

ORIGINAL ARTICLE

THE AWARENESS AND PRACTICE OF BREAST SELF-EXAMINATION (BSE) AMONG FEMALE UNIVERSITY STUDENTS IN SELANGOR, MALAYSIA: A CROSS-SECTIONAL STUDY

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ABSTRACT

Breast cancer, the most prevalent cancer among women worldwide and in Malaysia, has an escalating incidence, underscoring the critical importance of early detection through breast self-examination (BSE) to enhance survival rates. This study aimed to evaluate the awareness and practice of BSE among female university students in Selangor, Malaysia. Conducted over five months, a cross-sectional study gathered data from 359 female university students aged 18-30 years, utilizing snowball and convenience sampling methods. Data were collected using a validated and structured online questionnaire. The findings revealed that only 32.9% of respondents were aware of and effectively practiced BSE, with 38.7% lacking awareness and engagement, and 28.4% being aware but not practicing. Although respondents demonstrated high awareness of breast cancer symptoms (55.7%) and treatment (56.8%), a notable majority exhibited low awareness of risk factors (49.9%) and BSE knowledge (52.6%). Among those with low awareness, 40.11% did not perform BSE, while 12.53% did. In contrast, among those with moderate awareness, 23.4% performed BSE, while 15.04% did not. Remarkably, among respondents with high awareness, 5.01% engage in BSE, surpassing the 3.90% who do not, highlighting a discrepancy between awareness and practice. This study highlights a concerning gap between awareness and practice attitudes regarding breast self-examination (BSE) among female university students in Selangor, Malaysia. A significant portion of the participants exhibited low awareness and practice of BSE despite high awareness of breast cancer symptoms and treatment. This indicates a critical need for targeted interventions to bridge this disparity and improve breast health outcomes in this demographic.

Keywords: Breast cancer, Breast Self-Examination (BSE), awareness, practice, female university students.

INTRODUCTION

The World Health Organization (WHO) reported that from 2002 to 2012, 5,410 cases of breast cancer were diagnosed among Malaysian women, which was significantly higher than cervix uteri cancer (2,145 cases) (1). A study states that the risk of developing breast cancer increases with age, with the highest risk among women aged 50 and above (2).

According to the report for MNCR, 2017-2021, the prevalence of breast cancer is the highest (17.6%) compared to other cancer (3). One of the leading causes of the higher breast cancer rate in Malaysia, and the reason patients are more likely to progress towards late stage of the disease are due to lack of awareness and ignorance regarding the disease and its screening procedures. (1).

BSE is one of the most convenient, cost-effective, and non-invasive screening methods that can be used for the early detection of breast cancer. It involves a step-by-step method in which a woman examines her breast (4). According to Ali et al. (2018), individuals who

regularly perform BSE from the outset are more likely to detect breast cancer than those who do not. Furthermore, the research indicates that BSE can contribute to the early detection and successful treatment of breast cancer in women. Overall, the study found an association between BSE and both early breast cancer detection and increased survival rates (5).

In 2011, a report by Loh and Chew showed that 80% of breast cancer survivors self-detected breast lumps. Only 14% of the patients identified lumps through mammographic screening, and 3% were discovered by doctors. They also reported that more than 70% of women lacked the knowledge/skill on the proper practice of BSE, which was the key barrier to a more regular BSE practice. However, after an educational intervention on BSE practice, they found an increase in the self-reported monthly BSE practice from 17% to 67% (6).

Thus, when awareness about BSE is high, women can approach clinics with a determination of early diagnosis and treatment of breast cancer, which significantly improves the prognostic factors. Hence, it is justifiable that every

woman should be aware of the proper way to practice BSE for early detection of breast cancer and better prognosis.

METHODS

Study Design

A cross-sectional study was conducted among female university students in Selangor, Malaysia, between December 2023 until April 2024.

Study Participants

The inclusion criteria for this study encompassed all female students aged 18 to 30, currently residing in Selangor, Malaysia, who had registered for foundation, diploma, undergraduate, or postgraduate studies at a University in Selangor during the data collection period and had agreed to participate as respondents.

