Original Article

Breast Self-Examination (BSE): Knowledge, Awareness, Attitude, and Practice Among Female Undergraduate Medical Students of a Public Sector Medical College in Punjab, Pakistan.

Muhammad Junaid Iqbal, Menahal, Farmeen Akhtar, Aima Safdar, Tahreem Tariq & Noor ul Huda

ABSTRACT

Objective: Our study aims to assess the knowledge, awareness, attitude, and practice of Breast Self-Examination (BSE) among female undergraduate medical students.

Methodology: After receiving ethical approval from the Institutional Review Board (IRB) and obtaining written informed consent from the participants, a cross-sectional study was conducted among 117 female undergraduate medical students from the 1st year to the final year, from July 2024 to September 2024, at Sahiwal medical college, a public sector institution in Punjab, Pakistan. Data was collected using a validated questionnaire via a convenience sampling technique and analyzed using SPSS version 26 for descriptive statistics (frequency and percentages).

Results: Of the 117 participants, 17.9% (n=21) were from the 1st year, 18.8% (n=22) from the 2nd year, 23.1% (n=27) from the 3rd year, 21.4% (n=25) from the 4th year, and 18.8% (n=22) were from the final year. The study shows that two-thirds of participants have adequate knowledge of BSE. Similarly, 105 (89.7%) participants find BSE easy to perform, while 59 (50.4%) reported practicing it.

Conclusion: Medical students have a better understanding of breast cancer and its earlier diagnosis, which contributes to a positive attitude towards BSE. Awareness regarding BSE should also be promoted among the general population to help control this disease.

KEYWORDS: Attitude, Awareness, Breast Cancer, Breast Self-Examination.

INTRODUCTION

Breast cancer (BC) is a major disease affecting women globally, with approximately 2.3 million new cases reported in 2020, overtaking the incidence of most other cancers.[1] It presents a significant challenge for healthcare providers, placing a substantial burden on the healthcare system and an emotional strain on patients' families. Although diagnosis before the age of 40 is less common, the disease has a greater impact on younger patients.[2] Raising awareness in resource-limited settings can play a crucial role in early diagnosis.[3] Since breast cancer has various stages of severity, significant damage may have already occurred by the time it is diagnosed at a later stage, making treatment difficult.[4]

The increased incidence of breast cancer can be attributed to multiple risk factors, including a sedentary lifestyle, poor eating habits, obesity, reduced breastfeeding, and alcohol consumption. The incidence can be reduced if people have proper awareness of the causes and risk factors of this disease.[5] A considerable number of early breast cancer discoveries are made by individuals who

Muhammad Junaid Iqbal,[1] *MBBS*
Assistant Director
Menahal,[2]
Student MBBS
Farmeen Akhtar,[3]
Student MBBS
Aima Safdar,[4]
Student MBBS
Tahreem Tariq,[5]
Student MBBS
Noor ul Huda,[6]
Student MBBS
[1-6]Sahiwal Medical College, Sahiwal, PAK.

Correspondence
Dr. Muhammad Junaid Iqbal
sh.junaid099@gmail.com

perform BSE, as initial cancers are often self-discovered. Routine self-examinations can lead to the detection of breast cancer at its earliest stage.[6] BSE is particularly important in regions where clinical breast examination (CBE) and mammography are not readily available, especially in developing countries. It can be easily performed in low-income areas as it is safe, private, convenient, and requires no equipment.[7] If women are adequately informed about the symptoms and risk factors of BC, they can play an important role in reducing the disease burden in their communities and protecting their own health.[8] Women can reach out to healthcare providers if they find any abnormality either on inspection or palpation, as BSE will help women become familiar with the normal contour, appearance, and consistency of their breasts.[9] BC is a lethal disease, but its impact can be mitigated if the public is properly educated about its risk factors.[10] In this study we assessed the knowledge, attitude and practice of breast self-examination as a preventive measure for breast cancer. The practice of breast self-examination (BSE) can play an important role in reducing disease burden by early detection.

