



Awareness of Breast Cancer and Breast Self-Examination Practices among Cambodian Women

Rachany Heng¹, Sung-Heui Bae^{2*}

¹ Department of Nursing, University of Health Sciences, Phnom Penh, Cambodia, ² College of Nursing, Graduate Program in System Health Science and Engineering, Ewha Womans University, Seoul, Republic of Korea

Received July 27, 2021; revised September 09, 2021; accepted September 13, 2021

ABSTRACT

Introduction

Breast cancer is the most commonly diagnosed cancer and the leading cause of death in women worldwide. This study aimed to assess awareness of breast cancer and breast self-examination practices among Cambodian women.

Methods

The cross-sectional study was conducted among 268 females aged 20-59 years, who visited outpatient departments of three health centers in the Siem Reap province, Cambodia. A questionnaire was performed for data collection. Descriptive statistics, independent samples T-test, one-way ANOVA, and a Chi-square test were utilized to analyze data with SPSS version 25.0.

Results

The awareness of breast cancer scores were 9.85 for knowledge of breast cancer risk factors, 12.76 for knowledge of breast cancer warning signs and symptoms, and 23.21 for attitude to breast cancer prevention. Half of the participants (51.1%) had ever performed breast self-examination during their lifetime, and slightly fewer (50.4%) had practiced breast self-examination in the past 12 months. The lifetime breast self-examination performance and practice of breast-self-examination in the past 12 months were significantly associated with marital status, oral contraceptive use, and having a history of breast problems. The practice of breast self-examination in the past 12 months was significantly associated with a woman's attitude to breast cancer prevention.

Conclusions

The study shows that Cambodian women have a low level of awareness of breast cancer and breast self-examination practices. Breast self-examination practices were significantly associated with a positive attitude to breast cancer prevention. This implies that there is a need for healthcare workers to provide effective educational breast cancer programs and breast self-examination screening for women to improve their knowledge, positive attitude to breast cancer prevention, and breast self-examination practices.

* Corresponding author: Bae SH sbae@ewha.ac.kr

Citation: Heng R, Bae SH. Awareness of Breast Cancer and Breast Self-Examination Practices among Cambodian Women, *CJPH* (2021) 02:10

© 2021 Cambodia Journal of Public Health. All rights reserved

Keywords: Awareness of breast cancer, Breast self-examination practices, Cambodian woman

Introduction

Breast cancer is the most commonly diagnosed cancer and the leading cause of death in women worldwide. There were 2.3 million cases of breast cancer, accounting for almost 1 in 4 cancer cases in women worldwide, and 0.68 million deaths due to the disease among females in 2020 [1]. According to the latest report from International Agency for Research on Cancer in 2020, in Cambodia, the number of new cancer cases were 9957 for females, the most common cancer was breast cancer (18.9%), followed by cervix uteri (11.4%), liver (10.7%), colorectum (8.3%), lung (7.0%), with other cancers accounting for the remaining 43.7% of cases [2]. Ley and colleagues [3] found that breast cancer presented at a younger age in Cambodian women and tended to be identified at an advanced stage compared to cases in developed South East Asian and high-income countries. About 77.6% of Cambodian women presented with stage 3 and stage 4 breast cancer, compared to only 22.3% in Singapore, a high-income, South East Asian country [3].

In Cambodia, there is no public health promotion program for breast cancer screening in women; however, the Ministry of Health is onerous to promote self-palpation among women and educate them to visit doctors, nurses, or midwives at primary health centers or hospitals if they identify any breast abnormalities [4]. The Ministry of Health is implementing breast palpation into the public primary health care level and tries to promote breast palpation methods through mass media communication [5]. Unfortunately, clinical breast examinations are not available for women living in rural areas where there are no health facilities or doctors, and mammography is only available in Phnom Penh, the capital city of Cambodia [4]. Breast self-examination is only the available screening method to identify breast abnormalities for women living in rural areas of Cambodia.

