

ORIGINAL ARTICLE

Evaluation of Knowledge, Practice, and Barriers Towards Breast Self-Examination (BSE)

Siti Nur Anis Ismail, Nurul Dizyana Nor Azman, Ann Eryyna Lema Thomas Sudin, Nurul Saadiah Shamsuddin

Centre of Medical Imaging, Faculty of Health Sciences, Universiti Teknologi MARA, Selangor Branch, Puncak Alam Campus, 42300 Puncak Alam, Selangor, Malaysia

ABSTRACT

Introduction: Breast cancer affects 2.1 million women each year and causes the highest number of cancer-related deaths among women. Several modalities such as mammography, ultrasound, magnetic resonance imaging & biopsy are used for diagnostic purposes; clinical breast examination (CBE) & breast self-examination (BSE) are performed as part of screening approaches. The objective of this research is to evaluate knowledge, practices, and barriers to breast cancer. **Methods:** A cross-sectional study was carried out among 235 women in a tertiary hospital, from March to June 2020. Data were collected using a validated questionnaire adapted from previous study and distributed by hand. **Results:** Most of the respondents were single (68.9%), university graduate (82.6%) and students (39.6%). There was a significant difference between BSE performers and non-performers correlated to education level, marital status, occupation, family history of breast cancer, and knowledge level of BSE. BSE performers had lower mean scores for barriers compared to non-performers. **Conclusion:** Overall findings indicate respondents have a moderate knowledge level of BSE with 64.7% (n = 152). Other than that, 57.0% (n = 134) of women practice BSE. Thus, BSE educational programs should be carried out in society for the early detection of breast cancer.

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Keywords: Breast self-examination (BSE), Clinical breast examination (CBE), Practice, Barriers

Corresponding Author:

Nurul Dizyana Nor Azman, MSc
Email: nuruld2795@uitm.edu.my
Tel: +6014-5146440

INTRODUCTION

Breast cancer is the leading cancer among women aged 24 to 59 in Malaysia, based on the Malaysian National Cancer Registry (MNCR) Report 2011 (1). According to a World Health Organization Report, in Malaysia 8418 (32.9%) new cases of breast cancer were detected among women of all ages in 2020 (2). The mortality rate is high in developing countries due to vast numbers of breast cancer detected at advanced stages, including Malaysia (3, 4).

93% to 100% survival rate could be achieved and the percentage of detected breast cancer at late stages can be lowered from 72% to 22% if breast cancer was discovered at the initial phase, as per the American Cancer Society (5). The cost to diagnose and treat breast cancer can be reduced if the breast cancer is detected

at early stage. Malaysian Ministry of Health has been encouraging breast self-examination (BSE) and clinical breast examination (CBE) as part of breast health awareness campaigns since 1995, while countrywide mammography screening has been implemented in 2012 for high-risk women. More than 90% of breast cancer cases have been detected by the women themselves which emphasises the importance BSE regularly (6).

According to Hassan et al.(2017), BSE has become a necessary screening technique due to being non-invasive, inexpensive, and straightforward procedure (7). However, a study by Alazmi et al. among women who attending primary healthcare in Kuwait showed that low percentage of women (34%) performed BSE every month (8). In addition, a study by Akhtari et al.(2014) stated high percentage of 810 female undergraduate students in Malaysia were aware of breast cancer but did not perform BSE due to several factors (9).

Thus, this study is conducted to evaluate the knowledge, practice, and barriers towards BSE among women who undergo procedures in medical imaging department.

MATERIALS AND METHODS

Design and Sample

A cross-sectional study was carried out among women aged 18 to 50 years old from March to June 2020 in a tertiary hospital in Penang. A total of 235 women met the inclusion criteria and had given informed consent to participate in the study. The inclusion criteria for this study were female, Malaysian citizen, and attending any breast imaging examination – magnetic resonance imaging (MRI), ultrasound and mammography. Exclusion criteria were women who did not undergo breast imaging examination. This study obtained approval from the Universiti Teknologi MARA (UiTM) Research Ethics Committee REC/02/2020 (UG/MR/78).

