RESEARCH ARTICLE

Measurement of the Extent of Awareness of Al jouf Region Residents with the Importance and Methods of Breast Cancer Early Detection in Females

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Abstract

Background: Early detection of breast cancer is the most important strategy to prevent deaths from breast cancer as breast cancers that found in early stages is easier to be treated successfully. This study aimed to measure the extent of awareness of Aljouf region residents with importance and methods of breast cancer early detection in females. **Methods:** A cross-sectional research study of 1,026 participants from different cities in Aljouf province, aged above 18 years and successfully filled the online questionnaire from January to April 2022. Modified Breast Cancer Awareness Measure version 2 was used to assess the awareness of participants regarding early detection of breast cancer. Descriptive statistics and Pearson's chi-square tests were used to analyze the data. **Results:** Results indicated that majority of participants were Saudi (98.1%), female (86.1%), aged 18-35 (77.6%), and single (62.2%) with university education (63.5%).There was no history of breast cancer in 75.8% of participant's families. The majority of the participants (68.7%) were had some knowledge about breast cancer early detection and its checkups, despite their answers containing little detailed information and a significant disparity in the correct answers. **Conclusion:** The present study showed that more than two-thirds of the participants had a poor level of awareness about early detection of breast cancer. Knowing about checkup and general knowledge significantly was related to some socio-demographic factors such as age between 18-35 years, high educational level, employment, and marriage.

Keywords: Awareness- breast cancer- early detection- residents- Saudi Arabia

Introduction

Worldwide, breast cancer is the most common cancer affecting women and the 5th cause of cancer related mortality, with 2.3 million new estimated cases worldwide. In 2020, there will be 685,000 cases died from breast cancer (Sung et al., 2021; Siegel et al., 2022). There is an expectation of increasing the number of cases to reach 4.4 million in 2070 (Soerjomataram et al., 2021). In terms of countries, China had the largest number of cases of breast cancer, accounting for approximately 18.4% of breast cancer cases, followed by the USA, with11.8% breast cancer cases in the world, lowest rates of occurrence are presented in the most African countries, although in these countries, breast cancer incidence rates are enhancing also (Lei et al., 2021). In Saudi Arabia, as per the Saudi cancer registry 2020, breast cancer is the 2nd most frequently occurring cancer after colorectal cancer with 3954 estimated new cases in both sexes, all ages with

an incidence and mortality rates 14.8% (cumulative risk 2.87%) and 8.5% (cumulative risk 0.81%) respectively in both sexes, (Alqahtani et al., 2020; Garassino et al., 2021). The main risk factors contributed to breast cancer are but not limited to older age, obesity, high fat diet, smocking, decreased physical activities, early age at menarche, late age at menopause, first full-term pregnancy in old age, deceased breastfeeding, use of hormone replacement therapy and positive family history of breast cancer (Collaboration et al., 2016; Abarca-Gómez et al., 2017).

Throughout the world now, the survival rates of breast cancer have change to a high extent, ranging from 80% or more in North America, Sweden, and Japan, to about 60% in middle-income countries, and less than 40% in low-income countries (Black et al., 2019).

All recommendations state that early detection of breast cancer is the most important. Strategy to prevent deaths from breast cancer as breast cancers that found in early stages is easier to be treated successfully. Finding regular

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screening tests is the most reliable way for early detection. (El_Rahman, 2021). The World Health Organization (WHO) has defined distinct but related two strategies to promote the early detection of cancer 1st is the early diagnosis in which the recognition of symptomatic cases at an early stage disease, and 2nd is the screening in which the identification of asymptomatic cases in apparently healthy individuals (da Silva, 2017). Programs for cancer control should ensure the diagnosis of the disease at early stage where the treatment will be effective and cure rate will be most likely (Yip, 2016). So The most beneficial and important area of protection issues is the screening (Shyyan et al., 2008). It is observed and well known to all, that diagnosis of breast cancer in the early disease stages will lead to decrease in the mortality rates (Justo et al., 2013). There are many approaches for screening of breast cancer the 1st is breast Self-Examination (BSE) that has been endorsed and widely promoted by many cancer organizations and authorities worldwide. The effectiveness of BSE is dependent on outreach and health education to the population (Galukande et al., 2010), the 2nd is breast clinical examination(BCE) which is one of the primary methods of breast cancer screening. The effectiveness of BCE is dependent on the experience and skills of the health care worker and the available facilities. For that, it is important to use standard techniques and training strategies to ensure full training of health workers (Romanoff et al., 2017), the 3rd and most important is Mammography which is the standard screening methods for breast cancer early detection (Sprague et al., 2017). According NCCN guidelines for risk reduction of breast cancer, women with average risk should start their screening at age of 40 years and for those with high risk should started in earlier ages (Gradishar et al., 2017).

