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Knowledge and Barriers toward Breast Self-Examination and Awareness of Breast Cancer among Women in Puncak Alam

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ABSTRACT

Background: Breast cancer is the leading cause of cancer-related death among Malaysian women. However, there is still a lack of breast cancer awareness among women. The study aims to identify knowledge gaps and barriers to breast self-examination (BSE) and breast cancer awareness. **Methods:** This cross-sectional study was conducted among women in Puncak Alam, Malaysia, using a convenience sampling method. 395 participants, aged between 18 and 60, answered the questionnaire about knowledge of BSE, barriers toward BSE, and breast cancer awareness. The obtained data were analyzed using SPSS version 25. **Results:** Most participants, 51.6% (n=204) had good knowledge of BSE and a low barrier to breast self-examination (60.8%, (240). The main barrier to BSE is scared diagnoses with breast cancer 90.1% (n=356). The overall breast cancer awareness is poor, 74.2% (n=293). There were statistically significant differences between age $p< 0.001$ and family income $p=0.01$ with knowledge of BSE. As for the association between barriers toward BSE with demographic characteristics, there was a statistically significant difference between marital status $X^2(2) = 7.54$, $p =0.02$ and family history of breast cancer $X^2(1) = 5.86$, $p =0.02$. Furthermore, there were statistically significant differences between awareness and marital status (2) = 7.10, $p =0.03$. **Conclusion:** The study reveals that women knew about BSE and had low barriers toward BSE, but lacked awareness about breast cancer. Breast cancer awareness is critical because early detection of breast cancer makes it treatable. More awareness campaigns are suggested, and nurses should proactively promote breast cancer awareness to close the BSE gap.

Keywords: Awareness; Barriers; Breast Cancer; Breast Self-Examination; Knowledge

INTRODUCTION

According to the World Health Organization (WHO), breast cancer is the most common cancer in women, with an estimated 627,000 deaths in 2018 (Ghazi *et al.,* 2020). Malaysia has room for improvement in breast cancer risk factors, clinical symptoms, treatment, diagnosis, and prevention, based on a study by Lee *et al.* (2019). The American Cancer Society (2020) suggests obtaining more specific information on breast cancer awareness according to age categories. The age 18–30 category typically represents early adulthood; age 30–50 is often referred to as middle adulthood; and age 51–60 is transitioning to or already in late adulthood. In addition, the World Health Organization supports BSE to raise breast cancer awareness among women, despite the fact that it is no longer a conventional method for early breast cancer detection (Dagne, Ayele, & Assefa, 2019). Hence, it is crucial to promote a culture of prevention, raise cancer awareness, and emphasize the significance of lifelong screening through BSE (Conte *et al.*, 2023). BSE is preferred in developing nations because it is easy, quick, private, safe, and requires no additional equipment (Mekonnen & Asefa, 2019). Previous research has demonstrated that BSE, when performed correctly and regularly, can identify breast tissue variations and detect breast cancer tumors (Ali *et al.*, 2019).

Several barriers to the practice of BSE that have been demonstrated in the past include a family history of breast cancer and a lack of knowledge about the practice (Baloushah *et al.*, 2020). During manual examination, Birhane *et al*. (2017) note that a lack of time, the fear of discovering a mass, and a feeling of oppression have been identified. The breast screening techniques performed poorly, possibly as a result of a lack of awareness and a misunderstanding of the necessity and benefits of such practices (Abdul Mutalib *et al*., 2019). Another study in

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Egypt reveal that moderate awareness and knowledge about breast cancer and self-examination, emphasizing the need for nationwide interventions to boost awareness and encourage regular breast self-examination among women (Mohamed, 2021). In Malaysia, socio-demographic characteristics such as age, marital status, level of education, and family income influence BSE knowledge (Moey *et al*., 2020).

Abu Samah, Ahmadian & Latiff, (2016) indicate that breast cancer knowledge leads to better interventions. This is because a study showed that a lack of awareness prevents women from seeking treatments, which raises the death rate involving breast cancer among women (Godfrey, Agatha & Nankumbi, 2016). Puncak Alam has a predominantly younger population, but it is also home to older adults, typically aged 50 and above. However, a limited study was conducted to determine breast self-examination (BSE) knowledge and breast cancer awareness among women in Puncak Alam. The novelty of research knowledge on barriers to breast self-examination (BSE) and breast cancer awareness among Puncak Alam women lies in uncovering specific factors that hinder their engagement in breast self-examination and limit their awareness of breast cancer. By studying the awareness levels of breast cancer among different age groups in Puncak Alam, researchers can identify areas where educational interventions are needed to promote early detection, which can improve treatment outcomes and survival rates. Therefore, this research aims to determine breast cancer awareness, the level of knowledge, and the barriers towards BSE, as well as the relationship between breast cancer awareness, knowledge, barriers to BSE, and demographic characteristics among women in Puncak Alam.

