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Knowledge and practice of breast self-examination among female nursing students at Majmaah University, Saudi Arabia

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ABSTRACT

Breast cancer is one of the most common types of cancer in Saudi Arabia, as well as worldwide. Most breast cancer cases are detected at advanced stages, and one possible reason is that many Saudi women are not aware of breast self-examination (BSE). Few studies have examined the knowledge and practice of BSE among female nursing students in Saudi Arabia, and most of those have focused on major cities. Therefore, the aim of this study is to determine the knowledge and practice of BSE among Saudi nursing students at Majma'ah University, Kingdom of Saudi Arabia. This study used a descriptive cross-sectional design involving 100 nursing students there. The results of this research have revealed that there is a low level of practice of BSE among nursing students and irregular performance of BSE for those who practice it. Subsequently, there is an urgent need to empower awareness, attitude, and practice of BSE among nursing students in Saudi Arabia.

1. Introduction

Breast cancer (BC) is one of the most common types of cancer and is increasingly recognized as a serious public health concern worldwide because of its major impact on women's health. According to the American Institute for Cancer Research (ACS, 2018), more than two million new cases of BC were diagnosed worldwide in 2018, with an expected increase in the female mortality rate of about 41,400. Of American women, 268,670 were expected to be diagnosed with BC in 2018 (ACS, 2018). In Saudi women, BC is the most common cancer, representing 20.6% of all Saudi female cancer cases, and as per the Saudi Cancer Registry (SCR), the incidence rate of BC is rising annually, with 5,378 in 2010 (SCR, 2011). In addition, the International Agency for Research on Cancer reported that the age-standardized incidence rate for BC is 22.4 per 100,000 women, and the age-standardized mortality rate is 10.4 per 100,000 women (Saggu et al., 2015).

In Saudi women, BC cases are detected at very advanced stages, which is due to a lack of national screening programs, lack of education about early detection and prevention, and cultural barriers to screening (SCR, 2011). Early detection and screening are fast becoming a key instrument in reducing BC mortality rates, and central to screening programs, breast self-examination (BSE) has received considerable critical attention as it plays an important role in the early detection and management of BC. Alghamdi et al. (2013) have pointed out the need to launch educational programs through various media channels about BSE, which is often the first motivating step that leads women to seek medical help.

BSE is a non-invasive method of early detection recommended for women. It is relatively convenient,

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simple, cheap, and free from risk or harm. Toomey (2011) argued that women need to begin this routine when they reach their 20s so that they can learn about, observe and feel healthy breast tissue, and can report any obvious changes in their breasts to a healthcare team. Women who carry out BSE periodically are found to be detected earlier with smaller breast tumors than those who do not (Kudzawu et al., 2016). BSE should be carried out on a monthly basis between the 7th and 10th days of the menstrual cycle. The main goal of BSE is to recognize and become accustomed to the feel of the normal structure of the breast on palpation, enabling easier detection of future changes. This may facilitate early diagnosis of BC, and therefore, early management, better outcome, lower cost of care, and consequently improved patient quality of life (QOL).

The Scandinavian Ministry of Health, in their investigations of the effectiveness of BSE in the management of BC, revealed promising research results showing a massive reduction in the mortality rate (31%) among women who performed BSE regularly. Moreover, they have adopted BSE as the only realistic approach for the early detection of BC (Montazeri et al., 2008). In addition, other researchers who have examined the relevance of BSE to BC have emphasized that BSE is the key to early detection of BC as more than 90% of BC cases can be detected by the patients themselves (Segni et al., 2016).

Planned educational programs by healthcare providers and mass media have significant roles in promoting BSE (Marzo and Salam, 2016). Recent studies have highlighted the intense need to disseminate information about BC and BSE in schools and universities, and among healthcare personnel, especially in countries with limited resources (Olateju et al., 2016).

According to the data, prior studies in Saudi Arabia that examined the knowledge and practice of BSE among female nursing students in Saudi Arabia focused on the major cities. This study recruited students from Majmaah University, who are mainly from Majmaah city and its surrounding villages, and consequently rarely seek medical care and have difficulty in accessing healthcare facilities. Therefore, this study adds to the literature, as it is the first to investigate this devastating problem within the context of a small city in Saudi Arabia, such as the Majmaah region. The main aim of this study is to determine the knowledge and practice of BSE among Saudi nursing students at Al-Majma`ah University, Kingdom of Saudi Arabia (KSA).