In KSA, the 1stnationwide center for breast cancer screening was established by Saudi Cancer Society in collaboration with non-governmental AbdulL ateef Charitable Screening Center in Riyadh city(Gosadi, 2019). The study by Abulkhairet et al(2010) published their results of a retrospective review conducted on 1215 cases screened in this center from September 2007 to April 2008 by Using mammogram, they detected 16 cases only out of 1215 (Abulkhair et al., 2010). In the Eastern province of KSA, there is another non-governmental screening program initiated by using mobile mammogram machines screened 8061 women from 2009 to 2014 and detect only 47 cases (Al Mulhim et al., 2015). The 1st published report of governmental breast cancer screening was from a pilot study in Alqassim region (Akhtar et al., 2010). In 2015, the Saudi MOH initiate national campaign to increase awareness about importance of breast cancer screening for promotion of national breast cancer early detection program (Gosadi, 2019), In another study by El Bcheraoui et al, they founded that from 1135 women aged 50 years or older, 92% of them never having a mammogram (El Bcheraoui et al., 2015). It is noted that, the process of seeking for breast cancer early detection is not so clear and not available in the official website of Saudi Ministry of Health and The low rate participant may be explained by lack of information to public of available screening programs for breast cancer (Gosadi, 2019).

In Aljouf province, in the northern area of KSA, breast cancer screening clinics are available at Prince Mutaib bin Abdul-Aziz Hospital- Sakaka, Tabarjal General Hospital, and Domat Al Jandal General Hospital. Expected lack of knowledge and wrong believes about breast cancer early detection among females will adversely affect perception of increasing the chance of cure, So we conducted this study to measure the extent of awareness of Aljouf region residents with importance and methods of breast cancer early detection in females for further recommendations.

Materials and Methods

This research is a cross-sectional study designated to measure the extent of awareness of Aljouf region population about the importance and methods of breast cancer early detection in females. An online simple questionnaires written in the Arabic language and selected randomly from different cities in Aljouf province, the purpose and the nature of the study were explained in the questionnaires. The demographic data from participants who agreed to fill the online questionnaire to collect their information about residency, age, social status, level of education, occupation. A close-ended with Arabic modification of Breast Cancer Awareness Measure (Breast CAM) version 2 (Cancer Research United Kingdom, King's College London and University College London, 2009) was generated to collect the data from participants about their awareness about methods of breast cancer early detection and its importance. The Breast CAM v2 was modified and translated into Arabic to fit the nature and purpose of current study. The modified breast CAM comprises seventeen questions about general awareness of breast cancer early detection regarding different methods of screening, their knowledge about breast cancer early detection in Aljouf and importance of breast cancer early detection. The modified version was tested by experts in the field of breast cancer for its reliability and validity, Cronbach's Alpha test was used for reliability of the questionnaire and was found to be 0.89. After preliminary designation of questionnaire, a pilot study was conducted on 50 participants to fill the questionnaire then any necessary changes were done. Wide distribution of the questionnaire done by sending the link to as much as possible number of Aljouf residents after their permission that obtained from every participant at the beginning of the questionnaire link before starting to fill the questionnaire. The wide distribution of the link was done via employees and students in Jouf University and their relatives and friends. A total of 1026 participants aged above 18 volunteered and successfully filled the questionnaire during the period starting from 1-1- 2022 to 1-4-2022.

Statistical Analysis

The data was analyzed using the Statistical Package for the Social Sciences (IBM Corporation, Armonk, NY, USA), version 20. For the descriptive statistics, number and percentage were used. Continuous variables represented by mean ± SD. The Chi square test was used to test for significance differences and the association

of qualitative variables (X²). The P value for significant results was set at <0.05.

Results

Socio-demographic characteristics of the sample

The details of socio-demographic nature of the studied sample shown in Table 1. This study included 1026 respondents 883 (86.1%) females and 143 (13.9) males. 77.6% of the participants aged 18-35 years where 62.2% of them were single and 63.5 % had bachelor's degree. SO, Majority were female with age 18-35, single with university education. The majority of participants (68.4%) were students from Sakaka. Regarding to nationality, most of the participants were Saudi (98.1%). 75.8 % of respondents declared no family history of breast cancer in their families.

General knowledge of Breast Cancer (BC) early detection among respondents

Table 2 showed the asked questions and its answers of participants about general knowledge of BC early detection. The majority of our respondents (68.7%) declared that they had some knowledge about BC early detection and its checkup; although their answers showed little detailed information and marked discrepancy about the correct answers. Only about 30% of participants knew the age at which woman should go for BC early detection at 40 years while only 42.4 % knew the methods of BC early detection. Regarding the answers about the common

causes of BC, majority said genetic causes followed by no breast feeding and Obesity.

