The Determining Factor of Practicing Breast Self-Examination Among Women in Hai Duong, Vietnam: An application of the Health Belief Model

Hang Thi Nguyen, PhD[1,2], Tung Thanh Le, Prof[3], Viet Van Tran, Prof[2], Hien Nguyen Thi Thu[2], Loan Bui Thi[2], Thanh Ninh Vu[2]

[1]PhD Candidate at Nam Dinh University of Nursing, Nam Dinh City, Nam Dinh 420000, Vietnam
[2]Lecturer at Hai Duong Medical Technical University, Hai Duong City, Hai Duong 170000, Vietnam
[3]Chair of committee, Nam Dinh University of Nursing, Nam Dinh city, Nam Dinh 420000, Vietnam
Email address: hangnguyenyhd@gmail.com

Abstract— Objective: The purpose of this study was to examine the factors that influence breast self-examination (BSE) practice among women in Hai Duong, Vietnam using the Health Belief Model (HBM). Maternal and methods: This cross-sectional study was conducted in three Hai Duong provinces and Vietnam communes. A total of 309 women participated aged from 20-59. Results: Only 3.2% of the respondents indicated they had regularly performed BSE, and 7.7% completely performed all 5 steps of BSE. The results of our study indicated that the HBM variables were significantly associated with BSE practice (Except for the cues to action variable p=0.633> 0.05). The results of the logistic regression analysis show that higher perceived self-efficacy and lower perceived barriers were unique correlates of BSE practice. Conclusion: Women in rural Hai Duong province have low awareness and implementation of breast cancer screening. Lack of information and lack of technical guidance may be responsible for the limited practice of correct breast self-examination. Therefore, BSE training programs that emphasize self-efficacy and perceived barriers are recommended.

Keywords— Breast cancer screening, Breast self-examination, health belief model, Hai Duong, Vietnam.

I. INTRODUCTION

Globally, breast cancer accounted for 11.7% of all cancer cases, there were 2.3 million women diagnosed with breast cancer and 685,000 deaths in 2020 making it the world's most prevalent cancer[1]. In Vietnam, breast cancer is the most common type of cancer among women. In 2020, there were over 15,000 women diagnosed with new breast cancer and over 6,100 deaths[2]. Most women with breast cancer in Vietnam are already at an advanced stage of the disease when they first seek healthcare[3,4].

The World Health Organization has recognized mammography, clinical breast examination, and breast self-examination as screening tools for breast cancer[5]. The American Cancer Society (2018) recommended that women aged 20 and older should have BSE performed regularly every month and be educated on the technique by medical staff[13]. Breast self-examination is an inexpensive, safe, non-invasive technique that is simple to perform, therefore regular breast self-examination (BSE) combined with breast self-awareness, is one of the strategies for early breast cancer detection because up to 90% of cancer cases are detected early through

the patient's monthly BSE practice[4,7–9]. And 70% of newly diagnosed breast cancer cases result in death in low-resource settings, while 20% in high-resource settings[9,10]. Especially, in the countryside where income is low and mammography is difficult to access, BSE is considered the most appropriate method of screening for breast cancer[12–14]. In Vietnam with over 60% of the population living in rural areas, the Vietnamese Ministry of Health has also introduced the BSE approach as a primary healthcare level in the national guidelines for cancer prevention[15]. So, early cancer detection programs are important in Vietnam. It can save lives and increase the chances of being treated efficaciously, reduce costs, and improve the quality of life for patients after the treatment process[16]. *BSE is an important early-detection tool for breast cancer,* despite the benefits of the BSE, the majority of women in Vietnam do not perform or do it infrequently[17–19]. The rate of correct implementation of the BSE technique only accounts for a very low rate of 3.7% or 7.7%[17,19].

The Health Belief Model is one of the most important and widely used behavioral change models to determine the relationship between health beliefs and health behaviors. HBM in particular has proven to be a valid tool for predicting breast cancer screening behaviors among women in low-and middle-income countries[11,20]. According to this model, women who perceive themselves to be susceptible to a certain disease (perceived susceptibility), believing that it is a serious disease (perceived severity), or the positive results expected from performing a certain health behavior (perceived benefits), who perceive that low barrier to taking preventive action can engage in a certain preventive health behavior (self-efficacy), are more likely to engage in that health behavior.

Victoria Champion was the first to use the HBM framework to investigate women's beliefs regarding breast cancer and breast cancer screening behavior, including BSE[21]. This study aimed to examine the factors that influence breast self-examination (BSE) practice among in rural areas of Hai Duong, Vietnam.

