Breast Self-Examination Awareness, Knowledge, Practice and Attitudes among Female Healthcare Workers in a Public Malaysian Hospital

Lilian Sin Yii Lai[1], Priscilla Sheng Mei Wong[2], Hartini Sinow[3], Noor Rosmiza Abdullah[4,5], Shirlie Chai[2,6*]

[1] Pharmacy Department, Jalan Merbau Health Clinic, Ministry of Health Malaysia, 98000, Miri, Sarawak, Malaysia
[2] Pharmacy Department, Miri Hospital, Ministry of Health Malaysia, 98000, Miri, Sarawak, Malaysia
[3] Health Promotion Unit, Miri Hospital, Ministry of Health Malaysia, 98000, Miri, Sarawak, Malaysia
[4] Emergency and Trauma Department, Miri Hospital, Ministry of Health Malaysia, 98000, Miri, Sarawak, Malaysia
[5] Breast Clinic, Miri Hospital, Ministry of Health Malaysia, 98000, Miri, Sarawak, Malaysia
[6] Clinical Research Centre Miri, Ministry of Health Malaysia, 98000, Miri, Sarawak, Malaysia

Correspondence to: Shirlie Chai
shirlie_chai@yahoo.com

Accepted: 31 October 2023

ABSTRACT

Introduction:

Breast cancer remains a global health concern with escalating incidence rates, emphasising the urgency of effective early detection strategies. This study aimed to evaluate the awareness, knowledge, practice, and attitudes towards breast self-examination (BSE) among female healthcare workers.

Methods:

This was a cross-sectional study conducted at Miri Hospital adopting a validated, self-administered questionnaire from March to April 2023. Female healthcare workers aged 18 years and above, able to read and understand English or Malay language were eligible to participate. The questionnaire gathered respondents' information regarding their demographics and awareness, knowledge, practice, and attitudes towards BSE. Results were summarised using descriptive statistics.

Results:

A total of 223 eligible respondents completed and returned the questionnaire. The majority were married (67.7%) and had a mean age of 37.1 ± 7.9 years. The majority of them were aware of BSE (96.9%) and possessed good knowledge of BSE (74.4%). However, recognition of skin dimpling as a sign of breast cancer was observed in around half (57.4%) of respondents. While 81.6% had practised BSE, correct implementation was reported by a mere 12.1%. The majority of respondents agree that BSE helps in breast cancer detection (95.5%), not difficult to perform (87.9%) and not time-wasting (94.6%), yet respondents were afraid of finding signs indicative of breast cancer (64.6%).

Conclusion:

This study underscores a notable disparity between awareness, knowledge, and the correct practice of BSE among female healthcare workers. The identified gap emphasizes the necessity to explore and address barriers hindering proper implementation, particularly among educated healthcare professionals. Bridging this divide not only enhances the breast health of healthcare workers but also holds the potential to catalyse broader breast cancer prevention initiatives within the community.

Keywords:

Breast cancer, breast self-examination, healthcare workers, screening

INTRODUCTION

Breast cancer poses a significant global health challenge, with escalating incidence rates and mortality. The World Health Organization (WHO) reported 2.3 million new cases and 685,000 deaths in 2020.[1] International Agency for Research on Cancer (IARC) and partner institutions predicted that breast cancer burden would increase to more than 3 million new cases per year (an increase of 40%) and more than 1 million deaths per year (an increase of 50%) by 2040.[2]

In Malaysia, breast cancer is the most prevalent cancer among women, with a notable rise in cases in women after the age of 50, according to the Malaysia National Cancer Registry Report 2012-2016.[3] The report also stated that about 1 in 19 Malaysian women are at risk of breast cancer, with Chinese having a higher risk, followed by Indians and Malays.[3] Despite its higher occurrence after the age of 50, the risk persists for younger women due to factors such as genetics, being overweight, personal history of breast conditions, personal or family history of breast cancer, and early menarche, emphasising the need for awareness and vigilance.[4]

Late-stage diagnoses contribute to higher breast cancer mortality rates, often attributed to a lack of awareness and knowledge on breast cancer and its screening methods among women.[5] In Malaysia, the percentage of late-stage diagnoses (stage 3 and 4) increased from 43.2% (2007-2011) to 47.9% (2012-2016).[3] Nowadays, breast cancer treatments are highly effective, with survival probabilities of 90% or higher, particularly when the disease is identified early.[1] Therefore, early detection and screening are vital in improving treatment efficacies and reducing mortalities.

