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Impact of Awareness Session on Assessment of Breast Self-Examination among Female University Students and Faculty Members

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Abstract

Background: Breast cancer is diagnosed most often in women around the globe and late detection in areas with fewer resources leads to a high number of deaths. Despite being convenient to do and costing little, BSE is underused among even those who have access to information. Negative attitudes, unclear knowledge and fear of the disease make BSE less likely to be used. **Aim:** To evaluate the impact of a structured awareness session on BSE knowledge, attitude, and practice (KAP) among female university students and faculty members. **Methods:** Researchers carried out a quasi-experimental pre-post intervention study at Iqra University in Pakistan. Two hundred and fifty people (235 students and 15 faculty) filled out pre-intervention questionnaires on their knowledge of BSE. For 30–60 minutes, participants received an educational session with visuals, practical demonstrations and discussions. Post-intervention KAP was measured using the same tool. Each numerical variable was tested by paired t-tests using SPSS v27 (statistical significance was set to $p < 0.05$). **Results:** Knowledge: Overall scores increased from 18.55 ± 3.82 to 36.40 ± 2.76. Practice: Pre-intervention, only 22.8% performed BSE; post-intervention, >90% understood techniques (e.g., visual inspection: 38.4% to 91.2%). Awareness: Screening knowledge rose from 36.8% to 92.8%.

Key barriers pre-intervention included lack of knowledge (59.2%) and fear of results (34.4%). Significant improvements ($P < 0.001$) were observed across all domains: **Conclusion:** Sessions designed to raise awareness about BSE improve what university students know about the subject. It is important to add structured BSE education to health programs at institutions to encourage early detection and reduce the incidence of breast cancer.

Keywords: Breast self-examination, Awareness session, Knowledge-attitude-practice, Early detection, University students, Faculty members

Introduction

Breast self-examination is still considered as an easy and inexpensive way to increase breast awareness among women. BSE is not a substitute for breast examination or mammography, but it is a way for women to become familiar with the appearance and feel of their breasts. [1,2]The more you know, the sooner you can spot something out of the ordinary. BSE is one of the most easily available methods for early detection of breast cancer in many developing countries with a shortage of healthcare resources. Hence, the role of educational institutions is crucial in improving women's awareness of this preventive practice by organizing awareness activities of women and health campaigns. [3,4]

Awareness sessions are held in Universities, which can be a great way to strengthen knowledge and hands-on skills about BSE. Structured educational interventions enable participants to learn the correct procedure, timing and frequencies of examination in a supportive environment. They acquire confidence in performing BSE properly through the use of models, videos and interactive discussions. [5]These interventions are particularly helpful for young women who might otherwise get false information from social media or through informal channels. Regular contact with accurate health education information helps to change health behavior and promote regular screening practices [6].

Women students and teachers are a significant segment of the society as they are mostly disseminating health-related information to friends, families, and community. Women with knowledge of and understanding of the significance of early detection are more likely to persuade their households to engage in prevention practices. [7]Women with knowledge and understanding about the importance of early detection are more likely to encourage their households to practice preventive health. Also, faculty can include information about breast health into classroom lectures and mentoring relationships. This helps normalize and inform about preventive health and wellness. The

cascade effect of informed university women can be an additional source of increasing public awareness and better health results in the community [8].

Women continue to face psychological and cultural challenges in the practice of BSE. Breast health is a topic that is often taboo for women, and their concerns about finding breast cancer, embarrassment, misconceptions, and social stigma often hinder communication regarding breast health and routine exams. [9]Awareness sessions can be used to discuss, communicate and provide a safe space for the counselling of these fears. If women are told by health care providers that things are not serious and that they have accurate information, they are more likely to engage in self-screening activities. It is therefore critical to include cultural sensitive educational interventions in the promotion of acceptance of breast health practices [10].

Awareness programs effectiveness can be assessed by pre-test and post-test techniques to gauge the audience's knowledge and practices before and after the program. These assessments aid researchers in finding increases in knowledge, confidence, and intention of behavior concerning BSE. They also give evidence on the effectiveness and ineffectiveness of educational programs. Assessment results can help inform further health promotion planning by the university administration and/or policy makers. Monitoring of long-term outcomes is also important to evaluate if awareness sessions have long-term effects on behaviour [9,10].

