



Knowledge, Awareness, and Breast Self-Examination Practice Among Nurses in Sultan Ahmad Shah Medical Centre: A Follow-Up 6 Months Study

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Abstract:

Background: Nurses play an important role as public health educators, particularly in breast cancer screening. Therefore, follow-up studies on breast cancer and breast self-examination (BSE) are important to ensure that nurses' knowledge is updated. The objectives are to determine the knowledge, awareness, and practice (KAP) of breast cancer and BSE among staff nurses in SASMEC@IIUM in Kuantan, Pahang, and its association with socio-demographic factors. **Methodology:** A quasi-experimental study was conducted among 50 nurses. A validated questionnaire was utilised to assess the KAP of BSE domains. Data was analysed for descriptive statistics and Wilcoxon signed-rank test to compare the changes. **Results:** A total of 50 nurses were involved in the pretest. However, only 30 nurses were retained at the 6-month posttest. Most were females (86.7%), Malay (96.7%), married (66.7%), with a family history of cancer (26.7%), and have a family history of breast cancer (13.3%). Positive improvements were observed in their median scores for knowledge and practice related to BSE domains post-6-month. A significant association was noted between knowledge of the risk factors among the nurses posttest ($p = 0.015$). **Conclusion:** The webinar on breast cancer improved the nurses' knowledge of breast cancer risk factors. Continuous effort is vital to sustain the positive changes in BSE practice and improve the nurses' awareness of delivering health education on breast cancer. An intervention that integrates digital technology is perhaps needed in the future to achieve a better outcome.

Keywords: Breast self-examination, knowledge, awareness, practice, nurses

Introduction:

Globally, the United States of America (USA) reported 1.2 million females having breast cancer in 2018, while Australia, Germany, and New Zealand reported an incidence of 20,000, 70,000, and 3,266 between 2012 to 2017 (Centre for Disease Control and Prevention, 2021; Espina et al., 2017; National Breast Cancer Foundation, 2021). Meanwhile, in the Asia-Pacific region, the highest incidence occurs in China (46%) and Japan (14%), followed by Indonesia (12%; Espina et al., 2017). Meanwhile, Malaysia experienced a high rate of unstaged breast cancer, at 36% (Youlden et al.,

2014). Thus, it is important to initiate early screening for breast cancer (Cherchiglia de Moraes et al., 2017).

A study in Nigeria by Yakubu et al. (2014) highlighted that nurses have little knowledge regarding screening methods for breast cancer, as none of them can explain their purpose due to inadequate sources of information. Hence, Ramathuba et al. (2015) emphasised the importance of awareness of breast cancer risk factors among health personnel to guide patients in early screening. Fotedar et al. (2013) asserted that female nurses are most

suitable for disseminating breast cancer knowledge to women.

Furthermore, Yakubu et al. (2014) agreed that nurses who lack knowledge of the correct timing and screening methods for breast cancer would indirectly affect the information delivered to patients. However, they revealed that nurses from the surgical ward and close to surgeons and physicians involved in education programmes and seminars were more confident, motivated, and aware of the correct time to perform screening methods for early detection.

A local study addressed that although nurses are well equipped with the knowledge of breast self-examination (BSE), only 35.1% perform it monthly as recommended by the Ministry of Health, Malaysia (Raja Lexshimi et al., 2014). Gupta et al. (2020) highlighted the lack of self-practice in a systematic review among healthcare professionals and Karayurt et al. (2010) believes that this hinders the spread of breast cancer awareness. There are limited intervention findings on breast cancer awareness among nurses.

The preliminary findings among nurses at Sultan Ahmad Shah Centre (SASMEC), Kuantan, Pahang, highlighted a moderate score on the awareness and practice towards BSE (Siti Noorkhairina et al., 2020). Thus, the current study is performed to follow up on the retention of knowledge (K), awareness (A), and BSE practice (P) among SASMEC @IIUM staff nurses after six months.

Materials and Methods:

Participants

A follow-up study was conducted to evaluate the retention of knowledge, awareness, and practice on breast cancer among staff nurses in SASMEC@IIUM, Kuantan, Pahang, post-6-months. Approval from the Kulliyah of Nursing Post Graduate Research Committee (KNPGRC; Ref: IIUM/313/G/14/3/1) dated 29 November 2019 and 26 August 2020 was obtained. Meanwhile, approval from the International Islamic University Malaysia Research Ethics Committee (IREC) was received; Ref: IIUM/504/11/2/IREC 2020-054 and Ref: IIUM/504/11/2/IREC 2020-KON2, apart from the Clinical Research Centre (CRC) SASMEC @IIUM (Ref: IIUM/423/DEaR/14/3/4).

Settings

Only 30 out of 50 staff nurses were conveniently retained post-6-months due to the COVID-19

pandemic, with a 60% response rate. Other healthcare professionals were excluded from this study.