The National Breast Cancer Early Detection Program Guidelines recommended early detection of breast cancer through screening methods, such as breast self-examination (BSE).[6] BSE is a simple, inexpensive technique, not requiring special equipment that helps in detecting palpable lumps in the early stages.

While controversy surrounds the effectiveness of BSE, its simplicity and accessibility make it a valuable tool, particularly in resource-constrained settings.[7-8]

Despite its importance, challenges hinder the widespread practice of BSE. Factors such as limited knowledge about breast cancer and BSE, absent reminders, forgetfulness, negligence, and demanding work schedules impact adherence, especially among female healthcare workers, a potentially at-risk group.[9-18] It has been reported that shift work, such as night shifts, may further contribute to the risk of breast cancer among healthcare workers.[19] Therefore, this study aimed to assess the awareness, knowledge, practice, and attitudes towards BSE among female healthcare workers at Miri Hospital, Sarawak, shedding light on potential barriers and facilitating targeted interventions to enhance breast health in this crucial demographic.

METHODS

Study Design, Period, and Setting

A cross-sectional study was conducted among female healthcare workers at Miri Hospital, Sarawak from March to April 2023, adopting a self-administered questionnaire validated by Chia and colleagues.[20]

Study Participants and Sampling

Female healthcare workers from various backgrounds, including specialists, doctors, pharmacists, nurses, dieticians, pathologists, and physiotherapists, were invited to participate in the study. Quota sampling was employed to ensure a representative and diverse respondents. The eligibility criteria focused on female healthcare workers aged 18 years and above, employed at Miri Hospital, proficient in reading and understanding English or Malay language. Exclusion criteria were applied to those eligible respondents who did not provide written consent for participation in the study.

Data Collection and Tool

The data collection process involved the distribution of questionnaires to willing respondents, with responses collected upon completion. Respondents were encouraged to provide truthful responses to the best of their ability, and the questionnaire took approximately 10 to 15 minutes to complete.

The questionnaire adopted was designed to assess awareness, knowledge, practice, and attitudes towards Breast Self-Examination (BSE). Initially developed in English, the questionnaire underwent content validation by a panel of three experts from the Department of Surgery and Breast Cancer Support Group. Subsequent translation into Malay involved a forward and backward translation process, followed by face validation with ten women raters for each language version. Both content and face validity indices for the final questionnaire were deemed satisfactory.[20]

Comprising four sections, the questionnaire collected demographic information in Section A, including age, marital status, and personal and family history of breast cancer. Awareness of BSE was also assessed in this section. Sections B and C consisted of questions on BSE practice and knowledge, respectively, with a scoring system defining good practice and knowledge. Respondents with a monthly BSE practice, correct timing post-menstruation, and BSE activity in the past month were considered to exhibit good practice. Knowledge was evaluated using a common grading method, with a score of one for correct response; zero for an unsure response and a deduction of one for an incorrect response. A score of nine or more indicate good knowledge of BSE.

Section D explored respondents' attitudes toward BSE practice, encompassing opinions on breast cancer detection, perceived difficulty in performing BSE, views on its time efficiency, and potential fear associated with identifying signs of breast cancer. This comprehensive methodology ensures a robust assessment of BSE awareness, knowledge, practice, and attitudes among female healthcare workers at Miri Hospital.

