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Breast cancer in Saudi Arabia, clinical aspects, risk factors, awareness and preventive practices

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ABSTRACT

Background: Breast cancer is the most common form of the disease in women and the leading cause of cancer death in Western countries the most common malignancy among Saudi females. We aim to evaluate the level of awareness of Breast Cancer among females in KSA in 2021. *Methods:* Adult females at Saudi Arabia's Riyadh city's primary health centers were the focus of this cross-sectional study. The data was collected from 370 participants out of 500 who completed the questionnaire, through an online self-administered questionnaire in English and Arabic language, data collected between January 2022 and March 2022. All data was cleared, coded and entered using SPSS. P value 0.05% or less considered significant. *Result:* Out of 370 respondents, 62.2% showed a good level of awareness, while 30% showed a moderate level of awareness and 7.8% showed low awareness. The majority had a good level of awareness regarding preventive practices of breast cancer (67.6%), moderate level of awareness (22.2%) and low level (10.3%). In terms of the relationship between awareness and age, there were 230 respondents with a good level of awareness, with a moderate level of 111 respondents and 29 of respondents had a low level. Regarding the relationship between awareness and level of education (62.20%) with a good level of awareness, with moderate level (30%) and (7.80%) had a low level. *Conclusion:* Majority of participants had a good level of awareness regarding breast cancer. There is a relationship between education and level of awareness, as university education level tends to have better awareness.

Keywords: Breast Cancer, Riyadh Saudi Arabia, Breast Carcinoma.

1. INTRODUCTION

The most prevalent form of malignancy identified in the cancer registries of practically all Eastern Mediterranean nations is breast cancer (Lafta et al., 2013). Breast cancer is the most prevalent cancer in women and the main cause of cancer mortality in Western nations. The most common malignancy among Saudi females, accounting for 21.8% of cases, is breast cancer (Elkum et al., 2007). It is important to highlight that breast cancer is on the rise in women between the ages of 15 and 34, which is concerning because it indicates the need for educational and awareness campaigns aimed at the younger parts of the population to implement early practices of breast examination (Madhukumar et al., 2017; Norsa'adah et al., 2022; Zafar et al., 2022). The creation and effectiveness of breast cancer preventive strategies are constrained by the absence of prior assessment (Madanat and Merrill, 2002). Lack of exercise throughout the course of a person's life is linked to obesity and a risk factor for breast cancer (Shahar et al., 2010). We aim to evaluate the level of awareness of Breast Cancer among females in Riyadh, Saudi Arabia.

2. METHODS

A cross sectional study targeted adult females, in Primary health centers in Riyadh city, Saudi Arabia. The data was collected from 370 participants out of 500 who completed the questionnaire, through an online self-administered questionnaire in English and Arabic language that was specially prepared for the purpose of this study after consulting epidemiologist and literatures, data collected between January 2022 and March 2022. It contained four sections. The first section was the demographic data. The second section was about the occurrence and intervention. The third section was on risk factors. The fourth section was about awareness and preventive practices regarding breast cancer. All data was cleared, coded and entered using SPSS. The results were presented in tables as frequencies and parentages. Suitable statistical tests of significance were used to test for association.

3. RESULT

Out of 500 only 370 of them were qualified to participate in this study. In table 1 the present study is based on a sample of 370 participants, all of whom are women from Saudi Arabia belonging to different age groups and of varying marital and educational status. Within the sample, 30 participants are younger than 20 years, 86 are between 20 and 29, 91 are between 30 and 39, 104 are between 40 and 49 and 59 are older than 50. Married women constitute 53.5 percent of the participants and singles account for 30.3 percent. As for widows and divorcees, they constitute 7.8 and 8.4 percent of the sample, respectively. More than half or namely, 210 participants accounting for 56.8 percent of the sample have a university degree. Those with high school education are 139 in number constituting 37.6 percent. There are also 15 participants with primary education only, which amounts to 4.1 percent of the sample and 6 illiterate participants accounting for 1.6 percent.