METHODOLOGY

After obtaining ethical approval from the Institutional Review Board (letter#118/IRB/ SLMC/SWL) and securing written informed consent from the participants, a cross-sectional study was conducted from July 2024 to September 2024, at Sahiwal medical college, a public sector institution in Punjab, Pakistan. The convenience sampling technique was used to collect data from first-year to final-year undergraduate medical students via a validated questionnaire. The inclusion criterion was all the female undergraduate medical students who were willing to participate in our study and filled the written informed consent form. All those participants were excluded who initially gave consent but later on didn't fill the questionnaire and additionally all the incomplete questionnaires were excluded. The data was analyzed using SPSS version 26 for descriptive statistics (frequency and percentages). The sample size was calculated to be 117 female students, based on an expected frequency of 17.4% and a 5% margin of error, using the formula for a finite population:

$$n = N \cdot Z^2 \cdot P(1-P) / [d^2(N-1) + Z^2 \cdot P(1-P)]$$

RESULTS

In our study, the study population was female undergraduate medical students and out of the total 117 participants, 17.9% (n=21) were from 1st year, 18.8% (n=22) from 2nd year, 23.1% (n=27) from 3rd year, 21.4% (n=25) from 4th year and 18.8% (n=22) were from final year. A total of 114 (97.4%) participants were unmarried and 3 (2.6%) were married. Additionally, 95 (81.2%) participants were hostel residents and 22 (18.8%) were day scholars.

Table 1: Demographics of the study participants.

Sr. no.	Variables		Frequency (f)	Percentage (%age)
1.	Marital status	Married	3	2.6%
		Unmarried	114	97.4%
2.	Year of study	1st year	21	17.9%
		2nd year	22	18.8%
		3rd year	27	23.1%
		4th year	25	21.4%
		5th year	22	18.8%
3.	Residency	Boarders	95	81.2%
		Day scholars	22	18.8%

Table 2: Knowledge about Breast Self-Examination among the study participant (things they look for during breast self-examination)

Sr. no.	Indicators Checked During Breast Self-Examination (BSE)	Agree	Disagree
1.	Lump in the breast	89 (76.1%)	28 (23.9%)
2.	Inverted nipples	85 (72.6%)	32 (27.4%)
3.	Abnormal nipple discharge	81 (69.2%)	36 (30.8%)
4.	Changes in breast skin texture, such as redness, dimpling or tethering	88 (75.2%)	29 (24.8%)
5.	Change in the size and shape of the breast	85 (72.6%)	32(27.4%)
6.	Don't know	20(17.1%)	97(82.9%)

Table 3: Attitude of the study participants towards breast self-examination.

Sr. no.	Attitude towards Breast Self-Examination (BSE).			Frequency (n)	Percentage (%)
1.	Is BSE time consuming?	Yes		15	12.8%
		No		102	87.2%
2.	Is BSE expensive?	Yes		3	2.6%
		No		114	97.4%
3.	Is it difficult to perform BSE?	Yes		12	10.3%
		No		105	89.7%
4.	Is BSE embarrassing and unpleasant?	Yes		22	18.8%
		No		95	81.2%
5.	At what age should BSE be practiced?	Above 15 years old		60	51.3%
		Above 20 years old		23	19.7%
		Above 30 years old		6	5.1%
		No specific age		19	16.2%
		Don't know		9	7.7%
6.	How often should someone do the procedure of BSE.	Daily	Agree	22	18.8%
			Disagree	95	81.2%
		Weekly	Agree	62	53%
			Disagree	55	47%
		Monthly	Agree	77	65.8%
			Disagree	40	34.2%
		Yearly	Agree	52	44.4%
			Disagree	65	55.6%
		Not necessary	Agree	6	5.1%
			Disagree	111	94.9%

Table 4: Practice of Breast Self-Examination (BSE) among the study participants.

Sr. no.	Practice of Breast Self-Examination (BSE).		Frequency (n)	Percentage (%)
1.	Have you ever performed BSE?	Yes	59	50.4%
		No	58	49.6%
2.	How often do you perform BSE?	Everyday	1	0.9%
		Weekly	9	7.7%
		Monthly	15	12.8%
		Yearly	6	5.1%
		At random	34	29.1%
		Don't perform	52	44.4%
3.	What is the appropriate time to perform BSE?	Before menstruation	1	0.9%
		During menstruation	2	1.7%
		Some days after menstruation	12	10.3%
		No particular time	45	38.5%
		Don't know	57	48.7%
4.	How do you perform BSE?	In front of mirror	21	17.9%
		While showering	36	30.8%
		By lying down on bed	11	9.4%
		Don't perform	49	41.9%

Table 5: Reported actions of participants upon detection of a breast lump

Sr. no.	Actions most likely taken by participants upon noticing a breast lump.		Frequency (n)	Percentage (%)
1.	I would go for treatment from a traditional healer.	Agree	47	40.2%
		Disagree	70	59.8%
2.	I would ignore.	Agree	5	4.3%
		Disagree	112	95.7%
3.	I would visit the clinic for further diagnosis.	Agree	109	93.2%
		Disagree	8	6.8%
4.	Don't know.	Agree	9	7.7%
		Disagree	108	92.3%

DISCUSSION

This study was conducted among undergraduate female students at Sahiwal Medical College to evaluate their knowledge, attitude, and practice regarding breast self-examination (BSE). In our study, 114 (97.4%) participants were unmarried and 3 (2.6%) were married. Out of the total 117 participants, 17.9%, were from 1st year, 18.8% from 2nd year, 23.1% from 3rd year, 21.4% from 4th year and 18.8% were from final year. Moreover, 95 (81.2%) participants were hostel residents and 22 (18.8%) were day scholars.

