaths due to breast cancer happened worldwide in 2012. According to GLOBOCAN, it is the most common cancer in women, accounting for 25.1% of all cancers [2]. Breast cancer incidence in developed countries is higher, while relative mortality is greatest in less developed countries [3]. Five-year relative survival estimates range from 12% in parts of Africa to almost 90% in the United States, Australia and Canada, with the discrepancy associated with a combination of early detection, access to treatment services and cultural barriers. Observed improvements in breast cancer survival in more developed parts of the world over recent decades have been attributed to the introduction of population-based screening applying mammography and the systemic use of adjuvant therapies [4].

Breast cancer was the ninth leading cause of death for females in Saudi Arabia in 2010 [5]. Among Saudi patients, there is a substantial upsurge in the incidence of breast cancer, which happens at an earlier age than in western countries [6,7]. A number of etiological factors have been involved in the etiology of breast cancer in Saudi Arabia.

These factors act individually or together to cause breast cancer. The most frequent etiological factors include; age factors, age at first birth, early menarche, gender, dietary factors, tobacco smoking, alcohol consumption, low-dose irradiation, obesity, physical activity, lactation, hormonal factors, hormone replacement therapy, steroid hormone receptors, mammographic density, benign breast disease, and genetic factors [8].

Education of women is recommended in all countries for early detection and treatment. Plans for the control and prevention of breast cancer must be a high priority for health policy makers; also, it is essential to increase awareness of risk factors and early detection in less developed countries. Therefore, the aim of the present study was to assess the knowledge and perception of Northern Saudi Arabia people towards breast cancer prevention and early detection.

MATERIALS AND METHODS

In this cross sectional descriptive study, data about breast cancer were obtained from 566 Saudi volunteers living in the city of Hail, Saudi Arabia. Participants were randomly selected by simple random regardless to age, gender and education.

A purposeful questionnaire was designed and used for obtaining of the necessary data. The following information were obtained from each participant: age, sex, breast cancer may be inherited, hormonal exposure (Estrogen (RE)) increase the risk of breast cancer, do you think that some food can prevent breast cancer, do you think that some food can cause breast cancer, don't food can prevent or cause breast cancer, Know some food can prevent and cause breast cancer, early puberty and late menopause increase the risk of breast cancer, delayed and repeating child birth increase the risk of breast cancer, natural breast feeding decreases the risk of breast cancer, overweight or obesity increase the risk of breast cancer, cosmetics increase the risk of breast cancer, radiation exposure increases the risk of breast cancer, cigarette smoking and some viruses increase the risk of breast cancer.

Data Analysis

Statistical Package for Social Sciences (version 16) was used for analysis and to perform Pearson Chi-square test for statistical significance (P-value). The 95% confidence level and confidence intervals were used. P value less than 0.05 was considered statistically significant.

Ethical Approval and Informed Patient Consent

Each participant was asked to sign a written ethical consent during the questionnaire's interview. The informed ethical consent form was designed and approved by the ethical committee of the College of Medicine (University of Hail, Saudi Arabia) Research Board.

RESULTS

This study investigated 566 apparently healthy volunteers, their ages ranging from 14 to 52 years with a mean age of 26 years. Out of the 566 participants, 165 (29.2%) were males and 401 (70.8%) were females, giving males' females' ratio of 1.00 to 2.43.

The distribution of the study population showed that most of the participants were at age group 20-24 years followed by 25-29, representing 299/566 (52.8%) and 67/566 (11.8%), in this order. For males the majority of participants were found in age range 20-24 years followed by 25-29, 35-39 and <20 years constituting 129/165 (78.2%), 18/165 (10.9%), 7/165 (4.2%) and 6/165 (3.6%), respectively. For females the majority of participants were found in age range 20-24 years followed by 40+, 25-29, 30-34, 35-39 and <20 years constituting 170/401 (42.4%), 50/401 (12.5%), 49/401 (12.2%), 47/401 (11.7%), 45/401 (11.2%) and 40/401 (10%), respectively as indicated in Table 1 and Figure 1.

