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KNOWLEDGE AND PRACTICES REGARDING BREAST SELF EXAMINATION AMONG FEMALES NURSING STUDENTS

Original Research

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ABSTRACT

Background: Breast cancer is one of the leading causes of cancer-related deaths among women globally, with early detection playing a critical role in reducing mortality. Breast self-examination (BSE) is a cost-effective and accessible method for early detection, particularly in resource-limited settings. Despite its importance, studies indicate poor adherence to BSE practices among women, even those in health professions. Evaluating knowledge and practice levels in future nurses is essential for guiding effective educational interventions.

Objective: To assess the level of knowledge and practices regarding breast self-examination among undergraduate female nursing students.

Methods: A descriptive cross-sectional study was conducted from September to December 2023 at Lahore School of Nursing, University of Lahore. A total of 87 female nursing students from semesters 2, 4, and 6 were recruited using convenience sampling. A structured, validated questionnaire was used to collect data on demographics, BSE knowledge, and practices. Knowledge scores were categorized as poor (<50%), fair (50–75%), or good (>75%), while practice scores were labeled as competent (>75%) or incompetent (<75%). Data were analyzed using SPSS version 21.0 with descriptive and inferential statistics, including chi-square tests for associations.

Results: Among the 87 participants, 23 (26.4%) had poor knowledge, 53 (60.9%) had fair knowledge, and 11 (12.6%) had good knowledge. Practice levels were suboptimal, with 66 participants (75.9%) classified as having incompetent practices and only 21 (24.1%) demonstrating competent BSE practices. No significant association was found between demographic factors and knowledge or practice levels ($p > 0.05$).

Conclusion: While most students showed fair knowledge of BSE, their practical engagement remained limited. Strengthening BSE training and awareness within nursing curricula is crucial to empower future nurses as both practitioners and educators of breast health.

Keywords: Attitude to Health, Breast Neoplasms, Breast Self-Examination, Early Detection of Cancer, Health Knowledge, Practice, Nursing Students, Preventive Health Services.

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INTRODUCTION

Breast cancer remains a leading global health concern, accounting for the majority of all female malignancies and representing the most common cause of cancer-related mortality among women. According to the World Health Organization, more than two million new cases were reported globally in 2020, leading to approximately 685,000 deaths (1). The burden of breast cancer is rising significantly across both high-income and low- to middle-income countries, underscoring its widespread impact on public health. While considerable advancements have been made in diagnostic imaging and treatment modalities, early detection remains the cornerstone of improving survival outcomes and minimizing treatment-related morbidity. Notably, breast cancer is increasingly affecting women in developing countries, such as Saudi Arabia, where data from the Saudi Cancer Registry (SCR) reported 2,814 new breast cancer cases in 2018, comprising 31.8% of all female cancer cases, with an average age of diagnosis of 51—substantially younger than the average age of 61 observed in the United States (2,3). This early onset in younger populations is concerning, given that younger women often present with more aggressive disease and poorer prognoses (3). Breast self-examination (BSE) has long been advocated as a simple, low-cost, and accessible method for the early detection of breast abnormalities. It involves a woman inspecting her own breasts to identify any unusual changes such as lumps, asymmetry, or skin alterations, ideally performed monthly starting from the age of 20 (4). Though the role of BSE in reducing breast cancer mortality has been debated, when practiced alongside clinical breast examination (CBE) and mammography, BSE may enhance breast health awareness and facilitate early diagnosis (5). In resource-limited settings, where access to imaging modalities may be restricted, BSE becomes an even more critical tool in raising awareness and prompting timely clinical evaluation (6). Despite its benefits, global and regional studies have shown that awareness, attitude, and practice of BSE remain suboptimal, particularly in low-resource communities and among younger women (7,8).