Sample Size

The sample size was estimated based on a power of at least 80% and a of significance of at least 95%. According to a study conducted at Universiti Kebangsaan Malaysia (UKM) in Bangi by Hassan et al., in 2017, the sample selected was 364 female students, among whom 37.1% practiced BSE (7). The minimum sample size required to conduct our study was calculated as 359 respondents.

Sampling Method

We employed non-probability sampling, specifically Convenience Sampling, which allowed us to easily approach more participants, given that our reference population was scattered across different districts in Selangor. Consequently, we distributed a link to the Google Forms questionnaire via personal social media platforms and sent an official email with the link to all students at the University of Cyberjaya through Outlook. Additionally, we utilized Snowball Sampling by encouraging respondents, through social media and university email, to share the Google Forms questionnaire link with their relatives and friends to help us achieve our targeted sample size. We excluded all respondents who did not meet our inclusion criteria.

Research Questionnaire

The questionnaire contained four sections.

1. Sociodemographic Information of Respondents

A total of 13 questions in this section collected data on age, ethnicity, nationality, marital status, education level, university name and location, age of menarche, family history of breast cancer, smoking and alcohol consumption status, physical activity level, and any history of breast cancer treatment.

2. Breast Cancer and Breast Self-Examination (BSE) Awareness Questions

This section consisted of 24 questions: Three questions covered general facts about breast cancer, eight addressed risk factors, five focused on signs of breast cancer, three related to treatment, and five pertained to BSE. Responses were recorded using a scale of "Yes," "No," and "Not sure." One point was given for every "Yes" answer, and zero points for "No" or "Not sure" answers. The maximum score in this section was 24 points (100%), and the minimum score was 0 points (0%). Awareness levels were classified as "Low" for scores between 0% and 49%, "Moderate" for scores between 50% and 79%, and "High" for scores between 80% and 100% (8).

3. BSE Practice Frequency Questions

There were 3 questions in this segment included three questions related to frequency of BSE practice. The respondents' answers were recorded as "regularly", "occasionally", and "never". Two points were awarded for "regularly", one point for "occasionally" and zero points "never".

4. Methods of Performing BSE Questions

There were 10 questions in the methods of performing BSE section. Similarly, one point was given for every "Yes" answer, and zero points for "No" or "Not sure" answers. This section assessed the respondents' understanding of the practice of BSE, correct timing and frequency of performing BSE.

Data Collection and Instrument

Data were gathered using a validated online Google Forms questionnaire available in English and Bahasa Malaysia. The validity of the questionnaire content was ascertained by our supervisor. The questionnaire was pretested among 30 female students to check question clarity. Each submission was automatically recorded in the Google Forms system. Respondents were informed about the aim and purpose of the study, which they could refer to in the Respondent Information Sheet attached to the Google Form. Consent was required to ensure that the participants' information would be kept confidential and anonymous, with no possibility of retrieving specific respondent information. To protect privacy and confidentiality, respondents' identities were not revealed, and their personal information was not reported in the study; only relevant data related to the study objectives, such as sociodemographic data, awareness level, and frequency of BSE practice, were used. All information was stored in an encrypted file accessible only to the supervisor and group leader and would be destroyed in five years.

Data Analysis

Data analysis was performed using Jeffreys' Amazing Statistics Program version 0.16.3. Descriptive statistics were used to obtain the means, standard deviations, frequencies, and percentages for all continuous and discrete

variables. The chi-square test was used to determine the association between discrete variables and BSE practice. The significance level was set at $\alpha < 0.05$ for all variables in the analysis.

Ethical Approval

All participants provided informed consent before the commencement of the survey. Ethical approval was acquired from University of Cyberjaya Research Ethics Review Committee [Reference number: UOC/CRERC/ER/524].