Table 1 Demographic information

		Frequency	Percent
Age	< 20 years old	30	8.1
	20-29	86	23.2
	30-39	91	24.6
	40-49	104	28.1
	50 and over	59	15.9
	Total	370	100
Marital status	Married	198	53.5
	Single	112	30.3
	Widowed	29	7.8
	Divorced	31	8.4
	Total	370	100
Education status	Illiterate	6	1.6
	Primary	15	4.1
	High School	139	37.6
	University	210	56.8
	Total	370	100%

n=370

Table 2 Participant responses

Have you ever been diagnosed with breast cancer?	No	271	73.2
	Yes	99	26.8
	Total	370	100
Does anyone in your family have breast cancer?	No	175	47.3
	Yes	114	30.8
	Not Applicable	81	21.9
	Total	370	100
How do you describe yourself regarding to obesity?	Underweight	38	10.3
	normal	182	49.2
	obese	120	32.4
	overweight	30	8.1
	Total	370	100
Are you having previous history of radiation exposure?	No	88	23.8
	Yes	178	48.1
	I don't know	104	28.1
	Total	370	100
What is the age of first menstruation?	8-11	121	32.7
	11-15	249	67.3
	Total	370	100
Is a Lump in the breast a sign of breast cancer?	No	81	21.9
	Yes	289	78.1
	Total	370	100
Is the best time to examine your breast, two weeks after a menstrual period?	No	143	38.6
	Yes	227	61.4
	Total	370	100
Is the early finding of breast cancer giving you more treatment options and increasing your chances for survival?	No	34	9.2
	Yes	336	90.8
	Total	370	100
Is the treatment of breast cancer often by surgery, radiation, and chemotherapy?	No	46	12.4
	Yes	322	87
	Total	370	100
Is the mammogram investigation helping in early breast cancer diagnosis and intervention?	No	69	18.6
	Yes	300	81.1
	Total	370	100
Is maintaining of healthy weight decrease the risk of breast cancer?	No	89	24.1
	Yes	280	75.7
	Total	370	100

n=370

Table 2 covers many relevant aspects of this research, summarizing the participants' responses in an easily accessible way. Among the women in the sample, (73.2%) have never been diagnosed with breast cancer. In terms of risk factors, 175 (30.8 %) of all participants have a family history of breast cancer and 178 (48.1%) have a history of radiation exposure. Apart from that, 120 participants (32.4%) describe themselves as obese and 30 (8.1%) consider themselves to be overweight. Other parts of the table illustrate prior exposure to procedures that may be related to breast cancer, ranging from surgeries to chemical and hormone therapy. Apart from that, the table also describes the participant's awareness of risk factors and preventive measures associated with the condition. However, these are covered in detail in the tables to follow.

Table 3 Level of awareness regarding breast cancer among women

Awareness	Frequency	Percent
Low	29	7.8
Moderate	111	30.0
Good	230	62.2
Total	370	100.0