Breast health education can help to create a health-conscious culture within the university. When students and staff are involved in activities like orientation seminars, health weeks, workshops and peer education, they are likely to value and focus on preventive health care.[11,12] The support of the institutions also reflects their interest in the general welfare of the academic community. These programs can be enhanced in terms of quality and reach through cooperation between universities and healthcare workers. There needs to be sustained educational campaigns to maintain awareness about breast cancer prevention [13,14].

It is thus, that this study highlights the significance of awareness sessions with a structure to enhance knowledge and practice of BSE among female students and faculty members. Education interventions can increase awareness which could translate to earlier identification of breast changes and prompt medical consultation. The results from these studies can inform health education policies to promote preventive health care and help promote university take-up of preventive health care programs within the institution's responsibilities. Finally, giving women the right knowledge and skills have a positive impact on health outcomes, morbidity and quality of life in the broader community.

Method

This study used a quasi-experimental one-group pre-test and post-test design to evaluate the effectiveness of an awareness session on breast self-examination (BSE) among female students and faculty members. The study was conducted at Iqra University. A census or enumerative sampling technique was applied, in which all eligible participants were invited to participate voluntarily. The total sample consisted of 250 participants, including 235 female students and 15 faculty members. Participants aged 18 years or above who provided written informed consent and agreed to attend all phases of the study were included. Individuals who had attended a similar awareness session within the previous six months or had existing breast abnormalities were excluded from the study. A structured questionnaire was developed with guidance from previously validated studies on breast cancer awareness and BSE practices. To ensure validity and reliability, a pilot study was conducted among ten participants who were not included in the final sample. Necessary modifications were made based on their feedback to improve the clarity and consistency of the tool.

Data Collection Procedure

Data collection was completed in three phases. In the first phase, participants completed a pre-test questionnaire to assess their baseline knowledge and practices regarding breast cancer and breast self-examination. In the second phase, an educational intervention session was conducted using lectures, multimedia presentations, breast models, and interactive discussions. The awareness session focused on the importance, timing, frequency, and correct technique of BSE. Participants were encouraged to ask questions and actively engage in the session to improve understanding and confidence. In the third phase, a post-test questionnaire was administered immediately after the intervention to evaluate changes in participants' knowledge and practice related to BSE.

Data Analysis Procedure

Collected data were entered into Microsoft Excel and analyzed using SPSS version 27. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize socio-demographic characteristics and study variables. A paired t-test was applied to compare pre-test and post-test scores to determine the effectiveness of the awareness session. Statistical significance was considered at a p-value of less than 0.05.

Results

Demographic Analysis

A total of 250 participants were studied, with an average age of 22.8 years (±3.5) and most were unmarried (78.8%). A majority of the participants were in years 2 or 3 at

university. More than four in five (81%) had monthly earnings between 30,000 and 50,000 PKR and almost all reported being Muslim (99.2%). Only 7.2 percent said they were tobacco users. Additionally, 43.2 percent had taken part in physical activity within the past seven days. Only a small group (10%) had participated in BSE training before [Table 1].

Table 1: *Demographic Characteristics of Participants (n = 135)*

Variable	Category	Frequency (n)	Percentage (%)
Age (Mean ± SD)	—	22.8 ± 3.5	—
Program/Discipline	Health Sciences	235	94
Faculty Members		15	6
University Study Year	1st	56	23.8
	2nd	65	27.6
	3rd	72	30.6
	4th	42	17.8
Marital Status	Married	53	21.2
	Unmarried	197	78.8
Number of Children (if married)	Mean	2	—
Monthly Household Income	<30,000 PKR	80	32.0
	30,000–50,000 PKR	120	48.0
	>50,000 PKR	50	20.0
Religion	Islam	248	99.2
	Other	2	0.8
Tobacco Use	Yes	18	7.2
	No	232	92.8
Menarche (Mean Age ± SD)	—	12.9 ± 1.4	—
Physical Activity in Last 7 Days	Yes	108	43.2
	No	142	56.8
Previous BSE Training Attended	Yes	25	10.0
	No	225	90.0