Raising awareness of breast cancer is particularly important to encourage women to become familiar with any abnormalities that they may detect during breast self-examination [6]. Therefore, breast self-examination is the primary prevention of breast cancer, as well as increasing breast self-examination practices, aim to reduce breast cancer morbidity and mortality rates [7]. The various factors have been reported as an effect on breast self-examination including women's age, marital status, education, socio-economic status, the residence of stay, occupation, and family history of cancer [8, 9]. There has been no research documented about awareness of breast cancer and breast self-examination practices among Cambodian women. Therefore, the purpose of this study was to assess awareness of breast cancer and breast self-examination practices among Cambodian women. The finding of this study will provide

supportive data about knowledge of breast cancer risk factors, warning signs and symptoms, attitude to breast cancer prevention, and breast self-examination practices; and will help healthcare providers and planners to develop and modify effective health education programs and breast cancer screening guidelines to help the women to increase their knowledge, positive attitude to breast cancer prevention, and performance of breast self-examination.

Methods

Study Design and Sample

A cross-sectional study was conducted among 268 women aged 20-59 years in three health center outpatient departments in Siem Reap province by using a convenience sampling to recruit participants. One of them was located in an urban, and the other two health centers were in a rural area. These public health centers provide free-of-charge services: initial consultations and primary diagnosis, emergency first aid, chronic disease care, maternal and child care (including normal birth delivery), birth spacing advice, immunization, health education, and referrals [5]. All of these health centers weren't available for clinical breast examination or mammography.

The eligibility criteria for sampling were as follows: (i) Cambodian women aged 20-59 years; (ii) women from an outpatient department; (iii) and women who can read and write, respectively. The exclusion criteria were as follows: (i) women with a diagnosis of breast cancer; (ii) illiterate women; (iii) and women who were not interested in this study.

Instruments

A structured questionnaire consisted of general characteristics, awareness of breast cancer, and breast self-examination practices. It was translated from English to Khmer language by using the forward and backward translation method [10]. Then, a pilot study was conducted using the Khmer version questionnaire on 15 general Cambodian women without a diagnosis of breast cancer to modify the survey questionnaire and increase content validity.

Awareness of breast cancer was measured by the Breast Cancer Awareness Scale (B-CAS) developed by Rakkapao and colleagues [11]. In this study, awareness of breast cancer was categorized into three sub-domains including; knowledge of breast cancer risk factors (9 items), knowledge of breast cancer warning signs and symptoms (8 items), and attitude to breast cancer prevention (6 items). The knowledge of breast cancer risk factors ranged from 0-27 and was categorized into three levels; low (score < 9), moderate

(score 10-18), and high (score 19-27) [11]. The knowledge of breast cancer warning signs and symptoms ranged from 0-24 and was also categorized into three levels; low (score < 6), moderate (score 7-12), and high (13-24) [11]. Attitude to breast cancer prevention (6 items) was a score from 6-30. A higher score indicated a higher level of awareness of breast cancer. The Cronbach's alpha for each sub-domain, which are knowledge of breast cancer risk factors (0.72), knowledge of breast cancer warning signs and symptoms (0.87), and attitude to breast cancer prevention (0.85).

The tool of breast self-examination practices was adapted from a questionnaire previously used by Alkhasawneh [12]. The following two questions were asked the woman has performed breast self-examination during her lifetime and has she practiced breast self-examination in the past 12 months. A higher score indicated a higher involvement of breast self-examination practices.

General characteristics were divided into two parts: socio-demographic characteristics (10 items) and women's health-related characteristics (5 items). The socio-demographic characteristics included age, religion, marital status, education, occupation, location, number of children, type of family, monthly family income, and age at first marriage. The health-related characteristics included age at first pregnancy, oral contraceptive use, menopause, history of breast problems, and family history of cancer.

