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Understanding and Implementation of Breast Screening Practices among Female Lecturers

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Abstract
Breast screening practices, including BSE, CBE, and mammography, help detect breast cancer early and improve outcomes. This study assessed the understanding and implementation of these practices among female lecturers in one of the public universities using a cross-sectional design. A total of 261 lecturers completed an online questionnaire. Most participants had fair to good knowledge and practice of BSE, while fewer demonstrated good levels of knowledge for CBE and mammography. Some individuals still demonstrated poor knowledge, particularly in the areas of CBE and mammography. Overall, the findings indicate that better understanding leads to improved screening practices, which may reduce the risk of developing breast cancer.

Keywords: Breast cancer; Screening practices; Female lecturers; Knowledge and practice

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1.0 Introduction

Breast cancer remains the most common cancer among Malaysian women, with delayed diagnosis significantly contributing to cancer-related mortality (Mohan et al., 2021). Globally, breast cancer screening behavior has been widely studied using behavioral frameworks such as the Health Belief Model (HBM) and the Theory of Planned Behavior (TPB). Evidence from systematic reviews and cross-sectional studies consistently shows that adequate knowledge does not necessarily lead to regular screening practices, especially for clinical methods such as CBE and mammography (Bonsu & Ncama, 2018; Tavakoli et al., 2024). Even among educated and professional groups, screening uptake is often affected by perceived barriers, fear, limited access, and competing role demands rather than knowledge alone (Bashirian et al., 2019; Heena et al., 2019; Kalliguddi et al., 2019).

Within the Malaysian context, most studies focus on the general population, rural communities, or healthcare workers, with limited attention on educated professional women. This creates a global–local gap where internationally established theoretical explanations of screening behavior may not be fully reflected or empirically tested in local, highly educated populations. To address this gap, the present study applies behavioral theory to examine breast cancer screening practices among female university lecturers, thereby connecting global theoretical perspectives with local empirical evidence to better understand the disconnect between knowledge and practice.

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Despite healthcare settings, many women do not undergo regular screening due to limited knowledge and low awareness (Dyavarishetty & Mistry, 2019). Adequate understanding of symptoms is associated with increased use of CBE and mammography (Solikhah et al., 2021). Screening plays a critical role in reducing late-stage diagnosis (Htay et al., 2021), and mammography has been shown to detect a significant portion of early cases (Mirzaei-Alavijeh et al., 2018). However, access to mammography remains limited in many populations due to cost and availability of facilities (Adedokun et al., 2020). Educating women on the benefits of early detection—such as tissue preservation, better prognosis, and higher chances of cure—can motivate regular breast checks and promote health-seeking behavior (Yusuf et al., 2022).

1.1 Problem Statement

Breast cancer continues to pose a major global health challenge, with early detection hindered by ongoing issues related to screening accessibility, adherence, and technology. Despite advancements, many women still present at advanced stages due to delayed diagnosis (Zielonke et al., 2020; Osei-Afriyie et al., 2021).Global evidence highlights disparities in screening access, especially among underserved groups, leading to poorer outcomes (Bray et al., 2020). Low adherence to mammography and CBE guidelines remains a concern, with studies showing consistently poor participation in routine screening (McCarthy et al., 2021). At the same time, rapid technological development complicates screening choices, requiring a balance between innovation and equitable access (Smith-Bindman et al., 2022).In many communities, late-stage breast cancer is linked to limited knowledge, poor awareness, emotional barriers, and socioeconomic factors (Solikhah et al., 2020). These challenges underline the need for improved understanding and practice of breast screening, particularly among educated working women. Therefore, this study aims to assess and enhance the understanding and implementation of breast screening practices among female lecturers at UiTM Puncak Alam.

1.2 Background and Screening Guidelines

Breast screening practices include routine testing such as breast self-examination (BSE), clinical breast examination (CBE) by healthcare practitioners, and mammography. These methods are critical for enhancing treatment options and results. For patients diagnosed with breast cancer, early detection via these tools increases the likelihood of successful treatment outcomes. The screening criteria are usually influenced by age and individual risk factors, emphasizing the importance of routine screening in discovering problems early on, when therapies are most successful.