In our study, 89 (76.1%) of respondents were aware of breast lumps, 85 (72.6%) recognized inverted nipples, 81 (69.2%) knew about abnormal nipple discharge, 88 (75.2%) understood changes in breast skin texture (such as redness, dimpling, and tethering), and 85 (72.6%) were aware of changes in breast size and shape. However, 20 (17.1%) of the respondents were not familiar with BSE. Overall, approximately two-thirds of the participants had adequate knowledge of BSE.

These findings contrast with a study of female medical students from Saudi Arabia, where more than half of the participants demonstrated inadequate knowledge of BSE. In that study, only 48% were aware of breast lumps, 42.9% recognized changes in breast size and shape, and 29% knew

about inverted nipples.[11] Similarly, another study among female medical students and faculty from Najran University in Saudi Arabia reported much lower levels of knowledge, with only 11.7% knowing about abnormal nipple discharge, 11.3% aware of skin changes, and 10.3% recognizing changes in breast size.[12]

Comparatively, a study in Pakistan among university students revealed that only 25% knew about breast lumps, indicating that medical students at Sahiwal Medical College possess greater knowledge than students from other disciplines.[1] Another study conducted in India among college teachers showed better awareness of BSE, with 83.3% knowing about breast lumps, 60.8% aware of skin redness, 65.3% recognizing changes in breast size, 48.7% aware of abnormal nipple discharge, and 51.2% knowing about inverted nipples.[14]

In our study, 105 (89.7%) participants found BSE easy to perform, 114 (97.4%) considered it a cost-effective method, 22 (18.8%) felt it was embarrassing or unpleasant, and 60 (51.3%) recommended it be performed after age 15, with other respondents suggesting different ages. Additionally, 109 (93.2%) indicated they would visit a doctor if they detected a lump, while 47 (40.2%) said they would consult a traditional healer.

A comparative study among women attending pastoral health facilities in South Ethiopia reported that 53.2% found BSE simple to perform, while 42.5% felt uncomfortable touching their breasts during the examination.[15] This suggests that the participants in our study had a more favorable attitude toward BSE. A study among female university students in Bangladesh found that 20.5% believed in herbal treatment, and 17% considered alternative medicines to be effective treatments.[16] While more than half of the respondents in the Bangladesh study relied on modern medical treatment, our study revealed that 40.2% would opt for traditional treatment, reflecting a preference for alternative treatment options.

Furthermore, a study at King Edward Medical College found that 50% of respondents felt embarrassed about visiting a doctor after detecting symptoms.[17] In contrast, participants in our study demonstrated a more positive attitude toward consulting a doctor. A study among female medical students from Saudi Arabia suggested that 89% of respondents correctly identified that BSE should be performed monthly, whereas our participants showed a lower level of adherence to the recommended frequency of BSE.[11]

In our study, 59 (50.4%) of the participants practiced BSE, while 57(48.7%) were unaware of the appropriate time to perform it. Among those who performed BSE, 36 (30.8%) did so while showering, 21 (17.9%) in front of a mirror, and 11 (9.4%) while lying down.

A similar study among university students in Pakistan found that only 23% practiced BSE, indicating that medical students at Sahiwal Medical College practice BSE more frequently.[13] In contrast, a study from Ethiopia among social science undergraduate female students revealed that only 17.4% of respondents practiced BSE, while 21% of master's degree students in Bangladesh reported practicing BSE. A study in Bangladesh among female university students also found that 46.7% knew about BSE, but only 16.3% practiced it, which contrasts with the higher rate of BSE practice observed in our study.[18,16,19]

In India, one study among healthcare professionals showed that only 15.6% practiced BSE,[20] while another study among nursing students reported a much higher practice rate of 87.5%.[21] These findings indicate significant variability in BSE practice rates, with one study showing lower practice rates than ours, and another showing higher. In Jordan, 36.5% of women reported not practicing BSE, while in Northwest Turkey, 81.5% of women did not perform BSE regularly, both of which contrast with our findings. However, a Turkish study among female university students, reported that 50% of students practiced BSE, which aligns with our results.[22,23,24]

CONCLUSION

Our study suggests that medical students possess better knowledge, attitude, and practice of breast self-examination (BSE) compared to students from other disciplines, likely due to their medical background. However, gaps still exist, highlighting the need for comprehensive studies and education to enhance early detection of breast cancer.