Data Collection

The data were collected on November 03-18, 2018. Research assistants (RA) were trained for one day before data collection on the purpose of the study and how to interview the participants. The participants were recruited when they visited the outpatient department; head nurses of each health center informed women about the current study and invited them to participate in this study. The researcher/ RA informed each participant by providing written and verbal information about the research subject, purposes, and procedure before they answer the questions. The participants were asked to write the name with signature on the informed consent sheet when they volunteered to cooperate in the interview. The face-to-face interviews by structured questionnaires took approximately 15 minutes.

Analysis

The completed survey questionnaires were coded and entered into Statistical Package for Social Sciences (SPSS) version 25.0. Simple descriptive statistics (mean, standard deviation, minimum, maximum, and percentage) were used to describe the

participants' general characteristics, awareness of breast cancer, and breast self-examination practices. One way ANOVA and Independent sample T-test were used to analyze the awareness of breast cancer level based on general characteristics, and the relationship between awareness of breast cancer and breast self-examination practices. A Scheffé test was used to identify the specific groups that led to statistically significant differences. The Chi-square test was used to analyze the level of breast self-examination practices based on general characteristics. A Fisher's Exact test was used to identify the groups that led to statistically significant differences, especially in cases of samples size less than 5.

Results

1. General Characteristics of the Participants

The general characteristics of the participants are presented in **Table 1**. About 44.0% of participants were aged from 20 to 29 years. The majorities of the studied participants were Buddhist (95.1%), and married/divorced (92.9%). About 58.2% of the participants' attained less than secondary education. Half of the participants were housewives (52.2%) and lived in urban areas (59.7%). Eighty-six percent of the participants had children. About 40.3% of the participants were members of an extended family and lived with a family income of less than USD 100 per month (41.4%). About 66.4% of participants with an age at first marriage less than 24 years, 57.5% had an age at first pregnancy less than 24 years, and 56.7% never used oral contraceptives. The majority of participants had not begun menopause (92.5%), had no history of breast problems (94.8%), and had no family history of cancer (97.4%).

2. Awareness of Breast Cancer and Breast Self-Examination Practices

Awareness of breast cancer encompassed three sub-domains and the mean scores for each sub-domain were as follows: 9.85 for knowledge of breast cancer risk factors, 12.76 for knowledge of breast cancer warning signs and symptoms, and 23.21 for attitude to breast cancer prevention (**Table 2**).

In terms of the lifetime breast self-examination performance, 51.1% of the studied women had performed breast self-examination at some point during their lifetime. Half of the women in this study (50.4%) had practiced breast self-examination in the past 12 months. The percentages of participants who had practiced breast self-examination in the past 12 months were as follows: once every 12 months (16.4%), once every 6 months (11.6%), once every 2-3 months (12.7%), and once every month (9.7%).

Table 1: General characteristics of the participants ($N = 268$)

Variables	Category	<i>n</i> (%)
Socio-demographic characteristics		
Age (years)	20-29	118 (44.0%)
	30-39	96 (35.8%)
	40-49	27 (10.1%)
	50-59	27 (10.1%)
Religion	Buddhism	255 (95.1%)
	Others	13 (4.9%)
Marital status	Single	19 (7.1%)
	Married/ divorced	249 (92.9%)
Education	No education	22 (8.2%)
	Less than Secondary education	156 (58.2%)
	High school	52 (19.4%)
	Colleges	38 (14.2%)
Occupation	Student	11 (4.1%)
	Housewife	140 (52.2%)
	Businesswomen	80 (29.9%)
	Others	37 (13.8%)
Location	Rural	108 (40.3%)
	Urban	160 (59.7%)
Number of children	Yes	231 (86.2%)
	No	37 (13.8%)
Type of family	Extended	108 (40.3%)
	Joint	53 (19.8%)
	Nuclear	107 (39.9%)
Monthly family income (US\$)	<100	111 (41.4%)
	101-300	108 (40.3%)
	> 300	49 (18.3%)
Age at first marriage (years)	Not yet	20 (7.5%)
	< 24	178 (66.4%)
	25-33	70 (26.1%)
Women health-related characteristics		
Age at first pregnancy (years)	Not yet	30 (11.2%)
	< 24	154 (57.5%)
	25-33	84 (31.3%)
Oral contraceptive use	No	152 (56.7%)
	Ex-user	86 (32.1%)
	Current user	30 (11.2%)
Menopause	Yes	20 (7.5%)
	No	248 (92.5%)
History of breast problems	Yes	14 (5.2%)
	No	254 (94.8%)
Family history of cancer	Yes	7 (2.6%)
	No	261 (7.4%)