With regard to education level, the majority of the study subjects were with university level of education followed by basic and secondary education levels, representing 414/566 (73.1%), 106/566 (18.7%) and 46/566 (8.2%), respectively. For males, out of 165 respondents, 152 (92.2%) were at university level, 9 (5.4%) were at secondary level and 4 (2.4%) were at basic level. For females, 262 (65.3%) were at university level, 102 (25.4%) were at basic level and 37 (9.3%) were at secondary level, as indicated in Table 1 and Figure 1.

Table 1 Distribution of the study population by demographical characteristics

Variables	Category	Males	Females	Total
Age	<20 years	6	40	46
	20-24	129	170	299
	25-29	18	49	67
	30-34	4	47	51
	35-39	7	45	52
	40+	1	50	51
	Total	165	401	566
Education	Basic	4	102	106
	Secondary	9	37	46
	university	152	262	414
	Total	165	401	566

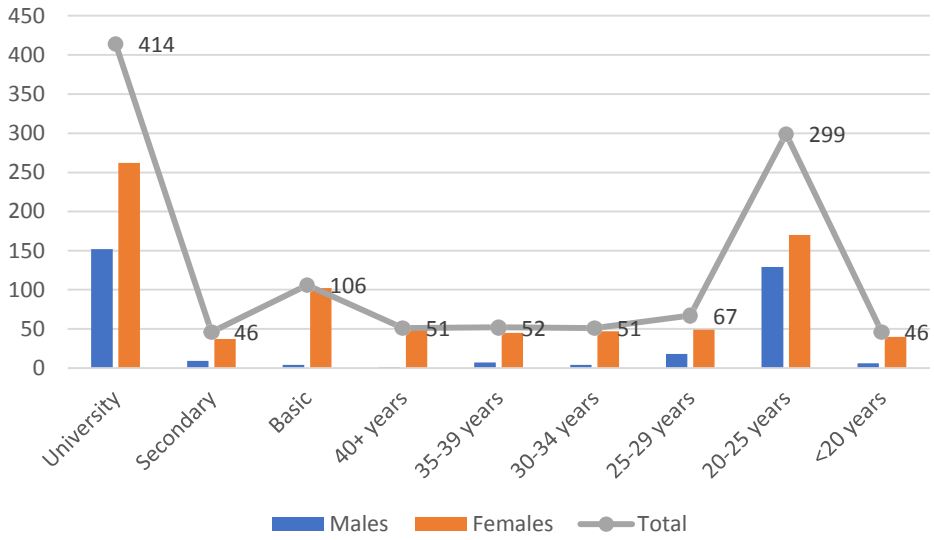

Figure 1 Description of the study population by demographical characteristics

Table 2 Distribution of the study population by knowledge about breast cancer

Variables	Category	Males	Females	Total
Level of individual's knowledge about breast cancer	None	2	18	20
	Poor	24	62	86
	Moderate	59	111	170
	Good	45	142	187
	Excellent	22	60	82
	Total	152	393	545
Level of Community knowledge about breast cancer	None	5	16	21
	Poor	74	124	198
	Moderate	41	149	190
	Good	28	79	107
	Excellent	5	25	30
	Total	153	393	546

Level of health services providers' knowledge about breast cancer	None	12	7	19
	Poor	38	55	93
	Moderate	56	133	189
	Good	31	118	149
	Excellent	16	80	96
	Total	153	393	546
Level of media's knowledge about breast cancer	None	13	10	23
	Poor	35	48	83
	Moderate	52	95	147
	Good	39	146	185
	Excellent	14	94	108
	Total	153	393	546
Level of efforts of breast cancer prevention in KSA	None	8	34	42
	Poor	52	86	138
	Moderate	62	167	229
	Good	36	107	143
	Excellent	0	0	0
	Total	158	394	552