2. Research methodology

A descriptive cross-sectional research design was used to achieve the research objectives.

The study was conducted among students in the Nursing Department, College of Applied Medical Sciences, Majma'ah University, KSA. A convenience sample of 109 female nursing students was targeted. Nine students did not complete the whole questionnaire and were excluded. Therefore, the actual sample for this study was 100 students, yielding a response rate of 91.7%.

The inclusion criteria for this study were as follows: Saudi nationals; female students; nurse specialists studying in the 2nd, 3rd, or 4th year; and voluntary study participation. Non-Saudi nationals, non-nursing students, and nursing students studying in the first year (preparation), and internship year were excluded from the study.

2.1. Questionnaire

A structured questionnaire sheet designed by the researcher and based on a literature review was used for data collection. It included 26 'yes or no' questions and 10 open-ended questions about socio-demographic data, family history of BC, personal history of breast lumps, knowledge and practice of BSE, knowledge of BC, and barriers to practicing BSE. This tool was tested by five experts in nursing for content validity, clarity of the items, and appropriateness. A pilot study was carried out on 20 students to test the clarity of the questions. Thereafter, minor modifications were carried out to adapt it to the curricular Arabic.

2.2. Data collection

The period of data collected for this study was three months starting in January 2019. The questionnaires were distributed to the participants during their availability in the classrooms after obtaining permission from the faculty staff who teach the students. Each student who wanted to participate in the study independently answered the questionnaire, which took 10 to 15 minutes and was asked to place the completed questionnaire in a locked box. The cover page of the questionnaire explained the aim and nature of the study and the rights of the participant.

2.3. Data analysis

SPSS version 23 was used for the analysis of the study data. A descriptive study using frequencies was used to assess the distribution of practice of BSE, distribution of knowledge of BC, and distribution of knowledge about BC risk factors. Similarly, this study used frequencies to assess the distribution of BSE performance steps.

3. Results

Regarding socio-demographic characteristics of the study sample (Table 1), most of the students were aged 20–30 years (69%), were single (87%), had a family history of BC (62%), and had no personal history of breast masses (89%).

Table 2 illustrates that most of the studied students had never performed BSE (82%), with only 9% performing it regularly. Most of the students

stated that BSE helps in the early detection of BC (89%), and 85% agreed upon the importance of BSE. However, 53% did not know when to perform BSE. Moreover, 82% stated that they were not practicing BSE because they felt embarrassed.

Table 1: Frequency distribution of socio-demographic characteristic of the participants (n=100)

Characteristic	Frequency (%)
Age	
17–20	30
20–30	69
>30	1
Marital status	
Married	13
Single	87
Family history of breast cancer	
Yes	62
No	38
Personal history of breast mass	
Yes	11
No	89

Table 2: Frequency distribution of practice of breast self-examination (n=100)

Item	Frequency (%)
Have you ever performed breast self-examination (BSE) before?	
Yes	18
No	82
Time of performing breast self-examination (BSE)	
Before the menstrual period	4
During the menstrual period	5
5 to 7 days after the menstrual period	19
At any time	19
Do not know	53
Do you perform breast self-examination (BSE) regularly?	
Yes	9
No	91
Is it important to perform breast self-examination (BSE)?	
Yes	85
No	3
I do not know	12
Reason for BSE performance (Helps to detect breast cancer)	
Yes	89
No	11
Reasons for not doing BSE	
I feel embarrassed	82
It is not important	11
I do not know steps	7

Table 3 shows that the majority of the respondents became aware of BC through the media (61%), and 56% agreed that there is a relationship between a healthy life and breast disease. Most of the respondents knew that BSE is the most important screening method for early detection of BC (55%), while others (19%) said that BSE, mammography, tumor markers, and MRI are all important for the detection of early signs of BC. Most of the studied nursing students (52%) reported that BSE should be performed monthly. However, most of the studied students did not appear to be interested in BC as a minority percentage had participated in a screening program, knew about organizations that sponsor BC patients, had registered for membership in one of these organizations or knew the date of International Breast Cancer Day.

Table 4 shows that the majority of the participants (74%) were aware that a family history of BC is a risk factor for BC, but most did not know about obesity, fatty food consumption, a sedentary lifestyle, and refraining from breastfeeding as risk factors for BC.