Awareness of BC early detection program and its utilization

The degree of awareness of participants about BC early detection program and its utilization in Aljouf province was shown in table 3, it is founded that 83.2% of participants know about the program but only 16.6% had visit and 76.0% of them believe that checkup has a value. According to the frequency of visits for checkup, most respondents answered monthly (32, 4%), annually (27.4%), don't know (24.6%), and weekly (15.7%).

Table 2. Knowledge Assessment among Studied Group

Variable		N	%
Knowledge	No	321	31.3
	Yes	705	68.7
Timing	40 year	299	29.1
	Before 40	209	20.4
	Don't know	423	41.2
	Other	95	9.3
Know Methods	No	372	36.3
	Yes	654	63.7
Methods	Mammography	361	35.2
	Clinical	22	2.1
	Self-examination	37	3.6
	All	436	42.5
	Don't know	170	16.6
Causes	Smoking	75	7.3
	Genetic	255	24.85
	Malnutrition	126	12.28
	Being female	114	11.11
	Menses Irregularity	173	16.86
	No breast feeding	205	19.98
	Obesity	197	19.2
	Late menarche	168	16.3

Table 1. Demographic Data Distribution

Variable		N	%
Sex	Female	883	86.1
	Male	143	13.9
Age	18-35	796	77.6
30.25±10.32	>35-50	180	17.6
	> 50	50	4.9
Marital status	Single	638	62.2
	Widow	14	1.4
	Married	303	29.5
	Divorced	71	6.9
Education	High school	292	28.5
	Bachelors	651	63.5
	Master degree	19	1.9
	PHD degree	64	6.2
Occupation	Not	118	11.5
	Student	702	68.4
	Worker	12	1.2
	Employee	194	18.9
Residence	Qurrayat	90	8.8
	Sakaka	778	75.8
	Tabarjal	158	15.4
Family history of breast cancer	No	778	75.8
	Yes	248	24.2
	Total	1026	100

Table 3. Awareness and Utilization

Variable		N	%
Knowledge about BC early detection Program	No	172	16.8
	Yes	854	83.2
Visit	No	856	83.4
	Yes	170	16.6
Value of checkup	No	246	24
	Yes	780	76
Frequency of visits	Weekly	161	15.7
	Annual	281	27.4
	Monthly	332	32.4
	Don't know	252	24.6
	Total	1026	100

Table 4. Awareness of BC Early Detection in Relation to Socio-Demographic Nature

			Knowledge		X²	P
			No	Yes		
Sex	Female	N	283	600		
		%	88.20%	85.10%		
	Male	N	38	105	1.71	0.19
		%	11.80%	14.90%		
Age	18-35	N	267	529		
		%	83.20%	75.00%		
	35-50	N	39	141	9.67	0.007*
		%	12.10%	20.00%		
	>50	N	15	35		
		%	4.70%	5.00%		
Marital	Single	N	219	419		
		%	68.20%	59.40%		
	Widow	N	2	12		
		%	0.60%	1.70%		
	Married	N	55	248	62.95	0.00**
		%	17.10%	35.20%		
	Divorced	N	45	26		
		%	14.00%	3.70%		
Education	Bachelors	N	255	396		
		%	79.40%	56.20%		
	High school	N	60	232		
		%	18.70%	32.90%		
	PhD	N	4	60	56.95	0.00**
		%	1.20%	8.50%		
	Master	N	2	17		
		%	0.60%	2.40%		
Occupation	Student	N	248	454		
		%	77.30%	64.40%		
	Worker	N	8	4		
		%	2.50%	0.60%		
	No work	N	35	83	35.05	0.00**
		%	10.90%	11.80%		
	Employee	N	30	164		
		%	9.30%	23.30%		
Family history of BC	No	N	239	539		
		%	74.50%	76.50%		
	Yes	N	82	166	0.48	0.49
		%	25.50%	23.50%		
Total		N	321	705		
		%	100.00%	100.00%		

Relation between socio-demographic nature and extent of awareness

The relation between socio- demographic characteristics and degree of awareness about BC early detection was summarized in Table 4. Data analysis to detect relationship between demographic variables and degree of awareness of participants showed that there is no significant difference between male and females (P-value 0.19), regarding the age, it is noted that respondents aged 18-35 has significant differences in their knowledge compared to other age groups (P-value 0.007). Regarding marital status, married women appeared to be aware of BC early detection more than others (P-value 0.00), the level of education was expected to be one of most effectors variables, in our study, participants with PhD degree appeared to have good knowledge more than those with

other lower level of education (P-value 0.00). Also, it is noted that employees in this study have more information about BC early detection than those with other occupations (P-value 0.00). Finally, positive family history of breast cancer has insignificant difference compared with those with negative family history (P-value 0.49).