Table 2 summarizes the distribution of the study population by knowledge about breast cancer. When the level of individual's knowledge about breast cancer was assessed, the majority of the study subjects were found with good knowledge followed by moderate and poor representing 187 (34.3%), 170 (31.2%) and 86 (15.8%), respectively. For males, most of them were found with moderate knowledge followed by good and poor constituting 59 (38.8%), 45 (29.6%) and 24 (15.8%), respectively. For females, most of them were found with good knowledge followed by moderate and poor constituting 142 (36.1%), 111 (28.2%) and 62 (15.8%), respectively, as indicated in Table 1 and Figure 2.

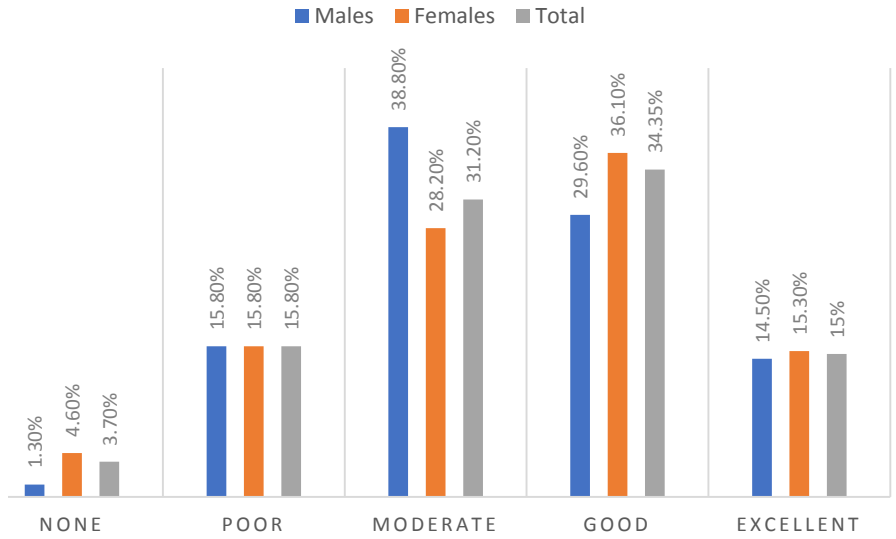

Figure 2 Description of the study population by the levels of individual's knowledge about breast cancer

With regard to the perception of the participants toward the level of community knowledge about breast cancer, 198 (36.3%) have poor knowledge about breast cancer prevention and early detection, 190 (34.8%) were with moderate and 107 (19.6%) were with good level. For males, most of them were found with poor knowledge followed by moderate and good constituting 74 (48.4%), 41 (26.8%) and 28 (18.3%), respectively. For females, most of them were

found with moderate knowledge followed by poor and good constituting 142 (36.1%), 111 (28.2%) and 62 (15.8%), respectively, as indicated in Table 3 and Figure 3.

Table 3 Distribution of the study population by knowledge about breast self-examination (BSE)

Variables	Category	Males	Females	Total
Level of knowledge and perception about breast self-examination	None	28	85	113
	Poor	22	89	111
	Moderate	56	109	165
	Good	58	117	175
	Excellent	0	0	0
	Total	164	400	564
Do you think BSE has preventive role	Yes	104	347	451
	No	23	75	98
	Total	163	399	549
Knowledge of signs and lesions that you should consider when doing BSE	Yes	82	264	346
	No	77	126	203
	Total	159	390	549