Instrument

A self-administered questionnaire was used to collect the information from the respondents. The questionnaire was adapted from similar studies by Ossai et al., Al-Dubai et al., and Latiff Ismail et al. (9, 10, 11). A pilot study was carried out beforehand among 24 women who underwent breast imaging examination to test the validity and reliability of the questionnaire. Cronbach’s alpha test was run for the pilot study.

The questionnaires were distributed to the respondents by hand. The identity of the respondents was kept confidential and secured.

The questionnaire consists of four sections: (1) Socio-demographic features which consists of six questions about the respondent’s age group, marital status, level of education, occupation, family history of breast cancer and other cancers; (2) Knowledge of breast self-examination (BSE) which consists of 15 items; (3) The practice of BSE which consists of six items; and (4) Barriers for BSE which used Champion’s Revised Health Belief Model Scale that consists of 11 items.

Data Analysis

The data collected from this research were analysed using SPSS version 21.0 for statistical analysis. Descriptive analysis was used to describe, demonstrate, or summarize the collected data. Pearson chi-square test and independent-sample t-test were used to compare means of two groups which are performer or non-performer of BSE among women.

For knowledge of BSE, a score of 1 was given for each “yes” and “correct” answer while zero score for “no”, “wrong”, or “not sure” answer. The total of the question for knowledge is 15. The knowledge level was low for those who scored less than 49% of 15 items, moderate knowledge for 50% – 79% and high knowledge for a score 80% – 100%.

For barriers for BSE, the 5-point Likert scale is used from “strongly disagree” with a value of 1 to “strongly agree”

with value 5 suggested by The Champion’s Revised Health Belief Model Scale. The score is ranging from 11 – 55 as it contains 11 items. The result of Cronbach’s alpha for the overall scale of the variables is more than 0.70, which is acceptable.

RESULTS

Socio-demographic Data

Based on Table I, a total of 235 respondents have participated in this study. The majority of the respondents were from age 18 to 29 (70.6%), and 194 respondents (82.6%) were university graduate. 162 (68.9%) respondents were single, with 93 (39.6%) was a student.

Table I: Association between Level of Knowledge, Socio-demographic Variables and BSE Practice

Variables	Performers	Non-performers	P value
Level of Knowledge			
Low	5 (14.3%)	30 (85.7%)	0.000
Moderate	86 (56.6%)	66 (43.4%)	
High	43 (89.6%)	5 (10.4%)	
Age group (years)			
18-29	101 (60.8%)	65 (39.2%)	0.164
30-44	23 (46.0%)	27 (54.0%)	
>45	10 (52.6%)	9 (47.4%)	
Level of Education			
Primary/Secondary School	14 (34.1%)	27 (65.9%)	0.001
University Graduate	120 (61.9%)	74 (38.1%)	
Marital Status			
Single	99 (61.1%)	63 (38.9%)	0.059
Married	35 (47.9%)	38 (52.1%)	

Knowledge of BSE

A total of 181 respondents (77.0%) have heard about BSE. 230 respondents (97.9%) stated that they were aware that BSE was essential in detecting breast cancer at an early stage. 215 (91.5%) of the respondents answered correctly that BSE could be done in front of the mirror, followed by 212 (90.2%) who responded that detecting a lump in the breast may be an early sign of cancer. Meanwhile, a total of 209 (88.9%) responded that unusual change in the shape and size of the breast is observed during BSE. 192 (81.7%) said that BSE includes armpit examination to check for any lump (Table II).

Table II: Descriptive of Knowledge on BSE

Variables	Answer	Frequency (n)	Percentage (%)
Ever heard of BSE	Yes	181	77
BSE is important in early detection of Breast cancer	Yes	230	97.9
Detection of lump in the breast may be an early sign of cancer.	Yes	212	90.2
During BSE unusual change in the shape and size of the breast is observed	Yes	209	88.9
BSE includes armpit examination to check for any lump	Yes	192	81.7

Practice of BSE

Table III shows 134 respondents (57.0%) practice BSE, while 101 (43.0%) of the respondents do not practice BSE. Among the respondents who practice BSE, 55 (41.0%) of the respondents regularly practice BSE every month, and most of them 113 (84.3%) start BSE practice at the age more than 19 years old. 61 (45.5%) of the respondents take 3 to 5 minutes for each breast during the examination, and 98 (73.1%) correctly perform BSE by palpating with palm and three fingers.