To summarize, knowing about checkup and general knowledge significantly associated with age 35-50, high school, and post graduated also with employee and married participants. But other variables have insignificant differences.

Discussion

Evaluation of awareness and attitudes towards breast cancer screening is of fundamental importance for successful implementation of breast cancer early detection and subsequent cancer prevention and control activities (Omotara et al., 2012). Till date, the actual means to prevent breast cancer not known, that increases the reliance on the methods for breast cancer early detection in order to improve disease outcomes. In Kingdom of Saudi Arabia, 3954 new breast cancer cases were registered in 2020, accounting about 29% of all new cancer cases reported among Saudi females and it is expected that this incidence will increase over the coming decades in KSA due to the aging and continuous increase in population's growth.

There are several studies in KSA to evaluate awareness of breast cancer and the practice of its screening among Saudi females in different regions of KSA, the current study is a cross-sectional study designated to measure the extent of awareness of Aljouf region population about the importance and methods of breast cancer early detection in females. To our knowledge, this is the 1st study conducted in Aljouf province to detect the awareness of the population about methods and importance of BC early detection and considered to be an initial research showing preliminary data about general awareness of BC early detection in Aljouf. The current study included 1,026 volunteers participating to fill online questionnaires, their socio-demographic characteristics were shown in Table 1. The results our study showed that Aljouf residents had worryingly poor levels of awareness of BC early detection 705 (68.7%) out of 1026 responders. Although this study included highly educated university students (63%), we expected that they would have more knowledge and awareness of BCED than the general population. These results nearly the same obtained by Hawraa et al in their study conducted to detect the Attitude and awareness of Saudi females toward breast cancer Screening in Al-Ahsa, KSA where 69 % of their participants had general awareness of breast cancer (Ali et al., 2018), and slightly better than that obtained by Fathuldeen et al in their study, (61 %) of studies population had knowledge about breast cancer (Abdel-Salam et al., 2020), And much better than that founded in Binhussien et al study where they showed only 14% had knowledge (Binhussien et al., 2018), This is possibly may be due to the increasing the of awareness of women had breast cancer and shared their experiences and knowledge to raise the level awareness of

the public about breast cancer. In current study majority of participants (41.2%)declared that they did not know the time to go for Breast Cancer Early Detection (BCED) and only 20.4% knew that they should go for screening at age 40 years, these results were nearly the same obtained by Abdel Salam et al in their study conducted to assess knowledge and barriers of screening of women attending primary health centers in Aljouf, KSA, where 42 % of respondents reported that screening was recommended above 40 years of age (Abdel-Salam et al., 2020)and inconsistent with that obtained by Ojewusi and Arulogun who showed that only 3.3% of their participants reported that the recommended age of breast cancer screening was 40 years (Ojewusi et al., 2016).

Regarding to general knowledge about the methods of BC early detection, 654 (63.7%) respondents reported that they know the methods of screening, where most of them (35.2 %) knew the mammography is one of the methods of screening, only 3.6% of them knew about breast self-examination (BSE) and 2.1% knew about breast clinical examination (BCE). Comparing our results to other results, Binhussien et al in their study showed that BSE and CBE are the methods of breast cancer early detection which was answered by 60.9% of women where in another study conducted by (Amin et al., 2009) most women have heard about CBE (53.1%). About 43% of women heard of mammography, these results also were comparative with that obtained by mammography (Dündar et al., 2006) in which 27.9 % of the respondents reported no previous knowledge of. SO compared to our results, mammography as a methods of breast cancer screening was lower than that obtained by other results in both developed and developing countries (Blackman et al., 1999; Leslie et al., 2003; Parsa et al., 2008; Villanueva et al., 2008).

In Conclusion, the present study concluded that more than two-thirds of the residents of the Aljouf region in Saudi Arabia had a poor level of awareness regarding breast cancer early detection. Socio-demographic characteristics such as marriage, high educational level, employment, and ages of 18 and 35 years have level of knowledge about the importance and methods of early detection of breast cancer. With approximately 68.7% of participants having a low awareness, the study recommended a more focused breast cancer awareness and education program aimed at increasing knowledge to educate people about breast cancer and dispel myths m concerning risk factors, as these serve as the foundation for sound attitudes and behaviors. The findings of the study are limited to the Jouf residents and thus the results cannot be generalized for whole Saudi population.

Author Contribution Statement

All authors made substantial contributions to design, and acquisition, analysis and interpretation of data. Also, have wrote and critically reviewed and approved the initial and final draft and have all responsibility for the content and similarity index of the manuscript.

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