II. METHODS

Study design

This study was cross-sectional.

Sample & Settings

In the first step, we randomly selected 3 districts of a total of 9 districts in rural areas of Hai Dương. Then, in each district randomly selected one commune. The total sample size was 309 rural women in Hai Duong province. The inclusion criteria for this study were: 1) aged 20-59 years old, 2) not diagnosed with breast cancer; 3) not pregnant or breastfeeding; 4) able to speak, read, and write Vietnamese; 5) consenting to participate in the study.

Study instrument and data collection

After providing their informed consent, participants completed the Champion's Health Belief Model scale (CHBMS). We used the Vietnam version of the CHBMS (the V-CHBMS) to investigate the HBM variables.

The tool for data collection used in this study includes three parts: 1) Demographic information, 2) *Vietnamese version of* Champion's Health Belief Model Scale (VCHBMS), and 3) Breast self-examination checklist:

D*emographic Questionnaire*: The demographic questionnaire included age, marital status, education level, monthly income, and family history of breast cancer.

The Health Belief Model scale (V-CHBMS): has 42 items representing 6 subscales: perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, cues to action, and self-efficacy10. All items were rated on a 5- Likert scale, from one = 'strongly disagree' to five = 'strongly agree'. Possible scores range from 5–25 for susceptibility; 7-35 for seriousness; 6–30 for benefits; 6–30 for barriers; 7–35 for cues to action and self-efficacy scores range from 11-55. Higher scores indicated stronger agreement. The Vietnamese version of the Health Belief Model scale (V-HBMS) used in this study has a Cronbach alpha coefficient ranging from .715 to .954 and the reliability of the ICC re-test ranged from .954-.000 (p-value = 0.000)[22].

Breast self-examination checklist: The checklist was developed by the study's authors and some experts based on cancer communication materials including cancer breast and guidelines on the website of the National Cancer Hospital[4]. After that, 3 experts in clinical and training fields were consulted in developing the practice checklist. The checklist uses 2 levels of "Yes" – "No" to assess the proficiency and accuracy of women when performing self-reporting according to the 5 steps recommended.

Information about the accuracy of BSE as the main outcome variable was collected by medical staff through observation and a coded checklist. This illustrated checklist included 8 items and 17 consecutive steps. The total practice score was 17 while Each performance step is evaluated as "Yes" when they do well and equivalent to 1 point, "No" when they do not or perform but seriously wrong, and equivalent to 0 points according to the classification of Gamelan et al. (2020)[23] the practice scores were classified as follows:
Poor practice: less than 50% (the participant score < 8.5)
Satisfactory practice: 50 - 70% (the participant score 8.5 - 12)
Good practice: more than 70% (the participant score more than 12-17)

Ethical considerations

The study was reviewed and approved by Nam Dinh University of Nursing. No.2675/GCN-HĐĐD.

After the researcher assistants explained the study purpose. Participants who voluntarily participated in this study would sign written informed consent. We have ensured that patient information confidentiality of the data obtained.

Statistical analysis

The data were analyzed using the SPSS version 22.0. The significance level was set at p<.05. The Socio-demographic characteristics are described by using frequency, percentage, mean, and standard deviation. Analytical statistics were applied to investigate the association of BSE practice and variables of HBM. Logistic regression analysis was used to identify the significant predictors for BSE practice among the participating women.

III. RESULTS

Sociodemographic Characteristics

TABLE 1. Sociodemographic characteristics of the respondents

Variables	Frequency (n = 30)	Percent (%)
Mean age (SD)	*45,2 ± 9.3*	
age group		
≥ 50	*120*	*38.8*
< 50	*189*	*61.2*
education level		
>= general education	*307*	*99.3*
< general education	*2*	*0.7*
Marital status		
- Single	*17*	*5.5*
- Married	*292*	*94.5*
Profession		
Farmer	*145*	*46.9*
Worker	*57*	*18.4*
Government employees	*34*	*11,0*
freelance workers	*72*	*23.3*
Students	*1*	*3.3*
Income per month		
< 2 million vn	*99*	*32.0*
>= 2 million vn	*210*	*68.0*
Family history of breast cancer		
Yes	*12*	*3.9*
No	*297*	*96.1*

309 women were participating. Their mean age was 45.2 ± 9.3, of which 61.2% were under the age of 50 and most (94.5%, n = 292) of them were married. More than half of the women participating (68%, n = 210) had incomes above the minimum income. 46.9% of the participants were farmers. Regarding family history of breast cancer, only 12%. (Table 1)

Practice and knowledge of breast self-examination

TABLE 2. Knowledge and practice of breast self-examination.

