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Original Article

Investigating the Knowledge, Attitudes, and Practices of Female Students Regarding Breast Self-Examination: A Cross-Sectional Study at Shahid Chamran University in Southwestern Iran

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Abstract

Background and aims: Breast cancer (BC) is the most common type of cancer among women, with an increasing incidence. Given the importance of early diagnosis in the control and treatment of BC, as well as the simplicity and low cost of breast self-examination (BSE) as a screening method, this study was conducted to determine the knowledge, attitudes, and practices of female students at Shahid Chamran University of Ahvaz regarding BSE.

Methods: This descriptive cross-sectional study included 400 female students aged >20 years selected through cluster random sampling from Shahid Chamran University of Ahvaz. The required data were collected using a researcher-made questionnaire consisting of demographic information and scales assessing knowledge, practices, and attitudes.

Results: The mean age of the participants was 22.75 (±3.029) years. The majority of participants had low knowledge, poor practice, and negative attitudes toward BSE. Only 10% of participants had received formal training in BSE. Moreover, a significant negative correlation was found between practice and knowledge among individuals with a history of breast disease in first-degree relatives (r=-0.586, P=0.001).

Conclusion: Our findings revealed low levels of knowledge, attitudes, and practices regarding BSE. Therefore, planning and implementing educational programs about BC and its screening methods are necessary.

Keywords: Breast cancer, Breast self-examination, Screening, Knowledge, Practices, Attitudes

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Introduction

Breast cancer (BC) is the most prevalent type of cancer in women and the leading cause of cancer-related deaths in this population worldwide (1). Approximately 7,000 new BC cases are annually reported in Iran (2). BC is the most common neoplasia among Iranian women (3). Although the incidence of BC is globally increasing (4), the mean age at diagnosis in Iran is between 40 years and 50 years, which is about 10–15 years younger than the global average (1). This discrepancy may be attributed to low screening rates in developing countries, leading to delays in early detection and effective treatment (5).

Early diagnosis reduces mortality and morbidity and is associated with a better prognosis (6-8). Consequently, 85–95% of patients survive with early detection compared to only 56% when diagnosis is delayed. Early detection strategies include two categories: early detection (9) and screening. The first category involves mammography, breast self-examination (BSE), and clinical breast examination (CBE) (10-12). In addition, the second uses a screening test in a potentially asymptomatic population to identify individuals with abnormalities suggestive of cancer. However, screening is far more complex than an early detection program (13). Evidence indicates that early

detection strategies can lead to "down-staging" (i.e., an increase in the proportion of BC diagnosed at early stages) of the disease, making it more amenable to treatment (14-16). According to previous research, one-third of all cancer cases can be prevented, and another third can be cured if diagnosed early (17). A study by the Iranian National Population-Based Cancer Registry demonstrated that better access to screening facilities and a greater number of referral centers have led to an increased incidence of BC in densely populated provinces, mainly in central Iran (3).

Accordingly, women should be encouraged to monitor their breasts for any observable changes routinely. Both BSE and CBE help raise awareness and may lead to earlier diagnosis. In contrast, mammography significantly reduces BC mortality. Thus, it is recommended that BSE and CBE be combined with mammography for greater effectiveness. However, due to limitations in the health system and economic constraints, mammography is not widely available in many developing countries, including Iran (18, 19). Additionally, mammography has several limitations, such as poor accuracy in women with dense breast tissue, a relatively high false-positive rate, subjective discomfort, and limited effectiveness in women under 50 years of age (20). Therefore, other screening methods are more appropriate in low-income and middle-income countries where women lack access to advanced screening methods, including mammography (16).

BSE is a simple, effective, inexpensive, non-invasive, and painless method for the early detection of BC in women over 20 years of age that can be performed at home (21, 22). It involves a visual and manual examination of the breasts to detect lumps as small as 1 cm (23) and bumps and skin changes on the nipples and breasts (7). Thus, most BC cases can be detected by women themselves (4, 24).

Existing studies have primarily focused on clinical populations or women accessing healthcare services. However, female students in non-medical universities are at higher risk of neglecting preventive behaviors due to a lack of specialized health education. Various factors can influence BC screening behaviors, including ethnicity, cultural taboos, health beliefs, patient characteristics, and knowledge (5, 25-27). In most societies, women play a significant role in the family; therefore, the problems caused by this disease affect these individuals and other family members, thereby undermining family foundations. Moreover, the high and increasing incidence of this disease and the difficulty of treating it at advanced stages impose a significant burden on healthcare systems worldwide. Thus, timely identification, prevention, and treatment of this disease are crucial (28). Although the risk of BC among college students is relatively low, it is important to increase awareness about breast health and BC (21). Hence, this study aims to determine the level of knowledge, practices, and attitudes toward BSE among female students at Shahid Chamran University of Ahvaz.