Fear, embarrassment, lack of knowledge, and cultural stigmas often deter women from performing BSE. In several African and Middle Eastern countries, including Ethiopia, Nigeria, and Iran, women frequently cite limited awareness about breast cancer risk factors and uncertainty about how to correctly perform BSE as barriers to regular practice (9). In one Iranian study, over 65% of women admitted to never having practiced BSE, and similar trends were reported in Ghana and Pakistan, where fewer than half of surveyed women engaged in regular self-examinations despite having some knowledge about breast cancer (10). Even in countries with rising health literacy, misconceptions and underestimation or overestimation of personal risk can impede proactive breast health behavior (11). Moreover, while educational initiatives have been shown to improve knowledge and attitudes toward BSE, they are inconsistently implemented and rarely tailored to specific cultural or demographic needs. Health professionals and nursing students, who serve as future educators and caregivers, play a pivotal role in health promotion and breast cancer awareness. However, studies show that even among this educated cohort, knowledge and practice of BSE are not universally adequate (12). This indicates a pressing need to evaluate and strengthen foundational awareness and practical training in breast cancer prevention strategies among female healthcare students. Empowering this group not only improves their personal health practices but also enhances their ability to influence community health outcomes. Given the persistent gap between knowledge and practice, it is essential to assess both the understanding and implementation of BSE in women, particularly among those pursuing careers in health sciences. The objective of this study is therefore rationalized as follows: to assess the knowledge and practices of females regarding breast self-examination, with the intent to inform targeted interventions that can foster early detection behaviors and ultimately reduce breast cancer morbidity and mortality.

METHODS

The present study employed a descriptive cross-sectional design to assess the knowledge and practices regarding breast self-examination among female undergraduate nursing students. The study was conducted at Lahore School of Nursing, University of Lahore, between September 2023 and December 2023. The target population included female nursing students enrolled in semesters 2, 4, and 6 of the Bachelor of Science in Nursing (BSN) program, aged between 18 and 25 years. Students from the Post-RN BSN program, 8th semester, and Master of Science in Nursing (MSN) programs were excluded to ensure homogeneity of academic level and age range within the sample. The sample size was calculated using the Yamane formula**:** $n = N / (1 + N * e^2)$ Substituting the values: $n = 112 / (1 + 112 * 0.05^2) = 87$. This calculation assumed a population size (N) of 112 and a 5% margin of error (e), which is a standard statistical threshold

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for minimizing sampling error in cross-sectional designs. Participants were recruited through convenience sampling based on availability during data collection sessions (13).

Data were collected using a structured questionnaire adapted from a previously validated study tool. The questionnaire comprised two sections: the first gathered demographic data, while the second assessed participants' knowledge and practices related to breast self-examination. The tool was self-administered, and participants completed it within approximately 8–10 minutes. The dependent variables in the study were knowledge and practice scores related to breast self-examination, while the independent variable was the self-examination behavior itself. Data were entered and analyzed using SPSS version 21.0. Descriptive statistics were applied to summarize the data, including frequencies, percentages, and mean scores, while inferential statistics were intended to assess associations between key variables, although the specific tests used (e.g., Chi-square, t-test) were not mentioned and should be clarified for reproducibility. Ethical approval for the study was obtained from the Institutional Review Board (IRB) of the University of Lahore. All ethical principles were upheld throughout the study. Informed written consent was obtained from all participants prior to data collection. Participation was voluntary, and students were informed that they could withdraw at any stage without any penalty. Confidentiality and anonymity were maintained throughout the research process, with no identifying information collected. Participants were also reassured that the study posed no physical, emotional, or academic risks.

RESULTS

The study enrolled a total of 87 undergraduate female nursing students, primarily within the age group of 18–20 years, comprising 64.4% of the sample. Participants from the 4th semester made up the largest academic subset (51.7%), followed by students from the 6th semester (26.4%) and 2nd semester (21.8%). Most of the respondents were single (81.6%), while only 18.4% were married. Findings related to knowledge of breast self-examination (BSE) revealed that a significant proportion of participants (86.2%) reported having heard or read about BSE, and 71.3% were aware of women diagnosed with breast cancer. Additionally, 73.6% indicated knowledge about performing BSE for early detection. However, only 41.4% knew that physicians can test for breast cancer. Regarding correct BSE timing, 64.4% believed it should be performed every two months, while only 49.4% correctly identified the ideal timing within the menstrual cycle (day 7 to day 10). Furthermore, awareness about procedural steps was inconsistent: 41.4% knew BSE should be performed in front of a mirror, 67.8% acknowledged that undressing until the waist is necessary, and 63.2% understood the importance of raising the arms above the head during inspection. A majority (66.7%) recognized that axillary palpation is part of proper BSE technique.