Variables		Frequency/ Percent	
		n = 309	%
Heard of BSE	No	206	66.7
	Yes	103	33.3
Guided BSE	never been	237	77.3
	ever heard	72	22.7
BSE performed 7-10 days after periods	Yes	252	81.6
	No	57	18.4
BSE Frequency	Never	203	65.7
	Regular	10	3.2
	Irregular	96	31.1

Table 2. shows that a very high percentage of 66.7% of participants have never heard of the BSE and 77.3% have never guided technical instructions to perform BSE at home. Only 46.9% had ever performed BS but a low percentage of 18.4% had performed it on time 7-10 days after periods.

TABLE 3. Practice breast self-examination according to the 5-step breast examination checklist (Observed by medical staff).

BSE practice	Frequency n	Percent %
Good practices	18	5.8
Satisfactory practice	71	23
Poor practice	220	71.2
Total	**309**	**100**

The results of Table 3 show that the highest percentage of poor practice was 71.2% and the number of Satisfactory practices was 71, accounting for 23%, and a very low percentage of good practice was only 5.8%.

The correlation between BSE practice and variables of HBM.

TABLE 4. The correlation between BSE practice and variables of HBM.

Variables of HBM		BSE practice observed by medical staff			$X^2(p)$
		Poor practice		Satisfactory practice	
		n	%	n	%	
Susceptibility	Poor perceived < 15 points	186	74,7	63	25,3	χ2 =7,666, p=.006
	Good perceived >=15 points	34	56,7	26	43,3	
Severity	Poor perceived < 21 points	90	78,3	25	21,7	χ2 =4,456, p=.035
	Good perceived >=21 points	130	67,0	64	33,0	
Benefits	Poor perceived < 18 points	70	84,3	13	15,7	χ2 =9.555 p=.002
	Good perceived >=18 points	150	66,4	76	33,6	
Barriers	Poor perceived < 18 points	105	59.0	73	41.0	χ2 =30,517 p=.000
	Good perceived >=18 points	115	87,7	16	12,2	
Cues to action	Poor perceived < 21 points	30	68,2	14	31,8	**χ2 =0,228 p=.633**
	Good perceived >=21 points	190	71,7	75	28,3	
Self-efficacy	Poor perceived < 33 points	174	79,5	45	20,5	χ2=24,984, p=.000
	Good perceived >=33 points	46	51,1	44	48,9	

The results of Table 4. show that people who practice BSE Satisfactory practice have a more sensitive awareness of breast cancer and perceive the severity of the disease to be higher than those who do not practice BSE or poor practice (χ2 = 7.666, p =.006; χ2 = 4.456, p =.035). Similarly, people with high perceived benefits of BSE, low barriers, and self-efficacy were more likely to practice BSE well. Except for the cues to action variable, which doesn't not correlate with BSE practice behavior with p = 0.633> 0.05.

TABLE 5. Logistic regression analysis of Health Belief Model factors for predicting BSE practice.

HBM constructs	Model[a]					
	B	SE	Wald	OR	CI (95%)	p
Susceptibility	.426	.339	1.586	1.532	0.7-2.9	0.208
Severity	.421	.309	1.857	1.523	.83- 2.7	0.173
Benefits	.315	.371	.722	1.370	.66- 2.8	0.395
Self-efficacy	1.181	.300	15.479	3.258	1.8- 5.8	0.000
Barriers	-1.498	.327	21.006	.224	.118-.42	0.000

[a]Model χ2(5) = 312.2532, p=0.435. Nagelkerke R Square R2= .248 (Nagelkerke).

Unique correlates of BSE practice in Model[a] were perceived barriers, and self-efficacy (p <.005). The women who indicated higher self-efficacy (OR=3.258, CI=[1.8 - 5.8], but perceived fewer barriers (OR=.224, CI=[.118-.42] were more likely to perform BSE.

IV. DISCUSSION

Knowledge and practice on breast self-examination.