1.3 Research Problem and Objective

Despite the availability of screening methods, adherence varies among women. This study aims to analyze female lecturers' knowledge and implementation of breast screening practices at UiTM Puncak Alam. By focusing on this specific demographic, the study seeks to determine whether higher educational status correlates with better screening compliance and whether family history influences these practices.

2.0 Literature Review

2.1. Current Screening Landscape in Malaysia

Breast cancer screening plays a vital role in reducing mortality through early detection and timely treatment (Zielonke et al., 2020). In Malaysia, however, the screening landscape remains largely opportunistic, meaning screening is conducted only when women engage with the healthcare system for other reasons, rather than through systematic nationwide programs. The Malaysian Clinical Practice Guidelines recommend biennial mammography for women aged 50–74 years, while mammograms for women aged 40–49 are provided selectively, based on individual risk and clinical judgment. Meanwhile, Breast Self-Examination (BSE) is promoted only as a means of breast awareness rather than as a formal screening tool (Mohan et al., 2021).

Despite this, BSE, Clinical Breast Examination (CBE), and mammography continue to serve as Malaysia's primary methods for early detection of breast cancer (Bashirian et al., 2019). National initiatives such as the Ministry of Health's Pink October campaigns, mobile mammography units, and NGO-based awareness programs aim to increase screening uptake, particularly among underserved communities. Yet, participation remains suboptimal due to a lack of structured screening invitations, variations in health literacy, socioeconomic barriers, cultural beliefs, and limited accessibility of mammography services in rural regions.

Furthermore, studies report that many Malaysian women still rely heavily on healthcare providers as their main source of breast cancer information, while others depend on social media, which contributes to inconsistent or inaccurate knowledge. This indicates that the current screening landscape not only lacks uniformity in implementation but also faces gaps in public understanding and uptake, reinforcing the need for targeted health education interventions.

2.2. Determinants of Screening Practice

Knowledge is essential but insufficient for ensuring screening practice. Demographic factors such as age, education, and marital status significantly influence engagement in BSE, CBE, and mammography. Although higher education is generally associated with better awareness and screening rates, misconceptions and inconsistent practices persist even among university lecturers (Dinegde et al., 2020). Access to reliable health information via campaigns, professionals, and trustworthy online sources improves compliance. However, cultural barriers like fear, embarrassment, fatalism, and the belief that screening is unnecessary without symptoms often deter women from regular screening.

Family history, a recognized risk factor, has a mixed influence on screening behavior. Some evidence suggests increased motivation among women with positive family history, but awareness does not consistently lead to action (Kalliguddi et al., 2019). Emotional factors such as denial, fear, and perceived invulnerability further reduce screening likelihood. Socioeconomic status, healthcare accessibility, and social support also shape screening patterns. Financial stability, urban residence, and encouragement from peers or employers correlate with higher compliance, whereas time constraints, work stress, and competing responsibilities hinder participation among working women. These findings underscore the complex, multidimensional nature of screening behavior. Understanding these factors is critical for crafting effective interventions that bridge the gap between knowledge and practice, particularly in educated groups like university lecturers.

3.0 Methodology

3.1. Study Design and Study Setting

A cross-sectional quantitative design was employed to collect data at a single point in time, aiming to identify the prevalence of breast screening knowledge and practices. Data were gathered through self-administered questionnaires. The study was conducted at UiTM Puncak Alam, Selangor, among female lecturers. The site was selected due to its large population (approximately 1,000 female lecturers), convenient access, and anticipated high cooperation.

3.2 Participants

Selection Criteria: Female lecturers from multiple faculties, including Health Sciences (excluding Nursing), Pharmacy, Education, Hotel and Tourism, Business and Management, Accountancy, Built Environment, and Creative Arts. The inclusion criteria of the participants are female lecturers who are proficient in English and Malay, and the study excludes lecturers from the Nursing Program and lecturers diagnosed with breast cancer.

3.3 Sampling Method

Convenience sampling was used based on participants' availability and willingness to respond. This method facilitated easy access to the target population; however, it limits the generalizability of the findings due to the non-random nature of sampling. Future studies should consider probabilistic sampling to enhance the representativeness of their findings.