RESULTS

As shown in Table 1, a total of 359 respondents participated in this study. Most respondents were aged 18 to 21 years (45.7%). The majority of respondents (89.4%) were Malaysian, and among them, 168 (46.8%) were Malays. Among the total participants, 298 were single (83.9%) and 239 were undergraduates (66.6%). Participants from the University of Cyberjaya were 60.7%, and the Sepang district was 54.3%, predominantly in medicine (55.2%). The majority had menarche before age 13 (58.8%), no family history of breast cancer (69.4%), did not smoke (91.6%), did not consume alcohol (83.0%), and were physically inactive (67.4%). A large percentage have not received any early screening scans (86.4%)

Table 1: Socio-demographic data of respondents and their family history of breast cancer (N=359)

Variable	Frequency	Percentage (%)
Age		
18-21	164	45.7
22-25	161	44.8
26-30	34	9.5
Race		
Malay	168	46.80
Indian	119	33.15
Chinese	46	12.81
Others (African, Nigerian, Punjabi, Pakistani, Yoruba, Djibouti, Emirati, Arab & Bangladeshi, Filipino, Myanmar)	26	7.24
Nationality		
Malaysian	321	89.4
Non-Malaysian	38	10.6
Marital Status		
Single	298	83.9
Married	39	11.0
Divorced	18	5.1
Widowed	4	0.01
Level of education		
Undergraduate	239	66.6
Diploma	50	13.9
Foundation	42	11.7
Postgraduate	26	7.2
PhD	2	0.6

Table 1a: Socio-demographic data of respondents and their family history of breast cancer (N=359)

University Name		
UOC	218	60.7
UITM	17	4.7
MSU	11	3.1
UTAR	10	2.8
UPM	8	2.2
Sunway University	8	2.2
Taylor's University	7	2.0
UIA	6	1.7
Politeknik (PSIS)	5	1.4
UM	5	1.4
UKM	4	1.1
APU	4	1.1
UNISEL	4	1.1
MMU	3	0.8
INTI	3	0.8
UniKL	2	0.6
Others (UPNM, IMU, SEGI, KDU, City, Heriot-Watt, Lincoln, UniTEN, Kolej Poly Tech Mara Bangi, Kolej Enam Petaling, UMS, UMP, UniMAP, UTHM, USM, UTM, UniSZA & UUM)	44	12.3
University Location		
Selangor	195	54.3
Petaling	60	16.7
Hulu Langat	25	7.0
Kuala Selangor	23	6.4
Gombak	16	4.5
Klang	15	4.2
Sabak Bernam	11	3.1
Hulu Selangor	10	2.8
Kuala Langat	4	1.1
Field of Study		
Medical	198	55.2
Non-Medical	161	44.8
Age of menarche		
Before 13	211	58.8
13 and Above	148	41.2
Family history of Breast cancer		
Yes	65	18.1
No	249	69.4
Not Sure	45	12.5
Smoking History		
Yes	30	8.4
No	329	91.6
Alcohol Consumption		
Yes	61	17.0
No	298	83.0
Physical Activity		
Active/Regularly	117	32.6
Inactive/Not regularly	242	67.4
Receive any scan for early detection of breast cancer		
Yes	49	13.6
No	310	86.4

Table 2 revealed that most respondents are aware of breast cancer incidents (85.5%), and majority are aware of BSE (53.5%), as well as have a high awareness of Breast cancer symptoms (55.7%). However, nearly half of the respondents (49.86%) had low awareness of the risk factors of breast cancer. A total of 147 respondents (40.9%)

reported performing BSE, while 212 respondents (59.1%) did not. Among the respondents who practiced BSE, 31(21.1%)practiced BSE regularly every month, while 116 (78.9%) practiced it only occasionally.