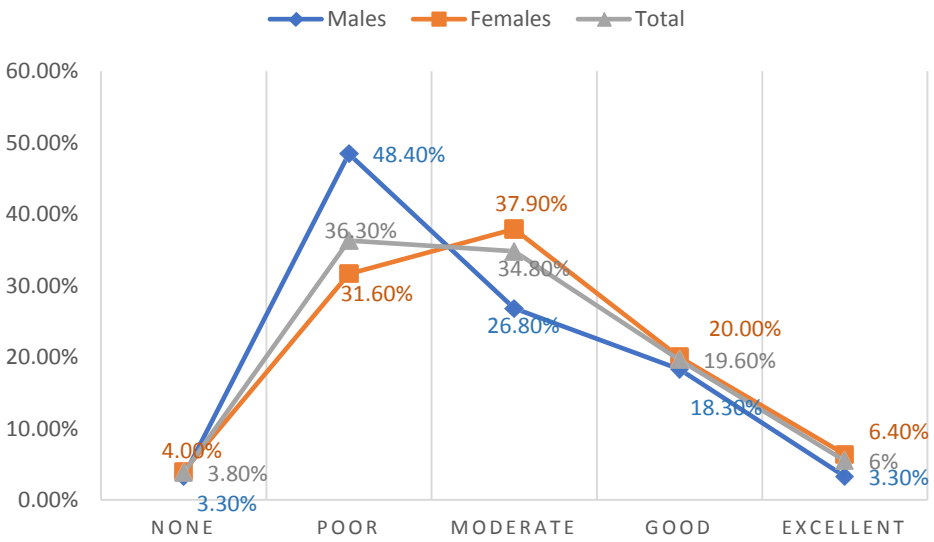

Figure 3 Description of the study population by the levels of community contribution on awareness about breast cancer

With regard to the perception of the participants toward the level of health services providers' contribution on awareness about breast cancer, 189 (34.6%) think that health services providers have moderate knowledge about breast cancer prevention and early detection, 149 (27.3%) were good, and 96 (17.6%) were excellent. For males 56 (36.6%) were moderate, 38 (24.8%) were poor and 31 (20%) were good.

For females, 133 (33.8%) were moderate, 118 (30%) were good and 80 (20%) were excellent, as indicated in Table 1 and Figure 4.

With regard to the perception of the participants toward the level of media's contribution on awareness about breast cancer, 185 (33.9%) think that media have good contribution about breast cancer prevention and early detection, 147 (26.9%) were moderate, and 108 (19.8%) were excellent. For males 52 (34%) were moderate, 39 (25.5%) were good and 35 (22.9%) were poor contribution. For females, 146 (37.2%) were good, 95 (24.2%) were moderate and 94(23.9%) were excellent, as indicated in Table 1 and Figure 4.

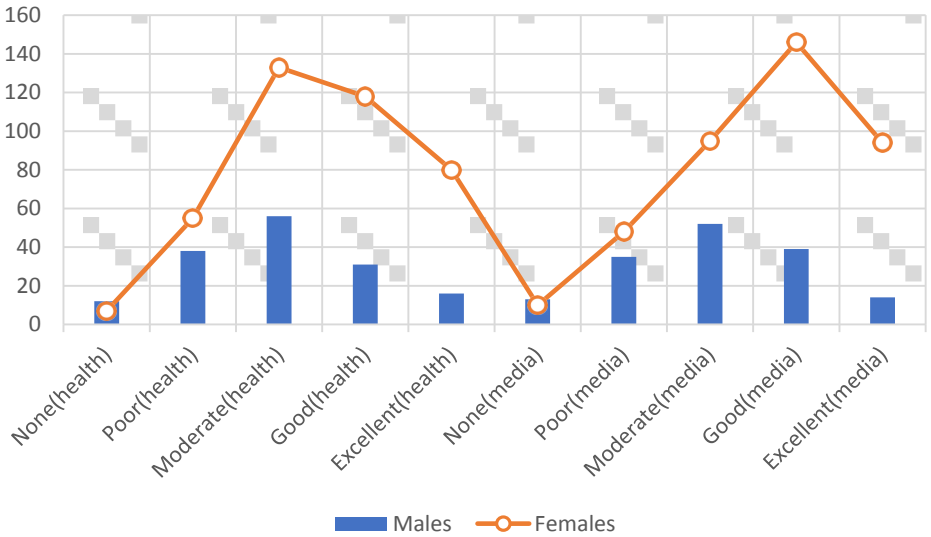

Figure 4 Description of the study population by the levels of health service providers and media contribution on awareness about breast cancer prevention and early detection