3. Awareness of Breast Cancer and Breast Self-Examination Practices Based on General Characteristics

Awareness of breast cancer based on general characteristics is presented in **Table 3**. Knowledge of breast cancer risk factors was significantly associated with oral contraceptive use ($F=3.11$, $P=.046$).

The level of knowledge of breast cancer warning signs and symptoms was significantly associated with

education ($F=3.21$, $P=.024$), type of family ($F=4.93$, $P=.008$), and family history of cancer ($F=4.03$, $P=.046$). The positive attitude to breast cancer prevention was significantly associated with family income ($F=3.10$, $P=.047$), and oral contraceptive use ($F=3.75$, $P=.025$).

Table 2: Awareness of breast cancer and breast self-examination practices of the participants

Awareness of breast cancer	Mean ± SD	Min - Max
Knowledge of breast cancer risk factors	9.85 ± 3.35	0 - 18
Knowledge of breast cancer warning signs and symptoms	12.76 ± 3.42	0 - 16
Attitude to breast cancer prevention	23.21 ± 3.00	
Breast self-examination practices	Category	n (%)
Have you ever performed breast self-examination during your lifetime	Yes	137 (51.1%)
	No	131 (48.9%)
How many times have you practiced breast self-examination in the past 12 months	Yes	
	Once every 12 months	44 (16.4%)
	Once every 6 months	31 (11.6%)
	Once every 2-3 months	34 (12.7%)
	Once every month	26 (9.7%)
No	133 (49.6%)	

SD, Standard Deviation; Min, Minimum; Max, Maximum

The breast self-examination practices based on general characteristics are presented in **Table 4**. The lifetime breast self-examination performance was significantly associated with the marital status ($\chi^2=5.04$, $P=.025$), oral contraceptive use ($\chi^2=8.67$, $P=.013$), and a history of breast problems ($\chi^2=4.46$, $P=.035$). The practice of breast self-examination in the past 12 months was significantly associated with marital status ($\chi^2=4.73$, $P=.030$), oral contraceptive use ($\chi^2=11.26$, $P=.004$), and a history of breast problems ($\chi^2=7.38$, $P=.007$).

4. Relationship between Awareness of Breast Cancer and Breast Self-Examination Practices

The relationship between awareness of breast cancer and breast self-examination practices is presented in **Table 5**. The lifetime breast self-examination performance showed no statistically significant differences within any of the sub-domains for awareness of breast cancer. However, practicing breast self-examination in the past 12 months was significantly associated with attitude to breast cancer prevention ($F=4.00$, $P=.047$).

Discussion

With regards to awareness of breast cancer, the participants were found with low knowledge of breast cancer risk factors, and the breast cancer warning signs and symptoms were found with moderate knowledge, respectively. Based on the present result, it seems that Cambodian women regarding awareness of breast cancer are relatively low. Thus, this finding highlight an essential for nurses to provide breast cancer education programs that include information regarding risks factors, and warning signs and symptoms to the patients.