The findings in Table 2 indicate that although the majority of participants (76%) had heard about breast cancer, detailed knowledge regarding the disease remained limited. More than half of the respondents (54.8%) did not know the symptoms of breast cancer, which reflects insufficient awareness about early warning signs. Only 12.8% reported a family history of breast cancer, suggesting that most participants may not perceive themselves to be at risk. Furthermore, only 22.8% had ever performed breast self-examination (BSE), while the majority (77.2%) had never practiced it. These findings

demonstrate a considerable gap between general awareness and actual preventive health behavior among the participants.

Figure 1: General Knowledge and Awareness About Breast Cancer (n = 250)

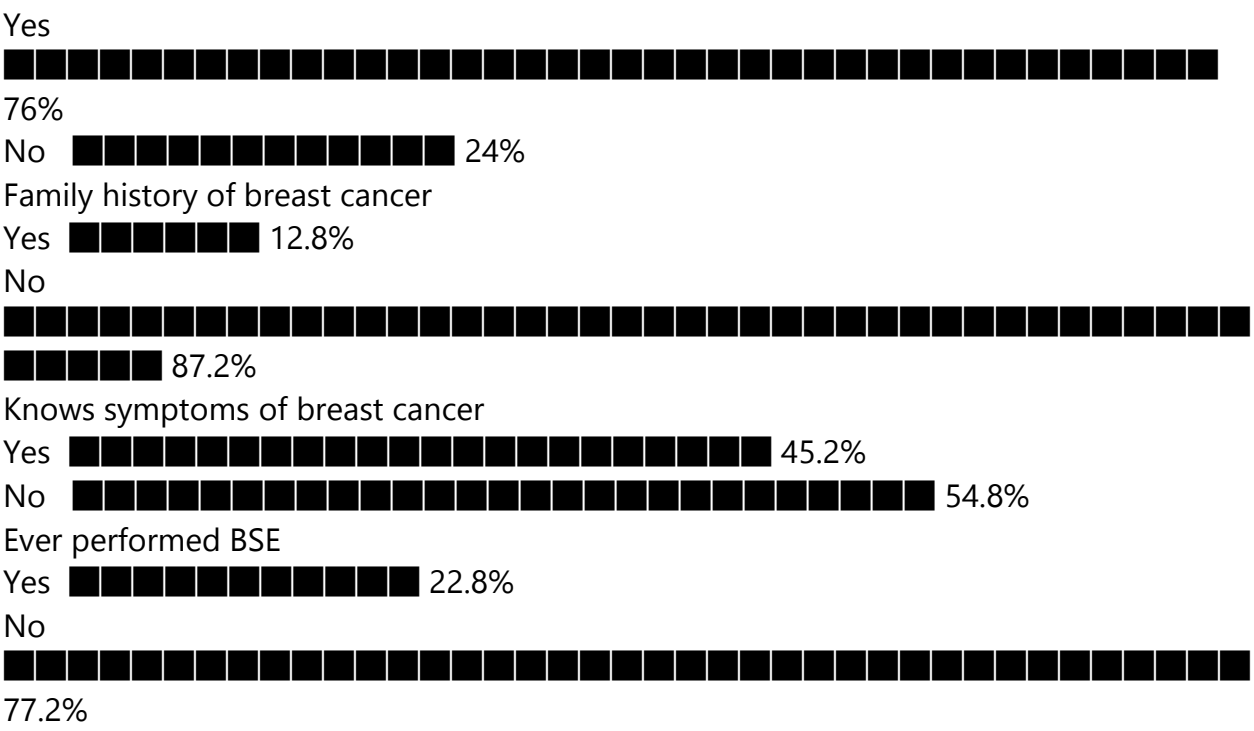

Table 2 demonstrates a substantial improvement in participants' knowledge after the educational intervention. Awareness regarding breast cancer symptoms increased from 45.2% before the intervention to 90% after the session. Similarly, knowledge about risk factors, preventive measures, screening methods, and BSE steps showed remarkable improvement following the awareness program. Knowledge of advanced screening methods such as mammography, breast ultrasound, and MRI also increased significantly. These results indicate that the intervention was highly effective in improving participants' understanding of breast cancer, available screening techniques, and correct BSE practices.