With regard to the perception of the participants toward the level of efforts of breast cancer prevention in Saudi Arabia, the majority of participants think that there are moderate efforts, followed by good, poor and complete absence, representing 229 (41.5%), 143 (25.9%), 138 (25%) and 42 (7.6%), in this order. For males, the majority of them think that there are poor prevention efforts followed by poor and good representing 62 (39.2%), 52 (33%), and 36 (22.8%) respectively. For females the majority of them think that there are moderate efforts followed by good and poor constituting 167 (42.4%), 107 (27.2%) and 86 (21.8%) in this order as described in Table 1.

Luckily, the majority of the participants were found with good level of knowledge and perception about breast self-examination (BSE) followed by moderate, absence and poor representing, 175 (31%), 165 (29.3%), 113 (20%) and 111 (19.7%), respectively. For males, most of them indicated good followed by moderate and none, representing 58 (35.4%), 56 (34%) and 28 (17%), respectively. For females, most of them indicated good, moderate, and good constituting 117 (29.3%), 109 (27.3%) and 89 (22.3%) respectively. However, 85 (21.3%) of the females indicated complete absence of knowledge about BSE, as indicated in Table 3.

When asking the participants, whether BSE has preventive role, 351 (82%) answered “yes” and the remaining 98 (18%) answered “no”. Out of the 163 males, 104 (64%) stated “yes” and 23 (36%) stated “no”. Out of the 399 females, 347 (87%) answered “yes” and 75 (13%) stated “no”, as indicated in Table 3 and Figure 5.

When asking the participants bout their knowledge of signs and lesions that you should consider when doing BSE, 346 (63%) answered “yes” and the remaining 203 (37%) answered “no”. Out of the 159 males, 82 (52%) stated “yes” and 77 (48%) stated “no”. Out of the 390 females, 264 (68%) answered “yes” and 126 (32%) answered “no”, as indicated in Table 3 and Figure 5.

Table 4 summarizes the distribution of the study population by source of knowledge about breast self-examination (BSE). The great majority of the participants learned BSE for the first time during their study in the university representing 251 persons. With regard to way they learned, most learned through university program followed by media, and seminars, representing 170, 148 and 48 respectively.

In respect to the preferred method to do BSE, most of them think that mirror is the best method followed by those don’t know constituting 204 and 150, respectively, as indicated in Table 4 and Figure 6.

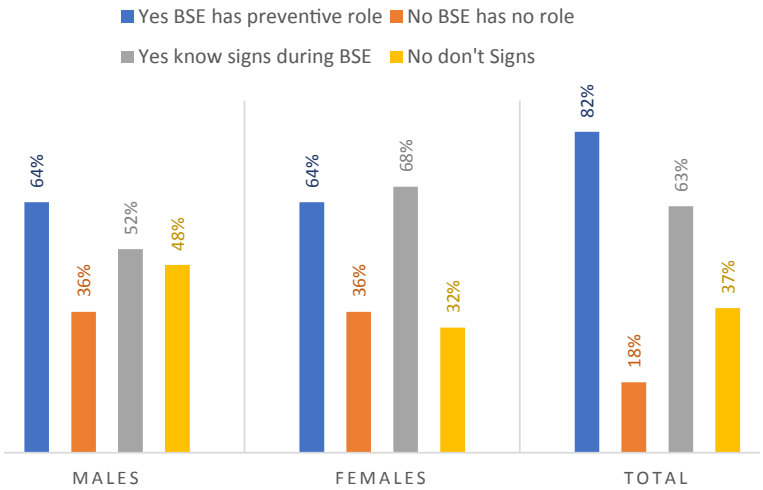

Figure 5 Description of the study population by knowledge about breast self-examination (BSE)

Table 4 Distribution of the study population by source of knowledge about breast self-examination (BSE)