n=370

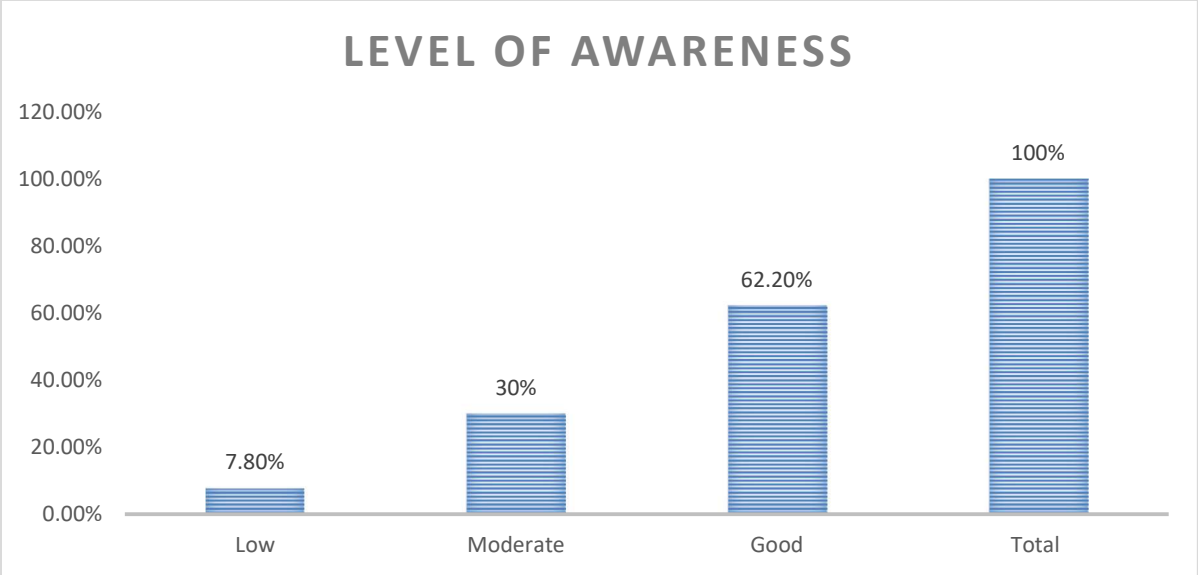

Figure 1 Level of awareness regarding breast cancer among women

As one can see from Table 3, the present research suggests high levels of awareness about breast cancer across the sample. Only 28 participants, who amount to a mere 7.8 percent, demonstrate low awareness of breast cancer. In contrast, moderate awareness of the condition encompasses 111 participants constituting 30 percent. As for the high awareness, it is, by far, the most prominent score that is demonstrated by 230 participants totaling 62.2 percent of the entire sample. The generalized score of the awareness about breast cancer includes the knowledge of the range of its risk factors, symptoms, treatments and preventive practices. Detailed scores for each of these may be found (Table 2) and this table allows evaluating the general awareness level. Thus, the study indicates a relatively high awareness of breast cancer among Saudi women.

Table 4 Relationship between awareness and level of education

		Education Status				
		Illiterate	Primary	High School	University	Total
Awareness	Low	2	4	8	15	29
		33.30%	26.70%	5.80%	7.10%	7.80%
	Moderate	2	5	57	47	111
		33.30%	33.30%	41.00%	22.40%	30.00%
	Good	2	6	74	148	230
		33.30%	40.00%	53.20%	70.50%	62.20%
	Total	6	15	139	210	370
		100%	100%	100%	100%	100%

P-Value= 0.000

Table 4 indicates that there is a statistical association between awareness and level of education regarding breast cancer with a P-value=0.000. As one can see, education level serves as a strong predictor of participant awareness across the entire sample. Among the illiterate participants, low, moderate and high awareness account for 2 participants or 33.3 percent each. For those with

primary education only, the same numbers are 4, 5 and 6 participants (26.7, 33.3 and 40 percent), respectively. Among those with high school education, there are 8 participants with low awareness (5.8 percent), 57 with moderate awareness (41 percent) and 74 with high awareness (53.2 percent). Finally, those with higher education include 15 participants (7.1 percent) with low awareness, 47 participants (22.4 percent) with moderate awareness and as many as 148 participants (70.5 percent) with high awareness. In short, the knowledge of breast cancer grows with the education level, but the difference in awareness between those with a high school and university education is not particularly noteworthy.

Table 5 Relationship between awareness and age

		Age					
		< 20 years old	20-29	30-39	40-49	50 and more	Total
Awareness	Low	4	11	4	6	4	29
		13.30%	12.80%	4.40%	5.80%	6.80%	7.80%
	Moderate	12	23	28	36	12	111
		40.00%	26.70%	30.80%	34.60%	20.30%	30.00%
	Good	14	52	59	62	43	230
		46.70%	60.50%	64.80%	59.60%	72.90%	62.20%
Total		30	86	91	104	59	370
		100%	100%	100%	100%	100%	100%

P-Value= 0.139

Table 5 indicates that there is a statistical association between age and level of awareness regarding breast cancer (P-value=0.139). Interestingly enough, the distribution of awareness among the age groups is fairly uniform. Those below 20 years of age are the least aware of all, with 13.3 percent of low awareness, 40 percent of moderate awareness and 46.7 percent of high awareness. For those between 20 and 29, the same numbers are 12.8, 26.7 and 60.5 percent, respectively. For the older age groups, low awareness does not rise above 7 percent, ranging from 4.4 in those between 30 and 39 and 6.8 percent in those older than 50. Moderate awareness ranges from 20.3 percent in those of 50 and more years to 34.6 percent in those between 40 and 49. Finally, high awareness is consistently present in more than a half, with the lowest score being 59.6 for those between 40 and 49 and the highest one, at 72.9 percent, among those 50 and older. The P-Value for the results suggesting the awareness of age groups about breast cancer is 0.138 and it displays the difference in perceiving the disease by the younger and older populations.