Table 2: Awareness on Breast Cancer and BSE practice of respondents (N= 359)

Variable	Frequency	Percentage (%)
Breast cancer incidents		
Yes	307	85.5
No	30	8.4
Not sure	22	6.1
Breast cancer Symptoms		
Low	112	31.2
Moderate	47	13.1
High	200	55.7
Breast cancer risk Factor		
Low	179	49.86
Moderate	104	28.97
High	76	21.17
Breast Self-Examination		
Yes	192	53.5
No	107	29.8
Not sure	60	16.7
Performing BSE		
Yes	147	40.9
No	212	59.1
Frequency of BSE (overall)		
Regularly	31	8.6
Occasionally	116	32.3
None	212	59.1
Frequency of BSE (among those practice BSE)		
Regularly	31	21.1
Occasionally	116	78.9

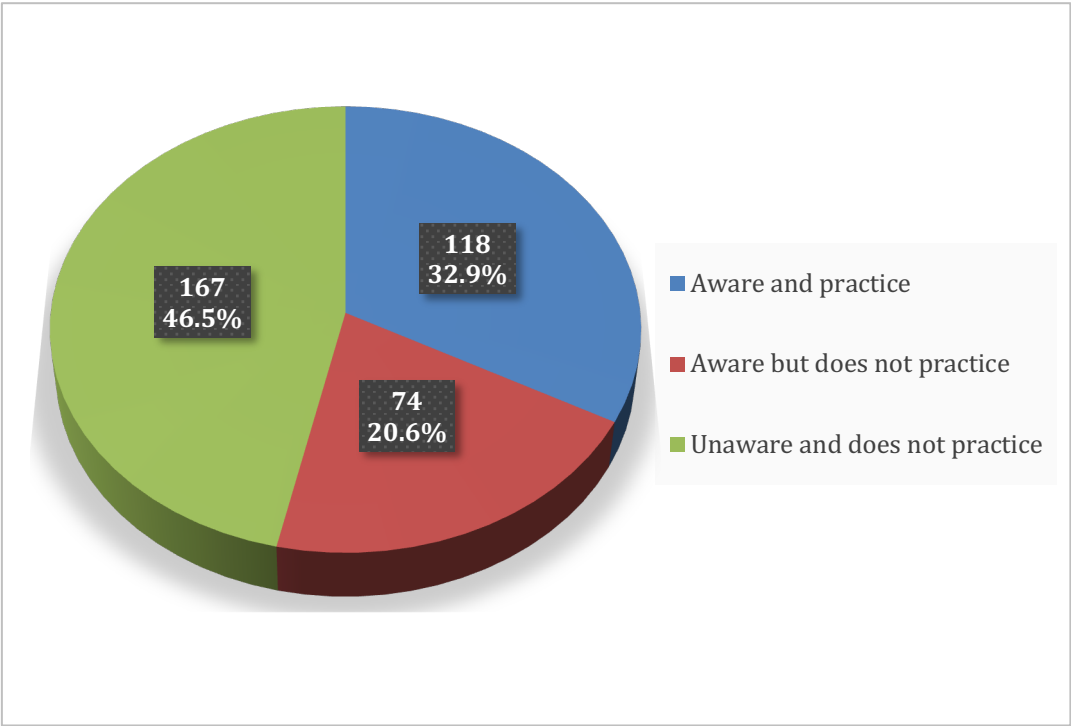


Figure 1: Pie chart represents awareness and practice of BSE (N=359)

Based on Figure 1, a large number (167) of respondents stated that they were not aware of BSE and did not practice BSE (46.5%). On the contrary, 118 respondents are aware and

practice BSE regularly (32.9%). Only 74 of our respondents (20.6%) stated that they were aware of it, but did not practice it.