Measures

The questionnaire comprised of five parts: Part A on sociodemographic data of the nurses, Part B measured the risk factors, while Part C included 10 items on signs and symptoms in a dichotomous choice of 'yes' or 'no'. Meanwhile, 10 items in Part D measured the nurses' awareness of BSE, and Part E described the practice of BSE in extreme ends 10-point Likert scale ranging between 0 points for strongly disagree to 10 points for strongly agree.

The content validity index obtained was 88.33%, with a strong internal consistency of $r^2 = 0.886$ (Siti Noorkhairina et al., 2020; Zamanzadeh et al., 2015). A hardcopy version questionnaire was distributed to the nurses during the preliminary phase after disseminating the study information and consent acquisition. Later, the Google Form was utilised to substitute for post-evaluation due to the Movement Control Order announced during the COVID-19 pandemic.

A one-day breast cancer awareness webinar about cancer and BSE was given between pre- and post-evaluation under the elective course NURF 4314 Discovery of Sub-specialisation: Patient Education and a representative from the Majlis Kanser Nasional (MAKNA) on 26 August 2020. An informative video recording from the webinar and an online BSE practical session by the MAKNA expert was distributed via email prior to retention evaluation. However, no mechanism was performed to check whether the nurses watched the recording.

Data analysis

The IBM Statistical Package Social Science (SPSS) software version 27.0 was used for analysis. Mean and standard deviation was reported for numerical data, while frequency and percentage represent the categorical data. The Wilcoxon signed-rank test was utilised to compare the pre and posttest scores. The statistical significance value was set at less than 0.05.

Results:

Socio-demographic background

There were a few drop-outs during the follow-up study after 6 months, as one staff nurse quit SASMEC@IIUM and 19 withdrew from the study. Thus, 30 staff nurses were retained (Table 1).

Table 1: Sociodemographic backgrounds of nurses (n=30)

Characteristic	Variable	Pre (n=50)		Post (n=30)		
		Freq (%)	Mean (SD)	Freq (%)	Mean (SD)	
Age (years)			29.46 (\pm 6.79)		30.03 (\pm 7.39)	
Gender	Male	9 (18)		4 (13.3)		
	Female	41 (82)		26 (86.7)		
Race	Malay	49 (98)		29 (96.7)		
	Indian	1 (2)		1 (3.3)		
	Chinese	0		0		
	Others	0		0		
	Marital status	Single	17 (34)		8 (26.7)	
	Married	33 (66)		20 (66.7)		
	Divorce	0		2 (6.7)		
	Widow	0		0		
Child number			0.48 (\pm 0.84)		0.80 (\pm 1.10)	
Family history of cancer	No	38 (76)		22 (73.3)		
	Yes	12 (24)		8 (26.7)		
History of cancer*	Breast Cancer	7 (14)		4 (10.0)		
	Brain Cancer	1 (2)		1 (3.3)		
	Colon Cancer	2 (4)		2 (6.7)		
	Lung Cancer	1 (2)		1 (3.3)		
	Thyroid Cancer	0		1 (3.3)		
	Cervical cancer	1 (2)		0		
	Family history of breast cancer	No	42 (84)		26 (86.7)	
	Yes	8 (16)		4 (13.3)		
Education level	Certificate	2 (4)		0 (0)		
	Diploma	16 (32)		12 (40.0)		
	Degree	4 (8)		2 (6.7)		
	Master	0		0		
	PhD	0		0		
	Others (Post Basic)	28 (56)		16 (53.3)		
Specialization**	Critical Care	9 (18)		4 (13.3)		
	Emergency Care	10 (20)		7 (23.3)		
	Midwifery	0		1 (3.3)		
	Perioperative Care	13 (26)		5 (13.3)		
	Audiology	2(4)		0		
	Ear, Nose and Throat	2(4)		0		
	Medical-surgical	5 (10)		0		
	Stoma care	1 (2)		0		
	Ophthalmic	6 (12)		0		
	Psychiatric	2(4)		0		
	Working area	Ear Nose Throat (ENT) Clinic	4 (8)		2 (6.7)	
Emergency and Trauma Department (ETD)		10 (20)		7 (23.3)		
Intensive Care Unit (ICU)		9 (19)		5 (16.7)		
Ophthalmology Clinic		6 (12)		4 (13.3)		
Operation Theatre		13 (26)		9 (30.0)		
Rehabilitation Unit		0		1 (3.3)		
Surgery Clinic		5 (10)		2 (6.7)		
Psychiatric Clinic		2(4)		0		
Clinical experience (years)				6.6 (\pm 6.28)		7.20 (\pm 6.376)

Note:

*participant might answer more than one type of cancer

**participant might answer more than one specialization

Table 2: Knowledge regarding the risk factors of breast cancer (n=30)

Items	Answer	Pre (n=50)	Post (n=30)
		Freq (%)	Freq (%)
The risk of breast cancer increasing with age	No	8 (16)	4 (13.3)
	Yes	42 (84)	26 (86.7)
Breast cancer is a hereditary disease	No	14 (28)	10 (33.3)
	Yes	36 (72)	20 (66.7)
High fat diet is a risk factor for breast cancer	No	16 (32)	8 (26.7)
	Yes	34 (68)	22 (73.3)
Smoking is a risk factor for breast cancer	No	19 (38)	10 (33.3)
	Yes	31 (62)	20 (66.7)
Alcohol consumption increases the risk of breast cancer	No	14 (28)	10 (33.3)
	Yes	36 (72)	20 (66.7)
Pregnancy after 30 years old increases the risk of breast cancer	No	26 (52)	14 (46.7)
	Yes	24 (48)	16 (53.3)
Having first menstrual cycle before the age of 11 increases your risk of breast cancer	No	32 (64)	18 (60.0)
	Yes	18 (36)	12 (40.0)
Late menopause is a risk factor for breast cancer	No	34 (68)	21 (70.0)
	Yes	16 (32)	9 (30.0)
Stress increases the risk of breast cancer	Yes	36 (72)	21 (70.0)
	No	14 (28)	9 (30.0)
Obesity is one of the risk factors for breast cancer	No	14 (28)	8 (26.7)
	Yes	36 (72)	22 (73.3)
Women who never give birth (nulliparous) are at risk for breast cancer	No	27 (54)	9 (30.0)
	Yes	23 (46)	21 (70.0)
The consumption of contraceptive pills increases the risk of breast cancer	No	26 (52)	11 (36.7)
	Yes	24 (48)	19 (63.3)
Breastfeeding reduces the risk of breast cancer	No	7 (14)	5 (16.7)
	Yes	43 (86)	25 (83.3)
High levels of estrogen hormone increase the risk of breast cancer	No	16 (32)	9 (30.0)
	Yes	34 (68)	21 (70.0)
Breast cancer is a contagious disease	Yes	1 (2)	0
	No	49 (98)	30 (100.0)
Breast cancer cannot be cured	Yes	11 (22)	4 (13.3)
	No	39 (78)	26 (86.7)
Breast cancer can cause death	No	8 (16)	3 (10.0)

Knowledge Regarding the Risk Factors of Breast Cancer

All nurses knew that breast cancer is not a contagious disease (100%), could cause death (90%), and risks increased with age yet curable (86.7%) after 6 months (Table 2). The mean total knowledge scores on risk factors are 10.82 ± 3.17 at the pretest and 11.50 ± 2.79 at the posttest, lower than the 50th percentile, indicates a moderate score in this domain but with improvement.

Knowledge Regarding the Sign and Symptoms of Breast Cancer

Most nurses understood that breast swelling (96.7%), mucus discharge from the nipple and ulcers, breast

size and shape changes, along with weight loss (93.3%), are the sign and symptoms of breast cancer (Table 3). The mean total knowledge score was 8.18 ± 1.69 (pretest) and 8.30 ± 1.80 (posttest), lower than the 50th percentile, indicating a moderate score in this domain.

Awareness Regarding Breast Cancer and Early Breast Cancer Screening Test: Breast Self-Examination

The mean total awareness score obtained was 74.04 ± 25.07 , lower than the 50th percentile (83.50) at the pretest and 70.63 ± 29.09 at the posttest, lower than the 50th percentile (82.50). This indicated a moderate awareness of breast cancer and BSE.

Table 3: Knowledge regarding the sign and symptoms of breast cancer (n=30)

Items	Answer	Pre (n=50)	Post (n=30)
		Freq (%)	Freq (%)
A lump on the breast is a sign of breast cancer	No	10 (20)	13 (43.3)
	Yes	40 (80)	17 (56.7)
Mucus discharge from the nipple shows signs of breast cancer	No	7 (14)	2 (6.7)
	Yes	43 (86)	28 (93.3)
Pain at the breast is a sign and symptom of breast cancer	No	17 (34)	11 (36.7)
	Yes	33 (66)	19 (63.3)
Changes in the size of one or both breasts are indications of breast cancer	No	4 (8)	2 (6.7)
	Yes	46 (92)	28 (93.3)
Ulcers on the surface of the breast skin are one of the symptoms of breast cancer	No	9 (18)	2 (6.7)
	Yes	41 (82)	28 (93.3)
People with breast cancer usually lose weight	No	7 (14)	2 (6.7)
	Yes	43 (86)	28 (93.3)
Changes in the shape of one or both breasts show signs of breast cancer	No	1 (2)	2 (6.7)
	Yes	49 (98)	28 (93.3)
Inverted breast nipple in one or both breasts showing signs of breast cancer	No	24 (48)	12 (40.0)
	Yes	26 (52)	18 (60.0)
Breast cancer causes the breast to swell and grow	No	5 (10)	1 (3.3)
	Yes	45 (90)	29 (96.7)
A lump at the armpit is a sign of breast cancer	No	7 (14)	4 (13.3)
	Yes	43 (86)	26 (86.7)

