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ORIGINAL RESEARCH

PERIOPERATIVE MEDICINE

Perception and knowledge of breast cancer: evaluating educational gaps among Saudi Arabian female medical students

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ABSTRACT

Background & objective: Breast cancer continues to rank among the leading causes of mortality for women globally. Though a serious disease, breast cancer is poorly understood worldwide, including in Saudi Arabia.

To evaluate female medical students' understanding of breast cancer risk factors, symptoms, and signs.

Method: This prospective study was conducted over nine months in the College of Medicine, Northern Border University, involving 198 female medical students. A questionnaire adapted through modification from the Breast Cancer Awareness Measure, version 2, was used for this study to collect data. The SPSS used for analysis was version 29.

Results: Medical students' knowledge of breast cancer symptoms and signs is diverse. As an example, 59.2% of respondents correctly identified a lump or thickening in the breast and 67.3% recognized that a lump or thickening under the armpit may be a warning sign, while 40.8% and 32.7%, correspondingly, were uninformed. Awareness of the risk factors among the different years of the study revealed some interesting trends with significant associations like the history of breast cancer (P = 0.003), relative to breast cancer (P = 0.031), early menarche (P = 0.005), and hormone replacement therapy (P = 0.021). Only 18.69% were very confident in noticing changes in breasts while 40.91% had never done self-examination.

Conclusion: The female Saudi medical students demonstrated knowledge in some aspects of breast cancer; however, knowledge and practice gaps were still large. These results strengthen the evidence of a continuing need for education to develop better knowledge and proactive health behaviors regarding breast cancer.

Key words: Breast Cancer; Risk Factors; Medical Students; Saudi Arabia

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1. INTRODUCTION

Breast cancer constitutes a serious health condition, with death rates caused by its complications significantly high among females globally.¹ The World Health Organization (WHO) estimates about 15 million breast cancer diagnosed annually and approximately 500 thousand people die each year from the disease.² It has

been discovered in various studies that breast cancer has several causative factors such as early menarche, late menopause, multiparity, old age, no breastfeeding, oral contraceptives and hormone replacement therapy, high intake of alcohol, and fatty diets leading to overweight among individuals.^{3,4,5} Therefore, lifestyle modification and detection at an early stage are key in the management of breast cancer. The patient's survival of breast cancer is primarily influenced by the extent of the disease at diagnosis hence knowing the early signs and symptoms and the early screening intervention becomes very significant. However, several studies show that a lack of awareness and information is why people do not participate in screening programs.⁴

Awareness regarding Breast cancer has largely been inadequate even with the fact that the disease poses a huge threat. The study on Palestinian female university students concluded that most participants (68.7%) had insufficient knowledge of breast cancer, including an ignorance of potential risk factors.⁶ Most people were unaware of methods used to prevent breast cancer, according to another study done by Wardle in the UK.⁷ In a similar vein, a worldwide study carried out in European nations revealed a dearth of knowledge regarding risk factors and early signs of breast cancer.8 In addition to Cultural and religious beliefs, issues of privacy and fear of diagnosis make Arab women avoid visits to the doctor when facing issues relating to the breast resulting in poor outcomes due to presentation with advanced disease.

According to a survey conducted in the United Arab Emirates, the ignorance of Arab women about screening facilities led to insufficient use of screening modalities. A similar study revealed a moderate awareness (57.4%) among females and only 18% reported performing BSE in Riyadh, Saudi Arabia.¹⁰ On the contrary, A study carried out in Taif indicated poor knowledge (8.2%) about breast cancer, with only 17% practicing BSE. One systematic review in 2015 confirmed that breast cancer awareness together with technology and screening has led to lower mortality rates in both the United Kingdom and the United States, but in the case of Egypt, it is rather bleak because of lack of awareness.¹²

Earlier diagnosis as a result of the heightened awareness and knowledge of the disease has brought about positive results on the prognosis of the disease. Additionally, The Breast Health Global Initiative (BHGI) stated that when women have sufficiently high levels of awareness regarding the disease as well as the skills required about breast cancer self-examination, then breast cancer can be managed much earlier than usual.¹³ This cancer at an earlier stage has a greater chance of being treated successfully

The studies conducted in Saudi Arabia have mostly targeted the populations of big cities leaving less developed ones untargeted. Hence, we conducted this study to evaluate the level of understanding regarding breast cancer by the female students of Northern Border University's College of Medicine in Arar (Saudi Arabia).