Table III: Respondents Practice (n=134)

Variables	Frequency (n)	Percentage (%)
Have you done BSE before		
Yes	134	57.0
No	101	43.0
Frequency of BSE(N=134)		
Once a month	55	41.0
Once in two months	26	19.4
Twice a year	22	16.4
Once a year	31	23.1
At what age did you start doing BSE		
<19 years old	21	15.7
>19 years old	113	84.3
When was last time you perform BSE		
Less than a week ago	42	31.3
Less than 3-6 month	53	39.6
Less than one year	39	29.1
Time spent for each breast during examination		
≥2 minutes	51	38.1
3-5 minutes	61	45.5
5 minutes	22	16.4
How is BSE done		
Palpate with one finger	7	5.2
Palpate with palm and three fingers	98	73.1
Anyhow	29	21.6

Barriers of BSE

The highest percentage for BSE barriers was “Doing BSE during the next year will make me worry about breast cancer” with 24.3% strongly agree, and 34.0% agree. For the statement “Doing BSE would require starting a new habit, which is difficult”, 16.2% and 26.0% of respondents strongly agree and agree. Next, “I am afraid I would not be able to do BSE” with 15.3% strongly agree, and 17.9% agree; “Doing BSE will be unpleasant” with 13.6% strongly agree and 16.6% agree, as shown in Table IV.

Table IV: Association between BSE Practice and Barriers

	Performing BSE mean (SD)	Not Performing BSE Mean (SD)	T	P-value
Barrier	25.6 (8.0)	34.4 (8.9)	7.9	<0.001

Relationship between Socio-demographic Variables, Knowledge Level and BSE Practice

Table I showed respondents aged 18 – 29 years (60.8%) practised BSE more than those aged older than 45 years (52.6%). University graduate’s respondents (61.9%) practice more than those with primary or

secondary education (34.1%). Single respondents (61.1%) performed BSE more than married respondents (47.9%). The respondents who were students (67.7%) and government servants (62.3%) practised more than respondents who were privately employed (50.9%). A significant association was found on BSE practice with a level of education ($p < 0.001$) and occupation ($p < 0.001$).

A total of 30 (85.7%) of low knowledge respondents do not perform BSE, followed by the moderate knowledge respondents 66 (43.4%) and high knowledge respondents 5 (10.4%). While most of the high knowledge respondents, 43 (89.6%) practised BSE followed by moderate knowledge respondents at 86 (56.6%) and low knowledge respondents at 5 (14.3%). There is a significant association between the level of knowledge and BSE practice ($p < 0.001$).

Comparing between BSE Performer and Non-BSE Performer

Table III shows comparison of means between the two groups. The barriers had no considerable influence on respondents who performed BSE (25.6 ± 8.0) compared to those who did not perform BSE (34.4 ± 8.9), where mean barriers were higher in non-BSE performer group than the performer group ($p < 0.001$).

DISCUSSION

BSE and CBE play important roles in detection of breast cancer in its initial state which could increase survival rate and subsequently reduced diagnosis and treatment cost (5,6). According to a study done by Ossai et al. in Nigeria, majority of their respondents had good knowledge, which was due to high level of awareness of BSE (10). The high percentage of moderate knowledge in our study was maybe due to the location of the study conducted in an urban area where healthcare facilities are widely available, and information can be easily accessed through the internet and television as illustrated in fig 1.

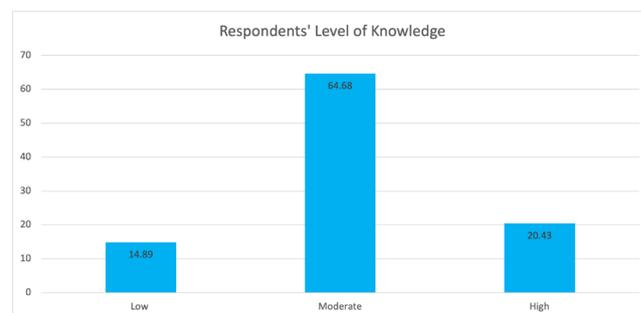


Figure 1: Bar graph represents respondents' level of knowledge. The respondents' knowledge level, mainly at a moderate level, 64.68%, scored 50% to 75% of the questions. 20.43% of the respondents were considered good knowledge level, which scored 75% above, while 14.89% scored below 50% of the items were considered poor knowledge level.