Data Processing and Analysis

Data cleaning and analysis were conducted using Microsoft Excel and SPSS version 25. Descriptive statistics were used to report respondents' demographics, awareness, knowledge, practice, and attitudes towards BSE practice. Continuous variables were presented as mean and standard deviation (SD), while categorical variables were recorded as frequencies and percentages.

Sample Size Calculation

This is part of a larger study to examine associated factors of BSE practice. The sample size was determined using G*Power software version 3.1.9.4, based on a conventional choice of level of significance, 5% (α=0.05), study power of 80% (β=0.2), and odds ratio of 2.5.[21] The minimum sample size is 164, and with non-response rate of 30%, the required sample size is 235.

RESULTS

Demographic Characteristics and Awareness of BSE

A total of 230 questionnaires were distributed to eligible respondents, with an impressive response rate of 97.0%, resulting in 223 completed and returned questionnaires. The diverse demographic profile of the respondents included a mean age of 37.1 ± 7.9 years, with a predominant representation of married individuals (67.7%) and the Sarawak indigenous group (41.3%). 43.5% identified as Christian, and 44.4% held a bachelor's degree or higher.

The majority of respondents reported no family history of breast cancer (81.2%), while 10.8% disclosed a personal history of breast cancer or related conditions such as cysts and fibrosis. Notably, only three respondents (1.3%) were under current follow-up for breast-related conditions. Despite this, a substantial portion of the respondents claimed to be aware of BSE (96.9%).

Table 1 provides a comprehensive summary of the respondents' demographic characteristics and their awareness of BSE, reflecting a diverse and informed participant cohort in this study.

Table 1. Demographic Characteristics and Awareness of BSE (n=223)

Characteristics	Mean (SD)	n (%)
Age in years	37.1 (7.9)	
Marital Status		
Single		66 (29.6)
Married		151 (67.7)
Divorced		3 (1.3)
Widowed		2 (0.9)
Missing response		1 (0.4)
Ethnicity		
Sarawak indigenous group		92 (41.3)
Malay		55 (24.7)
Chinese		59 (26.5)
Indian		12 (5.4)
Others		2 (0.9)
Missing response		3 (1.3)
Religion		
Islam		82 (36.8)
Christian		97 (43.5)
Buddhism		28 (12.6)
Others		13 (5.8)
Missing response		3 (1.3)
Educational Level		
Secondary School		54 (24.2)
Diploma		70 (31.4)
Bachelor's degree and above		99 (44.4)
Study in health science-related field		
Yes		180 (80.7)
No		41 (18.4)
Missing response		2 (0.9)
Position		
Doctors (Specialists, Medical Officers, Housemen)		60 (26.9)
Nurses (Matrons, Registered Nurses, Community Nurses)		74 (33.2)
Pharmacists & Pharmacist Assistants		21 (9.4)
Medical Assistants		21 (9.4)
Health Care Assistants		21 (9.4)
Others		26 (11.7)
Scheme		
Management and Professional (Grade 41 - 56)		87 (39.0)
Supporting Group 1 (Grade 17 - 40)		110 (49.3)
Supporting Group 2 (Grade 1 - 16)		26 (11.7)
Monthly Income		
<RM1000		2 (0.9)
RM1000-2000		12 (5.4)
RM2001-3000		42 (20.2)
RM3001-4000		49 (22.0)
RM4001-5000		52 (23.3)
>RM5000		61 (27.4)
Missing response		2 (0.9)
Family history of breast cancer		
None		181 (81.2)
First-degree female relative (sister, mother, daughter)		10 (4.5)
Second degree relative (aunt, grandmother, cousin)		22 (9.9)
Not sure		9 (4.0)
Missing response		1 (0.4)
Personal history of breast cancer or conditions, such as cysts, fibrosis		
Yes		24 (10.8)
No		188 (84.3)
Not sure		11 (4.9)
Currently under follow-up for breast-related conditions		
Yes		3 (1.3)
No		219 (98.2)
Missing response		1 (0.4)
Medical insurance coverage		
Yes		136 (61.0)
No		80 (35.9)
Not sure		6 (2.7)
Missing response		1 (0.4)
Long-term contraception use		
Yes		19 (8.5)
No		194 (87.0)
Previously		9 (4.0)
Missing response		1 (0.4)
Number of pregnancies		
0		88 (39.5)
1		22 (9.9)
2		36 (16.1)
3		33 (14.8)
4		24 (10.8)
>4		16 (7.1)
Missing response		4 (1.8)
Experience of breastfeeding/ lactation		
Yes		130 (58.3)
No		92 (41.3)
Missing response		1 (0.4)
Heard of BSE		
Yes		216 (96.9)
No		6 (2.7)
Missing response		1 (0.4)

