

Knowledge, Attitude, and Practice on Breast Cancer Screening Among Women in Perak State, Malaysia: A Cross-Sectional Study

Abdul Raheem Muhammed Atheeq^{1*}, Wania Ahmed Khan², Syaril Rohan Bin Roseli³, Ateyah Saleh⁴, Nabeeha Mohamed Fauzee⁵

*Corresponding author:

¹Abdul Raheem Muhammed Atheeq, MBBS student,
Email: atheeqraheem1@gmail.com [[ORCID](#)]

²Wania Ahmed Khan [[ORCID](#)]

³Syaril Rohan Bin Roseli [[ORCID](#)]

⁴Ateyah Saleh [[ORCID](#)]

⁵Nabeeha Mohamed Fauzee [[ORCID](#)]

¹⁻⁵MBBS year 3 students, Faculty of Medicine, Quest International University (QIU), No. 227, Plaza Teh Teng Seng (Level 2), Jalan Raja Permaisuri Bainun, 30250 Ipoh, Perak Darul Ridzuan, Malaysia

Information about the article:

Received: Feb. 10, 2026

Accepted: Apr 27, 2026

Published online: July. 1, 2026

DOI: <https://doi.org/10.5281/zenodo.21723089>

Publisher

Quest International University (QIU), No.227, Plaza Teh Teng Seng (Level 2), Jalan Raja Permaisuri Bainun, 30250 Ipoh, Perak Darul Ridzuan, Malaysia

e-ISSN: 2636-9478

© The Author(s). 2026

Content licensing: [CC BY 4.0](#)

ABSTRACT

Introduction:

Breast cancer prevalent globally, has high mortality rates among women. Screening reduces risk, but inadequate participation, awareness suffers due to cultural barriers, knowledge and healthcare accessibility issues. This study assessed knowledge, attitude, and practice of breast cancer screening among Perak women, examining sociodemographic factors to identify gaps for targeted health education initiatives revealing barriers in Malaysia, particularly in Perak State where data is sparse.

Methods:

This cross-sectional descriptive study was conducted from February 2025 to May 2025. A structured questionnaire was distributed online via Google Forms, where 233 respondents participated.

Results:

Overall, participants demonstrated moderate knowledge regarding breast self-examination (BSE). Participants showed positive attitudes toward BSE. Almost all respondents agreed that BSE is beneficial. Although 80.3% expressed fear when thinking about breast cancer, only 24.89% reported avoiding BSE because of this fear. Despite generally positive knowledge and attitudes, BSE practice was suboptimal. Slightly over half of the participants reported practicing BSE (51.5%), while only one-third performed it monthly (33.48%).

Conclusion:

The study concludes that participants have moderate knowledge and positive attitudes toward BSE, but practice is lacking. Proper practical training BSE education may bridge this gap and improve outcomes.

Keywords

Breast, cancer, educational, knowledge, practice, screening, women

Introduction

Breast cancer is considered one of the most common malignant tumors in women, which develops as a result of multiple internal and external factors. [1-3] Mortality at the global level is alarming; 694,000 deaths in 2024, and it is the most common cause of cancer in women in 164 countries out of 186 in the same year. [4] Screening for breast cancer is vital, as it detects precancerous lesions and early-stage cancers in women without symptoms. It helps to reduce the chances of mortality and morbidity. [5] Although there are well-known methods for breast examination and diagnosis, such as breast self-examination (BSE), clinical breast examination (CBE), and mammography, awareness about breast cancer and adoption in a community face multiple challenges. This is because of inadequate participation in breast screening programs due to multiple factors, e.g. differences in awareness, cultural barriers, educational backgrounds, accessibility of healthcare services, and perceived susceptibility to the disease. Another concern is diagnosis in advanced stages due to either knowledge deficit or poor screening practices. [6, 7]

The Knowledge-Attitude-Practice (KAP) is a well-known tool that helps measure knowledge, positive/negative attitudes toward a specific topic, behavior, or health intervention, and the subsequent actions or practices taken by a community or target population. Systematic evidence indicates that many women have inadequate knowledge, unfavorable attitudes, and poor screening practices, indicating persistent barriers to the successful implementation of breast cancer screening programs. [8] However, most of the existing KAP evidence on breast cancer screening comes from Western populations or from other Asian settings with different healthcare systems, cultural norms, and screening infrastructure, limiting its direct applicability to the Malaysian context. [7-11] Within Malaysia itself, KAP data are unevenly distributed across states, and women in Perak State — a region with its own distinct urban-rural mix, ethnic composition, and healthcare accessibility profile, which remain under-represented in the published literature. [10-15] So it remains unclear whether the knowledge deficits, attitudinal barriers, and practice gaps reported elsewhere in Malaysia are mirrored, exaggerated, or attenuated among women and the factors associated with poor screening uptake locally.