3.4.Sample Size

Using Raosoft software with a population size of 806 female lecturers, a 5% margin of error, a 95% confidence level, and a 50% response rate, the required sample size was calculated to be 261. Ethical approval was obtained from the Faculty Ethics Review Committee (FERC/FSK/MR/2024/00051) covering the period 29 January–28 July 2024.

3.5.Research Instrument

A 36-item questionnaire adapted from a previous study was used, divided into four sections as follows:
Section A: Five socio-demographic items (age, religion, marital status, income, family history of breast cancer).
Section B: Sixteen items on BSE knowledge and practice (scored 0–16; categorized as poor, fair, good).
Section C: Eight items on CBE knowledge and practice (scored 0–8; categorized as poor, fair, good).
Section D: Seven items on mammography knowledge and use (scored 0–6; categorized as poor, fair, good).

3.6.Validity and Reliability

A pilot study was conducted from April 5 to 12, 2024, involving 26 participants (approximately 10% of the sample size). Data were analyzed using SPSS version 28. All sections demonstrated acceptable reliability with Cronbach's alpha values above 0.60.

3.7.Data Collection

Data collection commenced following ethical approval. Questionnaires were distributed via Google Forms using convenience sampling. Eligible participants provided online informed consent before completing the survey. Individuals who did not consent or were excluded were removed from the dataset prior to analysis. Data were analyzed using SPSS version 28. Descriptive analysis assessed understanding levels, and the Chi-Square Test investigated the relationship between screening practices and family history.

4.0 Findings

4.1 Socio-demographic Characteristics of Participants.

Table I presents the sociodemographic characteristics of the participants. The participants were well distributed across age groups, with the highest proportion aged 30–39 years (41.0%), followed by those aged 25–29 years (27.6%) and 40 years and above (31.4%). More than half were Muslims (57.5%), while Buddhists (21.1%), Hindus (19.2%), and Christians (2.3%) formed the remainder. The majority were married (51.3%), with 46% single, and only a small percentage were divorced (0.8%) or widowed (1.9%).

In terms of monthly income, most participants earned RM2000–RM4000 (38.7%), followed by RM4000–RM6000 (27.6%) and less than RM2000 (21.8%). Smaller proportions earned RM6000–RM8000 (5.4%) or more than RM8000 (6.5%). A large majority (85.8%) reported no family history of breast cancer, while 14.2% had such a history.

Table 1: Sociodemographic characteristics of participants (n=261)

Characteristics	Frequency (n)	Percentage (%) Age
25 - 29	72	27.6%
30 - 39	107	41.0%
40 and above	82	31.4%
Religion		
Islam	150	57.5%
Christian	6	2.3%
Buddha	55	21.1%
Hindu	50	19.2%
Marital Status		
Married	134	51.3%
Single	120	46.0%
Divorced	2	0.8%
Windowed	5	1.9%
Monthly income/allowance		
<RM2000	57	21.8%
RM2000 - RM4000	101	38.7%
RM4000 - RM6000	72	27.6%
RM6000 - RM8000	14	5.4%
>RM8000	17	6.5%
Family history of Breast Cancer		
yes	37	14.2%
No	224	85.8%

4.2 Level of Knowledge and Practice of BSE

Table II illustrates the participants' knowledge and practice of BSE. A small number (2.7%) know or practice BSE scoring between 0 and 5. This suggests that some individuals are unaware of or underutilize BSE. Then, more than half of the people (57.9%), scoring between 6 and 11, are knowledgeable about and proficient in BSE. A large group (39.5%) demonstrates good knowledge and regular practice of BSE, indicating that many people are knowledgeable about BSE and engage in it frequently.

Table 2: Level of Knowledge and Practice of BSE (n=261)

Category	Frequency (n)	Percentage (%)
Poor Knowledge and Practice (0 – 5)	7	2.7%
Fair Knowledge and Practice (6 – 11)	151	57.9%
Good Knowledge and Practice (12 – 16)	103	39.5%

4.3.Level of Knowledge and Practice of CBE

Table III illustrates the extent to which participants are familiar with and utilize CBE. 31.4% of them have a poor understanding and do CBE, indicating that one-third of these individuals are not well-informed and rarely engage in CBE. The largest group, comprising 45.6% of participants, falls into the fair category. This indicates that almost half of them understand and engage in CBE at a moderate level. 23.0% of participants have good knowledge and often practice CBE, indicating that approximately a quarter of the people possess a considerable amount of knowledge and regularly engage in CBE.