Table 3: Frequency distribution of knowledge of breast cancer (n=100)

Item	Frequency (%)
Do you know signs and symptoms of breast cancer?	
Yes	68
No	32
Sources of awareness	
Media	61
Family	4
Friends	1
College curricula	34
Relation between healthy life and breast diseases	
Yes	56
No	44
Screening methods for early detection of breast cancer	
Breast self-examination	55
Mammography	5
Tumor markers	2
MRI (magnetic resonance imaging)	3
All of the above	19
Do not know	16
Frequency of breast self-examination (BSE)	
Monthly	52
Yearly	10
Do not know	38
Have you ever participated in a screening program for breast cancer?	
Yes	12
No	88
Do you know which organizations sponsor breast cancer patients?	
Yes	23
No	77
Do you have a subscription to one of these organizations?	
Yes	4
No	96
Do you know the date of the International Day for breast cancer patients?	
Yes	12
No	88

Table 4: Frequency distribution of knowledge about breast cancer risk factors (n=100)

Risk factor	Frequency (%)
Smoking	
Yes	52
No	48
Alcohol consumption	
Yes	45
No	55
Fatty food consumption	
Yes	12
No	88
Family history of breast cancer	
Yes	74
No	26
Stress	
Yes	32
No	68
Exposure to radiation	
Yes	48
No	52
Late menopause and Early menarche	
Yes	38
No	62
Obesity	
Yes	16
No	84
Not breastfeeding	
Yes	17
No	83
Sedentary lifestyle	
Yes	11
No	89

Table 5 shows that 64% of the studied students who performed BSE stood in front of a mirror and looked for any abnormal changes in the breasts in different positions. Only 26% looked for skin dimpling, puckering, or ulceration; changes in breast size; changes in skin color or texture; skin thickening; or lumps in the breast. Only 9% palpated the breast and squeezed the nipple to check for any discharge.

Table 5: Frequency distribution of breast self-examination (BSE) performance steps (n=100)

Breast self-examination steps (BSE)	Frequency (%)
Start from the collarbone to the sternum, to the last rib in the chest	
Yes	17
No	83
Stand in front of a mirror and look for any abnormal changes in your breasts in different positions:	
Arms at your side	
Arms held over your head	
Yes	64
No	36
Press your hands on your hips while tightening your chest muscles	
Yes	21
No	79
Gently squeeze the nipple to check for any abnormal discharge or pain	
Yes	9
No	91
Lie down, place a pillow under your shoulder and feel the breast with the palm and the second, third and fourth fingers. Use light, medium and firm pressure over each area of the breast. Move systematically:	
Use circular motions	
Follow an up and down line pattern	
Start at the outer edge of the breast, check the whole breast covering one small wedge-shaped section at a time	
Yes	9
No	91
During the breast self-examination (BSE) you are looking for:	
Skin dimpling, puckering or ulceration	
Change in breast size, skin thickening, color and texture	
Lumps in the breast	
Abnormal discharge from the breast	
Yes	26
No	74

4. Discussion

Central to the entire oncology discipline is the early detection and management of BC, and in Arab countries, including Saudi Arabia, it has become a central issue in the healthcare sector. BSE is fast becoming a key approach for early detection of BC, which plays a major role in improving QOL; controlling mortality rate; and saving wasted funds of the healthcare budget, such as on avoidable surgical management, chemotherapy, and radiotherapy.

Compared with subjects in other Arab countries, including Yemen (Al-Sharbatti et al., 2013), Palestine (Alzabadi et al., 2017), and Jordan (Alsaraireh and Darawad, 2018), the Saudi nursing students were much more aware of BC and BSE. However, 82% did not perform BSE, which was strongly related to the students' feelings of embarrassment and shame regarding performing BSE. This alarming student response highlights the cultural barriers regarding BSE in Saudi Arabia. The same findings were reported by Yousuf (2010), who found that about a third of the students performed BSE. Other researchers, however, who investigated the reasons for not practicing BSE, found that lack of knowledge is the main reason. Alzabadi et al. (2017), Birhane et al. (2017), and Hassan et al. (2017), for example, reported that most students did not perform BSE because of insufficient information and skills about its steps. Forgetfulness was the reason found by Haruna et al. (2017).

A striking finding is the studied Majmaah nursing students' negative attitude towards BC, as most of them neither cared about organizations that sponsor BC patients nor were members of such organizations. They were even unaware of the date of International Breast Cancer Day. This negative attitude may be a further factor in reducing the practice of BSE. In the same line, Umbreen et al. (2017) stated that student nurses had good knowledge about BSE but did not practice it because of their negative attitude towards it.

