

Screening mammogram – Assessment of eligible females' knowledge, attitude and practice, at a tertiary care hospital in Karachi

Mahrukh Naz, Omema Saleem, Umm e Habiba Abdul Rauf, Faisal Ghani Siddiqui, Mahnoor Arif, Yumna Monis

Abstract

Objective: To assess the knowledge, attitude and practices regarding screening mammography among females attending a tertiary care facility.

Method: The cross-sectional study was conducted from May to October 2023 at the Dow University Hospital, Karachi, and comprised women aged 20-70 years attending the Breast Clinic. Data was collected using a structured, interviewer-administered questionnaire. Data was analysed using SPSS 20.

Results: Of the 134 women, 47(35%) were aged 41-50 years, followed by 36(27%) who were aged 31-40 years. Most respondents 71(53%) correctly identified mammography as a useful tool for early detection of breast cancer, while 63(47%) were unaware of it. Regarding awareness of risks, 72(54%) women believed that mammography is not associated with cancer risk. In terms of screening frequency, 47(35.2%) women were unaware of the recommended interval, while 58(43.3%) identified yearly screening as appropriate. Overall, 64(48%) participants reported that they would opt for mammography, and 115(86%) believed that screening should be encouraged.

Conclusion: Although attitudes towards mammography were found to be generally positive, significant gaps in knowledge and practice persisted, highlighting the need for targetted educational interventions and improved access to screening services.

Keywords: Mammography, Early detection of cancer, Women's health, Health education.

(JPMA 76: 1914; 2026) DOI: <https://doi.org/10.47391/JPMA.31181>

Introduction

Breast cancer is a major global public health concern.¹ Early detection through mammography significantly improves survival, but awareness and practices remain low, particularly in resource-limited settings. Healthcare professionals, particularly female providers, are pivotal in promoting screening and encouraging adherence.

Nearly half of global cancer cases and the majority of cancer-related deaths occur in Asia, with the region comprising over half of the world's population. Late-stage diagnosis and limited access to healthcare contribute to high mortality in low- and middle-income countries (LMICs).² The World Health Organisation (WHO) Global Breast Cancer Initiative aims at reducing mortality by 2.5% annually through health promotion, early detection, timely diagnosis and comprehensive management.³

Screening mammography is considered the gold standard for early detection in average-risk women. Clinical breast examination and breast self-examination remain complementary strategies, particularly in settings where

mammography access is limited. According to the American Cancer Society, mammography should start at age 40 for average-risk women. High-risk women should begin annual screening earlier, based on family history or genetic predisposition.⁴

The current study was planned to assess knowledge, attitude and practices regarding screening mammograms among Pakistani women, and to identify factors motivating or hindering uptake. The study also aimed at evaluating sources of information and prevalence of screening among immediate family members.

Subjects and Methods

The quantitative, cross-sectional study was conducted at the Breast Clinic of Dow University Hospital (DUH), Dow International Medical College (DIMC), Dow University of Health and Sciences (DUHS), Karachi, from May to October 2023. After approval from the institutional ethics review board, the sample size was calculated using the single-population proportion formula⁵ for cross-sectional studies with 95% confidence level, 5% absolute precision and anticipated proportion of 50% based on published literature⁵ on breast cancer awareness and screening practices. The sample was raised using systematic random sampling technique, and written informed consent was obtained from all the participants.

Those included were women aged 20-70 years attending

Department of General Surgery, Dow University of Health Sciences, Karachi, Pakistan.

Correspondence: Mahrukh Naz. e-mail: mahrukhnaz91@yahoo.com

ORCID ID: 0009-0008-0505-2797

Submission completed: 18-07-2025 **1st Revision received:** 28-11-2025

Acceptance: 05-08-2026

Last Revision received: 04-08-2026

the clinic during the study period. Those excluded were women who were unconscious, cognitively challenged, or having major cognitive impairments.

A structured, knowledge-based proforma was designed to assess the level of awareness regarding screening mammograms. In addition to demographic details, the proforma explored knowledge about mammography, source of information regarding screening mammograms, awareness of mammography as a tool for early detection of breast cancer, perceived risks associated with mammography, recommended age for initiating mammography, frequency of mammography, attitude towards encouraging screening mammograms, and distance of the screening centre from the participant's home.