To address this gap, the present study aimed to assess the knowledge, attitude, and practice regarding breast cancer screening among women in Perak State, Malaysia, and to examine the sociodemographic factors associated with each domain. Characterizing the KAP profile of this population could help identify the specific knowledge gaps and attitudinal barriers that most need addressing in Perak State, and could inform the design of more targeted, locally relevant health education initiatives and screening outreach programs, rather than relying on generic national campaigns.

Methods

Study period, study design, and participants

This cross-sectional descriptive study was conducted from February 2025 to May 2025. A structured questionnaire was distributed online via Google Forms, with 233 participants responding.

Study participants

All female participants from Perak were selected as the study population. aged 18 and above who were willing to participate and provided informed consent to the investigators. Women who lived in Perak for a short time, could not read or understand English or Malay and were unwilling to participate were excluded.

Collection of data and a questionnaire

The respondents answered the questionnaire via Google Forms. Three reminders were sent to ensure comprehensive participation. The questionnaire consists of two sections. Section one presents the demographic profile of the respondents, including age, gender, nationality, and ethnicity. Section two was the questionnaire based on knowledge, attitude, and practice. A total of 41 questions were used as follows: a) knowledge – 17 items, b) attitude – 14 items, and c) practice – 10 items. [16]

Independent variables

Age, nationality, ethnicity, religion, level of education, marital status, employment, household income, and self-medication were considered independent variables.

Dependent variables

Knowledge, attitude, and practice of breast cancer screening.

Statistical analysis

The Statistical Package for the Social Sciences (SPSS, version 26) was used for the statistical analysis. Descriptive statistics were performed to summarise the data. Qualitative variables were presented as frequencies and percentages.

Ethical committee approval

The Joint Research Ethics Committee (JREC) of Quest International University approved this research. To ensure participant confidentiality, no personally identifiable information—such as names, addresses, emails, or phone numbers—was collected. Voluntary participation was secured through informed consent, with participants briefed on the study's purpose. Investigators informed participants that refusal to participate or withdrawal at any stage would incur no penalty or adverse consequences.

Results

Table 1: Descriptive statistics for demography (n=233)

Variable	n	(%)
Age		
18-20	92	(39.50)
21-23	85	(36.50)
24-28	23	(9.90)
29-34	8	(3.40)
35-40	11	(4.70)
41-59	14	(6.00)
Nationality		
Malaysian	189	(81.10)
Non-Malaysian	44	(18.90)
Ethnicity		
Malay	35	(15.00)
Chinese	73	(31.30)
Indian	74	(31.80)
Others	51	(21.90)
Religion		
Atheism	8	(3.40)
Hindu	65	(27.90)
Islam	63	(27.00)
Catholic	28	(12.00)
Buddhism	69	(29.60)
Level of Education		
Bachelors	167	(71.70)
Masters	7	(3.00)
Doctorate	1	(0.40)
Primary School	1	(0.40)
Secondary School	57	(24.50)
Marital Status		
Married	31	(13.30)
Single	201	(86.30)
Separated	1	(0.40)
Employment		
Employed	55	(23.60)
Unemployed	177	(76.00)
Pensioner	1	(0.40)
household Income		
B40	109	(46.80)
M40	96	(41.20)
T20	28	(12.00)
self-medicate		
Yes	76	(32.60)
No/I don't know	157	(67.40)

Table 1 explains that A total of 233 women participated in the study. Most participants were aged 18–20 years (39.5%), followed by 21–23 years (36.5%). The majority were Malaysian (81.1%), with Chinese (31.3%) and Indian (31.8%) participants comprising the largest ethnic groups. Most respondents had a bachelor's degree (71.7%), were single (86.3%), and unemployed (76.0%). Nearly half belonged to the B40 household income group (46.8%), while approximately one-third (32.6%) reported practicing self-medication.