Table 2: *Comparison of Knowledge Before and After Intervention (n = 250)*

Domain	Pre-Test Yes %	Post-Test Yes %
Knowledge of breast cancer symptoms	45.2	90.0
Knowledge of risk factors	40.0	88.0
Knowledge of preventive measures	44.0	92.0

Awareness about screening	36.8	92.8
Knowledge of BSE steps	38.4	91.2
Knowledge of mammography	45.6	90.0
Knowledge of breast ultrasound	36.0	84.0
Knowledge of MRI screening	21.2	72.0

The comparison of mean pre-test and post-test scores in Table 3 reveals statistically significant improvements across all knowledge domains after the intervention. The overall mean score increased from 18.55 ± 3.82 before the intervention to 36.40 ± 2.76 after the intervention, with a mean difference of 17.85. The greatest improvement was observed in knowledge of risk factors, followed by knowledge of symptoms and preventive measures. All p-values were less than 0.001, indicating that the educational session had a highly significant impact on participants' knowledge and awareness regarding breast cancer and BSE. These findings confirm the effectiveness of structured awareness sessions in promoting preventive health education among university women.

Table 3: *Comparison of Mean Pre- and Post-Intervention Scores (n = 250)*

Domain	Mean Pre-Test Score (±SD)	Mean Post-Test Score (±SD)	Mean Difference	p-value
General Knowledge	2.95 ± 1.12	4.70 ± 0.56	1.75	<0.001
Knowledge of Symptoms	3.45 ± 1.45	6.80 ± 1.02	3.35	<0.001
Knowledge of Risk Factors	4.10 ± 1.88	8.35 ± 1.25	4.25	<0.001
Preventive Measures	3.75 ± 1.23	7.10 ± 0.86	3.35	<0.001
Screening Awareness	2.10 ± 1.04	4.30 ± 0.73	2.20	<0.001
BSE Practice Knowledge	2.20 ± 1.05	5.15 ± 0.72	2.95	<0.001
Overall Total Score	18.55 ± 3.82	36.40 ± 2.76	17.85	<0.001

Discussion

All areas measured, including general knowledge, symptoms, risk factors, downstream actions, awareness of screenings and breast self-examination, showed a clear improvement. Such findings indicate that taking part in educational courses can help individuals recognize breast cancer risks and respond positively.

Just 36.8% of individuals knew about breast cancer screening before the intervention, and this number shot up to 92.8% afterwards. The study also found that women had low

awareness at the start but showed much better knowledge after being educated [15]. Similarly, a Study showed that breast cancer awareness campaigns greatly improved Malaysian women's understanding of screening and effective detection [16].

The average score for knowing the main symptoms rose from 3.45 to a perfect 6.80 of 8, suggesting a clearer knowledge of nipple discharge, breast lumps and unusual pain. According to the study, a health education program boosted Iranian women's awareness of breast cancer symptoms [17]. But, in opposition, Research pointed out minor progress after education might be because of difficulties with language and culture in health communications [18].

The mean score for identifying risk factors increased from 4.10 to 8.35 after the intervention, with participants reporting the highest knowledge of family history, obesity and using alcohol. A similar finding was reported, which found that a local intervention caused people to better understand both modifiable and non-modifiable risk factors. Another explanation could be that our participants had already encountered health information informally before joining the study [19].

They learned a lot about nonsmoking and positive answers about the benefits of breastfeeding, protecting against future issues rose to 92.0%, surpassing the old rate of 46.4%. This is similar to a study that discovered that people gained significant knowledge about prevention after receiving tailored health education in India. Results from our study showed that fewer participants believed breast cancer could be completely prevented, which shows that the intervention helped set the record straight [20].