Breast self-examination is an important measure to see changes in one's breasts and this change can be a sign of disease, thereby helping women detect abnormalities and seek medical attention for early breast cancer. Therefore, all women should equip themselves with the knowledge and skills to properly practice BSE. Despite these great benefits, our study found that the majority of women who participated 66.7% had never heard of the BSE. This is consistent with the results of a study done by Tilaki et al. (2014)[24] in Iran was 61.6% with no information about BSE. But Tuyen et al. (2019)[17]and Shallo et al. (2019)[25] reported a lower result than ours 54,2% and 32,9%. The explanation could be that the research was conducted in different places and at different times, so the subjects' access to information was not the same.

BSE is an important strategy for early detection of breast cancer, but in our study, only 3.2% of participating women performed it regularly. In particular, up to 81.6% were not examined on time 7-10 days after menstruation, which could greatly affect the woman's Vaginal Examination results. This result is quite similar to some other studies in the country: Diem Huong and Ngan (2021).[19] 3.7% are regular volunteers; Vo Thi Ngoc Ha and colleagues (2016)[18] Practiced at the right time a few days after menstruation is 11.7%. However, when compared with studies in other countries around the world, the rate of regular BSE practice in this study is lower as shown by Abolfotouh et al. (2015)[26] indicated that 41.6% used to practice BSE and 21% did it regularly; Joyce et al. (2020)[27] It also shows that the percentage of women who have ever performed self-reporting is 32.6%, of which 16.9% practice regularly. This demonstrates that women in our study had lower levels of behavioral maintenance than other studies.

A difference in our study is that we evaluated the study participants' BSE practice according to the checklist of steps of the National Cancer Institute - Ministry of Health and was observed by medical staff. The results show that the rate of correctly following the steps was very small (5.8%), the remaining rate is 23% pass and 71.2% fail is the highest rate. This result is quite similar to the study of Nguyen Ngoc Bich et al. (2008).[28]also showed that 64.7% of subjects had performed BSE at home but only 0.5% had fully implemented the steps recommended by the World Health Organization. According to research by Do Quang Tuyen (2019)[17] 7.7% practiced the correct technique and the reason was due to a lack of instructions, 44.9%, and 26.7% due to shyness. Similarly, in this study, the reason was found to be the lack of information and knowledge about BSE because 66.7% had never heard of BSE and 77.4% had never been instructed about BSE. But when we look at some studies that only evaluate practical knowledge, they give higher results than our study such as the study of Nguyen Minh Phuong (2021)[29] showed that a proportion of correct knowledge and practice about Vinacomin was 22% and 18.2%, respectively; Alazmi et al. (2012)[30] 35% of women know correct practice 6 out of 12 steps of BSE. This result also recommends that intervention programs must focus on improving the effectiveness of BSE practice, not simply correct knowledge of implementation steps.

The correlation between BSE practice and variables of HBM.

Our research results also found a relationship between BSE practice and most variables in MHTSK. This result is quite similar to the study of Özkan et al. (2010)[31]; Dewi et al. (2019)[31]. However, in this study it was found that Behavioral motivation variables have no significant relationship ($\chi 2 = 0.228$ p= .633), this result is in contrast to the study of Tilaki and colleagues (2014)[24] indicated that people with higher health motivation performed BSE more often. This can be explained by the fact that the questions measuring motivation in Champion's health and wellness scale mostly measure general health behaviors such as maintaining a healthy diet, exercising regularly, and the ability to find health information. Therefore, most of the women in our study had an optimistic attitude.

The results of the logistic regression analysis in Table 5 show that women with self-efficacy practice BSE 2.97 times higher than women without self-efficacy (p = 0.000 < 0.05); and the negative correlation between barriers to implementing the behavior and the ability to practice BSE is that for people without barriers, the ability to practice BSE was 0.23 times higher than for people with barriers (p= 0.000). In, Self-efficacy was the most important factor. This result is quite similar to many previous studies such as Ahmadian et al. (2016)[32] also shows that high self-efficacy and negatively correlated barriers are factors that not only participate in predicting the implementation of BSE behavior in the past but are also factors that predict the intention to perform BSE behavior in the future; Research by Boafo and colleagues (2019) shows that self-efficacy and barriers are two factors that determine the implementation of BSE behavior by

research participants similar to Soo-Foon Moey's research.et al. (2020)[8]; Dewi et al. (2019)[31] and Tilaki et al. (2014)[24]. Therefore, it is recommended that researchers in this study, when developing an educational intervention program on breast cancer awareness and guiding breast cancer practice, should focus on improving self-efficacy and reducing barriers to achieving self-esteem. helps participants increase BSE practice regularly, by the 5-step process recommended by the Ministry of Health, and is highly effective.