Data was collected using a structured, interviewer-administered questionnaire. Personal identifiers were kept strictly confidential, and each participant was assigned a unique study number. A pilot test was conducted on a small sample to assess clarity, comprehension and feasibility of the questionnaire. The subjects were given the free will not to answer any question they did not want to.

Data was analysed using SPSS 20. Data was presented as frequencies and percentages. Chi-square test was used to evaluate the level of awareness among each study participant. $P < 0.05$ was considered significant.

Results

Of the 134 women, 47(35%) were aged 41-50 years, followed by 36(27%) who were aged 31-40 years. Most women 109(81.3%) held an undergraduate qualification, while 25(18.6%) had no formal education. The majority of the subjects were married 107(80%) and belonged to low-to middle-income households 82(61.0%).

In terms of ethnicity, the participants were predominantly Urdu-speaking 53(40%), followed by Sindhi 36(27%) and Punjabi 20(15%). Most participants were Muslim 121(90%), and lived in nuclear family systems 72(54%) (Table 1). Four (3%) participants avoided disclosing their ethnicity and family system while 1(1%) chose not to disclose their religion.

Most respondents 71(53%) correctly identified mammography as a useful tool for early detection of breast cancer, while 6(4%) responded negatively, and 57(43%) reported that they did not know. A total of 72(54%) participants believed that mammography does not involve any risks, whereas 62 (46%) believed that it may involve some risk.

There were 36(26.8%) participants who correctly identified

the recommended age to start screening, while 47(35.2%) were unaware of the recommended frequency. Overall, 58(43.3%) participants correctly identified yearly screening as appropriate.

Overall, 64(48%) participants reported that they would opt for mammography, 40(30%) said they would consider it only if symptomatic, 27(20%) were uncertain, and 3(2%) stated they would never consider it.

In terms of practice, 69(51%) participants reported willingness to undergo screening, while 65(49%) were not inclined. Additionally, 63(47%) participants reported that the nearest screening facility was far from their residence (Table 2).

Statistically significant associations were observed between awareness of risks and knowledge of

Table-1: Demographic characteristics of the subjects (n=34).

Characteristics	n (%)
Age (years)	
20-30	19 (14)
31-40	36 (27)
41-50	47 (35)
51-60	23 (17)
61-70	9 (8)
Educational Level	
No Formal Education	25 (18.6)
Primary School	23 (17)
Secondary	34 (25)
Higher secondary and above	52 (39)
Others	0 (0)
Religion	
Islam	121 (90)
Hinduism	9 (7)
Christianity	3 (2)
Avoided this question	1 (1)
Marital Status	
Married	107 (80)
Single	27 (20)
Ethnicity	
Urdu Speaking	53 (40)
Sindhi	36 (27)
Punjabi	20 (15)
Pathan	8 (6)
Others	8 (6)
Baloch	5 (4)
Avoided this question	4 (3)
Monthly Income (Pak Rupees)	
20000-50000	82 (61)
50000-100000	31 (23)
<20000	20 (15)
>100000	1 (1)
Family System	
Nuclear	72 (54)
Joint	58 (43)
Avoided this answer	4 (3)

Table-2: Responses to the study questionnaire (n=134).

Questions	n (%)
Is mammography a useful tool for early detection of breast cancer (BC)?	
Yes	71 (53)
No	6 (4)
Don't know	57 (43)
Does screening mammograms involve any risks?	
Yes	62 (46)
No	72 (54)
How often mammography should be done?	
6 Monthly	10 (7.46)
Yearly	58 (43.3)
Every 2 years	6 (4.5)
Once in a life	52 (38.8)
When a lump	8 (5.9)
Attitude	
Would only consider it if developed any symptoms	40 (30)
Will think about it	27 (20)
Would definitely opt for it	64 (48)
Would never consider it	3 (2)
Should screening mammogram be encouraged?	
Yes	115 (86)
No	5 (4)
Don't Know	14 (10)
Practice	
Yes	69 (51)
No	65 (49)

Table-2: Association of risk awareness related to mammography with study variables.