In terms of BSE practices, only 16.1% of participants reported performing BSE regularly once a month, while 52.9% did it occasionally, and 31.0% had never performed it. About 31.0% avoided learning the correct method, and only 11.5% stated they always made an effort to learn it. Parental encouragement to practice BSE was lacking, with 35.6% reporting no such guidance. Peer influence also appeared limited, as only 25.3% consistently discussed the importance of BSE with friends, and 21.8% frequently advised friends to perform it. Regarding technical steps during the examination, 29.9% reported always pressing firmly on all breast regions, and 31.1% consistently examined the armpit. Overall knowledge levels showed that 60.9% of participants demonstrated fair knowledge of BSE, 26.4% had poor knowledge, and only 12.6% achieved a good knowledge score. Regarding practice levels, 75.9% were categorized as having incompetent practices, whereas just 24.1% demonstrated competent practice of BSE. The analysis revealed a potential relationship between participants' knowledge levels and their corresponding practices regarding breast self-examination. Cross-tabulation between knowledge and practice categories demonstrated that among participants with fair knowledge, the majority (42 out of 53) still exhibited incompetent practices, while a small subset (11 out of 53) demonstrated competent practices. Interestingly, even among those with good knowledge, a significant portion (6 out of 11) failed to translate this into effective practice, suggesting that knowledge alone may not directly predict behavior. A Chi-square test for association between knowledge and practice levels was performed and yielded a p-value greater than 0.05, indicating no statistically significant association.

Further inferential analysis was conducted to explore correlations between demographic variables and BSE-related outcomes. When examining the relationship between academic year and level of knowledge (categorized as poor vs. fair/good), the Chi-square test again showed no significant association ($p = 0.911$), suggesting that the academic progression among nursing students did not significantly influence their BSE knowledge. Similarly, the relationship between marital status and BSE practice level (competent vs. incompetent) was not statistically significant ($p = 0.378$), indicating that marital status did not play a determining role in shaping participants' BSE-related behavior. These findings highlight a crucial insight: neither academic standing nor marital status significantly influenced participants' knowledge or practice, and possessing knowledge did not necessarily result in better practice. This underscores the need

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for targeted behavioral interventions and skills-based training alongside awareness campaigns to ensure effective translation of knowledge into consistent preventive action.

Table 1: Demographic Characteristics of Participants

Variable	Category	Frequency	Percentage
Age	18 – 20 years	56	64.4%
	20 – 25 years	31	35.0%
Academic year	2nd Semester	19	21.8%
	4th Semester	45	51.7%
	6th Semester	23	26.4%
Marital status	Single	71	81.6%
	Married	16	18.4%

Table 2: Knowledge of Participants Regarding Breast Self-Examination (N = 87)

Sr. No.	Statements	Yes (n)	Yes (%)	No (n)	No (%)
1	Have you ever heard/read any program on breast self-examination?	75	86.2%	12	13.8%
2	Do you know of women who have or have had breast cancer?	62	71.3%	25	28.7%
3	Do you know how to examine your own breasts to detect problems early?	64	73.6%	23	26.4%
4	Do you know that doctors can test for breast cancer?	36	41.4%	51	58.6%
5	Should BSE be done every two months?	56	64.4%	31	35.6%
6	Should BSE be performed between day 7 to day 10 after the menstrual cycle?	43	49.4%	44	50.6%
7	Should BSE be performed in front of a mirror?	36	41.4%	51	58.6%
8	Should one undress up to the waist while performing BSE?	59	67.8%	28	32.2%
9	Should hands be raised above the head while performing BSE in front of mirror?	55	63.2%	32	36.8%
10	Should BSE include armpit examination to check for lumps?	58	66.7%	29	33.3%

Table 3: Practices of Participants Regarding Breast Self-Examination (N = 87)

Sr. No.	Statements	Never (n)	Never (%)	Sometimes (n)	Sometimes (%)	Always (n)	Always (%)
1	I perform BSE once a month.	27	31.0%	46	52.9%	14	16.1%
2	I avoid learning the correct method of BSE.	27	31.0%	50	57.5%	10	11.5%
3	My parents advise me to perform BSE.	31	35.6%	33	37.9%	23	26.4%
4	I discuss the importance of BSE with friends.	22	25.3%	43	49.4%	22	25.3%
5	I advise my friends to perform BSE.	36	41.4%	32	36.8%	19	21.8%
6	I press firmly on the entire breast area during BSE.	23	26.4%	38	43.7%	26	29.9%
7	I check my armpits during BSE.	30	34.4%	30	34.4%	27	31.1%