Variables	Category	Males	Females	Total
When you first learn about BSE	Outside university	22	114	136
	During university	95	156	251
	Other	47	120	167
	Total	164	390	554
The way you learn about BSE	University program	72	98	170
	Seminars	22	96	118
	Leaflet	15	52	67
	Media	47	101	148
	Friends	6	42	48
	Total	164	389	551
The method you prefer to do BSE	In front of mirror	42	162	204
	During shower	11	57	68
	On bed	12	32	44
	All	32	54	86
	Don't know	61	89	150
	Total	158	394	552

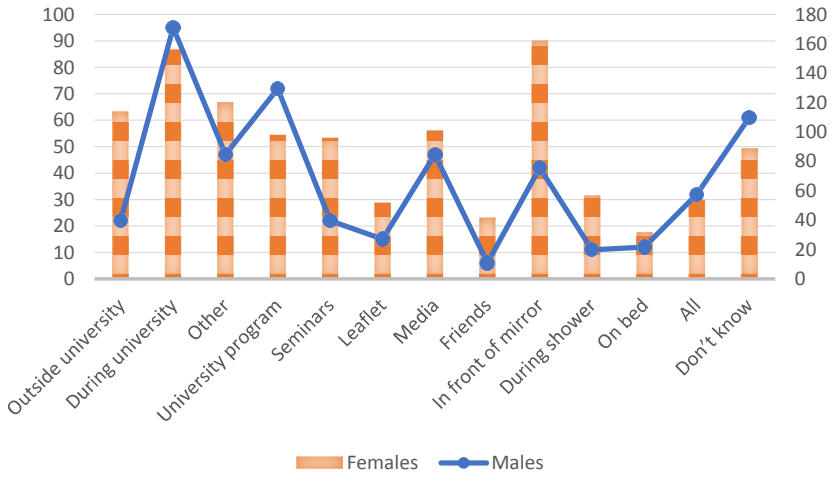

Figure 6 Description of the study population by source of knowledge about breast self-examination (BSE)

Table 5 Distribution of the study population by of knowledge of BSE timing

Variables	Category	Males	Females	Total
When you start BSE	At puberty	34	88	122
	Within 20-70 years	90	211	301
	At any age	31	70	101
	Don't know	10	31	41
	Total	165	400	565
Ladies between 20-39 years should do breast clinical exam by physician	Monthly	16	72	88
	Annually	72	170	242
	Every 2 years	35	53	88
	Every 3 years	37	96	133
	Total	160	391	551
Women after 40 years should do breast clinical exam by physician	Monthly	27	126	153
	Annually	78	174	252
	Every 2 years	29	55	84
	Every 3 years	26	38	64
	Total	160	393	553
Women after 40 years should do mammogram	Monthly	20	67	87
	Annually	90	201	291
	Every 2 years	28	69	97
	Every 3 years	22	53	75
	Total	160	390	550
The suitable interval to do BSE	Monthly	21	137	158
	Every 6 months	41	82	123
	Annually	51	50	101
	Every 3 years	21	86	107
	Duration differ with age	27	40	67
	Total	161	395	556

Table 5 summarizes the distribution of the study population by knowledge of BSE timing. The majority of the participants believe that BSE must start within the age of 20 to 70 years followed by those indicated at puberty, and at any age representing 301 (53.3%), 122 (21.6%), and 101 (17.8%). However, about 41 (7.3%) were answered "don't know". Out of the 165 males, 90 (54.5%), 34 (20.6%), and 31 (18.8%) have indicated within 20-70 years, at puberty and at any age, respectively. Out of the 400 females, 211 (52.8%), 88(%) and 70 (17.5%) have indicated within 20-70 years, at puberty, and at any time, correspondingly, as indicated in Table 5.