Approximately half of the Indian participants had ever performed self-examination [9]. Thus, this present study showed that Cambodian women had a low practicing breast self-examination. Based on the current study result, it seems that it is a need to provide the information regarding breast cancer and breast self-examination screening method to patients in health centers. Healthcare workers and especially the nurses should teach patients how to perform related to breast self-examination correctly, and ask them to carry out it regularly or monthly. When patients visit for a routine health check-up, the nurse should ask them to practice breast self-examination to check their understanding of the method and improve their current performance. In addition, the Ministry of Health should develop national breast self-examination guidelines and implement intensive breast cancer education programs across communities, high schools, universities, health centers, clinics, and hospitals. It is essential to provide more breast cancer and breast self-examination screening approach training to health providers, especially nurses in health centers, through courses, workshops, or conferences. This way, they will have the most up-to-date knowledge and can provide the most appropriate breast self-examination screening recommendations to patients.

The level of knowledge of breast cancer risk factors was significantly associated with oral contraceptive use. This finding is similar to results from Akhtari-Zavare [13], in which they found that participants who used oral contraceptives had a higher knowledge level with regards to breast cancer risk factors. The knowledge of breast cancer warning signs and symptoms was significantly associated with the following general characteristics: education, type of family, and family history of cancer. This finding is akin to those from a study by Sharma [14], which founded that women with a higher education level had a better knowledge of breast cancer warning signs and symptoms.

Table 3: Awareness of breast cancer based on general characteristics of the participants ($N = 268$)

Variables	Category	n	Knowledge of breast cancer risk factors		Knowledge of breast cancer warning signs and symptoms		Attitude to breast cancer prevention	
			Mean \pm SD	t/F (P)	Mean \pm SD	t/F (P)	Mean \pm SD	t/F (P)
Education	No education	22	11.27 \pm 4.82	1.59	12.91 \pm 3.52	3.21	23.27 \pm 3.53	.840
	Less than Secondary education	156	9.78 \pm 3.10	(.192)	12.89 \pm 3.21	(.024)*	23.13 \pm 2.86	(.473)
	High school	52	9.81 \pm 3.20		13.40 \pm 3.14		23.73 \pm 2.95	
	Colleges	38	9.39 \pm 3.43		11.26 \pm 4.22		22.76 \pm 3.28	
Type of family	Extended ^a	108	10.10 \pm 3.58	1.38	13.47 \pm 3.25	4.93	23.44 \pm 3.47	.516
	Joint ^b	53	10.19 \pm 3.18	(.252)	12.79 \pm 3.33	(.008)**	23.08 \pm 2.21	(.598)
	Nuclear ^c	107	9.44 \pm 3.18		12.03 \pm 3.51	a>c	23.05 \pm 2.83	
Monthly family income (US\$)	< 100	111	9.68 \pm 3.52	.278	12.40 \pm 3.43	2.31	22.68 \pm 2.91	3.10
	101-300	108	9.93 \pm 3.23	(.757)	13.31 \pm 2.30	(.101)	23.54 \pm 2.78	(.047)*
	> 300	49	10.08 \pm 3.26		12.39 \pm 4.12		23.69 \pm 3.49	
Oral contraceptive use	No	152	9.41 \pm 3.32	3.11	12.69 \pm 3.20	.074	22.80 \pm 2.93	3.75
	Ex-user	86	10.38 \pm 3.27	(.046)*	12.85 \pm 3.77	(.929)	23.90 \pm 2.71	(.025)*
	User	30	10.57 \pm 3.53		12.87 \pm 3.57		23.30 \pm 3.75	
Family history of cancer	No	261	9.89 \pm 3.36	.492	12.71 \pm 3.44	4.03	23.19 \pm 3.02	1.05
	Yes	7	8.57 \pm 3.10	(.484)	14.57 \pm 1.81	(.046)*	24.00 \pm 1.82	(.306)

* $P < .05$; ** $P < .01$ **Table 4:** Breast self-examination practices based on general characteristics of the participants ($n = 268$)