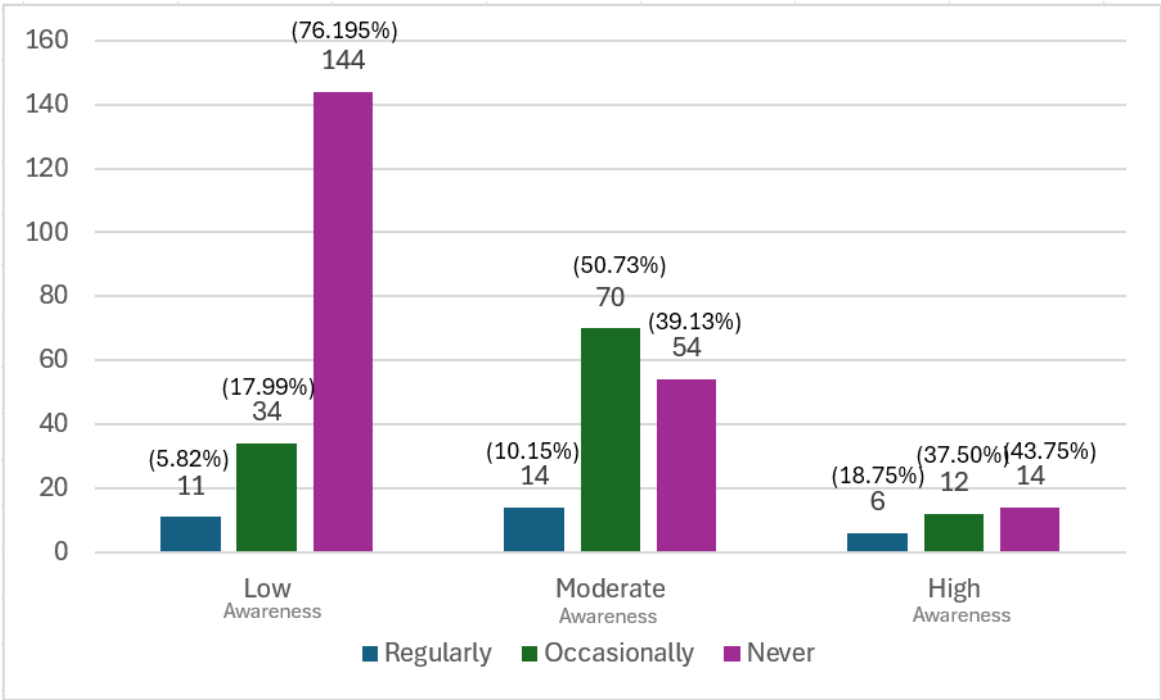


Figure 2 - The association between level of awareness with practice frequency of BSE of respondents (N=359)

Figure 2 shows a strong correlation ($\chi^2 = 52.579$, $p < 0.001$) between awareness level and BSE practice frequency. Individuals with moderate awareness levels tended to be more likely to engage in BSE activities in all frequency categories, while people with low awareness

levels tended to practice BSE less frequently. But individuals classified under the high awareness category exhibit variable practice frequencies (56%), which may be due to comparatively less number participants in this group (N=32). A considerable proportion of respondents with

moderate awareness practiced BSE (60.9%), and a significant majority of individuals with low awareness abstained from BSE practices, with 76.2% never engaging in them.

DISCUSSION

A number of studies support that the regular practice of BSE has a significant impact on treatment efficacy, prognosis, and survival rates in breast cancer cases (9, 10, 11). Therefore, in the exponential rate of breast cancer incidence, consistent practice and sufficient awareness regarding BSE can help lower breast cancer-related morbidity and mortality. This study assessed the awareness and practice of BSE among female university students in Selangor, Malaysia.

According to our study, 32.9% have awareness regarding BSE and practice it effectively (Figure

1). The majority (46.5%) were unaware of and did not practice BSE. Our findings align with those of Paruchuri et al. (2020), who assessed breast cancer awareness, BSE, and CBE practices among female healthcare students in Malaysia. The study found that 27.5% of respondents practiced BSE, with 22.4% monthly, and 62.5% had not been taught and were unaware of the proper technique (12). Similarly, Hassan et al. (2017) found that while 45% of non-medical UKM students had good BSE awareness, only 37.1% practiced it regularly (7). The higher rates of BSE practice in the latter study might be due to the sample population being from the same university (UKM).