Table 6 To describe occurrence of breast cancer among women in Saudi Arabia 2021

Had you been exposed to any surgical procedures?	No	139	37.6
	Yes	183	49.5
	Not Applicable	48	13
	Total	370	100
Had you been treated with Radiotherapy?	No	245	66.2
	Yes	57	15.4
	Not Applicable	68	18.4
	Total	370	100
Had you been treated with chemotherapy?	No	231	62.4
	Yes	77	20.8
	Not Applicable	61	16.5
	Total	370	100
Had you been treated with Hormonal Therapy?	No	256	69.2
	Yes	49	13.2
	Not Applicable	65	17.6
	Total	370	100
Are you making Special exercises?	No	231	62.4
	Yes	78	21.1
	Not Applicable	61	16.5

	Total	370	100
Are you doing Roquia?	No	159	43
	Yes	154	41.6
	Not Applicable	57	15.4
	Total	370	100%

n=370

Table 6 allows to analyze the participants' exposure to different forms of treatment that may be but not necessarily are associated with breast cancer differs across the board. In particular, as many as 183 participants (49.5%) of the sample report having been exposed to surgical procedures. The same numbers for radiotherapy, chemotherapy and hormonal therapy are 57 (15.4%), 77 (20.8%) and 4 (13.2%). Those doing special exercises account for 78 participants (21.1%) and those who are doing Roquia are 154 (41.6%). Those to whom the question does not apply for various reasons constitute between 13 (17%) of the sample in its totality. Since the questions do not specify whether a specific intervention was related to breast cancer, it is to be expected that more participants report surgeries, including non-cancer related, than chemotherapy or radiotherapy.

Table 7 To determine risk factors of breast cancer among women in Saudi Arabia 2021

Is Antiperspirant use considered a risk factor for breast cancer?	No	197	53.2
	Yes	173	46.8
	Total	370	100
Is the family history of breast cancer making you at high risk for breast cancer?	No	82	22.2
	Yes	288	77.8
	Total	370	100
Is there a relationship between age and breast cancer incidence?	No	100	27.0
	Yes	270	73.0
	Total	370	100

n=370

As the name suggests, Table 7 provides the data of risk factors awareness in Saudi women as of 2021. Generally speaking, the participants' awareness is high but not uniform across the board. Family history is recognized as a risk factor by 270 participants or as much as 77.8 percent of the sample. In a similar vein, 288 participants or 73 percent of the sample, acknowledge the relationship between age and breast cancer incidence. At the same time, only 173 participants (46.8 percent) consider the use of antiperspirant to be a risk factor, while as much as 197 (53.2 percent) do not think so. As such, the table demonstrates that the risk factor awareness is relatively high but not equally good in every single respect.

Table 8 The awareness of preventive practices regarding breast cancer

Awareness of Preventive Practices	Frequency	Percent
Low	38	10.3
Moderate	82	22.2
Good	250	67.6
Total	370	100

n=370

From Table 8, one can see the data on the awareness of preventive practices for breast cancer in Saudi women who have participated in the present study. As with the awareness of risk factors discussed above, it is relatively high across the entire sample. Specifically, only 38 participants, who amount to 10.3 percent, demonstrate low results in this regard. Moderate awareness scores are considerably higher, with 82 participants constituting 22.2 percent of the sample demonstrating this result. High awareness of preventive practices regarding breast cancer is, by far, the most common score in this regard. It is found in 250 participants or 67.6 percent of the total sample. These results clearly indicate that as much as two-thirds of the sample of this study demonstrates a good awareness of the practices conducive to preventing breast cancer. At the same time, the question of whether Saudi women actually engage in the practices they are so well aware of are a different matter altogether.