METHODOLOGY

Study Design, Location, and Sampling

The study was conducted at Puncak Alam, Selangor, using a cross-sectional study design. Puncak Alam was a brand-new urban development area in Selangor, situated 20 kilometres northwest of Shah Alam, the state capital of Selangor, and 30 kilometres northwest of Kuala Lumpur.The sample size was calculated by Raosoft Sample Size Calculator, using the confidence level of 95%, the response distribution of 50% and the margin error of 5%, giving out the recommended sample size of 395. Self-selected sampling is used among women residents in Puncak Alam, aged between 18 and 60 years old, with no history of breast cancer. sampling method allows for the targeted inclusion of participants with specific traits or experiences relevant to the research topic. Participants were informed that the study was entirely voluntary during data collection using online platforms such as WhatsApp Group, Telegram, and Facebook. Their information would be kept confidential and anonymous.

Research Instrument

The study used a structured questionnaire that consists of four sections. Section A contains demographic data about the participant's age, marital status, family income, and family history of breast cancer. Section B is a questionnaire adopted from Ali *et al.* (2019) knowledge of BSE. The section consisted of 9 questions with an answer of yes, no, or don't know and a question of multiple-choice options. Each yes and correct answer got two scores, one for no answers and a zero for not knowing the answer. The score converted to a percentage indicates that those who scored 80% or more had good knowledge. Less than 60% consider their knowledge to be poor. Section C measured barriers toward BSE was adapted from Akhtari-Zavare *et al.* (2015). It consisted of 6 questions with yes or no answers. A score of 1 was assigned to each yes, and 0 for no response. If the percentage was less than 50%, the level indicated a low barrier; if it was more than 50%, it was considered a high barrier toward BSE. Section D identifies a participant's awareness on BC, which was adapted from Ali *et al.* (2019). It contained 9 questions with yes, no, or don't know responses and multiple-choice options. Each yes and correct answer receives a score of 2, while each no response receives a score of 1, and don't know receives a score of 0. Greater than 80% indicates a good level of awareness in BC, while less than 60% indicates a low level of awareness.

Statistical Analysis

Data were analysed using the IBM Statistical Package for Social Sciences Version 25.0. The sociodemographic data were described with descriptive analysis. The association between knowledge and barriers toward BSE and awareness of BC with demographic characteristics among the respondents was analyzed with inferential statistics using Pearson's Chi-Square and Fisher's exact test. The accepted significance level was less than 0.05 ($p<0.05$).

Ethical Consideration

The study received approval from Research Ethics Committee of Universiti Teknologi Mara (UiTM), Malaysia on 3rd March, 2022 with reference number REC/12/2021 (UG/MR/1177).

RESULTS

Demographic Data

The total number of participants is 395, with 235 participants (59.5%) between the ages of 31 and 50. The majority of the participants were married, 242 (61.3%), followed by single categories, 118 (29.9%). 289 (73.2%) participants had no family history of breast cancer, as shown in table 1.

Table 1: Demographic Characteristics

Variables	Frequency (n)	Percentage (%)
Age		
18 - 30	147	37.2
31 - 50	235	59.5
51 - 60	13	3.3
Marital Status		
Single	118	29.9
Married	242	61.3
Divorced	35	8.9
Family Income		
Low (<RM4850)	164	41.5
Middle (RM4851-RM10970)	192	48.6
High (>RM10971)	39	9.9
Family History of Breast Cancer	22	7.1
Yes	106	26.8
No	289	73.2

Notes: n=395

The Level of Knowledge, Barrier Toward BSE, and Awareness of Breast Cancer among Women in Puncak Alam

The women in Puncak Alam had a good level of knowledge (204 (51.6%)) and a low level of barrier toward BSE (240 (60.8%). The overall breast cancer awareness rate is poor at 293 (74.2%) (Table 2). The biggest barrier toward BSE is "I am scared of being diagnosed with breast cancer," 356 (90.1%). About 34.4% (n=136) of participants feel "I don't feel it is necessary" to do BSE 131 (33.2%). 83 (21%) state, "I don't know how to do it". Meanwhile, in terms of awareness, 24 (6.1%) don't know early detection can improve survival rates, and 231 (58.5%) rate mammography as an ineffective tool for detecting breast cancer (Table 2).