The present study findings revealed that 65% of the participants reported that the reason for practicing BSE was to help in the early detection of BC and that they obtained the information from the media (61%) rather than college curricula (34%). Almost every paper that investigated the students' sources of information supported that the media and internet were the main sources of knowledge, as concluded by Alzabadi et al. (2017), Birhane et al. (2017), Hassan et al. (2017), and Evangeline et al. (2017). It appears that mass media and the internet have a greater influence on the current generation. It is noteworthy that Yakout et al. (2014) pointed out that half of the students had gained their knowledge about BSE from their college curricula. On the other hand, Haruna et al. (2017) claimed that healthcare professionals had successfully accessed Nigerian students and informed them about BSE and BC. This emphasizes the need for the Saudi healthcare authority to plan an accessible means of healthcare service delivery for women in the Majmaah region.

Most of the current study participants reported that BSE is an important method for screening for BC, which is congruent with the findings reported by Birhane et al. (2017) and Yakout et al. (2014), who reported that most of the students were aware of the importance of practicing BSE for early detection of BC. The present study, however, revealed that the majority of the participants had never participated in a BC screening program. Similarly, Alsaraireh and Darawad (2018), who were mainly interested in questioning BC screening program participation, reported that the minority of the participants had engaged in such a program. At a cancer screening center in Medina, a broader perspective was adopted by Aljohani et al. (2016), who highlighted the low level of utilization by Saudi women and argued that only 35.5% of attended women had practiced BSE.

A noteworthy result of the current study was that the majority of the participants selected family

history of BC as a primary risk factor for BC, but only a minority knew that obesity, fatty food consumption, sedentary lifestyle, and refraining from breastfeeding are also risk factors of BC. This agrees with Alsaraireh and Darawad (2018), who stated that Jordanian students knew that a family history of BC is a predisposing factor and added that they were unaware that weight and exercise also affect the risk of BC. Conversely, Alzabadi et al. (2017) reported that the majority of Palestinian students mentioned obesity as a risk factor.

Concerning warning signs of BC, only about a quarter of Majmaah nursing students were aware of these, which is in line with Alzabadi et al. (2017) and Alsaraireh and Darawad (2018), who found that students had a low level of knowledge about the signs and symptoms of BC.

Regarding the performance steps of BSE, the vast majority of the participants did not know how to perform it correctly. Most of them agreed that standing in front of a mirror in different positions and looking for any abnormal changes in the breasts is the easiest method. This finding was supported by Haruna et al. (2017) and Al-Naggar et al. (2011), who proposed that most of the respondents did not practice BSE accurately.

In summary, the study brought to light the horrible gap between the studied Majmaah nursing students' knowledge and practice of BSE. Similar findings were noticed by Umbreen et al. (2017) and Segni et al. (2016), who emphasized that students maintained a good level of knowledge about BSE, but a low level of practice, which was explained in light by a negative student attitude towards BSE. This highlights the urgent need for BSE workshops and awareness campaigns, which should be planned to fill the gap between the knowledge and practice of BSE.

5. Conclusion

The results of this research have revealed a low level of practice of BSE among nursing students and irregular performance of BSE for those who practice it. Therefore, there is an urgent need to empower awareness, attitude, and practice of BSE among Majmaah nursing students.

Saudi healthcare authorities should develop an accessible approach to engage women in the Majmaah region in BC screening programs, and BSE workshops and training programs should be planned for Majmaah University students. The media and the internet should provide more information about BSE and BC through planned health education programs.

One limitation of the study is that it was conducted at only one university, so it will be difficult to generalize the result of this study to other universities in Saudi Arabia. Future similar studies among nursing students at other universities in Saudi Arabia are recommended. Another limitation of the present study is that it used convenience sampling, which is prone to bias. Nevertheless, this study was the first to approach the Majmaah region as an example of a small university to examine the knowledge and practice of BSE among Saudi nursing students.

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Compliance with ethical standards

Ethical considerations

Ethical approval was obtained verbally from Majma'ah Institutional Ethical Committee, and then official written permission to perform the study was obtained from the responsible authorities of the College of Applied Medical Sciences (CAMS). For assurance of confidentiality, data were kept in a secure box in the researcher's office until the completion of the study, and only the researcher and their team had access to the data. Anonymity and confidentiality were assured before participation in the study. The participants were informed that they had the right to request that their information be used only for research purposes, and they would not suffer any negative consequences if they chose not to participate. In addition, the participants were not asked their names. Finally, the participants had the right to withdraw at any time from the research, without any consequences.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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