With regard to the question " Ladies between 20-39 years should do breast clinical exam by physician", Out of 551 respondents, 242 (44%), 133 (24%), and 88 (16%) answered, annually, every 3 years, and each 2 years & monthly, in this order. For males, out of 160 respondents, 72 (45%), 37 (23%), and 35(21.9%), indicated annually, every 3 years and every 2 years respectively. For Females, out of 391 respondents, 170 (43.5%), 96 (24.6%), and 52 (13.3%), indicated annually, every 3 years and every 2 years respectively, as indicated in Table 5.

With regard to the question "Women after 40 years should do breast clinical exam by physician", Out of 553 respondents, 252 (45.6%), 153 (27.7%), and 84 (15.2%) answered, annually, monthly, and every 2 years, in this order. For males, out of 160 respondents, 78 (48.8%), 29(18%), and 26 (16.3%), indicated annually, every 2 years and every 3 years respectively. For Females, out of 393 respondents, 174 (44.3%), 126 (32%), and 55 (14%), indicated annually, monthly and every 2 years respectively, as indicated in Table 5.

With regard to the question "Women after 40 years should do mammogram", Out of 550 respondents, 291(53%), 97 (17.6%), and 87 (15.8%) answered, annually, every 2 years, and monthly, in this order. For males, out of 160 respondents, 90 (56.3%), 28 (17.5%), and 22(13.8%), indicated annually, every 2 years and every 3 years respectively. For Females, out of 390 respondents, 201 (51.5%), 69 (17.7%), and 67 (17.2%), indicated annually, every 2 years and

monthly respectively, as indicated in Table 5.

With regard to the question "The suitable interval to do BSE ", Out of 556 respondents, 158 (28.4%), 123 (22%), 101 (18.2%) and 107 (18.2%) answered, monthly, every 6 months, every 3 years and annually, in this order. For males, out of 161 respondents, 51 (31.7%), 41 (25.5%), and 27 (16.8%), indicated annually, each 6months and duration differ with age, respectively. For Females, out of 395 respondents, 137 (34.7%), 86 (21.8%), and 82(20.8%), indicated monthly, every 3 years and every h 6 months, respectively, as indicated in Table 5.

DISCUSSION

The breast cancer awareness month, marked in countries across the world every October, helps to increase attention and support for the awareness, early detection and treatment as well as palliative care of this disease. In the present study, we aimed at assessing the knowledge and perception of Northern Saudi Arabia people towards breast cancer prevention and early detection. As breast cancer is a female's concern, the great majority of participants in this study were females. However, a little number of males' participants were considered since breast cancer can affect men, as well as, males can help in the prevention efforts. The majority of participants were from university of Hail's students, which may render the expected findings more positive than, if the sample was taken from community basis.

About 30-50% of all cancer cases are preventable. Prevention offers the most cost-effective long-term strategy for the control of cancer. National policies and programs should be employed to increase awareness, to reduce exposure to cancer risk factors and to ensure that people are provided with the sufficient knowledge and support they need to implement healthy lifestyles [9].

With regard to the level of individual's knowledge about breast cancer, the majority of the study subjects were found with good knowledge 34.3%, but for females, 28.2% and 15.8%, were found with moderate and poor knowledge, respectively. These values may be high for university educated persons. The assessment of knowledge level was based on asking the participant random questions about breast cancer risk factors, as well as, lifestyle incriminating factors.

With regard to the perception of the participants toward the level of community knowledge about breast cancer, about 36.3% have poor knowledge about breast cancer prevention and early detection. For females, most of them were found with moderate knowledge followed by poor constituting 36.1% and 28.2%, respectively. These factors were assessed in view of the participants toward the efforts of community in educating females about breast cancer prevention in Northern Saudi Arabia.

With regard to the perception of the participants toward the level of health services providers' contribution on awareness about breast cancer, most participants believe that health services providers in Northern Saudi Arabia deliver moderate efforts towards breast cancer control. However, in a situation where there is no established national screening program for breast cancer, it is inapplicable to assess the knowledge of breast cancer and its early detection measures. One can therefore propose that lack of knowledge of correct information about breast cancer exists in the community [10].