Variables	Chi-Square (χ^2)	p-value
Usefulness of mammography for early detection of breast cancer	145.204	0.001
Recommended age to start mammography	178.112	<0.001
Frequency of mammography	151.025	<0.001
Attitude toward screening mammography	150.862	0.001
Practice of screening mammography	147.429	<0.001
Distance of screening centre from home	147.128	<0.001

p-values ≤ 0.05 considered statistically significant.

mammography usefulness ($p=0.001$), recommended age to initiate screening ($p<0.001$), screening frequency ($p<0.001$), attitude towards screening ($p=0.001$), practice ($p<0.001$) and accessibility of screening services ($p<0.001$) (Table 3).

Discussion

The current study's findings suggest the presence of substantial gaps in knowledge, attitude and practice regarding screening mammography among women attending a tertiary care hospital in Karachi. Although just over half of the respondents recognised mammography as an effective tool for early breast cancer detection, overall knowledge was inadequate in a considerable proportion of participants. Similar patterns have been reported in previous literature, where awareness of breast cancer screening modalities remains suboptimal across different

regions of Pakistan despite an increasing disease burden.^{5,6,7}

Socioeconomic factors may play a role in shaping awareness and screening behaviour. The majority of participants in this study belonged to low- to middle-income households, which have been consistently associated with limited access to preventive healthcare services, including mammography. Evidence from primary care settings in Pakistan also indicates low utilisation of breast cancer screening services, particularly among women from lower socioeconomic backgrounds.⁷ Financial constraints, competing household responsibilities, and limited availability of organised screening programmes may contribute to reduced uptake of preventive care.

Cultural and socio-behavioural factors may further influence attitudes towards screening. Studies from South Asia have highlighted that modesty concerns, fear of diagnosis, and reliance on family decision-making can affect healthcare-seeking behaviour among women. A study done in Lahore reported that cultural sensitivities and stigma surrounding breast health may act as barriers to early screening and awareness.⁸ In the present study, a notable proportion of participants indicated willingness to undergo screening only in the presence of symptoms, suggesting a tendency towards symptom-driven rather than preventive health-seeking behaviour.

It is also important to note that gaps in knowledge and practice are not limited to the general population. International evidence among Pakistani women living in high-income countries has similarly demonstrated deficiencies in awareness of breast cancer screening guidelines, indicating that sociocultural influences may persist beyond geographical boundaries.⁹ These findings collectively suggest that awareness and health literacy remain key determinants of screening behaviour.

Overall, the current findings indicate that awareness and practice regarding screening mammography remain suboptimal in the studied population. However, given the cross-sectional design, only associations can be inferred and causal relationships cannot be established. These findings highlight the importance of strengthening health education initiatives, improving access to screening services, and implementing culturally appropriate awareness programmes to enhance early detection of breast cancer in Pakistan.

The present study has several limitations. First, the study was conducted at a single tertiary care hospital, which may limit the generalisability of the results to other healthcare settings and the wider Pakistani population. Second, the

use of an interviewer-administered questionnaire may have introduced response bias, including social desirability bias. Third, the minimum required sample size was calculated to be 384, but due to time and resource constraints, a total of 134 women were enrolled. The relatively small sample size may affect the precision of estimates and limits broader inference. In addition, the study included women below the recommended age for routine breast cancer screening, which may reduce the applicability of findings specifically to screening-eligible populations. Furthermore, formal reliability testing of the questionnaire, like Cronbach's alpha, was not performed, which may affect assessment of internal consistency. Therefore, the findings should be interpreted as exploratory, and multicentre studies with larger, representative samples are recommended for future research.

Conclusion

Awareness regarding mammography as a useful tool for early detection of breast cancer was found to be moderate among the study population, with just over half of the participants correctly identifying its role. However, a substantial proportion of women either lacked awareness or were uncertain about its utility. This highlights persistent gaps in knowledge regarding breast cancer screening and underscores the need for targeted educational interventions to improve awareness and promote early detection.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

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Author Contribution:

MN & OS: Concept, data analysis, interpretation and writing.

UHAR & FGS: Final approval and agreement to be accountable for all aspects of the work.

MA & YM: Drafting and critically revision.