Table 3: Level of Knowledge and Practice of CBE (n=261)

Category	Frequency (n)	Percentage (%)
Poor Knowledge and Practice (0 – 3)	82	31.4%
Fair Knowledge and Practice (4 – 6)	119	45.6%
Good Knowledge and Practice (7 – 8)	60	23.0%

4.1. Level of Knowledge and Practice of Mammography

Table IV organizes participants' understanding and habits of mammography into three sections. In the poor category, 13.0% of participants have insufficient awareness and interaction with mammography. On the other hand, a large group, 68.6%, shows fair awareness and practices, indicating they understand and engage with mammography. 18.4% display strong knowledge and practices related to mammography, which means almost one-fifth participate and are well-informed about mammography screenings.

Table 4: Level of Knowledge and Practice of Mammography (n=261)

Category	Frequency (n)	Percentage (%)
Poor Knowledge and Practice (0 – 2)	34	13.0%
Fair Knowledge and Practice (3 – 4)	179	68.6%
Good Knowledge and Practice (5 – 6)	48	18.4%

4.5 Correlation between BSE Knowledge and Practice and Family History of Breast Cancer

Table V presents the relationship between participants' knowledge and practice of BSE and their family history of breast cancer. Among those with a family history, none demonstrated poor knowledge or practice. Instead, 25 participants (16.6%) showed fair levels, while 12 (11.7%) demonstrated good knowledge and practice. In total, 37 participants (14.2%) reported having a family history of breast cancer. In contrast, all individuals with poor knowledge and practice (100%) were from the group without a family history. Most participants without a family history had fair knowledge and practice (83.4%), and 88.3% demonstrated good levels of knowledge and practice. Overall, 85.8% reported no family history of breast cancer. The chi-square result ($\chi^2 = 2.399$, $p = 0.301$) indicates no significant association between family history and BSE knowledge or practice. Since $p = 0.301$ is greater than 0.05, the differences observed between the two groups are not statistically significant and are likely due to chance.

Table 5: Cross-tabulation between Knowledge and Practice of

Characterist c		Knowled ge and Practice of BSE			Total n(%)	Chi-square (df)	p-value
		Poor n(%)	Fair n(%)	Good n(%)			
Family history of BC	Yes	0 (0%)	25 (16.6%)	12 (11.7%)	37 (14.2%)	2.399[a] (2)	0.301
	No	7 (100%)	126 (83.4%)	91 (88.3%)	224 (85.8%)		

BSE with the family history of Breast Cancer.

4.6.Correlation between Level of Knowledge and Practice of CBE and the Family History of Breast Cancer

Table VI shows the correlation between the level of knowledge and practice of CBE and the family history of breast cancer. Among participants, 14.2% have a family history of breast cancer, while 85.8% do not. For those with a family history, 11.0% have poor, 16.0% fair, and 15.0% good knowledge and practice. For those without, 89.0% have poor knowledge and practice, 84.0% have fair knowledge and practice, and 85.0% have good knowledge and practice. The Chi-square test value is 1.037 with 2 degrees of freedom, and the p-value of 0.595, indicating no significant association between family history and CBE knowledge and practice.

Table 6: Cross-tabulation between Knowledge and Practice of CBE with the family history of Breast Cancer.

([a]) – Chi-square Test, (n) – Frequency, (df) – Degrees of Freedom

Characteristic		Knowledge and Practice of CBE			Total n(%)	Chi-square	p-value
		Poor n(%)	Fair n(%)	Good n(%)		(df)	
Family history of BC	Yes	9 (11.0%)	19 (16.0%)	9 (15.0%)	37 (14.2%)	1.037[a] (2)	0.595
	No	73 (89.0%)	100 (84.0%)	51 (85.0%)	224 (85.8%)		

([a]) – Chi-square Test, (n) – Frequency, (df) – Degrees of Freedom

4.7.Correlation between Level of Knowledge and Practice of Mammography and the Family History of Breast Cancer

Table VII explores the correlation between the level of knowledge and practice of mammography and family history of breast cancer. Among the participants, 14.2% have a family history of breast cancer, while 85.8% do not. For those with a family history, 20.6% have poor, 14.5% fair, and 8.3% good knowledge and practice. For those without a family history, 79.4% have poor, 85.5% fair, and 91.7% good knowledge and practice.

