Barriers to Breast Cancer Screening in Nursing and Midwifery Personnel of Hospitals of Birjand, Iran

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Abstract

Background: Breast cancer is the most common cancer in women and the fifth leading cause of cancer death worldwide. In developing countries, early diagnosis of breast cancer through available screening methods is the main strategy to reduce mortality.

Objectives: This study aimed at investigating the barriers to breast cancer screening methods in nursing and midwifery personnel of hospitals of Birjand, Iran.

Methods: In this cross sectional study, a total of 202 female nursing and midwifery personnel working in hospitals of Birjand (lasted from July 2015 to September 2015) were selected using the stratified sampling method. The barriers to breast self-examination and clinical breast examination were investigated using a researcher-made questionnaire. The data were analyzed with the SPSS software (V. 16) using descriptive statistic and chi-square test. P values of < 0.05 were considered significant.

Results: The results showed that only 11.3% (N = 16) of the participants, who performed breast self-examination, did it on a monthly basis. Intervals between CBE performance in 35.5% of women was 5 or more than 5 years. The main barriers to breast self-examination and clinical breast examination in women were, respectively, lack of time, negligence, lack of symptoms of breast cancer, fear of potential surgery for cancer, and fear of losing beauty. There was a significant association between age, marital status, educational field of study, tenure, and BSE. History of having a child increases performance of CBE yet results also showed that females, who had a history of benign breast diseases, were less prone to perform CBE.

Conclusions: According to the results of this study, it seems that interventions, such as changes in psychological and educational programs, to increase the performance and knowledge and create a positive attitude towards these methods in females are needed.

Keywords: Breast Cancer, Self-examination, Screening, Breast

1. Background

Breast cancer is the most common cancer (1) and the fifth leading cause of cancer death worldwide (2). In Iran, it ranks second among the most common cancers in the country and is the most common amongst female cancers (3), such that more than 10000 new cases are identified each year (4), while also over 3000 people lose their lives to this disease (4). Age of developing breast cancer in Iran is at least ten years less than other countries (5).

Currently, early and timely detection is the only way to combat this disease. Detection of breast cancer in early stages can lead to reduced mortality and morbidity (6). Thus, if breast cancer is diagnosed early, 95% of the patients can be treated successfully (7).

One of the best ways for early detection of this disease is screening. Among accepted methods of breast cancer screening is mammography, clinical breast examination (CBE), and breast self-examination (BSE) (6). Although the world health organization does not recommend BSE as a screening method due to a lack of sufficient evidence on its effects in reducing mortality from breast cancer (8), it is still an important screening tool for early detection of breast cancer in developing countries. Breast self-examination is cheap, available, and requires no complex training. Furthermore, it increases accountability and empowerment of women regarding their breast health and is recommended as a way to raise awareness, particularly in women at risk (8, 9). Clinical breast examination training also plays a key role in early detection of asymptomatic patients, who live in areas where mammography, as a screening method, is not available (10).

Five-year survival rate for breast cancer is lower among Iranian females than in European and American counterparts. This is in fact because of delayed diagnosis and, therefore, detection at a more advanced stage of the disease. Among the reasons for this are cultural barriers

that inhibit females from disclosing to their doctor their female-specific health problems, where even educated females tend to refuse treatment and follow-up of their breast problems. Low awareness of Iranian females about breast cancer and breast cancer screening methods are among other inhibiting reasons [11].

There are 3 methods of breast cancer screening in Iran, yet only BSE and CBE are widely available. Mammography performance in Iranian females is very low because there is no population-based screening program for mammography. Furthermore, mammography screening is costly to people [12]. Therefore, BSE and CBE are the most important screening programs of breast cancer in Iran [9]. However, regular practice of this method is uncommon in females [13, 14].

A major source of knowledge about health issues are healthcare providers, including nurses and midwives, who can contribute to improved awareness and attitude as well as increased motivation to apply breast cancer screening methods among the general population [15]. Nonetheless, nurses and midwives should be performing these screening methods themselves before they can teach them to other women [16]. Greater emphasis of breast cancer screening methods for nurses and midwifes in their educational programs, may increase teaching this methods to clients [17].

However, a large number of nurses and midwives do not go through regular BSE [15, 18, 19]. Therefore, it seems that an identification of the underlying reasons for and barriers to breast cancer screening methods, could be the first step to promote these methods among the entire population.

2. Objectives

This study aimed at investigating the barriers to breast cancer screening methods (BSE and CBE) in nursing and midwifery personnel of hospitals of Birjand, Iran.

3. Methods

This was a cross sectional study conducted on a total of 202 female nursing and midwifery personnel working at 3 hospitals of Birjand, Iran. Sampling lasted from July 2015 to September 2015. The sample size was calculated as n = 202 according to Farshbaf-Khalili et al.'s study [20], in consideration of P = 0.53, $\alpha = 0.05$, and d = 0.07.

As the number of midwives was low, recruitment of midwives was by census (N = 36). However, nurses were selected using the stratified sampling method. From a total number of 437 female nurses working in 3 hospitals of

Birjand, 90 were selected from Vali-Asr hospital, 64 from Imam Reza hospital, and 12 from Tamin Ejtemaei (social welfare) Hospital. First, the number of female nurses working in each ward of the hospital was determined. Determining the sample size in each ward was in a proportionate manner to the entire population. Samples from each ward were selected in a random manner.

Inclusion criteria included being a nurse or midwife with age of 20 years or older, working in hospitals of Birjand, and lack of current breast cancer; exclusion criterion involved unwillingness to participate in the study.