In addition, 85.5% of respondents were aware of the high breast cancer incidence among females, and 53.5% had heard of BSE, which is an important tool for detecting breast cancer. Most of the respondents (55.7%), understood the symptoms of breast cancer; however, 49.86% respondents did not know the risk factors that lead to breast cancer (Table II). Ali et al. (2019) found that while 64% knew breast cancer was common and 72% were aware of BSE, only 43% understood it in detail, and just 32% knew the correct BSE method (13). Another study conducted at AIMST University in 2019 found that 64% of the respondents knew about breast cancer, but only 51% understood BSE. Despite this, 62% had positive attitudes toward BSE, while 29% were neutral, and 9% had negative views (14).

In present study, among all 359 respondents, only 8.6% are practicing BSE regularly every month, meanwhile 32.2% occasionally, and 59.3% of the respondents answered they are not practicing BSE (Table II). In contrast, the research conducted by Paruchuri et al. (2020) showed that out of 89.3% of respondents who had heard about BSE, only 27.5% of them practiced BSE, with 22.4% practicing it monthly. The study revealed 72.5% do not practice BSE, 62.5% of them have not been taught and the majority of them admitted that

they have no idea on the right methods on how to perform BSE (12). The higher rates of regular BSE practice observed in the latter study might be due to their sample population being composed exclusively of students from the medical and healthcare fields, whereas our study included students from various disciplines, as shown in Table I.

On the other hand, while most respondents are aware of breast cancer symptoms and its treatments, they lack awareness about the risk factors of breast cancer and how to perform BSE (Table II). This finding corresponds to a study by Hussein et al. (2013) done in Northern Saudi Arabia, where most participants were not aware that breast cancer was a multifactorial disease (15). The study also revealed contradictory findings where there was low awareness of the fundamental nature of the illness, whereas, in the Malaysian study, there was a high frequency of awareness of breast cancer symptoms and treatments. This discrepancy may be due to the time-period of study, also that Malaysian study being conducted in an urban area where information is more readily accessible to the public.

This study highlights a significant association between the level of awareness about BSE and the frequency of its practice as evidenced by the chi-square test ($\chi^2 = 52.579$, $p < 0.001$), as illustrated in Figure 2. This strong correlation suggests that higher awareness levels significantly influence BSE practice behaviours. A similar study by Ossai et al., 2019 in Nigeria found that most respondents had good knowledge of BSE, attributed to high awareness levels (16). Likewise, Nur et al. (2022) reported a relationship between knowledge level and BSE practice among respondents ($p < 0.000$). Consequently, higher levels of BSE knowledge are associated with increased performance rates (17).

This is consistent with Akhtari-Zavare et al. (2011), who identified significant differences in breast cancer and BSE knowledge between those who practice and those who do not practice. In their study, 36.7% of participants performed BSE, while 63.3% did not, with most participants doing so occasionally (57.5%) (18). These findings resonate with Gwarzo et al., (2009), who reported that despite 87.7% of female students at Ahmadu Bello University in Nigeria being aware of BSE, only 19.0% practiced it monthly (19). This parallels our observation that while awareness is crucial, additional factors like practice knowledge significantly impact practice rates.

Limitation and recommendation

Time constraints: Since this research was conducted within a defined timeframe, convenience sampling and snowball sampling methods were used where it resulted having an

underrepresentation of each age group and universities.

Resource constrains: Since we had limited access to expert support and advanced software as it was our first research work and this led to us to face difficulties in analysing the data. Hence, future studies with an extended timeframes can employ stratified random sampling to ensure more representative sample and prevent difficulties in analysing their data.

CONCLUSIONS

The research reveals significant gaps in the awareness and practice of Breast Self-Examination (BSE) among respondents. The majority of participants in our study are unaware of and do not practice BSE. Despite a significant portion being aware of breast cancer and its symptoms, only a minority practice BSE regularly, highlighting that awareness does not necessarily translate into BSE practice. While knowledge about breast cancer symptoms is relatively better, understanding of risk factors and the practice of BSE remain insufficient. This indicates a pressing need for targeted educational programs and practical training to bridge the gap between awareness and practice. Addressing these gaps is essential for improving early detection rates and ultimately reducing breast cancer morbidity and mortality.

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Competing interest

The authors have no conflict of interests to declare.

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