V. CONCLUSION

There was a low prevalence of regularly performed BSE (3,2%) and good practice of BSE (5.8%) of women in Hai Duong, Vietnam. Most of the variables of HBM were related to BSE practice (Except for the cues to action variable p = 0.633 > 0.05). In which self-efficacy and barriers were the most important predictors of BSE practice behavior. Health education programs are essential to encourage and improve women's breast cancer awareness and practice of BSE.

Conflict of Interest
The authors declare that there are no conflicts of interest in this study.

REFERENCES

1. WHO. Cancer today. Published 2020. Accessed September 2, 2021. http://gco.iarc.fr/today/home
2. Ministry of Health. Instructions for diagnosis and treatment of breast cancer. Published online 2020:60.
3. Trieu PD (Yun), Mello-Thoms C, Brennan PC. Female breast cancer in Vietnam: a comparison across Asian specific regions. *Cancer Biol Med*. 2015;12(3):238-245. doi:10.7497/j.issn.2095-3941.2015.0034
4. Mai Tran Quang, Thuan Tran Quang. Cancer prevention communication, Materials for students. Published online 2015. http://t5g.org.vn/uploads/document/dt-nckh/dao_tao/2015/k_tailieuhocvienuplenmang.pdf
5. World Health Organization. Breast cancer. Breast cancer. Published 2021. Accessed July 10, 2022. https://www.who.int/news-room/fact-sheets/detail/breast-cancer
6. Smith RA, Brooks D, Cokkinides V, Saslow D, Brawley OW. Cancer screening in the United States, 2013: A review of current American Cancer Society guidelines, current issues in cancer screening, and new guidance on cervical cancer screening and lung can. *CA: A Cancer Journal for Clinicians*. 2013;63(2):87-105. doi:10.3322/caac.21174
7. Kissal A, Kartal B. Effects of Health Belief Model-Based Education on Health Beliefs and Breast Self-Examination in Nursing Students. *Asia Pac J Oncol Nurs*. 2019;6(4):403. doi:10.4103/apjon.apjon_17_19
8. Moey SF, Mohamed NC, Lim BC. A path analytic model of health beliefs on the behavioral adoption of breast self-examination. *AIMS Public Health*. 2020;8(1):15-31. doi:10.3934/publichealth.2021002
9. Mohamed H, Ibrahim Y, Lamadah S, El-Magd M. Application of the Health Belief Model for Breast Cancer Screening and Implementation of Breast Self- Examination Educational Program for Female Students of Selected Medical and Non-Medical Faculties at Umm al Qura University". *Life Science Journal*. 2016;13.
10. Jones CE, Maben J, Jack RH, et al. A systematic review of barriers to early presentation and diagnosis with breast cancer among black women. *BMJ Open*. 2014;4(2):e004076. doi:10.1136/bmjopen-2013-004076
11. Birhane N, Mamo A, Girma E, Asfaw S. Predictors of breast self-examination among female teachers in Ethiopia using health belief

model. *Arch Public Health*. 2015;73(1):39. doi:10.1186/s13690-015-0087-7

12. Dewi TK, Massar K, Ruiter RAC, Leonardi T. Determinants of breast self-examination practice among women in Surabaya, Indonesia: an application of the health belief model. *BMC Public Health*. 2019;19(1):1581. doi:10.1186/s12889-019-7951-2

13. Tastan S, Iyigün E, Kılıc A, Unver V. Health Beliefs Concerning Breast Self-examination of Nurses in Turkey. *Asian Nurs Res (Korean Soc Nurs Sci)*. 2011;5(3):151-156. doi:10.1016/j.anr.2011.09.001

14. Myint NMM, Nursalam N, Mar'ah Has EM. Exploring the Influencing Factors on Breast Self-Examination Among Myanmar Women: A Qualitative Study. *J Ners*. 2020;15(1):85. doi:10.20473/jn.v15i1.18863

15. Bộ Y Tế. Quyết định 1639/QĐ-BYT 2021 Tài liệu sàn lọc ung thư vú ung thư cổ tử cung tại cộng đồng. Published 2021. Accessed October 14, 2022. https://thuvienphapluat.vn/van-ban/The-thao-Y-te/Quyet-dinh-1639-QD-BYT-2021-Tai-lieu-san-loc-ung-thu-vu-ung-thu-co-tu-cung-tai-cong-dong-468045.aspx

16. Tran TH, Trinh NL, Hoang Y, Nguyen TL, Vu TT. Health-Related Quality of Life Among Vietnamese Breast Cancer Women. *Cancer Control*. 2019;26(1):1073274819862787. doi:10.1177/1073274819862787

17. Tuyen DQ, Dung TV, Dong HV, Kien TT, Huong TT. Breast Self-Examination: Knowledge and Practice Among Female Textile Workers in Vietnam. *Cancer Control*. 2019;26(1):1073274819862788. doi:10.1177/1073274819862788

18. Ha Vo Thi Ngoc, Trung TT, Champion JD. Research on women's breast self-examination practice and related factors. Published online 2016:9.