Table 2: Level of Knowledge, Barrier toward BSE, and Awareness of Breast Cancer

Variable	Frequency (n)	Percentage (%)
Knowledge		
Good	204	51.6
Moderate	170	43.0
Poor Barrier	12	5.3
High	155	39.2
Low	240	60.8
Awareness		
Good	0	0
Moderate	102	25.8
Poor	293	74.2

Notes: n=395.

Table 3: Barriers toward BSE among Women in Puncak Alam

Items	n (%)
Barriers	
1. I don't know how to do it.	83 (21.0)
2. Doing BSE will take too much time.	131(33.2)
3. I am scared of being diagnosed with breast cancer.	356 (90.1)
4. I don't have enough privacy for BSE practice.	105 (26.6)
5. I don't feel it is necessary.	136 (34.4)
6. BSE will be embarrassing to me.	81 (20.5)
Awareness about Breast Cancer	
1. Source Information about Breast Cancer	
Newspaper/TV/Internet	379 (95.9)
Family doctor	89 (22.5)
Family/friend	324 (82)
2. Early Detection of Breast Cancer Improves Survival Rate	
Don't know	24 (6.1)
Yes	371 (93.9)
3. The Tool Utilized for Early Detection of Breast Cancer	
BSE	
Yes	147 (37.2)
No	248 (62.8)
Mammography	
Yes	164 (41.5)
No	231 (58.5)

Notes: n=395.

Association between Knowledge toward BSE with Demographic Characteristics

Table 4 shows that low-income families had poor knowledge of BSE 15 (71.4%). There was a significant difference between age $p< 0.001$, family income $p=0.01$, and BSE knowledge. Another trend noticed in the result was there is no association between a family history of breast cancer and knowledge of BSE $X^2(2) = 2.04, p = 0.36$.

Table 4: Association between Knowledge toward BSE with Demographic Characteristics (n=395)

Variables	Level of knowledge toward BSE n (%)			X^2 (df)	*p*-value
	Good	Moderate	Poor		
Age					
18-30	54 (26.5)	81 (47.6)	12 (57.1)		<0.001[b]
31-50	143 (60.9)	85 (50.0)	7 (33.3)		
51-60	7 (3.4)	4 (5.6)	2 (9.5)		
Marital Status					
Single	52 (25.5)	58 (34.1)	8 (38.1)		0.33[b]
Married	134 (65.7)	96 (56.5)	12 (57.1)		
Divorced	18 (8.8)	16 (9.4)	1 (1.9)		
Family Income					
Low (<RM4850)	72 (35.3)	77 (45.3)	15 (71.4)		0.01[b]
Middle (RM4851 - RM10971)	108 (52.9)	80 (47.1)	4 (19.0)		
High (>RM10971)	24 (11.8)	13 (7.6)	2 (9.5)		
Family History of BC					
Yes	54 (26.5)	49 (28.8)	3 (14.3)	2.04 (2)	0.36[a]
No	150 (73.5)	121 (71.2)	18 (85.7)		

a Pearson Chi-Square
b Fisher's Exact Test
**p<0.05 was statistically significant*

Association between Barriers toward BSE with Demographic Characteristics

Table 5. illustrates an association between barriers toward BSE with demographic characteristics. There was no statistically significant difference between age $X^2(2) = 5.40$, $p = 0.07$. When the difference was compared by marital status, married women had low barriers toward BSE (n=142, 59,2%) compared to single women (n=82, 34.2%). Thus there were statistically significant differences between marital status and barriers toward BSE $X^2(2) = 7.54$, $p = 0.02$. There were also associations between family income $X^2(2) = 14.48$, $p < 0.001$; family history of breast cancer $X^2(1) = 5.86$, $p = 0.02$ with bariers towards BSE.