Overall, participants demonstrated moderate knowledge regarding BSE. Most respondents had heard of BSE (83.7%) and recognized its importance for the early detection of breast cancer (78.1%). More than two-thirds correctly identified that BSE includes examination of the armpit (67.0%) and that breast lumps (70.8%) and

changes in breast shape or size (70.8%) may indicate breast cancer. Furthermore, 92.3% believed that BSE is necessary. However, knowledge regarding the appropriate timing and techniques of BSE was less satisfactory. Only half knew that BSE should be performed monthly 50.2%, 38.2% correctly identified the optimal timing during the menstrual cycle (Table 2).

Table 2: Participants knowledge about breast cancer screening

Knowledge questions	Yes n (%)	No/I don't know n (%)
K1) Have you ever heard about breast self-examination?	195 (83.70)	38 (16.30)
K3) BSE could be done monthly?	117 (50.20)	116 (49.80)
K4) BSE should begin at age of 20?	128 (54.90)	105 (45.10)
K5) BSE could be done lying down?	91 (39.10)	142 (60.90)
K6) BSE could be done in front of a mirror?	145 (62.20)	88 (37.80)
K7) BSE could be done sitting down?	132 (56.65)	101 (43.35)
K8) BSE could be done while showering?	129 (55.40)	104 (44.60)
K9) BSE is important in the early detection of breast cancer?	182 (78.10)	51 (21.90)
K10) BSE should be done between day 7 and day 10 of the menstrual cycle?	89 (38.20)	144 (61.80)
K11) BSE could be done during menstruation?	55 (23.60)	178 (76.40)
K12) BSE should not be performed after menopause?	23 (9.90)	209 (89.70)
K13) During BSE, there is a need to press on the nipple to check any unusual discharge ?	118 (50.60)	115 (49.40)
K14) BSE includes armpit examination to check for any lump?	156 (67.00)	77 (33.00)
K15) Detection of a lump in the breast may be an early sign of cancer?	165 (70.80)	68 (29.20)
K16) During BSE, an unusual change in the shape and size of the breast is observed?	165 (70.80)	68 (29.20)
K17) Do you think breast self-examination is necessary?	215 (92.30)	18 (7.70)

Participants showed positive attitudes toward BSE. Almost all respondents agreed that BSE is beneficial (94.9%), that it should be practiced by all women (94.0%), and that they cared about their breast health (93.56%). Most participants also reported that BSE was not embarrassing (70.82%), was not a waste of time (78.54%), and that they would seek treatment at a healthcare facility if they detected a breast lump (91.42%). Although 80.3% expressed fear when thinking about breast cancer, only 24.89% reported avoiding BSE because of this fear. Additionally, the majority expressed interest in performing BSE (78.54%) and obtaining further information about BSE (84.98%) (Table 3).

Table 3: Participants attitude about breast cancer screening

Attitude	No/I don't know		Yes	
	n	(%)	n	(%)
A1) Do you think breast self-examination can give you a benefit(s)?	12	(5.15)	221	(94.85)
A2) When doing BSE, it makes me feel funny.	166	(71.24)	67	(28.76)
A3) BSE is not embarrassing to me	68	(29.18)	165	(70.82)
A4) Doing BSE is not wasting time	50	(21.46)	183	(78.54)
A5) After doing BSE, it makes me feel satisfied	53	(22.75)	180	(77.25)
A6) If there is a lump, I prefer to get treatment from a medical facility	20	(8.58)	213	(91.42)
A7) If I can do BSE once a month, it makes me feel comfortable	46	(19.74)	187	(80.26)
A8) BSE is a good practice, and all women must practice it	14	(6.01)	219	(93.99)
A9) I care about my breast	15	(6.44)	218	(93.56)
A10) I am afraid to think about breast cancer	46	(19.74)	187	(80.26)
A11) I avoid doing BSE because I worry about getting breast cancer	175	(75.11)	58	(24.89)
A12) I am interested in doing a breast self-examination (BSE)	49	(21.03)	183	(78.54)
A13) I am interested in searching for information regarding BSE from the internet, magazine, and newspaper	35	(15.02)	198	(84.98)
A14) I discuss with my friends about BSE	92	(39.48)	141	(60.52)