Materials and Methods

This descriptive cross-sectional study was conducted on 400 female students at Shahid Chamran University of Ahvaz to determine their knowledge, practices, and attitudes toward BSE in 2022. Cluster random sampling was used, and each faculty at the university was considered a cluster. The sample size from each cluster was determined based on the number of female students aged 20 years and above. Then, the samples were randomly selected from each faculty's list of eligible students. The inclusion criteria were providing informed consent and being a female student aged 20 years or older (21). On the other hand, the exclusion criterion was failing to complete at least 80% of the questionnaire.

After obtaining permission, the researchers visited the university and approached the selected students during class breaks. After explaining the research objectives and obtaining informed consent, students who were willing to participate were asked to complete the questionnaires.

Fayazi et al used a researcher-made questionnaire for data collection (29). The questionnaire comprised demographic information, knowledge, attitude, and practice sections. Face and content validity were evaluated by 15 faculty members of the Nursing and Midwifery Department at Ahvaz Jundishapur University of Medical Sciences. The content validity index and content validity ratio were utilized, and simplicity, relevance, clarity, and necessity were examined. The questionnaire was administered to 30 participants to determine reliability. Cronbach's alpha values for knowledge, attitude, and practice were 0.67, 0.75, and 0.70, respectively.

The first section included questions about personal information, such as age, marital status, college and field of study, history of breast disease in oneself and first-degree relatives, training in BSE, and sources of information about BC and its screening methods. The second section encompassed 10 questions to assess students' knowledge of BSE. The response options were "yes", "no", and "I do not know". Only correct answers were scored "1". The total score for this section ranged from 0 to 10. The third section consisted of 10 items related to attitudes, measured on a 5-point Likert-type scale ranging from "strongly disagree" (1) to "strongly agree" (5). The total score ranged from 10 to 50. The fourth section assessed practice, also measured on a 5-point Likert-type scale ranging from "never" (1) to "always" (5). The total score ranged from 10 to 50.

Scores for knowledge and practice were interpreted as poor (less than 30% of the total score), average (30–60%), and good (above 60%). For attitude, scores of 10–30 and 31–50 were considered negative and positive, respectively. The obtained data were analyzed using descriptive and inferential statistical tests, including Pearson's correlation test, in SPSS (version 25), with a P-value set at < 0.05.

Results

Overall, 400 female students from Shahid Chamran University of Ahvaz participated in this study. Their mean ($\pm$SD) age was 22.75 ($\pm$3.029) years, ranging from 20 to 35. The majority of these students (84.5%) were

single. Only 160 participants (40%) had received formal education about BSE (from healthcare providers or university courses); friends were the most common source of information. None of the participants had a personal history of breast disease (Table 1).

A total of 288 participants had performed BSE at least once. Regarding practice, 78.5% (n = 314) were unsatisfactory. Additionally, 71% (n = 284) had a negative attitude, and 78% (n = 312) had low knowledge about BSE (Table 2).

The results of Pearson's correlation test revealed a significant negative correlation between practice and knowledge among participants with a history of breast disease in first-degree relatives (r = -0.586, $P = 0.001$). In other words, although these individuals had higher knowledge, their practice was weaker (Table 3).

Discussion

The present study evaluated students' knowledge, attitudes, and practices regarding BSE. The majority of students had limited knowledge about BSE. Consistent with our findings, the results of other studies performed by Tuyen et al in Vietnam (30), Getu et al in Ethiopia (31), Karimian et al (32) and Irani et al (33) in Iran, and Abu Sharour et al in Jordan (34) also confirmed low awareness of BSE among participants. However, the findings of the study by Rahman in Sharjah revealed that most students had good knowledge of BSE (17). Although both studies involved female students, the discrepancy in results may be due to differences in educational systems. Women are more likely to practice BSE regularly and correctly if they are sufficiently skilled in performing it (23). Several studies have shown that education increases knowledge and improves BC screening behaviors (5, 23, 32), indicating a lack of knowledge and a systemic gap in health education for non-medical populations. Thus, this question arises: Why do non-medical students lack knowledge despite the availability of health information in the digital age? The answer may lie in a combination of cultural, structural, and educational factors, including the lack of comprehensive planning to integrate health education into non-medical

Table 1. Demographic Characteristics of Participants

Characteristics	Number	Frequency (%)
Marital status		
Single	338	84.5
Married	56	14
Divorced	6	1.5
History of breast disease in first-degree relatives	54	13.5
History of breast disease in oneself	0	0
Former training on BSE	160	40
Sources of information		
Friends	156	39
Books	102	25.5
Formal education	40	10
Family	32	8

Note. BSE: Breast self-examination.