Limitations: This study was limited to undergraduate students from a single medical college in Pakistan, which restricts the generalization of our findings. Additionally, the data was self-reported, leading to recall bias and response bias, and the actual practice of BSE was not independently verified. Furthermore, not all aspects of knowledge and attitude toward BSE were covered in this study. A more detailed study could provide a better understanding of BSE knowledge, attitude, and practice. Lastly, Mammography complements breast self-examination (BSE) in early breast cancer detection and is generally more effective.

Acknowledgement: None

Conflict of interests: None
Funding: None

REFERENCES

1. Alqarni GS, Musslem MT, Alosaimi RM, Filfilan FF, Al Qarni AS, Rizk H. Awareness of and attitude to breast self-examination and breast cancer among females in Jeddah, Saudi Arabia. *Cureus*. 2023;15(3): e36595. doi:10.7759/cureus.36595.
2. Abo Al-Shiekh SS, Ibrahim MA, Alajerami YS. Breast cancer knowledge and practice of breast self-examination among female university students, Gaza. *Sci World J*. 2021; 2021:6640324. doi:10.1155/2021/6640324.
3. Sarker R, Islam MS, Moonajilin MS, Rahman M, Gesesew HA, Ward PR. Effectiveness of educational intervention on breast cancer knowledge and breast self-examination among female university students in Bangladesh: a pre-post quasi-experimental study. *BMC Cancer*. 2022;22(1):199. doi: 10.1186/s12885-022-09311-y. PMID: 35193526; PMCID: PMC8862195.
4. Solikhah S, Promthet S, Hurst C. Awareness level about breast cancer risk factors, barriers, attitude and breast cancer screening among Indonesian women. *Asian Pac J Cancer Prev*. 2019;20(3):877-884. doi: 10.31557/APJCP.2019.20.3.877. PMID: 30912407; PMCID: PMC6825774.
5. Al-Ismaili Z, Al-Nasri K, Al-Yaqoobi A, Al-Shukaili A. Awareness of breast cancer risk factors, symptoms and breast self-examination among Omani female teachers: A cross-sectional study. Sultan Qaboos Univ Med J. 2020 20(2): e194. doi:10.18295/squmj.2020.20.02.010.
6. Hassan NA. Awareness toward breast cancer and practice of breast self-examination among Iraqi female students at faculty of basic education. J Adv Pharm Technol Res. 2023 ;14(3):248-252. doi: 10.4103/japtr.japtr_281_23.
7. Maitanmi JO, Fadare O, Kolawole M, Aduroja DM, Faleti DM, Maitanmi BT,et al. Awareness and practice of breast self-examination among female staff at Babcock University, Nigeria. ecancermedicalscience. 2023;17. doi: 10.3332/ecancer. 2023. 1615
8. Jobran AW, Banat MA, Awad BY, Warasna HJ, Taqatqa YR, Jawabreh M, et al. Breast cancer knowledge and practice of breast self-examination among Palestinian females, West Bank: A cross-sectional study. *Health Sci Rep*. 2023 6(11):e1678. doi:10. 1002/hsr2.1678.
9. Susithra R, Shah PB. Women's Perspective on Self-Breast Examination. *Cureus*. 2024;16(4). doi:10.7759/cureus.58962
10. Aphrodite CT, Stephanie TT, Geayeal N, Philemon AE. Breast cancer and breast self-examination awareness among undergraduate students of the University of Bamenda, Cameroon. *Int J Community Med Public Health*. 2021; 8:581-588. doi:10. 18203/ 2394-6040.ijcmph20210206.
11. Alhalafi AH, Alqahtani SM. Knowledge, attitude, and practice of breast self-examination among adult females in Bisha, Saudi Arabia. Bahrain Med Bull. 2024;46(2):1-6. doi:10.47338/ bmb. 2024.46.2.1
12. Alsareii SA, Alqahtani SM, Alamri AM, Al-Wadei HH, Al-Ammari SA, Al-Qahtani AM, et al. Awareness of breast cancer among female students and faculty from Najran University, Najran, Saudi Arabia. *Asian Pac J Cancer Prev*. 2020;21(5): 1415-22. doi:10.31557/APJCP.2020.21.5.1415.
13. Rakhshani T, Dada M, Kashfi SM, Kamyab A, Jeihooni AK. The effect of educational intervention on knowledge, attitude, and practice of women towards breast cancer screening. Int J Breast Cancer. 2022;2022(1):5697739 doi: 10.1155.2022.5697739
14. Saha S, Priya SM, Surender A, Jacob RC, George MP, Varghese NM et al. Screening practices for breast and cervical cancer and associated factors, among rural women in Vellore, Tamil Nadu. Indian J Cancer. 2023 ;60(1):65-71. doi: 10.4103/ijc.IJC_83_20
15. Israel E, Awoke N, Yakob T, Aynalem A, Talto A, Bezabih K. Determinants of breast self-examination practice among women attending pastoralist health facilities, Southern Ethiopia: A cross-sectional study. *BMC Womens Health*. 2023;23(1):14. doi:10. 1186/s12905-023-02112-7.
16. Sarker R, Islam MS, Moonajilin MS, Rahman M, Gesesew HA, Ward PR. Knowledge of breast cancer and breast self-examination practices and its barriers among university female students in Bangladesh: Findings from a cross-sectional study. *PLoS One*. 2022;17(6): e0270417. doi: 10.1371/journal.pone. 0270417.
17. Qasim S, Tayyab H, Zulqadar K, Masood S, Qasim TB, Zubair Z. Breast cancer knowledge and perceived barriers to help seeking among pre-clinical and clinical female medical students of King Edward Medical University, Lahore: A cross-sectional study. *BMC Med Educ*. 2020; 20:296. doi:10.1186/s12909-020-02132-2.