Table 4: Participants practice about breast cancer screening

Practice		n	(%)
P1) Do you practice breast self-examination?	Yes	120	(51.50)
	No/ I don't know	113	(48.50)
P2) Do you perform BSE once a month?	Yes	78	(33.48)
	No/ I don't know	155	(66.52)
P3) Do you know the correct method of BSE?	Yes	89	(38.20)
	No/ I don't know	144	(61.80)
P4) Do you know the three BSE techniques?	Yes	76	(32.62)
	No/ I don't know	157	(67.38)
P5) If YES, what technique do you use?	Yes	11	(4.72)
	No/ I don't know	149	(63.95)
	Parallel Lines	10	(4.29)
	Consecutive clock time	45	(19.31)
	Concentric orders	18	(7.73)
P6) Have you ever seen a palpable lump or mass in your breast?	Yes	31	(13.30)
	No/ I don't know	202	(86.70)
P7) What makes you start performing BSE?	Fear of breast cancer	175	(75.11)
	Media	56	(24.03)
	Breast cancer campaign	1	(0.43)

	Mother had to	1	(0.43)
P8) When was the last time you perform breast self-examination?	Year ago	31	(13.30)
	Month ago	56	(24.03)
	Weeks ago	33	(14.16)
	Never practice BSE	113	(48.50)
P9) If you do not ever practice breast self-examination, what was the reason?	Don't know the technique	108	(46.35)
	No one recommends	47	(20.17)
	Afraid to touch	7	(3.00)
	Too young	12	(5.15)
	No symptom	33	(14.16)
	Fear of outcome	19	(8.15)
	Other	7	(3.00)
P10) Do you discuss the importance of BSE with friends?	Yes	126	(54.08)
	No/ I don't know	107	(45.92)

Despite generally positive knowledge and attitudes, BSE practice was suboptimal. Slightly over half of the participants reported practicing BSE (51.5%), while only one-third performed it monthly (33.48%). Less than 40% reported knowing the correct BSE method (38.2%) or the three recommended examination techniques (32.62%). Among those performing BSE, the consecutive clock-time technique was the most commonly used (19.31%). Fear of breast cancer was the main motivation for initiating BSE (75.11%). Among participants who had never practiced BSE, the most common barrier was not knowing the correct technique (46.35%), followed by the absence of recommendations from others (20.17%). More than half of the respondents (54.08%) discussed the importance of BSE with friends.

Discussion

The present study included a relatively young study population, with more than three-quarters of participants aged below 24 years, the majority being Malaysian, single, and bachelor's degree students. This demographic profile reflects a population that is generally well educated but has limited life experience regarding breast health. Young women often perceive themselves to be at low risk for breast cancer, which may reduce their motivation to seek information or engage in preventive screening behaviours. A previous study was based on university-based young women, making comparison with the present findings appropriate. [15] Some other researchers considered a larger cohort from the general population. [10-13] Although educational attainment was high in our study, higher education alone does not necessarily translate into improved preventive health practices, indicating that targeted breast health education remains necessary even among university students. [17]

These findings suggest that demographic characteristics play an important role when designing breast cancer awareness programmes, focusing more on young women who generally underestimate their susceptibility to breast cancer. We found that participants had moderate knowledge

regarding BSE. Most of the study participants had heard of BSE, were aware of its importance in early breast cancer detection, and correctly recognized common warning signs such as breast lumps and changes in breast size or shape.

However, important deficiencies remained regarding the correct timing, frequency, and techniques of BSE. Similar knowledge gaps have been reported in previous studies from Malaysia and other countries, where awareness of BSE was relatively high but detailed procedural knowledge was inadequate. [12]

Inadequate understanding of the proper examination technique may reduce women's confidence in performing BSE correctly and limit its effectiveness as a self-screening practice. Educational interventions should therefore move beyond increasing awareness to providing practical demonstrations and repeated training on the correct method and timing of BSE. [18]

Participants in the present study showed a positive attitudes towards breast cancer screening. Most of the respondents believed that BSE is beneficial, considered it an important practice for all women, and expressed concern for maintaining breast health. Most participants were in favour of seeking medical attention if they detected a breast lump and were interested in getting more information on BSE. These findings are encouraging because positive attitudes are recognized as important predictors of future screening behaviour. These findings are consistent with previous results, in which good knowledge led to positive attitudes and good practice of BSE [11, 19]. Although we observed favourable attitudes, many respondents also expressed fear of breast cancer, but relatively few reported avoiding BSE because of this fear. Similar observations reported that women frequently acknowledge the benefits of BSE while emotional factors such as anxiety and fear may still influence screening behaviour. [20, 21]