Table 4: Median score for knowledge, awareness and practice domains at pre- and post-6 month after Webinar (n=30)

Domains / Total Score	Median (IqR)		Z-stats ^a	p-value
	Pre-Test	Post-Test		
Knowledge on risk factors	11 (3)	12 (4)	-2.442	0.015
Knowledge on sign and symptoms	8 (3)	9 (3)	-1.683	0.092
Awareness on breast cancer and early screening test	81 (27)	79 (31)	-0.184	0.854
Breast cancer practice and BSE	68.5 (41)	79 (31)	-1.389	0.854

Note:

^aWilcoxon Signed-Rank Test

Breast Cancer Practice and Early Breast Cancer Screening: Breast Self-Examination

The mean total practice score is 66.62±26.85 at the pretest and 70.83±24.61 at the posttest, indicated a moderate practice of BSE among the nurses but with improvement.

The Association of Knowledge, Awareness, Practice and Breast Self-Examination among Nurses at pre and post-6-month programme

The median score for each KAP domain was reported after normality checking using Kolmogorov-Smirnov and Shapiro-Wilk tests. The median score for knowledge of the risk factors domain is significantly higher ($p = 0.015$) after 6 months (Table 4).

Discussion:

Studies on pre- and post-intervention of breast cancer awareness among nurses in Malaysia are scarce. The majority of studies conducted were among students and the general population (Akhtari-Zavare et al., 2016; Ali et al., 2019; Yong & Soon, 2017). Therefore, this study compares the findings with the global context. Nurses in this study were in their early 30s (years), female, married and had no family history of breast cancer, similar to the previous studies (Andegiorgish et al., 2018; Erdem & Toktaş, 2016; Jemebere, 2019; Tastan et al., 2011 & Venkatramana et al., 2011).

Nurses in this study exhibited better awareness (100.0% vs. 59.0%) that breast cancer is not contagious and can lead to death, in comparison to a study in Turkiye by Terzioğlu et al. (2017). Meanwhile, Taranikanti et al. (2014) reported poor nurses' knowledge of breast cancer risk factors. In comparison, Gabriel et al. (2016) highlighted that nurses in their study could identify between 60.0% to 77.6% of breast lumps, a lump under the armpit, and changes in breast size and shape, while nurses in the recent study can recognise between 93.3% to 96.7% of breast cancer signs and symptoms. Likewise, Andegiorgish et al. (2018) also reported that a high percentage (76.7% to 89.9%) of nurses recognised the signs and symptoms mentioned above.

Nonetheless, although the findings showed that nurses in this study have moderate awareness of breast cancer and BSE, it could be due to different scoring methods. Terzioğlu et al. (2017) reported a mean of 6.41 ± 29.09 , while Eskandari-Torbaghan et al. (2014) reported a mean of 23.8 ± 4.05 post-intervention among the female medical staff. Meanwhile, Heena et al. (2019) claimed that nurses in their study had low attitudes toward breast cancer screening and BSE. Likewise, the practice of BSE among nurses in this study is moderate, as supported by Erdem and Toktaş (2016), Ghanem et al. (2011), and Jemebere (2019), with 92.6%, 75%, and 71.2%, respectively. On the contrary, Andegiorgish et al. (2018) reported a low percentage (30%) of the practice of breast cancer screening as a preventive measure among nurses in their study.

Overall, a significant moderate improvement is observed in the knowledge level of risk factors after the breast cancer awareness webinar was given along with BSE practice (Siti Noorkhairina et al., 2020, 2021, 2022). This study's efforts align with the need for proper training addressed by Andegiorgish et al. (2018) and Taranikanti et al. (2014) to improve nurses' knowledge in recognising signs and symptoms of breast cancer and early screening measures. Karayurt et al. (2010) proved that the training programme for the trainer of nurses in Turkiye benefitted the nurses and improved the quality of life of breast cancer patients. Therefore, a continuous effort is needed to sustain the dissemination of knowledge, as agreed by Terzioğlu (2017).

Conclusion:

The knowledge of breast cancer risk factors was significantly improved after the six-month programme. Therefore, awareness programmes and internal training should be planned regularly. The

strength of the study lies in the pre- and post-evaluation despite its small sample size. Future studies should be conducted on a larger scale to determine the causal effect relationship.

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