18. Mihret MS, Gudayu TW, Abebe AS, Tarekegn EG, Abebe SK, Abduselam MA, et al. Knowledge and practice on breast self-examination and associated factors among summer class social science undergraduate female students in the University of Gondar, Northwest Ethiopia. J Cancer Epidemiol. 2021; 2021:8162047. doi:10.1155/2021/8162047.
19. Ahmed MS, Sayeed A, Mallick T, Syfuddin HM. Knowledge and practices on breast cancer among Bangladeshi female university students: A cross-sectional study. *Asian Pac J Cancer Care*. 2020;5(1):19-25. doi:10.31557/APJCC.2020.5.1.19-25.
20. Komuravelli M, Gaddala A, Nama S, Matli P, Anchuri K. Awareness and attitude regarding the risk factors, and self-examination for breast cancer in the students of an engineering college of South India. *Eur J Mol Clin Med*. 2022;9(2):2022-2028.
21. Khalip N, Isa KA, Masri N, Rahman HA, Jalil N, Hussein SZ, et al. Knowledge and attitude toward breast self-examination among young adult nursing students in a public university in Malaysia. *Malays J Nurs*. 2021;13(2):16-21. doi:10.31674 /mjn. 2021.v13i02.004.
22. Ahmad S, Alloubani A, Abu-Sa'da R, Qutaiba Y. Breast self-examination: knowledge, practice, and beliefs among females in Jordan. *SAGE Open Nurs*. 2022; 8:23779608221124517. doi:10.1177/23779608221124517.
23. Akarsu NK, Andsoy II. Evaluation of breast self-examination training in Turkish women living in Northwestern Turkey. *J Prev Med Hyg*. 2022;63(1): E76. doi:10.15167/2421-4248/jpmh 2022.63.1.2305.
24. Uruntie RO, Oputa CH, Peters E, Otovwe A. Effect of educational intervention on the knowledge, attitude and practice of breast self-examination among female students at a private university in Southern Nigeria. *BMC Cancer*. 2024;24(1):355. doi:10.1186/s12885-024-12116-w.

Author Contributions:

Muhammad Junaid Iqbal: Conceived the study designed, carried out the data collection and statistical analysis and drafted the manuscripts
Menahal: Conceived the study designed, carried out the data collection and statistical analysis and drafted the manuscripts
Farmeen Akhtar: Conceived the study designed, carried out the data collection and statistical analysis and drafted the manuscripts
Aima Safdar: Conceived the study designed, carried out the data collection and statistical analysis and drafted the manuscripts
Tahreem Tariq: Conceived the study designed, carried out the data collection and statistical analysis and drafted the manuscripts
Noor-ul-Huda: Conceived the study designed, carried out the data collection and statistical analysis and drafted the manuscripts

All authors are equally accountable for research work

Date of Submission: 08-10-2024
Revised Date: 20-02-2025
Accepted Date: 25-04-2025