Note: Percentages may not total to 100 due to rounding

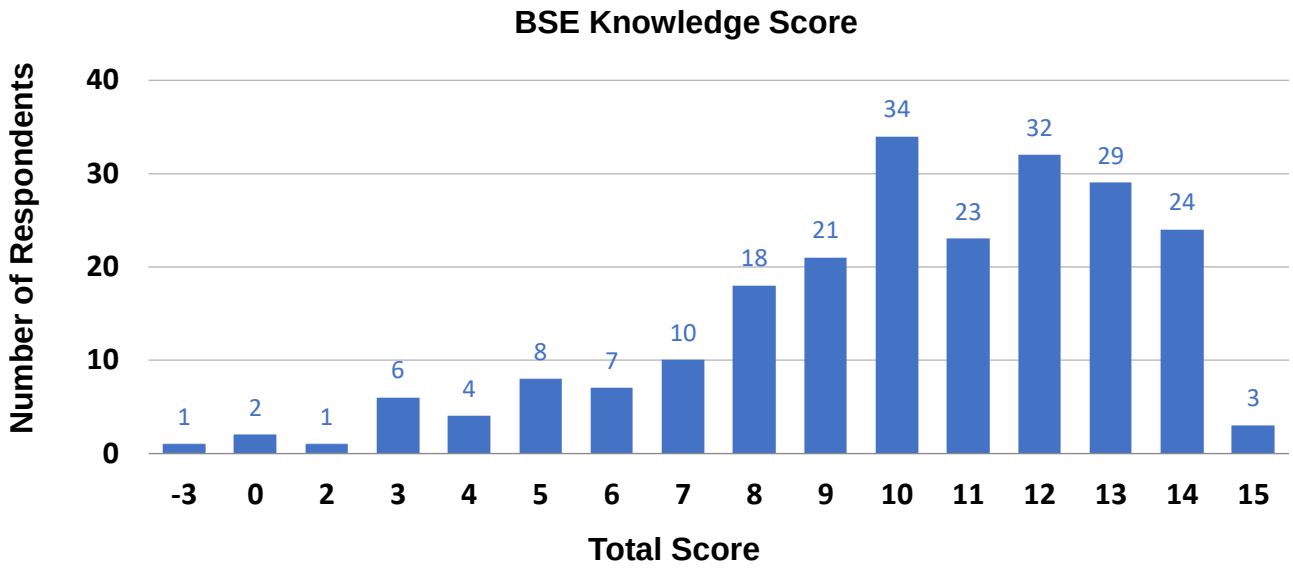

Figure 1. BSE Knowledge Score

Table 2. Knowledge of BSE (n= 223)