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Table 4: Level of Knowledge regarding Breast Self-Examination

Category	Frequency	Percent
<50% poor knowledge	23	26.4
>50% to 75% fair knowledge	53	60.9
>75% to 100% good knowledge	11	12.6
Total	87	100.0

Table 5: Level of Practices regarding Breast Self-Examination

Category	Frequency	Percent
<75% Incompetent Practices	66	75.9
>75% to 100% Competent Practices	21	24.1
Total	87	100.0

Table 6: Demographic Correlation Table

Demographic Factor	Chi-square	p-value	Significance
Academic Year vs Knowledge	0.187	0.911	No
Marital Status vs Practice	0.776	0.378	No

Table 7: Knowledge-Practice Association Table

Knowledge Level	Incompetent	Competent
Poor	18	5
Fair	42	11
Good	6	5

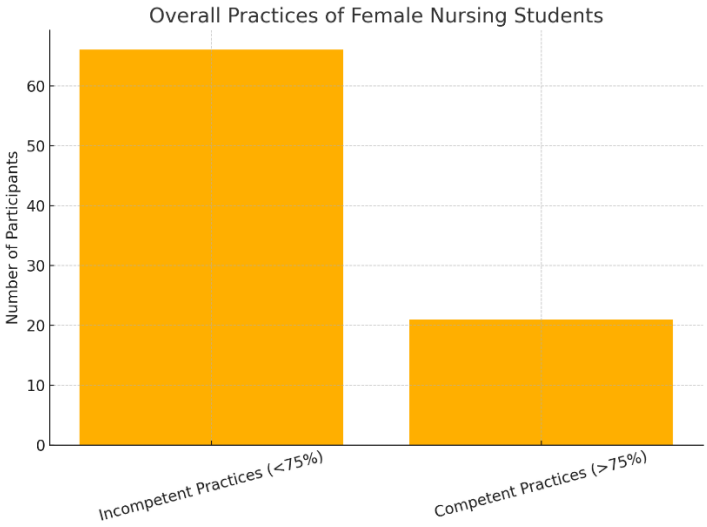

Figure 1 Overall Practice of Female Nursing Students

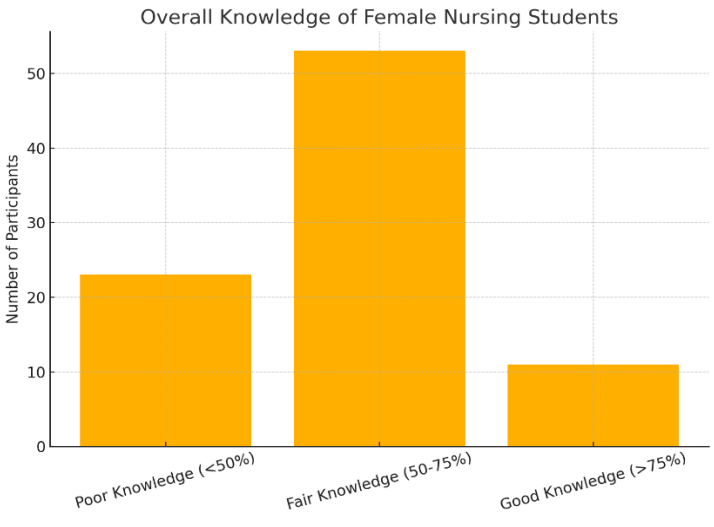

Figure 2 Overall Knowledge of Female Nursing Students

DISCUSSION

The present descriptive cross-sectional study evaluated the level of knowledge and practices regarding breast self-examination among female nursing students at Lahore School of Nursing, University of Lahore. Findings revealed that while a majority of participants

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demonstrated fair knowledge (60.9%), only a small proportion had good knowledge (12.6%). In terms of practice, a significant portion (75.9%) exhibited incompetent practices despite having some awareness of breast self-examination. These findings underscore a concerning disparity between knowledge and actual health-promoting behavior, particularly among individuals enrolled in health sciences programs. Comparative analysis with prior studies provides valuable insight into regional and contextual variations in knowledge and practice. A study reported that 79.9% of participants had heard of breast self-examination, and 39.0% reported practicing it. This practice rate is relatively higher than the current study, which found that only 24.1% had competent practice (14). Similarly, research showed extremely low levels of adequate knowledge (4.2%), although health sciences students demonstrated relatively better awareness (15). Additionally, 72% of those performing breast self-examinations correctly understood the importance of including axillary assessment, a finding consistent with the 66.7% awareness rate reported in the current study. In Ethiopia, it was observed that while 56% of women had sufficient knowledge, less than half practiced breast self-examination regularly, further reinforcing the global trend of knowledge-practice disparity (16,17).