19. Huong Nguyen Thi Diem, Ngan Vu Thi. Current status of breast self-examination of women in Tien Phuong commune in 2020. *Medical Research Journal*. 2021;(8):144.

20. Noroozi A, Jomand T, Tahmasebi R. Determinants of breast self-examination performance among Iranian women: an application of the health belief model. *J Cancer Educ*. 2011;26(2):365-374. doi:10.1007/s13187-010-0158-y

21. Champion VL. Instrument development for health belief model constructs. *ANS Adv Nurs Sci*. 1984;6(3):73-85. doi:10.1097/00012272-198404000-00011

22. Hang Thi Nguyen, Viet Tran Van, Nga Nguyen Thi, Huong Truong Thi Thu, Hai Thi Vu, Tung Le Thanh. Validity and Reliability of Champion's Health Belief Model Scale to Measure Beliefs in Breast Self-Examination Practices in Vietnamese Women. Published online April 8, 2023. Accessed August 22, 2023. https://ijmscr.org/index.php/ijmscrs/article/view/704

23. Gamelen H. Effect of Health Education Intervention Program about Breast Self-Examination (BSE) among Female Nursing Students In Faculty of Nursing, Tanta University, Egypt. Published online October 6, 2020.

24. Hajian-Tilaki K, Auladi S. Health belief model and practice of breast self-examination and breast cancer screening in Iranian women. *Breast Cancer*. 2014;21(4):429-434. doi:10.1007/s12282-012-0409-3

25. Shallo SA, Boru JD. Breast self-examination practice and associated factors among female healthcare workers in West Shoa Zone, Western Ethiopia 2019: a cross-sectional study. *BMC Research Notes*. 2019;12(1):637. doi:10.1186/s13104-019-4676-3

26. Abolfotouh MA, BaniMustafa AA, Mahfouz AA, Al-Assiri MH, Al-Juhani AF, Alaskar AS. Using the health belief model to predict breast self examination among Saudi women. *BMC Public Health*. 2015;15:1163. doi:10.1186/s12889-015-2510-y

27. Joyce C, Ssenyonga LVN, Iramiot JS. Breast self-examination among female clients in a tertiary hospital in Eastern Uganda. *International Journal of Africa Nursing Sciences*. 2020;12:100186. doi:10.1016/j.ijans.2019.100186

28. Bich Nguyen Ngoc, Ngan Nguyen Thi Kim, Tran Vu. Some factors related to breast self-examination behavior at home among women aged 15-49 in Hung Dao commune, Tu Ky district, Hai Duong province. *Journal of Public Health*. 2008;11(11):38-43.

29. Phuong Nguyen Minh, Dinh Le Thi Kim. Knowledge and practice of breast self-examination of women 18-60 years old in Can Tho city. *VMJ*. 2021;500(1). doi:10.51298/vmj.v500i1.301

30. Alazmi SF, Alkhabbaz A, Almutawa HA, Ismaiel AE, Makboul G, El-Shazly MK. Practicing breast self-examination among women attending primary health care in Kuwait. *Alexandria Journal of Medicine*. 2013;49(3):281-286. doi:10.1016/j.ajme.2012.08.009

31. Dewi TK, Massar K, Ruiter RAC, Leonardi T. Determinants of breast self-examination practice among women in Surabaya, Indonesia: an application of the health belief model. *BMC Public Health*. 2019;19:1581. doi:10.1186/s12889-019-7951-2

32. Ahmadian M, Carmack S, Samah AA, Kreps G, Saidu MB. Psychosocial Predictors of Breast Self-Examination among Female Students in Malaysia: A Study to Assess the Roles of Body Image, Self-efficacy and Perceived Barriers. *Asian Pac J Cancer Prev*. 2016;17(3):1277-1284. doi:10.7314/apjcp.2016.17.3.1277