Question No.	Questions & Responses	n (%)
1	**Does BSE help to detect breast cancer early?**	
	Yes*	214 (96.0)
	No	8 (3.6)
	Missing response	1 (0.4)
2	**How often must BSE be performed?**	
	Daily	3 (1.3)
	Weekly	21 (9.4)
	Monthly*	138 (61.9)
	Yearly	14 (6.3)
	Anytime	22 (9.9)
	Not sure	23 (10.3)
	Missing response	2 (0.9)
3	**When is the right time to perform BSE?**	
	Before menstruation	23 (10.3)
	During menstruation	3 (1.3)
	7-10 days after start of menstruation*	125 (56.1)
	Anytime	29 (13.0)
	Not sure	42 (18.8)
	Missing response	1 (0.4)
4	**Which part of the hand should be used to perform BSE?**	
	Fingertips	66 (29.6)
	Flat pads of fingers*	130 (58.3)
	Palm	12 (5.4)
	Not sure	13 (5.8)
	Missing response	2 (0.9)
5	**In which of the following steps, both of the hands are raised?**	
	Lying on bed	28 (12.6)
	Standing in front of a mirror*	172 (77.1)
	Squatting	1 (0.4)
	Not sure	21 (9.4)
	Missing response	1 (0.4)

Table 2. continued

Question No.	Questions & Responses	n (%)
6	**The direction of hand movement during BSE?**	
	Random	2 (0.9)
	Circle*	213 (95.5)
	Not sure	7 (3.1)
	Missing response	1 (0.4)
7	**Which area to examine when performing BSE?**	
	Breast*	206 (92.4)
	Armpit*	189 (84.8)
	Shoulder	28 (12.6)
	Between breast and collarbone*	88 (39.5)
	Not sure	3 (1.3)
	Missing response	1 (0.4)
8	**Which is the correct posture when performing BSE?**	
	Standing*	201 (90.1)
	Lying down*	138 (61.9)
	Squatting	23 (10.3)
	Not sure	5 (2.2)
	Missing response	1 (0.4)
9	**Which of the following is (are) the sign of breast cancer?**	
	Change in breast size*	158 (70.9)
	Lump*	204 (91.5)
	Saggy breast	16 (7.2)
	Nipple discharge*	180 (80.7)
	Skin dimpling (skin texture similar to an orange peel)*	128 (57.4)
	Not sure	3 (1.3)
	Missing response	1 (0.4)

Note: Asterisks (*) indicate the correct responses
Questions 7 to 9 are multiple-choice questions and allow for selection of more than one answer. Percentages may not total to 100 due to rounding

Knowledge of BSE

An overwhelming majority of respondents (96.0%) agreed that BSE helps in detecting breast cancer early. However, only 61.9% demonstrated awareness of the correct time interval for BSE, and merely 56.1% accurately identified the optimal time for its practice. Moreover, 58.3% of respondents correctly identified the appropriate part of the hand for conducting BSE, while an impressive 95.5% were able to discern the correct direction of hand movement.

While the majority correctly acknowledged the breast and armpit as essential examination sites, a noteworthy 60.5% overlooked the critical area between the breast and collarbone. In terms of identifying signs, a slightly lower percentage (57.4%) recognised skin dimpling as a potential indicator of breast cancer compared to other symptoms.

In summary, the study revealed that a substantial majority of respondents (74.4%) exhibited commendable knowledge of BSE, achieving a knowledge score of 9 or higher. The mean knowledge score stood at 10.1 ± 3.2 points.

The distribution of knowledge scores is visually depicted in Figure 1, while Table 2 summarises the findings on the knowledge of BSE.

Attitudes towards BSE Practice

Most of the respondents (95.5%) either agreed or strongly agreed that BSE helps in breast cancer detection. Additionally, a significant proportion of the respondents also agreed that BSE is not difficult to perform (87.9%). The vast majority of respondents disagree that performing BSE is time-wasting (94.6%). Despite these positive attitudes towards BSE, a notable 64.6% of the respondents admitted fear of discovering signs of breast cancer when performing BSE. The aforementioned findings are shown in Table 3.

BSE Practice

A significant proportion of respondents (81.6%) reported engaging in BSE at some point, yet only 12.1% exhibited good BSE practices. Only a mere 29.7% and 36.3% adhered to a monthly BSE routine and performed it at the optimal time (after menstruation), respectively. Surprisingly, only 43.4% of those with prior BSE experience conducted the examination in the past month. The majority (93.4%) reported not detecting any abnormalities in their breasts. Nevertheless, when abnormalities were detected, 83.3% of the respondents sought professional consultation, as outlined in Table 4.