These findings carry significant implications for public health strategies in healthcare education. While nursing students are expected to be more informed and proactive, the evident gap between their knowledge and actual practice suggests that current educational curricula may inadequately address practical application of preventive self-care methods like breast self-examination (18,19). Furthermore, this gap indicates a potential risk for delayed diagnosis in young women who, despite being future health advocates, may not prioritize routine self-assessments in their own lives. The strengths of this study include the focus on a specific, medically relevant population and the use of a structured questionnaire adapted from previously validated research tools, which enhances its content reliability. However, there are notable limitations. The use of a non-randomized, convenience sampling method may introduce selection bias and limit the generalizability of the findings. The relatively small sample size also constrains statistical power, particularly in subgroup analysis. Exclusion of students from Post RN and MSN programs may have narrowed the diversity of knowledge levels within the sample, as more experienced students might demonstrate different patterns. Limited institutional resources may have further hindered the scope and depth of the study (20).

Future studies should consider employing randomized sampling methods and expanding the sample to include a broader demographic and academic spectrum. Longitudinal research could provide more robust insights into how educational interventions influence both knowledge retention and sustained behavioral changes. Incorporating practical BSE training sessions, combined with clinical demonstration opportunities, may significantly enhance the transition from theoretical knowledge to competent practice. Furthermore, integration of screening facilities such as mammography units within university health services could promote preventive care access among students and staff alike. In conclusion, although the current study identifies moderate levels of knowledge, it highlights a critical deficiency in the practice of breast self-examination among nursing students. This gap necessitates strategic educational reform focused not only on awareness but also on skill-building and behavior reinforcement to foster long-term health-conscious practices in future healthcare professionals.

CONCLUSION

This study concludes that while female nursing students possess a generally fair level of knowledge regarding breast self-examination, their actual practice remains notably insufficient. The gap between awareness and implementation highlights a pressing need for targeted educational strategies that go beyond theoretical instruction and actively promote skill development and routine health behavior. As future healthcare providers, empowering these students with both the knowledge and confidence to practice and advocate for early detection methods is vital in reducing breast cancer morbidity through timely identification and intervention.

Author Contribution

Author	Contribution
Aqsa Rasheed*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Rimsha zaffar	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published

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(DEDICATION: I dedicate this work to my mother, whose unwavering support, boundless love, and quiet strength have been the cornerstone of my journey. Her constant encouragement, sacrifices, and belief in my potential have shaped the foundation of my academic and personal life. In moments of doubt, her words lifted me; in times of success, her pride fueled my drive. This research is as much hers as it is mine—a testament to her endless dedication and unconditional love.)