Despite moderate knowledge and highly positive attitudes, participants' BSE practices were unsatisfactory. We observed that approximately half of the respondents reported ever performing BSE, only one-third practiced it monthly as recommended, and fewer than 40% knew the correct examination technique. This is in line with previous findings, suggesting that knowledge alone is insufficient to produce sustained behavioural change. [10 -14]

The most common reason for not performing BSE in the present study was lack of knowledge regarding the correct technique, followed by the absence of recommendations from healthcare providers or others. So, inadequate technical knowledge, lack of confidence, negative thoughts, and absence of symptoms can be considered as major barriers to regular BSE practice. Consequently, breast cancer awareness campaigns need to be organized, and practical, hands-on BSE training, repeated reinforcement through healthcare professionals, and community-based educational programmes can help in this context.

Conclusion

The present study showed that although the majority of participants had moderate knowledge and positive attitudes toward BSE, their actual screening practices are not satisfactory. While most respondents know the importance of BSE and expressed willingness to do it, fewer reported practicing BSE regularly. The findings highlight a significant gap between knowledge, attitude, and practice. Therefore, breast health education programmes should be organized to incorporate practical BSE training, regular awareness campaigns, and guidance from healthcare professionals. Taking suitable steps to improve knowledge may change women's attitude and practice towards earlier detection of breast abnormalities and improve breast cancer outcomes.

Limitations and future scope

This study has a few limitations that should be considered when interpreting the findings. First, the cross-sectional design represents a single point in time, which prevents the establishment of causal relationships between variables. Second, the self-administered questionnaire may have introduced recall bias and social desirability bias, which affected the results. Third, the study population consisted predominantly of young, educated women, limiting generalizability. Future studies should include more diverse populations across age groups, educational backgrounds, socioeconomic statuses, and geographical regions, and use more complex analyses to improve the generalizability of the study findings.

Relevance of the study

Breast cancer is one of the leading causes of cancer-related morbidity and mortality among women worldwide. Early detection plays a crucial role in improving treatment outcomes and survival. The findings in this research provide valuable evidence on the current level of knowledge, attitudes, and practices related to breast cancer screening among women in Perak. Identifying the deficiencies in knowledge and barriers to regular BSE practice despite generally positive attitudes, this study revealed important insights for healthcare professionals, educators, and policymakers to design targeted public health campaigns to promote awareness.

Acknowledgement

Authors are grateful to Quest International University for providing all support for this work. The authors are grateful to Amanpreet Kaur Gurdarshan Singh of Quest International University for her contributions to the manuscript's language and grammar editing.

Authors' contribution

All authors made equal contributions to the study in terms of planning, data collection, data analysis/interpretation, paper writing, manuscript revision, and final approval of the manuscript. All authors also agreed to be responsible for all parts of the work.

Funding

The present study was not funded.

Availability of data and materials

All data underlying the results is available as part of the article, and no additional source data is required.

Competing interests

None declared.

Publisher's Note

QIU remains neutral with regard to jurisdictional claims in published maps and institutional affiliations. The publisher shall not be legally responsible for any types of loss, actions, claims, proceedings, demand, or costs or damages whatsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