Table 3. Attitudes towards BSE Practice (n=223)

Question No.	Questions & Responses	n (%)
1	**I think BSE helps to detect breast cancer.**	
	Strongly agree	144 (64.6)
	Agree	69 (30.9)
	Neutral	7 (3.1)
	Missing response	3 (1.3)
2	**I think BSE is not difficult to perform.**	
	Strongly agree	117 (52.5)
	Agree	79 (35.4)
	Neutral	16 (7.2)
	Disagree	4 (1.8)
	Strongly disagree	4 (1.8)
	Missing response	3 (1.3)
3	**I think performing BSE is wasting my time.**	
	Agree	1 (0.4)
	Neutral	8 (3.6)
	Disagree	106 (47.5)
	Strongly disagree	105 (47.1)
	Missing response	3 (1.3)
4	**Are you afraid of finding the signs of breast cancer?**	
	Yes	144 (64.6)
	No	76 (34.1)
	Missing response	3 (1.3)

Note: Percentages may not total to 100 due to rounding

Table 4. BSE Practice

Question No.	Questions & Responses	n (%)
1	**Have you ever practised BSE? (n=223)**	
	Yes	182 (81.6)
	No	40 (17.9)
	Missing response	1 (0.4)
2	**If the answer to the question above is yes, how often? (n=182)**	
	Weekly	8 (4.4)
	Monthly	54 (29.7)
	Occasionally	75 (41.2)
	Rarely	45 (24.7)
3	**Timing of practice of BSE? (n=182)**	
	Before menstruation	14 (7.7)
	During menstruation	3 (1.6)
	After menstruation	66 (36.3)
	When remember	99 (54.4)
4	**When was the last time you performed BSE? (n=182)**	
	In the past month	79 (43.4)
	More than one month ago	65 (35.7)
	More than one year ago	38 (20.9)
5	**Have you ever discovered any abnormality in your breast?(n=182)**	
	Yes	12 (6.6)
	No	170 (93.4)
6	**If the answer to the question above is yes, have you consulted a doctor? (n=12)**	
	Yes	10 (83.3)
	No	2 (16.7)

Note: Percentages may not total to 100 due to rounding

DISCUSSION

BSE plays a crucial role in early detection of breast cancer. This study revealed a commendable level of awareness and knowledge on BSE among female healthcare workers in Miri Hospital. While many respondents recognised the importance of BSE and did not perceive it as time wasting, only about one-third of them practised it as recommended.

Awareness of BSE

The study found that nearly all respondents were familiar with BSE. Similarly, other studies carried out among healthcare workers elsewhere in Malaysia, also reported the same findings. High level of awareness on BSE could be due to the inherent nature of their profession and regular exposure health promotions at their workplace.

Interestingly, similar findings were not limited to only healthcare workers. For instance, studies involving female health sciences students at public universities in Malaysia reported high awareness, ranging from 86.7% to 99.5%.[14,16,22-24] Furthermore, a study conducted at a local public university, Universiti Malaya, among female staffs aged above 35 years, concluded an impressive breast cancer awareness rate of 98.7%, with a noteworthy 83.8% having previously practised BSE.[25] The collective evidence suggests that both local health sciences students and healthcare workers exhibit robust awareness on BSE.

Knowledge of BSE

This study highlighted that a significant number of female healthcare workers possessed good knowledge of BSE, demonstrating well-informed knowledge about the recommended interval, time, and techniques. These findings align with previous studies, which similarly identified a prevalent high level of knowledge among healthcare workers.[26] Likewise, studies among health sciences students have consistently shown a positive trend, with approximately 74.15% demonstrating good knowledge.[14] The high level of knowledge is anticipated, due to the exposure to breast cancer and its detection during training.