Respondents in an urban area also are more up to date with the recent advances in the prevention of diseases (12, 15, 16). The fact that most of the respondents in this study are educated as they were university graduates makes it easy for them to access information regarding BSE.

Majority of respondents practised BSE, but only 41.0% of them practised it monthly which represented only 23.4% of the total respondents. Our findings of this study are consistent with the results of previous studies Sani & Yau, Ossai et al., and Joyce et al. (12, 14, 15) which showed more than half respondents practised BSE.

In contrast, Bawazir et al. found 30.3% of women attending primary healthcare centres practised BSE although it is a simple procedure (16). Furthermore, a study conducted among women attending primary healthcare in Kuwait stated that only 21% of the 520 respondents performed BSE (8). The percentage of respondents that performed BSE in our study was high at 57% because of the increased knowledge of BSE among them – 20.43% for high knowledge and 64.68% for moderate knowledge. High academic qualifications ostensibly had significant association with the practice of BSE.

The result showed that “Doing BSE will make them worry about the breast cancer”, “Doing BSE would require starting a new habit, which is difficult”, “I am afraid I would not be able to do BSE” and “Doing BSE will be unpleasant” are the main barriers among respondents in hospital. This finding is coherent with studies done among young Malaysian women (17). The result of a survey done by Akhtari-Zavare et al. (2014) also stated that the main barriers of BSE are “Doing BSE will be unpleasant” and “Doing BSE during the next year will make me worry about breast cancer” (18) as illustrated in fig. 2.

However, some other studies have reported inconsistent results. For example, the main barriers for BSE, were

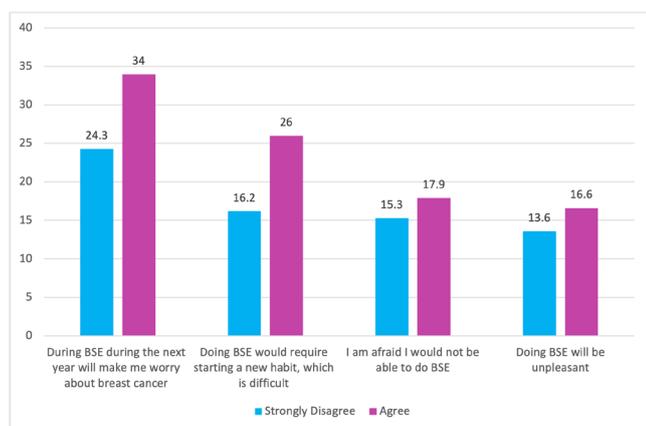


Figure 2: Barrier of Breast Self-Examination. Among highest score barriers question of breast self-examination among respondents.

stated as forgetfulness and negligence, lack of awareness about BSE techniques and lack of time (19). Also, “I don’t know how to do it”, and “I don’t have any symptoms” were the barriers among young women in Malaysia. The finding of our study can be explained that the women may be afraid of being diagnosed with cancer (20). Wrong perception among women about BSE was believed to cause all these worries and fears (9).

There is a relationship between knowledge level and practice of BSE among our respondents ($p < 0.000$). The finding of this study is in agreement with a survey done among Iranian women in Hamedan, Iran. The consistent findings signify that knowledge of BSE is an essential facilitator for the practice of BSE. Knowledge of BSE is one of the factors that affect the performance of women in practising BSE. Thus, a higher understanding of BSE will demonstrate higher performance rates (20).