2. METHODOLOGY

This prospective study was conducted at Northern Border University's College of Medicine in Arar, Saudi Arabia. The sample size was estimated to be 198 using a population prevalence of 61.1%, a margin of error of 5%, and a confidence interval of 85%.¹⁴ Female students enrolled in the 4th, 5th, and 6th years of medical college were informed and enrolled in the study after consent. Data on their knowledge of breast cancer were obtained using the modified version of the Breast Cancer Awareness Measure (Breast CAM).¹⁵

The instrument is divided into 3 parts: Part 1 with 11 items assessing knowledge on warning signs of breast cancer. Scores were assigned to each response with a score of 1 for the correct answer, and 0 for the incorrect or do not know the response. Section 2: 9 questions evaluating the knowledge of risk factors and were categorized according to the Likert scale. Both strongly agree and agree were labeled as correct responses whereas the rest of the responses were labeled as incorrect. Section 3 consisted of 3 questions related to BSE. All the information collected from the participants was kept private, as this would maintain privacy and ensure security regarding participant identity. Access was given to the researchers only. SPSS used was version 29. Means and percentages are represented for qualitative values. The Chi-square test was used for qualitative variables and the significance was a value less than 0.05.

3. RESULTS

With a sample size of 78 students from the fourth, 65 from the fifth, and 55 from the sixth year of their studies, the mean age was 23 ± 1.7 yr. Awareness about breast cancer signs varied among the students. For example, 59.2% of students listed a lump or thickening of the breast as a sign whereas 40.8% did not. Similarly, while 67.3% knew that a lump or thickening under the armpit could be a symptom, 32.7% did not. Similarly, while the redness of breast skin was identified by 72.6% of participants, 27.4% were left in the dark. Changes in either size of the breast or nipple were known to 64.8% while 35.2% did not know it as a symptom. While 62.9% identified changes in the shape of the breast or nipple, 37.1% were uninformed. (Figure 1).

The trends in risk factor awareness for students from different years were quite interesting. History of breast cancer was known by 67.85% of students, with 21.67% of the 4th-year, 16.84% of the 5th-year, and 29.34% of the 6th-year students identifying it correctly (P = 0.003). The total number who identified HRT was 37.81%, having 19.63% in the 4th year, 12.74% in the 5th year, and 15.44% in the 6th year,

Table 1: knowledge about breast cancer and association with year of study								
Risk factor for Breast Cancer	Correct answer (%)	Year of study			P value			
		4th year	5th year	6th year				
Past history of breast cancer	67.85	21.67	16.84	29.34	0.003			
HRT (Hormone Replacement Therapy)	37.81	9.63	12.74	15.44	0.021			
Overweight (BMI > 25 kg/m ²)	60.47	22.18	19.65	18.64	0.023			
Close relative with breast cancer	71.63	25.20	19.92	26.54	0.031			
Late pregnancy	79.56	26.47	22.18	30.91	0.004			
Early menarche	41.54	13.87	14.92	12.75	0.005			
Late menopause	58.37	18.45	20.68	19.24	0.0041			
Lack of physical activity	55.42	20.43	16.75	18.24	0 .001			

63.9 dimpling of breast skin 36.1 66.9 pain in one of your breasts or armpit 33.1 62.9 change in the shape 37.1 64.8 change in the size 35.2 72.6 redness of skin 27.4 58.2 rash 41.8 70.2 change in the position of nipple 29.8 67.4 pulling in of nipple 32.6 63.1 bleeding or discharge 36.9 67.3 lump or thickening in armpit 32.7 59.2 lump or thickening in breast 40.8 0 10 20 30 40 50 60 70 80 Correct answer ■ Incorrect answer/ Donot Know

Figure 1: Knowledge about warning signs of breast cancer

which according to their p-values equaled 0.021. 71.63% recognized a family history of breast cancer with awareness in successive years being 25.20%, 19.92%, and 26.54% (P = 0.031). Early menarche was identified by 41.54%, with 13.87%, 14.92%, and 12.75% having awareness in successive years (P = 0.005). Less than 30 minutes of moderate physical activity was recognized five times a week by 55.42%, the proportion distributed as follows: 20.43% in the 4th year, 16.75% in the 5th year, and 18.24% of the students in the 6th year were aware of this fact (P = 0.001). (Table 1).

Concerning breast self-examination practice, frequency varied among the students. Only 8.59% check their breasts once a week, and 16.16% at least once a month. On the contrary, 34.34% checked their breasts every six months, and as many as 40.91% rarely or never did self-examination. Regarding the confidence of them noticing changes, 18.69% of the participants were very confident, 22.22% were confident, 11.11% were not very confident and 47.98% were not confident at all. Only 18.17% would consult a physician if they noticed a change. (Table 2).