REFERENCES

1. Getu, M. A., Abebe, M., Tlaye, K. G., & Goshu, A. T. (2022). Breast self-examination knowledge and its determinants among female students at Addis Ababa University, Ethiopia: an institution-based cross-sectional study. *BioMed Research International*, *2022*
2. Ishtiak, A. S. M., Ahmed, N., Gaffar, F., Khan, M. A. S., & Yasmeen, F. (2022). Knowledge, practice and associated factors of breast self-examination among female university students of Bangladesh. *Heliyon*, *8*(11)
3. Kassie, A. M., Abate, B. B., Kassaw, M. W., & Shiferaw, W. S. J. C. C. (2021). Breast self-examination practice among female university students in Ethiopia: A systematic review and meta-analysis. *28*, 10732748211019137.
4. Kang, D., Bae, K. R., Ahn, Y., Kim, N., Nam, S. J., Lee, J. E., ... & Cho, J. (2023). Effectiveness of Self-Assessment, Tailored Information, and Lifestyle Management for Cancer Patients' Returning to Work (START): A Multi-center, Randomized Controlled Trial. *Cancer Res Treat*, *55*(2), 419-428.
5. Mageed, E. M., Alrubiyii, S. S., & Salman, B. I. J. K. J. o. M. (2023). Knowledge, Attitude, and Practice of Breast Self-Examination among Female Students in University of Kerbala 2021. *16*(1).
6. Moh Myint, N. M., Nursalam, N., & Mar'ah Has, E. M. (2020). Exploring the Influencing Factors on Breast Self-Examination Among Myanmar Women: A Qualitative Study.
7. Mekonnen, R. A., Tarekegn, T. K., Fetle, Y. T., Berhe, H. A., Lebelo, R. H., Beyene, E. G., . . . Gaim, S. S. M. J. A. J. o. P. H. (2023). Knowledge towards breast self-examination and related factors among women aged between 15-45 at Summit health center Addis Ababa, Ethiopia 2020. *11*(4), 124-135.
8. Ozdemir, A., & Ünal, E. (2023). The effect of breast self-examination training on nursing students by using hybrid-based simulation on knowledge, skills, and ability to correctly evaluate pathological findings: Randomized Controlled Study. *Nurse Education in Practice*, *66*, 103530.
9. Prakash, P., Khadka, S., Silwal, M., & Chandra, A. (2022). Assessment of knowledge on breast self-examination among female adolescent: a cross-sectional study. *Clinical Journal of Obstetrics and Gynecology*, *5*(1), 036-041
10. Rock, C. L., Thomson, C. A., Sullivan, K. R., Howe, C. L., Kushi, L. H., Caan, B. J., . . . Robien, K. J. C. a. c. j. f. c. (2022). American Cancer Society nutrition and physical activity guideline for cancer survivors. *72*(3), 230-262.
11. Ranganath, R., Muthusami, J., Simon, M., Mandal, T., & Kokemuller, M. A. (2020). Female medical and nursing students' knowledge, attitudes, and skills regarding breast self-examination in Oman: a comparison between pre-and post-training. *Journal of educational evaluation for health professions*, *17*(1), 37-0.
12. Sanad Alqarni, A., Abd Elrahman Elhanafey, S., Eltayeb Ahmad, K., Mohammed Abojameelah, S., A Algharib, D., & Elmashad, A. M. J. E. J. o. H. C. (2023). Knowledge, Attitude and Practice of Female toward Breast Self-Examination at Abha City. *14*(2), 466-475.
13. Tahira, Y., Nazar, K., Parveen, T. J. B., & Journal, C. S. R. (2023). AWARENESS AND ATTITUDE OF ADOLESENTS GIRLS ABOUT SELF EXAMINATION OF THE BREAST.*2023*(1)351-35
14. Udoh, R. H., Thiru, M., Ansu-Mensah, M., Baotou, V., Danquah, F. I., & Kupiak, D. (2020). Women's knowledge, attitude, and practice of breast self-examination in sub-Saharan Africa: a scoping review. *Archives of Public Health*, *78*(1), 1-1
15. Ahmad, S., Alloubani, A., Abu-Sa'da, R., & Qutaiba, Y. (2022). Breast Self-Examination: Knowledge, Practice, and Beliefs Among Females in Jordan. *SAGE Open Nursing*, *8*, 23779608221124517.
16. Abo Al-Shiekh SS, Ibrahim MA, Alajerami YS. Breast Cancer Knowledge and Practice of Breast Self-Examination among Female University Students, Gaza. ScientificWorldJournal. 2021;2021:6640324.
17. 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.
18. Kharaba Z, Buabeid MA, Ramadan A, Ghemrawi R, Al-Azayzih A, Al Meslamani AZ, et al. Knowledge, Attitudes, and Practices Concerning Breast Cancer and Self Examination Among Females in UAE. J Community Health. 2021;46(5):942-50.
19. Franco G, Sevilla AR, Herrera IMR, Castañeda MEG, Sunil T. Knowledge, Attitudes, Behavior, and Practices of Self-Breast Examination in Jalisco, Mexico. J Cancer Educ. 2022;37(5):1433-7.

20. Mahon SM, Mojisola Faleti D, Durodoluwa Faleti D, Eche IJ, Oladimeji TD. Response to "Knowledge and Practice of Breast Self-Examination: A Cross-Sectional Study of Women at Selected Health Centers in Oyo State, Nigeria". Clin J Oncol Nurs. 2023;27(3):223-5.