The study results also showed that education level and occupation were significantly associated with the practice of BSE. The finding regarding education level is in line with a study done among female students at Urmia University of Medical Sciences in Northwest Iran (21). Other studies have also reported that there is a relationship between occupation and education levels with BSE performance. Al-Dubai et al. stated that there is a significant association between the practice of BSE with occupation (11). The probable explanation for this association could be that most of the respondents was university graduates with more interests in practising BSE compared to others. Education is a facilitating component for the acceptance of health information and services. As shown in Table I, the majority of our respondents are currently university students with educational background which might be the possible reason they paid more interest in practising BSE (21).

The finding of this study is similar with a previous survey conducted among female non-medical students in Universiti Kebangsaan Malaysia (UKM), Bangi by Hassan et al. (2017), regarding marital status, education level, and family history of breast cancer (7). The results regarding marital status were also supported by the previous studies done among women living in an urban setting in Malaysia and women attending secondary health facility (22, 23). The reason why the married women were less likely to practice breast self-examination may not be unrelated to extra family responsibilities; this could be a focus for future studies. A possible justification for a strong correlation between BSE practice and family history of breast cancer could be the curiosity in knowing more about breast cancer when having relatives suffering breast cancer either first-degree relative or second-degree relative (7). According to Dewi et al., the curiosity also helps them developed awareness of their vulnerability when realizing the possibility of genetic factors influencing the development of cancer (24). Furthermore, Al Battawi & Sofar claimed

factors such as marital status, educational level, and family history of breast cancer were significant predictors of BSE practice (25). Nevertheless, other studies showed no significant association between practice of BSE and level of education, and between marital status and BSE performance.

There was no significant relationship between age groups and a family history of any cancer with the practice of BSE. Other studies have also reported no relationship between age and practice of BSE as well as between family history of any cancer and BSE practice (26). However, a study by Al-Battawi & Sofar has shown age was significantly connected with the practice of BSE (25).

According to Latiff et al. the barrier to perform BSE was a significant predictor for BSE practice (9). Based on the independent t-test analysis, our results revealed that barriers of BSE are related to the practice of BSE, in which women practising BSE had lower barrier a score than women that are not practising. This finding is similar to the health belief model (HBM) theory, which assumes that women who trust that they have little barriers to BSE are more expected to practice BSE (9). It is also in line with previous studies by Al-Battawi & Sofar and Ersin & Polat that mentioned that barrier scores of women who performed BSE were lower than those who did not perform; the difference was statistically significant (25, 27). However, the finding is contraindicated with the study done among women in Samut Songkhram Province, Thailand, in which no association was found between barriers and BSE practice with family income, health insurance situation, breast cancer knowledge, BSE knowledge, health motivation, BSE training experiences and mammography experiences (3).

Limitations of this study include it being only conducted among women who undergo breast imaging examination in one hospital, therefore, the result might not represent the population of across Malaysia. Furthermore, cross-sectional study can only evaluate factors observed between two groups but cannot determine the cause and effect among groups. The self-reported data might be recalled as bias, the correct BSE techniques of the women also could not be determined, and there is also some lack of cooperation from the respondents themselves. This study discovered that even though most of the respondents have a moderate knowledge level of BSE and the Malaysian Ministry of Health recommends monthly BSE, the prevalence of regular BSE was still low. Therefore, the results obtained from the study could be more precise. Several BSE promotion programs can be done, focusing on the breast cancer risk factor and the BSE techniques to enhance awareness of the importance of early breast cancer detection among women.

CONCLUSION

Most respondents of this hospital have moderate knowledge level of BSE and high proportion of them practice BSE. Most of the respondents agreed that the main barriers are doing BSE during the next year will make them worry about breast cancer, BSE requires starting a new habit which is difficult, and they are afraid they would not be able to do BSE. Lastly, knowledge, barriers, education level, occupation, marital status, and family history of breast cancer was significantly associated with the practice of BSE.

This study discovered that even though most of the respondents have a moderate knowledge level of BSE and the Malaysian Ministry of Health recommends monthly BSE, the prevalence of regular BSE was still low. Several BSE promotion programs can be done – focusing on the breast cancer risk factors and the BSE techniques – to enhance awareness of the importance of early breast cancer detection among women. Furthermore, electronic media such as television and social media could be used in conveying health education and belief changes. Future study is recommended to prolong the allocation time for the research and focus on a larger sample size from similar populations in Malaysia. Therefore, the results obtained from the study could be more precise. It is also suggested to determine the cause and effect among the variables.