Table 2: Knowledge of Bro (BSE)	east Self-Examination				
Queries	Response [n (%)]				
Frequency of breast examination?					
Weekly	17 (8.59)				
Monthly	32 (16.16)				
After 6 months	68 (4.34)				
Rarely or never	81 (0.91)				
Would you be able to notice any change during breast self-examination					
Very confident	37 (18.69)				
Fairly confident	44 (22.22)				
 Not very confident 	22 (11.11)				
Not at all confident	95 (47.98)				
Visit to a doctor due to any change noticed during breast self-examination					

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• Yes	36 (18.17)	
• No	162 (82.83)	

4. DISCUSSION

Breast cancer awareness among Saudi women is quite variable; though some symptoms and risk factors were well known, there were obvious gaps in knowledge. A rather reasonable percentage of respondents showed good knowledge of many symptoms like lump or thickening of the breast 59.2% and armpit 67.3%, bleeding or discharge from the nipple 63.1%, and nipple retraction 67.4%. However, there are still gaps, as a big proportion of the population is uninformed of such signs. hence the need for intensive education. This corresponds to the study done by Miskeen among medical students of the University of Bisha who concluded that almost half (49.36%) of participants showed less than optimum knowledge about breast cancer.¹⁶ Similarly, Meshari Almeshari et al. have also found similar results suggesting that almost 46% of the students and faculties of Hail University in Saudi Arabia have average knowledge about the signs and symptoms of breast cancer.¹⁷ Bleeding or discharge from the nipple in 63.1% was correctly identified, though 40.8% did not know a lump or thickening of the breast and lumps under the armpit as symptoms.

Also, knowledge about the risk factors showed variations. High awareness was observed for having a history of breast cancer (67.85%), close relatives with breast cancer (71.63%), and children later in life or not at all (79.56%). Low awareness was found regarding factors like intake of HRT (37.81%), overweight (60.47%), and intake of more than one unit of alcohol every day (58.19%). While some risk factors are well known, other risk factors need more emphasis through education and health programs. In this regard, a systematic review carried out by Bassam AlRajhi et al. has also concluded that almost 60% of Saudi women lack adequate knowledge about the risk factors of breast cancer.¹⁸

These data reflect an alarming trend in the frequency of BSE, with only 8.59% checking their breasts once a week, 16.16% once a month, 34.34% every six months, and as high as 40.91% infrequently or never. In addition, there are 86 participants in the Abo Al-Shiekh research from nursing and clinical nutrition departments within the Gaza Strip. The result showed only 31.4% of students frequently practiced BSE despite having good knowledge of breast cancer.¹⁹ The study among undergraduate students from 25 universities reported a reasonable percentage of respondents (59.3%) never conducted BSE. Notably, in Nigeria and Laos, more than 20% of the students were practicing BSE monthly, with less than 2% for Singapore, Bangladesh, India, Russia, and South Africa.²⁰ This proposes an increased effort to ensure regular encouragement for having breast selfexamination.

A variation in confidence levels was seen in identifying changes of the breast: 18.69% were very confident; 22.22% confident, and a significant number were not confident at all. This may be due to inadequate training; hence, practical sessions should be necessary concerning the technique of breast self-examination. In this, 82.83% would not consult a physician following observed changes in the breasts: 18.17% consented to see a physician, which may further imply a lack of realizing the importance of seeking medical consultation upon any change in the breasts.²¹ In Oman, medical students and nursing students were evaluated for their knowledge regarding BSEs before and after a training session. The study has emphasized the utility of training programs in improving knowledge and skills about BSE to enhance early diagnosis of breast cancer.²² While there are areas with high awareness, significant gaps persist regarding knowledge and practices concerning breast cancer. These must be addressed through comprehensive educational efforts and awareness programs to improve early detection and preventive strategies.

5. LIMITATIONS

This study is based on self-reporting data obtained through questionnaires. The data may be biased, as respondents may overestimate or underreport their knowledge of certain behaviors for reasons of social desirability. This study was conducted in only one university. Its results might not be generalized to the whole country or other institutions. A more heterogeneous sample can better represent the perspective.

6. CONCLUSION

This provided a greater and more insightful understanding of medical students' knowledge about breast cancer. Even though Saudi female medical students seemed aware of certain aspects regarding breast cancer, large gaps persisted in knowledge and practices among these students. Filling such gaps with sound teaching programs and including them in awareness campaigns might prove highly beneficial for the community by enabling early identification and prevention of breast cancer.

7. Data availability

The numerical data generated during this research is available with the authors.

8. Ethics Approval:

Local Committee of Bioethics (HAP-09-A-043), Number 28/24/H, on March 18, 2024.

9. Conflict of interest

The author declares no conflicts of interest.

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11. Authors' contribution

YM Concept, Literature search, statistical analysis and Manuscript editing.

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