Variables	Category	n	Have you ever performed breast self-examination during your lifetime?			How many times have you practiced breast self-examination in the past 12 months?		
			No n (%)	Yes n (%)	Chi-square χ^2 (P)	No n (%)	Yes n (%)	Chi-square χ^2 (P)
Marital status	Single	19	14 (73.7%)	5 (26.3%)	5.04	14 (73.7%)	5 (26.3%)	4.73
	Married/divorced	249	117 (47.0%)	132 (53.0%)	(.025)*	119 (47.8%)	124 (52.2%)	(.030)*
Oral contraceptive use	No	152	86 (56.6%)	66 (43.4%)	8.67	89 (58.6%)	63 (41.4%)	11.26
	Ex-user	86	32 (37.2%)	54 (62.8%)	(.013)*	32 (37.2%)	54 (62.8%)	(.004)**
	User	30	13 (43.3%)	17 (56.7%)		12 (40.0%)	18 (60.0%)	
History of breast problems	No	254	128 (50.4%)	126 (49.6%)	4.46	131 (51.6%)	123 (48.4%)	7.38
	Yes	14	3 (21.4%)	11 (78.6%)	(.035)*	2 (14.3%)	12 (85.7%)	(.007)**

* $P < .05$; ** $P < .01$ **Table 5:** Relationship between awareness of breast cancer and breast self-examination practices of the participants ($N = 268$)

Variables	Category	n (%)	Knowledge of breast cancer risk factors		Knowledge of breast cancer warning signs and symptoms		Attitude to breast cancer prevention	
			Mean \pm SD	t/F (P)	Mean \pm SD	t/F (P)	Mean \pm SD	t/F (P)
How have you ever performed breast self-examination during your lifetime?	No	131 (48.9%)	9.31 \pm 3.27	1.34	11.86 \pm 3.49	3.83	22.52 \pm 2.90	1.42
	Yes	137 (51.1%)	10.38 \pm 3.35	(.248)	13.62 \pm 3.13	(.052)	23.87 \pm 2.95	(.234)
How many times have you practiced breast self-examination in the past 12 months?	No	133 (49.6%)	9.36 \pm 3.28	1.11	11.82 \pm 3.44	2.79	22.51 \pm 3.05	4.00
	Yes	135 (50.4%)	10.34 \pm 3.37	(.293)	13.69 \pm 3.15	(.096)	23.90 \pm 2.79	(.047)*

* $P < .05$

In addition, a study by Solikhah [15] reported that women with a higher education level had a better knowledge of breast cancer warning signs and symptoms compared to those who had attained a lower education level.

The lifetime breast self-examination performance and practiced breast self-examination in the past 12 months were significantly associated with the following general characteristics; marital status, oral contraceptive use, and a history of breast problems. Those participants who were married/divorced comprised a greater percentage of those women who had practiced breast self-examination compared to single women. This finding is akin to the results published by Ogunbode [16], which revealed that the prevalence of breast self-examination practices was highest among women who got married. Married women tend to prepare for pregnancy and may have access to more reproductive health services where it is easier to find information regarding breast cancer screening. This result could be related to the study sample size and the low response rate of single women.

Study Limitation

There are several limitations to be addressed. Firstly, the data collection only included women from the Siem Reap province, northwest Cambodia. This result may not be generalized to all Cambodian women. Secondly, the inclusion criteria of this study were literate women and did not assess awareness of breast cancer and breast self-examination practices among illiterate women. Thirdly, the median age to develop breast cancer among Cambodian women is 47 years, however, in this study, nearly half of the participants were age from 20 to 29 years. Fourthly, the questionnaire covered only awareness of breast cancer and did not assess the participant's knowledge regarding breast self-examination for women. Last, this present study described only the number of times of practicing breast self-examination in the past 12 months and did not assess those factors that affect women to practices breast self-examination irregularly.

Thus, further research is essential to describe awareness of breast self-examination and to investigate other factors that affect women to practices breast self-examination irregularly. These findings also suggest that further studies should use large sample sizes and include women from representative Cambodian regions to generalize the results. Further

research should also assess awareness of breast cancer and breast self-examination practices among patients with a breast cancer diagnosis and illiterate.