Table 5: Association between Barriers toward BSE with Demographic Characteristics (n=395)

Variables	Level of barrier toward BSE *n* (%)		X^2 (df)	*p*-value
	High	Low		
Age				
18-30	52 (33.5)	95 (39.6)	5.40 (2)	0.07[a]
31-50	101 (65.2)	134 (55.8)		
51-60	2 (1.3)	11 (4.6)		
Marital Status				
Single	36 (23.2)	82 (34.2)	7.54 (2)	0.02[a]
Married	100 (64.5)	142 (59.2)		
Divorced	35 (8.9)	16 (6.7)		
Family Income				
Low (<RM4850)	78 (50.3)	86 (35.8)	14.48 (2)	<0.001 [a]
Middle (RM4851-RM10971)	71 (48.5)	121 (50.4)		
High (>RM10971)	6 (3.9)	33 (13.8)		
Family History of BC				
Yes	52 (33.5)	54 (22.5)	(5.86) 1	0.02[a]
No	103 (66.5)	186 (77.5)		

a Pearson Chi-Square
b Fisher's Exact Test
**p<0.05 was statistically significant*

Association between Awareness of Breast Cancer with Demographic Characteristics

Table 6 shows the association between awareness of breast cancer and demographic characteristics such as age, marital status, family income and family history of cancer. There were only statistically significant differences between marital status $X^2(2) = 7.10$, $p = 0.03$. A married participant shows a poor level of awareness 185 (63.1%). No statistically significant between the age $p = 0.12$, family income $X^2(2) = 4.11$, $p = 0.13$ and family history of BC $X^2(1) = 0.77$, $p = 0.38$.

Table 6: Association between Awareness of Breast Cancer and Demographic Characteristics (n=395)

Variables	Level of Awareness on Breast Cancer, *n* (%)		Test Statistics (Df)	*p*-value
	Moderate	Poor		
Age				
18-30	46 (45.1)	101 (34.5)	0.12[b]	
31-50	52 (51.0)	183 (62.5)		
51-60	4 (3.9)	9 (3.1)		
Marital Status				
Single	40 (39.2)	78 (26.6)	7.10(2)	0.03[a]
Married	57 (55.9)	185 (63.1)		
Divorced	5 (4.9)	30 (10.2)		
Family Income				
Low (<RM4850)	43 (42.2)	121 (41.3)	4.11(2)	0.13[a]
Middle(RM4851-RM10971)	44 (43.1)	148 (50.5)		
High (>RM10971)	15 (14.7)	24 (8.2)		
Family History of BC				
Yes	24 (23.5)	82 (28.0)	0.77(1)	0.38[a]
No	78 (76.5)	211 (72.0)		

a Pearson Chi-Square
b Fisher's Exact Test
**p<0.05 was statistically significant*

DISCUSSION

Knowledge barrier on BSE and Awareness of Breast Cancer among Women in Puncak Alam

This study indicates most participants had good knowledge of BSE. Similar to a study by Ali among pharmacy students in Malaysia discovered that 91.4% of participants were aware that BSE helps detect breast cancer early. In contrast, 54.4% of women demonstrated inadequate knowledge of BSE in a study by Marahatta & Sharma (2018). Only 37.5% of respondents to a Paruchuri *et al.* (2021) study knew that BSE should be practiced monthly. Thus, being aware of BSE as one of the tools for early cancer detection can be good knowledge about BSE. The benefit of this study is that it demonstrates that women must independently identify breast changes through self-examination to improve their chances of survival through early detection.

In this study, 60.8% of women in Puncak Alam had low barriers toward BSE. Baloushah *et al*. (2020), among Palestinian women in Gaza City, Palestine, identified many obstacles to practicing BSE that prevented them from performing BSE. Higher barriers may cause people to refrain from engaging in BSE regularly. The most common barriers to BSE in this study were "I am afraid of being diagnosed with breast cancer," followed by "I don't feel it is necessary. This finding is supported by Shakti Yambem and Rahman, (2019) among Sikkimese women, whose main barrier was the inability to perform BSE. 17.4% of women said they did not practice BSE because they did not have breast cancer problems (Dadzi & Adam, 2019). This might be because young women think they are young, and breast cancer happens to older women.