The practice and knowledge related to BSE increased markedly. After the intervention, nearly all respondents (90 %+) claimed to understand BSE techniques such as visual inspection and palpation, whereas this number was less than 30% for most categories. A similar result was shown wherein colorectal cancer screening practice and knowledge improved greatly among Turkish women through nursing-based interventions. This is good news because detecting cancer early with BSE is simple and cost-effective [21].

There was a large improvement in screening method awareness, with the mean increasing from 2.10 to 4.30. Many participants had a better understanding of mammography, clinical breast exams and ultrasound. This result is similar to what was shown in a previous study, which emphasized how support for breast screening can be increased through interventions in schools. Despite the interviews, post-treatment participants were still unaware of MRI scans [22].

A major advantage of the present study is the way it considers several areas and has a broad sample which evenly spreads the results and makes them dependable. Additionally, the pre- and post-test approach supports clear analysis of how much the intervention helped. Among the barriers described in the study, few understood BSE, some avoided getting tested because of anxiety and some felt shy when having the discussion with a healthcare professional [23].

Remarkably, the approach increased what people knew and reduced myths, including the idea that there are vaccines for breast cancer. Reaching this goal was important, since misinformation might prevent people from taking preventive actions. Study points out that dispelling myths is very important for successful public health education. Therefore, things like incorrect ideas should be corrected as much as information is taught through educational programs [24].

The results from looking at developing countries together suggest that health literacy is significantly influenced by cultural, social and educational factors. Research found that educational strategies worked less well in conservative communities because of the stigma attached to talking about breast health. In this study, we observed that a large portion of participants adopted new knowledge which may be explained by culturally appropriate teaching and lively engagement [25].

Participants could have answered the survey questions positively, not because of recent insight, but because it's what they believe is expected of them. While anonymity in data collection is tried, the possibility of this bias cannot be completely eliminated. Also, the sample was sizable, but because it came from just one area, it cannot be used for wide national findings [26].

Overall, the study shows that using organized approaches to teaching can considerably boost knowledge and actions involving breast cancer. The findings either correspond with or go beyond those reported in similar research worldwide. More funds focused on health education, including those designed for each culture and easy to find, are important for supporting early detection and reducing the effects of breast cancer.

Conclusion

The study shows that the educational intervention greatly improved how participants understood and practiced breast cancer awareness, risk factors, preventive actions, methods of screening and self-examination. Following the intervention, the mean scores increased significantly in all evaluated domains, suggesting participants understood more and were more likely to change their behaviors. It was successful in straightening out misunderstandings and overcoming difficulties such as lack of awareness, fear and unfamiliarity with the culture. These findings match those found in other countries and

demonstrate why education about breast cancer prevention is essential. This is why running frequent, culturally appropriate and research-backed awareness activities can help a lot in detecting breast cancer early and cutting down on cancer-related suffering and death. It is advised to do more research and keep checking behavior patterns over time to make better health plans for the future.

Recommendation

The suggestions below are based on what the study has found.

i. Add breast cancer education to community health initiatives: Educational programs should regularly inform community members about the disease, the symptoms to watch for, the risks involved, how to prevent it and why it's important to detect it early.
ii. Helpful practical and visual training in BSE should be offered, mainly to women in schools, colleges and health clinics, so they can practice frequently.
iii. Cultural awareness in counseling can ease fear, shyness and unreliable beliefs that keep women from doing BSE or getting checked.
iv. Reliable information about breast cancer should be sent out using different media like radio, television, social channels and the internet, especially to communities with poor literacy rates or in rural areas.
v. Train and get nurses, midwives and community leaders active in convincing women to visit regularly for screening and live healthily.
vi. You can help by teaching young people about breast health in schools and arranging awareness days every year.
vii. Helpful and Affordable Care: Organizations responsible for health should ensure that affordable breast exams, mammography and ultrasound screenings are easy to reach, especially for those living far away from medical centers.
viii. Regularly assess education programs by conducting studies and evaluations to check if people remember and follow health advice about breast cancer.

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