The Chi-square test value is 2.514 with a p-value of 0.285, indicating no significant association between family history of breast cancer and the knowledge and practice of mammography.

Table 7: Cross-tabulation between Knowledge and Practice of Mammography with the family history of Breast Cancer.

Characteristic		Knowledge and Practice of Mammography			Total n(%)	Chi-square	p-value
		Poor n(%)	Fair n(%)	Good n(%)		(df)	
Family history of BC	Yes	7 (20.6%)	26 (14.5%)	4 (8.3%)	37 (14.2%)	2.514[a] (2)	0.285
	No	27 (79.4%)	153 (85.5%)	44 (91.7%)	224 (85.8%)		

([a]) – Chi-square Test, (n) – Frequency, (df) – Degrees of Freedom

5.0.Discussion

5.1.Knowledge Gaps and Practice

The data reveal varied levels of knowledge across screening methods. While BSE knowledge was high (97.4% fair/good), significant gaps remain for CBE and mammography. The poor practice of CBE (31.4%) aligns with findings from Ethiopia (Dinegde et al., 2020) and Cameroon (Fouelifack et al., 2021), where barriers such as lack of time and fear were reported. For mammography, although 68.6% demonstrated fair knowledge, 13.0% had poor knowledge, reflecting access issues and socioeconomic constraints (Bonsu & Ncama, 2018).

5.2 Engagement with Theoretical Frameworks

The findings are primarily descriptive and would benefit from deeper analysis through health behavior theories such as the Health Belief Model and the Theory of Planned Behavior. These models could help explain why higher knowledge does not always translate into improved screening for CBE and mammography, highlighting perceived barriers, self-efficacy, and social norms as key factors influencing the outcome.

5.3 Influence of Family History

No significant correlation was found between family history and screening practices. This aligns with studies by Kalliguddi et al. (2019) and Dagne et al. (2019), which suggest that awareness of family risk alone does not guarantee adherence to screening. Instead, recommendations from healthcare providers and systemic educational interventions appear to be stronger motivators (Tavakoli et al., 2024).

5.4 *Generalizability and Limitations*

While the study provides valuable insights into breast screening among female lecturers at UiTM Puncak Alam, care must be taken in generalizing findings beyond this localized sample. The specific demographic and setting limit wider applicability, and further research should examine diverse populations.

6.0 Conclusion and Recommendations

In summary, an understanding of breast screening practices supports their implementation among female lecturers; however, family history is not a significant predictor of screening behavior in this group. To improve screening rates, focused educational programs emphasizing the importance of screening for all women, irrespective of family history, are essential. Addressing socioeconomic barriers and implementing regular monitoring of screening initiatives can enhance early detection.

This study is limited by its cross-sectional design, which precludes causal inference, and reliance on self-reported data, which may be subject to recall and social desirability biases. The sample's restriction to female lecturers at one institution limits generalizability. Additionally, cultural, socioeconomic, and psychological factors influencing screening behaviors were not fully assessed, and non-response bias may exist.

Given these limitations and findings, broad-based educational campaigns should be implemented to target all women, supplemented by community outreach through workshops, healthcare collaboration, and digital platforms. Subsidized or affordable screening services are critical to overcoming financial barriers. Training healthcare providers in culturally sensitive communication is recommended to encourage regular screening. Ultimately, continuous evaluation of screening programs is crucial for identifying gaps, assessing their effectiveness, and ensuring alignment with current evidence.

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Paper Contribution to the Related Field of Study

This study provides valuable insights into breast cancer screening awareness and practices among female lecturers, a group that has been rarely highlighted in previous research. By examining the levels of knowledge and implementation of Breast Self-Examination (BSE), Clinical Breast Examination (CBE), and mammography, the findings help identify specific gaps in understanding and practice within an educated professional population. These findings can support the development of targeted educational programs, strengthen health promotion strategies within universities, and guide policymakers in improving breast cancer screening initiatives among women in higher education settings.

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