With regard to the perception of the participants toward the level of media's contribution on awareness about breast cancer, 33.9% think that media have good contribution towards breast cancer prevention and early detection. The power of media can't be denied anywhere in the world. Breast cancer requires more and more awareness to be prevailed among the people and especially the women living in remote areas. Media can be used to make people aware about the breast cancer risk factors, and play a very constructive role in dispelling many myths and misconceptions about the disease [11,12].

With regard to the perception of the participants toward the level of efforts of breast cancer prevention in Saudi Arabia, the majority of participants think that there are moderate efforts. Breast cancer is reported from developed nations and Western countries, while data on relevant reports from Saudi Arabia appears either scattered, or not brought to the public interest [13]. This indicated the lack of such efforts or it's presented in narrow band delivered by non-governmental organizations.

Luckily, the majority of the participants were found with good level of knowledge and perception about BSE. In regions where there is low utilization of mammography screening, BSE proves to be an easy and cost-effective method that has an important part to play in the early detection of breast cancer. Failure to practice BSE has been

associated with delay in presentation, and thereafter with poor long-term survival [14-16]. Several studies conducted in different regions of Saudi Arabia have explored female knowledge and attitude towards breast cancer and BSE [17-24].

When the respondents were asked about their knowledge of signs and lesions that you should consider when doing BSE, 63% claim to know them. More respondents were better informed about breast cancer than about BSE. The leading source of information on breast cancer was breast cancer awareness campaign at university of Hail. Thus, the great majority of the participants first learned BSE during their study in the university representing 251 persons.

In regard to the preferred method to do BSE, most of them think that mirror are the best method. Standing before a mirror and compare the breasts for differences in size, nipple inversion (turning in), bulging, or dimpling is best way for BSE. Despite increased use of screening mammography, a large percentage of breast cancers are detected by the patients themselves. Patient-noted breast abnormalities should be carefully evaluated [25].

The majority of the participants believe that BSE must start within the age of 20 to 70 years. However, BSE is an option for women starting in their 20s [26]. With regard to the question "The suitable interval to do BSE", Out of 556 respondents, 158 (28.4%), answered, monthly.

With regard to the question "Women after 40 years should do breast clinical exam by physician", Out of 553 respondents, 45.6%, 27.7%, and 15.2% answered, annually, monthly, and every 2 years, in this order. Physical examination of the breast is not a single test. Among clinicians (where it is termed "clinical breast examination" or CBE), it has various degrees of accuracy, depending on the clinician and his or her technique [27]. Women in their 20 s and 30 s should have a CBE as part of a periodic (regular) health examination by health professionals preferably every 3 years. After the age of 40, women should have a CBE every year, as recommended by the American Cancer Society (ACS) [28].

With regard to the question "Women after 40 years should do mammogram", Out of 550 respondents, 53%, 17.6%, and 15.8% answered, annually, every 2 years, and monthly, in this order. Mammography, CBE and BSE are the secondary preventive methods used for screening in the early detection of breast cancer [29].

Annual mammography is considered the most valuable tool for detecting breast cancer in the earliest possible stages, before the cancer has metastasized and when interventions are most effective and least invasive and debilitating. The decline in breast cancer mortality has been largely attributed to regular mammography screening practice [30]. The ACS recommends that women aged 40 and over should have a screening mammogram every year and should continue to do so for as long as they are in good health [28].

CONCLUSION

The findings of the present study have delivered evidence that women in Northern Saudi Arabia lack appropriate information about breast cancer and its' early detection measures. The results indicated that the major source of information about breast cancer was University of Hail, which suggests that health care providers are needed to take responsibility of providing health information. It is hoped that the findings of this study will help in the preparation of breast cancer detailed health education.

DECLARATIONS

Acknowledgment

The authors would like to express their special appreciation and thanks to everyone offered his efforts and time to participate in this study, in particular the volunteers.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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