This finding highlighted the gap between the level of knowledge of female healthcare workers and the general public. A study on the general public of Miri, has found that 81.6% of them had poor knowledge on BSE.[27] Therefore, there is a need to address this huge gap as knowledge on BSE has been proven to play a crucial role in increasing breast cancer treatment efficacy and improving survival chances.[1]

While these results indicate a robust overall knowledge base, certain aspects demand attention, particularly regarding the recognition of non-lump signs of breast cancer. Although the current study reveals that most respondents can identify common signs such as changes in breast size, the presence of a lump, or nipple discharge, with a lump being the most recognised indicator (91.5%), fewer healthcare providers can identify non-lump signs like skin dimpling. This observation aligns with previous research highlighting a lower recognition of non-lump symptoms.[28] Thus, educational programmes should place greater emphasis on enhancing healthcare workers' awareness of non-lump signs associated with breast cancer.

BSE Practice

Despite the high levels of awareness and knowledge observed in our study, a substantial disparity in actual practice was revealed. While a majority of respondents (81.6%) reported having practiced BSE at some point, a mere 12.1% adhered to recommended practices. This discrepancy echoes findings from a previous study, where a significant proportion (69.3%) claimed to have engaged in BSE, yet less than half practised it on a monthly basis.[14] The gap between awareness, knowledge, and practical application poses a consistent challenge in breast cancer prevention and early detection efforts.

One potential explanation for this discrepancy might be linked to the perceived low detection of abnormalities during BSE.[29] Notably, many respondents in our study acknowledged the importance of BSE, and some had prior experience with it; however, they did not identify abnormalities and failed to adhere to regular checks. Further research is essential to validate this observation and underscore the necessity for targeted interventions aimed at bridging this gap, emphasising the importance of regular BSE as an integral component of healthcare workers' personal health practices.

Attitudes towards BSE Practice

The attitudes towards BSE were predominantly positive among the respondents in this study. The majority agreed that BSE plays a crucial role in early breast cancer detection and disagreed with the notion that performing BSE is a waste of time or difficult. However, it is noteworthy that 64.6% expressed fear about finding signs of breast cancer. Research has consistently identified fear as a significant barrier to BSE practice, encompassing concerns about discovering a growth and reluctance to discuss BSE.[29] Therefore, addressing this fear among female healthcare workers is paramount.

In the broader context of breast cancer prevention, healthcare workers, are influential role models within their communities, who possessed the potential to shape the adoption of preventive practices among the general population. Having well-informed advocates with supportive attitudes toward practicing BSE is of utmost importance. By fostering a positive perspective on BSE, healthcare workers can contribute significantly to breaking down barriers, dispelling fears, and promoting good breast health practices

Limitations

This study has several limitations. Firstly, the findings may not be generalizable to other healthcare workers from different demographic backgrounds as this study was a single-centred study in Miri. Secondly, the data on BSE practice were self-reported, introducing the potential of social desirability bias and possibility of reliance on online information resources. Therefore, the knowledge score could be inflated, if the responses were not entirely spontaneous or truthful.

CONCLUSION

This study highlights the paradox of high awareness and knowledge coexisting with low adherence to correct BSE practice among healthcare workers. This gap underscores the need for understanding the barriers faced by educated female healthcare professionals. Such efforts could not only improve the breast health of healthcare workers but also potentially serve as a catalyst for broader breast cancer prevention in the community.

ACKNOWLEDGEMENT

The authors would like to extend their highest gratitude to the Director General of Health Malaysia for the permission to publish this article.

CONFLICT OF INTEREST

The authors declare no conflict of interests.

FUNDING

This study received no external funding.

ETHICAL APPROVAL

This research project was registered in the National Medical Research Registry (NMRR ID-23-00204-SFD) and approved by the Medical Research and Ethics Committee, Ministry of Health Malaysia.

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