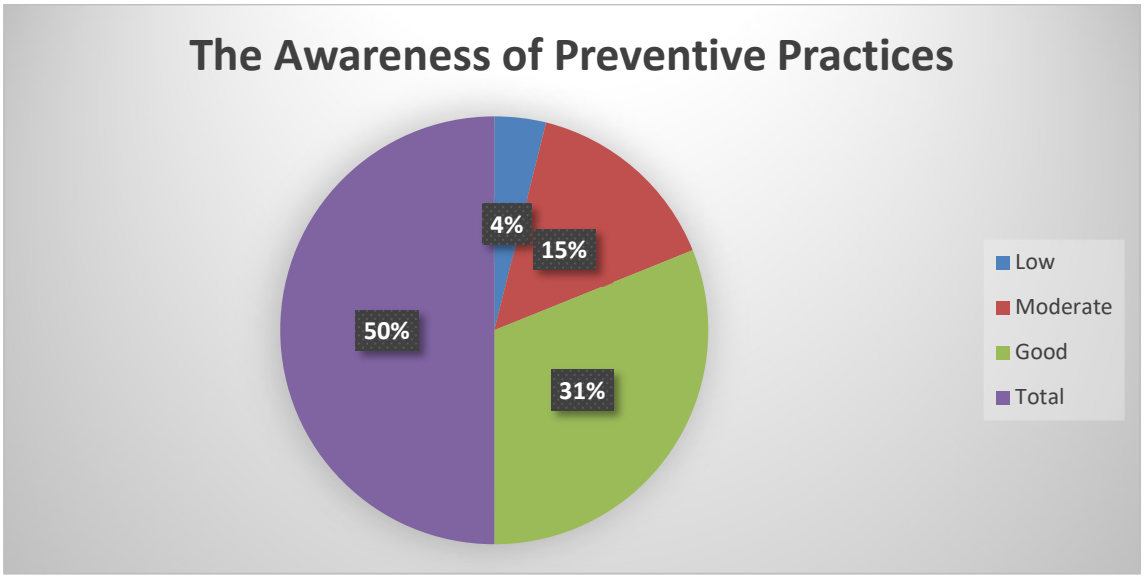

Figure 2 The awareness of preventive practices regarding breast cancer

4. DISCUSSION

The majority of the participants were aware of breast cancer, which agrees with the 2014 research done in Jordan (Suleiman, 2014) and the study in Jeddah (Radi, 2013). Thus, in comparison to the studies done over the last decade, it can be suggested that the government has done a commendable job in ensuring that the public is fully aware of breast cancer. We recommend health professionals to continue raising awareness about this disease. The majority of the participants who were aware of breast cancer were university graduates and this finding is in agreement with the 2019 research in Saudi Arabia (Elsayed and Mohammed, 2012). On the contrary, the level of low awareness was associated with low levels of education among the participants. Therefore, it implies that authorities need to invest more in educating the illiterate on breast cancer. The majority of young women under 20 were not aware of breast cancer, which contradicts the 2007 findings in Saudi Arabia that describe women under 40 as the most aware age group (Elkum et al., 2007). Nevertheless, age did not seem to be a great determinant of breast cancer awareness. Older people seemed moderately aware of breast cancer among all ages. It can be recommended that the authorities spread the information more efficiently among young women. The majority of the participants have been exposed to surgical procedures, with much fewer individuals being attracted to radiotherapy, chemotherapy and hormonal therapy; these results agree with the 2010 study done in United States (Berg, 2010). This study showed that even though many people are aware, few participate in the process, while another study in London opine that most people prefer other mitigating measures to therapy exposure (Cuzick et al., 2020). A relatively higher number never does special exercises despite the findings in Portland that exercising helps reduce fatigue in women (Schwartz et al., 2001). We recommend that the relevant bodies introduce additional healthcare-related strategies and policies to allow more women in Saudi Arabia to participate in both preventive and mitigation measures to curb the effects of breast cancer. The majority of participants believe that a history of breast cancer in a family implies high risk and these findings also agree with studies in Saudi Arabia, most of the participants think that there is a relationship between age and breast cancer incidence (Alotaibi et al., 2018; Asiri et al., 2020). The number of people who do not connect the use of antiperspirants with breast cancer is slightly higher than the number of those who think the use of antiperspirants risks causing breast cancer. We recommend policy-makers and health professionals to develop goals and strategies to make risk awareness more uniform across all groups of population, especially those at risk of developing breast cancer. The majority of participants was aware of breast cancer preventative measures and could demonstrate preventive practices awareness; these results agree with the study in Pakistan. The resulting statistics of the study show that the relevant bodies are efficiently informing the public about the measures that can help prevent breast cancer (Kumar et al., 2009). Nevertheless, there were a percentage of individuals who have demonstrated insufficient knowledge of preventive measures and were not aware of the importance of these measures. It can be recommended that health professionals and policy-makers focus on maintaining the quality of the information on preventing breast cancer provided to the general public.

5. CONCLUSION

In conclusion, the majority of participants had a good level of awareness regarding the knowledge of risk factors related to breast cancer. Although, our study revealed that the most don't practice self-examination nor do they check in with the doctors regularly. Ministry of health should implement more effective methods to spread awareness to people under 20 years old since they hold the lowest awareness level of all participants.

Ethical consideration

The study protocol was been reviewed and approved by the Institutional Review Board of Al-Maarefa University (IRB07-07092022-74). Permission of the participants were taken at the time they opened the questionnaire link and for privacy, the data was collected anonymously. Confidentiality was promised and maintained. Furthermore, the data was used only for the purpose of this study.

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Authors' contribution

All authors had substantial contribution to the paper, AA and OA and AA designed the study and prepared the proposal. ABH and AA and HIO analyzed and interpreted data. FA, FA and FA wrote results and discussion. ABH checked the paper from plagiarism and did proofreading. AFK and MAE checked and revised every step of this paper. All authors critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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