Table 2. Levels of Practice, Attitudes, and Knowledge Among Participants

Item	Frequency	Percentage
Practice levels		
Low (0-15)	314	78.5
Moderate (16-30)	78	19.5
Good (31-50)	8	2
Attitude levels		
Negative (10-30)	284	71
Positive (31-50)	116	29
Knowledge levels		
Low (0-3)	312	78
Moderate (4-7)	84	21
Good (8-10)	4	1

Table 3. Correlation of Knowledge, Practice, and Attitude With History of Breast Disease in First-Degree Relatives

History of Breast Disease in First-Degree Relatives			Knowledge	Attitudes	Practice
Positive	Practice	r	-0.586	-0.087	1
		P value	0.001*	0.334	
	Attitude	r	0.117	1	-0.087
		P value	0.280		0.334
	Knowledge	r	1	0.117	-0.586
		P value		0.280	0.001*
	Total		54	54	54
Negative	Practice	r	0.080	-0.110	1
		P value	0.148	0.075	
	Attitude	r	0.029	1	-0.110
		P value	0.352		0.075
	Knowledge	r	1	0.029	0.080
		P value		0.352	0.148
	Total		346	346	346

Note. *Pearson correlation test. $P < 0.05$.

university curricula, the absence of health counselors in these settings, and social stigma surrounding women's health issues.

Approximately 70% of participants had negative attitudes toward BSE. Our findings demonstrated a significant negative correlation between practice and knowledge among individuals with a history of breast disease in first-degree relatives. Similarly, participants in studies conducted by Karimian et al (32), Faryabi et al (35), and Kalani et al (36) also had negative attitudes toward BSE. In contrast, studies performed by Reisi et al (37), Sheikhalipour et al (38), Abu Sharour (34), Dewi et al (20), and Ashrafi et al (39) reported favorable attitudes. These discrepancies may be due to differences in academic fields, cultural backgrounds, geographical regions, and age ranges of the participants. Attitude toward a behavior reflects how desirable, pleasant, effective, or useful a person perceives the behavior to be, based on their judgment of its outcomes (40). Kalani et al suggested that the main reasons for negative attitudes toward BC screening include disbelief in the treatability of BC, perceived invulnerability, lack of knowledge about family history, and fear of finding a lump or lack of spousal permission (36). This negative attitude may stem from the fear of repeating painful family experiences. In one study, students reported lower perceived susceptibility to BC (34). Participants in the study by Sarker et al cited "I do not have symptoms" and "shyness/uncomfortable feelings" as main barriers to BSE (41). The findings of Abu Sharour et al confirmed that participants' overall perception of the seriousness of BC was low to moderate (34). Attitude is an individual factor influencing behavior, shaped by one's beliefs in the outcomes of health-related behaviors (23).

The results showed that most participants had performed BSE at least once, but their practice was unsatisfactory. These findings are in line with those of studies by Karimian et al (32), Tuyen et al (30), and Bashirian et al (42). In one study, only 44% of healthcare workers performed monthly BSE, and 22.1% visited a specialist for BC screening (38). Contrarily, Kalani et al found satisfactory practice levels among women referring to a comprehensive BC center in Jahrom (36). The more people believe in the benefits of preventive behaviors, the more likely they are to develop positive attitudes and a willingness to adopt such behaviors.

Friends and books were the most common sources of information for participants. Unfortunately, formal education about BSE and information provided by healthcare personnel were reported to be inadequate. Similarly, Molina et al concluded that recommendations from friends and family increased willingness to undergo mammography among Latin American women (43). Conversely, two studies identified physicians and healthcare personnel as the main sources of information about BC and screening methods (42, 44). Khani Jeihooni et al noted that interpersonal factors, such as social pressures and expectations from important people in one's life, influence preventive behaviors (23). Likewise, Sheikhalipour et al emphasized that unless healthcare workers truly believe in the effectiveness of preventive measures, they cannot effectively educate others about cancer screening (38). This finding highlights weaknesses in information sources and structural gaps in the distribution of health information, indicating a need for multilevel interventions, from individual education to policy changes.

Study Limitations

Considering that the questionnaire was completed during class breaks, time constraints prevented participants from thoroughly considering the questions, potentially affecting the accuracy of their responses. Another limitation was the relatively small sample size.

Suggestions for Further Research

Future studies should design and implement simple educational packages on BC prevention, particularly BSE, for use in educational centers, including high schools and universities.

Conclusion

Given the weak practice, negative attitudes, and low knowledge of female students at Shahid Chamran University of Ahvaz regarding BSE and considering the increasing mortality rates due to BC—primarily resulting from delayed diagnosis—it is necessary to conduct classes or workshops on BC and its screening methods for these students. Moreover, after receiving training, each student can play a significant role in raising awareness and changing attitudes among family members about BC screening methods, including BSE, which is an easy and cost-effective approach. As educated members of society, students can help address the generally weaker knowledge, attitudes, and practices of the broader population.

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Authors' Contribution

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Competing Interests
The authors declare no potential conflict of interests concerning the research, authorship, and/or publication of this article.

Ethical Approval
This article was derived from a research proposal (No. U-01122) approved by the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences (IR.AJUMS.REC.1401.248). To adhere to ethical considerations, participants were assured of anonymity, data confidentiality, and voluntary participation. In addition, the results were reported in aggregate form.

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