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REFERENCES

1. Murugesan M. Beating the odds in breast cancer. *New Straits Times* [Internet]. 2019. Available from: <https://www.nst.com.my/lifestyle/health/2019/02/464498/beating-odds-breast-cancer>
2. GLOBOCAN. Estimates of cancer incidence and mortality produced by the International Agency for Research on Cancer [Internet]. 2020. Available from: <https://gco.iarc.fr/today/data/factsheets/populations/458-malaysia-fact-sheets.pdf>
3. Koike I, Chompikul J, Thepthien B, Maikhan M. Determinants of monthly breast self-examination among women in Samut Songkhram Province, Thailand. *Journal of Public Health and Development*. 2018;16(1):29-43. Available from: <https://he01.tci-thaijo.org/index.php/AIHD-MU/article/view/100727>

4. Syed Ali SK, Jalil H, Mri H. Breast cancer: breast self-examination (BSE) practice. *International Physical Medicine Rehabilitation Journal*. 2018;3(5):439-441. doi: 10.15406/ipmrj.2018.03.00142
5. American Cancer Society. Cancer facts & figures. 2021. Available from: <https://www.cancer.org/cancer/breast-cancer/understanding-a-breast-cancer-diagnosis/breast-cancer-survival-rates.html#references>.
6. Jeyakeerthi S, Subbu Lakshmi M, Rajajeyakumar M and Niranjana D. Barriers to perform early screening and practice of breast self-examination among high risk young adults. *Biochem Physiol Open Access*. 2018;7(3). doi: 10.4172/2168-9652.1000242
7. Hassan MR, Ghazi HF, Mohamed AS, and Jasmin SJ. Knowledge and practice of breast self-examination among female non-medical students in Universiti Kebangsaan Malaysia (UKM) in Bangi. *Malaysian Journal of Public Health Medicine*. 2017;17(1):51-58. Available from: https://www.mjphm.org.my/mjphm/index.php?option=com_content&view=article&id=775:knowledge-and-practice-of-breast-self-examination-among-female-non-medical-students-in-universiti-kebangsaan-malaysia-a-ukm-in-bangi&catid=113:2017-volume-17-1&Itemid=128
8. Alazmi SF, Alkhabbaz A, Almutawa HA, Ismaiel AE, Makboul G, and El-Shazly MK. Practicing breast self-examination among women attending primary health care in Kuwait. *Alexandria Journal of Medicine*. 2013;49(3)281-286. Available from: <https://www.ajol.info/index.php/bafm/article/view/93300>
9. Latiff LA, Ismail IZ, Md Said S, Akhtari-Zavare M, & Juni MH. Health beliefs and breast self-examination among undergraduate female students in public universities in Klang Valley, Malaysia. *Asian Pacific Journal of Cancer Prevention*. 2015;16(9)4019-4023. doi: 10.7314/apjcp.2015.16.15.6231
10. Ossai EN, Azuogu BN, Ogaranya IO, Ogenyi AI, Enemor DO, & Nwafor MA. Predictors of practice of breast self-examination: A study among female undergraduates of Ebonyi State University, Abakaliki, Nigeria. *Nigerian Journal of Clinical Practice*. 2019;22(3):361-369. doi: 10.4103/njcp.njcp_482_18.
11. Al-Dubai SA, Ganasegeran K, Alabsi AM, Abdul Manaf MR, Ijaz S, Kassim S. Exploration of barriers to breast self-examination among urban women in Shah Alam, Malaysia: A cross sectional study. *Asian Pacific Journal of Cancer Prevention*. 2012;13(4):1627-32. doi: 10.7314/apjcp.2012.13.4.1627.
12. Sani MA & Yau LS. Relationship between knowledge and practice of breast self-examination among female workers in Sokoto, Nigeria. *Obstetrics & Gynaecology International Journal*. 2018;9(3):157-162. doi: 10.15406/ogij.2018.09.00323
13. Kalliguddi S, Sharma S, & Gore CA. Knowledge, attitude, and practice of breast self-examination amongst female IT professionals in Silicon Valley of India. *Journal of Family Medicine and Primary Care*. 2019;8(2): 568-572. doi: 10.4103/jfmpc.jfmpc
14. 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
15. Khan TM, Leong JPY, Ming LC, & Khan AH. Association of knowledge and cultural perceptions of Malaysian women with delay in diagnosis and treatment of breast cancer: A systematic review. *Asian Pacific Journal of Cancer Prevention*. 2015;16(13):5349-5357. doi: 10.7314/APJCP.2015.16.13.5349
16. Bawazir A, Bashateh N, Jradi H, & Breik A. Bin. Breast cancer screening awareness and practices among women attending primary health care centres in the Ghail Bawazir District of Yemen. *Clinical Breast Cancer*. 2019;19(1): e20–e29. doi: 10.1016/j.clbc.2018.09.005
17. Al-Naggar RA, Al-Naggar DH, Bobryshev YV, Chen R, Assabri A. Practice, and barriers toward breast self-examination among young Malaysian women. *Asian Pacific Journal of Cancer Prevention*. 2011;12(5):1173-8. Available online: <https://pubmed.ncbi.nlm.nih.gov/21875261/>
18. Akhtari-Zavare M, Ghanbari-Baghestan A, Latiff, LA, Matinnia N, & Hoseini M. Knowledge of breast cancer and breast self-examination practice among Iranian women in Hamedan, Iran. *Asian Pacific Journal of Cancer Prevention*. 2014;15(16):6531-6534. doi: 10.7314/APJCP.2014.15.16.6531
19. Taleghani F, Kianpour M, & Tabatabaiyan M. Barriers to breast self-examination among Iranian women. *Iranian Journal of Nursing and Midwifery Research*. 2019;24(2):108-112. doi: 10.4103/ijnmr.IJNMR
20. Rawashdeh M, Zaitoun M, McEntee MF, Abdelrahman M, Gharaibeh M, Ghoul S, & Saade C. Knowledge, attitude, and practice regarding clinical and breast self-examination among radiology professionals. *Breast Cancer Management*. 2019;7(3): BMT16. doi: 10.2217/bmt-2018-0014
21. Didarloo A, Nabilou B, & Khalkhali HR. Psychosocial predictors of breast self-examination behaviour among female students: An application of the health belief model using logistic regression. *BMC Public Health*. 2017; 17:861. doi: 10.1186/s12889-017-4880-9
22. Minhat H, Mustafa J, & Zain NM. The practice of breast self-examination (BSE) among women living in an urban setting in Malaysia. *International Journal of Public Health and Clinical Sciences*. 2014;1(2):91-99. Available online: <http://>