The study shows that 74.2 % of participants had poor levels of awareness about breast cancer. Like Ghazi *et al.* (2020), women in Selangor, Malaysia showed poor awareness regarding breast cancer, and Halmata *et al.* (2021) found a lack of awareness and poor practice of breast cancer screening among women. Only half of this study's participants state that BSE and mammography are tools for the early detection of breast cancer. In contrast, Lee et al. (2019) discovered that women understood BSE screening methods well, but despite the benefits of mammography, they believed it was painful. Now a days many people don't know how to do breast self-exams, and the internet is a crucial source of information for breast cancer prevention (Ghazi *et al.*, 2020).Thus, it is necessary to enhance the role of nurses by educating women on breast cancer and screening awareness by utilizing television and the internet to eliminate the stigma.

The Association between Social Demographic with Knowledge, Barrier toward BSE

There was an association between age and knowledge of BSE. The older the participants, the more knowledge they possess. Similarly, Kalliguddi, Sharma & Gore, (2019) reveal that knowledge increases with age but does not improve attitudes toward BSE. But Nordin *et al*. (2020) and Dadzi & Adam (2019) found age was not significantly associated with breast cancer or BSE knowledge. Most women with inadequate knowledge were under 30 years old (Dadzi & Adam, 2019). With technology, people can now learn regardless of their age. Thus, nurses should incorporate knowledge of BSE into social networking to spread awareness of BSE among women.

In this study, the majority of married respondents, followed by single respondents, indicated excellent knowledge. However, there is no correlation between BSE knowledge and marital status. This result was consistent with the conclusion of a study by Dadzi & Adam (2019) that marital status was not significantly associated with However, Al-Qazaz, Yahya & Ibrahim, (2020) discovered a significant correlation between marital status and the knowledge of the majority of married respondents. Even though there is no significant correlation between BSE knowledge and marital status, married respondents demonstrated an exceptionally high level of knowledge. This may be because married women are more likely to receive advice from family members, friends, or health care providers about breast self-examination. In addition, married women may be more likely to discuss breast health topics with their spouses, which may lead to increased knowledge about breast self-examination.

Family income and a history of breast cancer are associated with barriers toward BSE. The result shows that most women came from moderately wealthy families with low barriers toward BSE. This finding was reinforced by a study by Baloushah *et al*. (2020), which found that higher-earning women were more likely to engage in BSE. Lower-income families may have less access to reliable healthcare, making it more difficult to obtain regular breast cancer screenings or receive timely diagnostic care (Srinath *et al.*, 2022). Additionally, a family history of breast cancer can lead to increased anxiety and fear, making individuals more likely to avoid self-exams or other

forms of early detection (De Pelsmacker, Lewi & Cauberghe, 2017). All of these factors can lead to a decreased likelihood of engaging in BSE, which can increase the risk of developing breast cancer.

Association between Awareness of Breast Cancer and Demographic Characteristics

The results of this study suggest marital status significantly influences breast cancer awareness in this population. Similar to Smith *et al*. (2022), married women were more aware of breast cancer than divorced and never-married women. Social support from a spouse may influence their awareness of breast cancer and their motivation to engage in preventive behaviors. However, family history does seem to be associated with increased awareness and BSE practices. Khushalani *et al.* (2020) also stated in their study that there was no association between family history and awareness of BC among women aged 15 to 44 in the United States. It could be that even if individuals are aware of their family history of breast cancer, they may not fully understand the implications or the level of risk it poses. Masood et al. (2016) discovered that higher-income people were more aware of the disease. This suggests that more targeted education and outreach programs for women who are at risk of developing breast cancer, such as those with a family history of the disease, may be beneficial in increasing awareness and promoting BSE practices (Afifi & Barrero 2023).

CONCLUSION

The conclusion suggests that while women had good knowledge and low barriers toward BSE, they had poor awareness of breast cancer, particularly women with single status. This suggests that while women are aware of BSE and are willing to take the necessary steps to perform it, they lack a comprehensive understanding of the risks of breast cancer and the importance of early detection. This highlights the need for more education and awareness campaigns on breast cancer detection for adolescents and young adults to ensure that women are equipped with the right information and resources to take proactive measures to protect their health. Nurses could conduct interactive breast cancer awareness workshops or webinars in the future. The sessions should include presentations, discussions, and interactive activities designed to actively involve participants in acquiring knowledge and understanding breast cancer risk factors, self-examination techniques, the importance of screenings, and available support services. In addition, future research recommendations could examine how social media can raise breast cancer awareness.

Conflict of Interest

The authors declare that there are no conflict of interests.

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