References

- Obeagu EI, Babar Q, Vincent CCN, Udenze CL, Eze R, Okafor CJ, et al. Therapeutic targets in breast cancer signaling: A review. *J Pharm Res Int*. 2021;82-99. <https://doi.org/10.9734/jpri/2021/v33i56A33889>
- Aizaz M, Khan M, Khan FI, et al. Burden of breast cancer: developing countries perspective. *Int J Innov Appl Res*. 2023;11:31-7.
- Ibekwe AM, Obeagu EI, Ibekwe CE, et al. Challenges of exclusive breastfeeding among working class women in a teaching hospital South East, Nigeria. *J Pharm Res Int*. 2022;34:1. <https://doi.org/10.9734/jpri/2022/v34i46A36371>
- Breast cancer. (n.d.). Retrieved July 17, 2026, from Who.int website: <https://www.who.int/news-room/fact-sheets/detail/breast-cancer>
- Shah TA, Guraya SS. Breast cancer screening programs: Review of merits, demerits, and recent recommendations practiced across the world. *J Microsc Ultrastruct*. 2017;5(2):59-69. <https://doi.org/10.1016/j.jmau.2016.10.002>
- Lott BE, Yeo S, Bekele E, Birhanu F, Hussein R, Muktar S, et al. Breast cancer education and empowerment in Ethiopia: Evaluating community-based cancer prevention efforts using the RE-AIM framework. *J Cancer Educ*. 2024;39(6):698-705. <http://dx.doi.org/10.1007/s13187-024-02453-6>
- Yilmaz D, Bebis H, Ortobag T. Determining the awareness of and compliance with breast cancer screening among Turkish residential women Asian Pac J Cancer Prev. 2013;14:3281-8. <https://doi.org/10.7314/APJCP.2013.14.5.3281>
- Pal A, Taneja N, Malhotra N, Shankar R, Chawla B, Awasthi AA, et al. Knowledge, attitude, and practice towards breast cancer and its screening among women in India: A systematic review. *J Cancer Res Ther*. 2021;17(6):1314-21. https://doi.org/10.4103/jcrt.JCRT_922_20
- Al-Mousa DS, Alakhras M, Hossain SZ, Al-Sa'di AG, Al Hasan M, Al-Hayek Y, et al. Knowledge, attitude and practice around breast cancer and mammography screening among Jordanian women. *Breast Cancer (Dove Med Press)*. 2020;12:231-42. <https://doi.org/10.2147/BCTT.S275445>
- Abdullah Zawawi MFB, Shafee MHB, Muazhar NAB, Govindan SN. Knowledge, attitude, and practice of breast Self-Examination (BSE) among women in Ulu Kita, Perak. *Int J Hum Health Sci (IJHHS)*. 2025;9(10):S28. <https://doi.org/10.31344/ijhhs.v9i10.797>
- Norlaili AA, Fatimah MA, Daliana NFN, Maznah D. Breast cancer awareness of rural women in Malaysia: is it the same as in the cities? *Asian Pac J Cancer Prev*. 2013;14(12):7161-4. <https://doi.org/10.7314/APJCP.2013.14.12.7161>
- Subramaniam R. Knowledge and awareness of breast cancer among rural women in Perak. *Asian Journal of Medicine & Health Sciences*. 2018;1:27-31 Available from: https://www.ajmhsrcmp.org/images/journal/Breast_Cancer_Awareness_Ramani.pdf
- Sulong WSW, Yusoff HM, Shafie ZM, Hamzah F, Ali NA. Breast cancer awareness among rural women in Terengganu, Malaysia. *jmtmp*. 2022;3(3):28-38.
- Zainuddin NFA, Solihin Sulaiman NA. Knowledge, attitude and practice of breast self-examination among janitors at public university Malaysia. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*. 2022;7(12):e001956. <https://doi.org/10.47405/mjssh.v7i12.1956>
- Sowtali SN, Halid NHH. Knowledge, Attitude & Practice Regarding Breast Cancer and Breast Self-examination (BSE) among Undergraduate Students of International Islamic University Malaysia (IIUM). *IJAHS*. 2024;8(2): 3043-3052
- Muhsin M, Yamin LSM. Knowledge, Attitude, and Practice Regarding Breast Self Examination Among Female Health Sciences Final Year Students. *Malaysian Journal of Medicine and Health Sciences*. 2022;18(SUPP15): 205-212. <https://doi.org/10.47836/mjmhs.18.s15.28>

17. Garai S, Márton JT, Sipos D, Csima M. Health beliefs and breast self-examination practices among female health science students in Hungary: a health belief model perspective. *Front Public Health*. 2025;13(1681802):1681802.
<https://doi.org/10.3389/fpubh.2025.1681802>
18. Parsa P, Kandiah M, Parsa N. Factors associated with breast self-examination among Malaysian women teachers. *East Mediterr Health J*. 2011;17(6):509-16.
<https://doi.org/10.26719/2011.17.6.509>
19. Singh R, Turuk A. A study to assess the knowledge regarding breast cancer and practices of breast self-examination among women in urban area. *Int J Community Med Public Health*. 2017;4(11):4341.
<https://doi.org/10.18203/2394-6040.ijcmph20174856>
20. Almutairi WM, Alzahrani SH. Anxiety levels among women undergoing mammogram screening. *Curr Oncol*. 2025;32(3):160.
<https://doi.org/10.3390/curroncol32030160>
21. Consedine NS, Magai C, Krivoshekova YS, Ryzewicz L, Neugut AI. Fear, anxiety, worry, and breast cancer screening behavior: a critical review. *Cancer Epidemiol Biomarkers Prev*. 2004;13(4):501-10.
<https://doi.org/10.1158/1055-9965.501.13.4>