Conclusion and Recommendation

The study result shows that Cambodian women have a low level of awareness of breast cancer and breast self-examination practices. Among Cambodian women, breast self-examination practices were significantly associated with a positive attitude to breast cancer prevention. This implies that there is a need for healthcare workers to provide effective educational breast cancer programs and breast self-examination screening for women to improve their knowledge, positive attitude to breast cancer prevention, and breast self-examination practices.

Ethical Consideration

The data was collected after getting the Institution Review Board (IRB) approval from the National Ethics Committee for Health Research (NECHR), Ministry of Health, Cambodia. This study was approved by the provincial health department on 22nd October 2018 and the NECHR on 2nd November 2018 (Ref. No. 280 NECHR).

References

- [1] Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: a cancer journal for clinicians*. 2021;71(3):209-49.
- [2] Globocan. 2020. Cancer Incidence, Mortality and Prevalence Worldwide in 2020. Retrieved from: <http://globocan.iarc.fr>.
- [3] Ley P, Hong C, Camp L, Bouy S, Maling E. Challenges in the management of breast cancer in a low resource setting in South East Asia. *Asian Pacific Journal of Cancer Prevention*. 2016;17(7):3459-63.
- [4] Eav S, Schraub S, Dufour P, Taisant D, Ra C, Bunda P. Oncology in cambodia. *Oncology*. 2012;82(5):269-74.
- [5] World Health Organization & Ministry of Health. Health Service Delivery Profile, Cambodia. 2012.
- [6] Solikhah S, Promthet S, Hurst C. Awareness level about breast cancer risk factors, barriers, attitude and breast cancer screening among Indonesian women. *Asian Pacific journal of cancer prevention: APJCP*. 2019;20(3):877-84.
- [7] El-Nasr EM. Breast Cancer risk factors and screening practices Among Women Attending Family Health Centers in Cairo Governorate. *J Nurs Health Scie*. 2018;6(3):12-2.
- [8] Okobia MN, Bunker CH, Okonofua FE, Osime U. Knowledge, attitude and practice of Nigerian women towards breast cancer: a cross-sectional study. *World journal of surgical oncology*. 2006;4(1):1-9.
- [9] Dahiya N, Basu S, Singh MC, Garg S, Kumar R, Kohli C. Knowledge and practices related to screening for breast cancer among women in Delhi, India. *Asian Pacific journal of cancer prevention: APJCP*. 2018;19(1):155-59.

- [10] Squires A, Aiken LH, Van den Heede K, et al. A systematic survey instrument translation process for multi-country, comparative health workforce studies. *International journal of nursing studies*. 2013;50(2):264-73.
- [11] Rakkapao N, Promthet S, Moore MA, Solikhah S, Hurst C. Assessing breast cancer awareness in Thai women: validation of the breast cancer awareness scale (B-CAS). *Asian Pacific journal of cancer prevention: APJCP*. 2017;18(4):995.
- [12] Alkhasawneh IM. Knowledge and practice of breast cancer screening among Jordanian nurses. In *Oncology nursing forum* 2007;34(6):1211-17.
- [13] Akhtari-Zavare ZI, Hanafiah JM, Abdul MR, Zarina II. Knowledge on breast cancer and practice of breast self-examination among selected female university students in Malaysia. *Medical Health and Science Journal*. 2011;7(3):49-56.
- [14] Sharma PK, Ganguly E, Nagda D, Kamaraju T, Ghanpur RR, Pradesh A, Mail ID. Knowledge, attitude and preventive practices of South Indian women towards breast cancer. *Health*. 2013;1(1):16-22.
- [15] Solikhah S, Sangruangake M, Promthet S. Awareness of breast cancer and its screening among Indonesian women. *Journal of Clinical and Diagnostic Research*. 2018;12(11):36-41.
- [16] Ogunbode AM, Fatiregun AA, Ogunbode OO. Breast self-examination practices in Nigerian women attending a tertiary outpatient clinic. *Indian journal of cancer*. 2015;52(4):520-24.