- publichealthmy.org/ejournal/ojs2/index.php/ijphcs/article/view/122
23. Olaogun JG, Emmanuel EE, Dada SA, Odesanmi OM, & Adesua OA. The prevalence of practicing breast self-examination and knowledge of breast cancer disease among women attending secondary health facility. *International Surgery Journal*. (2017);4(10): 3211-3217. doi: 10.18203/2349-2902.isj20174491
 24. Dewi TK, Massar K, Ruitter 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):1-8. doi: 10.1186/s12889-019-7951-2
 25. Al-Battawi JA & Sofar SM. Utilization of health belief model as a guide for prediction of breast self-examination. *International Journal for Research in Health Sciences and Nursing*. 2018; 1:46-63. doi : 10.53555/hsn.v4i1.251
 26. Al-Sharbatti SS, Shaikh RB, Mathew E, & Al-Biate MAS. Breast self-examination practice and breast cancer risk perception among female university students in Ajman. *Asian Pacific Journal of Cancer Prevention*. 2013;14(8):4919-4923. doi: 10.7314/APJCP.2013.14.8.4919
 27. Ersin F & Polat P. Examination of factors affecting women's barrier perception to participate in breast cancer screenings in a region affiliated with a family health centre in Turkey. *Turkish Journal of Medical Sciences*. 2016;46(5):1393-1400. doi: 10.3906/sag-1502-89.