After the required permissions were obtained from the deputy of research at Birjand University of Medical Sciences, the researchers visited hospital wards and from the list of nurses in each section, the number of participants required for each section was selected using a computerized random number table. After explaining the study objectives to the participants, those who were willing to participate provided an informed consent and completed a demographic characteristics form and a researcher-made questionnaire on BSE and CBE barriers. The questionnaire had three parts. Part 1 involved personal and social information about the participants (18 items). Part 2 consisted of the practice of BSE; had they ever done BSE (yes/no), and the frequency of performing BSE (monthly, every 2 to 3 months, every 6 months, annually and if they remembered it), and their barriers (18 items). Part 3 consisted of items of practice of CBE; had they ever done CBE (yes/no), and the frequency of performing CBE (annually, every 2 years, every 3 years, every 4 years and 5 and more than 5 years) and their barriers (17 items). To determine the effect of each barrier on BSE and CBE practice, all items were ranked on a 5-point Likert scale ranging from very little (1 point) to very much (5 points). In order to facilitate comparison with the results of other studies, the total score of each item was calculated from 100. As in the data analysis, the scale ranging of each item was from 20 to 100 and the mean score of each item was reported. To determine the validity of the questionnaire, the content validity method was used. The questionnaires were given to 10 faculty members of the faculty of nursing and midwifery, Birjand University of Medical Sciences and after receiving their comments, necessary amendments were made. Reliability was confirmed using Cronbach's alpha on 30 nurses ($\alpha = 0.8$).

The data were analyzed using the SPSS software (V. 16) with descriptive statistics and chi-square test. P values of < 0.05 were considered significant. The Ethics Committee of Birjand University of Medical Sciences approved the ethical considerations of the present study under No ir.bums.REC.1395.32.

4. Results

The mean (SD) age of the participants was 31.53 (6.81) years and their mean (SD) work experience was 7.53 (6.38) years. The mean number of pregnancies was 1.09 (1.11) and the mean age of participants was 25.21 (3.39) years old at the time of first delivery. Other demographic characteristics are shown in Table 1.

The study found that 69.3% (N = 140) of the participants performed BSE (91.7% of the midwives and 64.5 of the nurses); however, only 11.3 % (N = 16), did this on a monthly and regular basis. A large percentage of the participants (41.8%) would only adhere to it if they remembered. Furthermore, CBE was performed by 22.3% (N = 45) of the participants (30.6% and 20.5% of Midwives and nurses, respectively). Intervals between CBE performance in 35.5%, 2.2%, 17.8%, 24.4%, and 20% of females was 5 and more than 5 years, 4 years, 3 years, 2 years, and on an annual basis, respectively.

The main barriers to BSE and CBE in females were, respectively, lack of time, negligence, lack of symptoms of breast cancer, fear of potential surgery for cancer, and fear of losing beauty (Table 2).

The chi-square test revealed that there was a significant association between age, marital status, educational field of study, tenure, and BSE (P < 0.05), such that chance to perform BSE increased along with older age, married status, graduation in midwifery, and work experience between 11 and 20 years (Table 3). History of having a child, increased the performance of CBE. The results also showed that females, who had a history of benign breast diseases were less prone to perform CBE.

5. Discussion

The low levels of regular BSE and CBE performance by females in this study are comparable to other studies (17, 21-24). One of the most important barriers to BSE and CBE in this study was lack of time and negligence. Similar results have been reported by other studies (19, 22, 25, 26). Although awareness was in a positive correlation with BSE and CBE, yet it seems that it did not play a role in how frequently these procedures were performed.

More emphasis on screening methods, based on the culture of the society, should be presented in a way that makes people sensitive towards their health conditions (27). This way, people would devote time and attention to their health issues (28).

Absence of breast cancer signs or symptoms, fear of surgery and radiotherapy, fear of the loss of beauty after surgery, and fear of cancer diagnosis are also among the main inhibitors against breast cancer screening in many

Table 1. Demographic Characteristics of the Participants

Variable	N (%)
Marital status	
Married	164 (81.2)
Single	38 (18.8)
Education	
Associate	4 (2)
Bachelor	192 (95)
Master	6 (3)
Field of study	
Nursing	166 (82.2)
Midwifery	36 (17.8)
Income	
Less than enough	55 (27.2)
Enough	107 (53)
More than enough	40 (19.8)
Exercise	
Yes	95 (47)
No	107 (53)
Having a child (in married person)	
Yes	119 (72.6)
No	45 (27.4)
Personal history of breast cancer	
Yes	1 (0.5)
No	201 (99.5)
Family history of breast cancer	
Yes	36 (17.8)
No	166 (82.2)
Degree of relative (in positive family history)	
Close	14 (38.9)
Far	22 (61.1)
History of benign breast diseases	
Yes	11 (5.4)
No	191 (94.6)
Being familiar with a person with breast cancer	
Yes	57 (28.2)
No	145 (71.8)

other societies (25, 29, 30). This fear may be attributed to the misperceptions of females in relation to breast cancer.

Lack of awareness of breast cancer preventability and lack of familiarity with ways to perform BSE were among

Table 2. Barriers to Breast Self Examination and Clinical Breast Examination in the Participants

Barriers to BSE Performance	Mean (SD)	Barriers to CBE Performance	Mean (SD)
Lack of time	57.62 (24.07)	Lack of time	59.80 (24.35)
Negligence	56.53 (24.47)	Negligence	55.04 (24.00)
Lack of breast cancer symptoms and lack of necessity	55.24 (24.62)	Lack of breast cancer symptoms and lack of necessity	52.67 (23.47)
Fear of operation, radiotherapy and pain	53.36 (25.57)	Fear of operation, radiotherapy and pain	50.89 (24.27)
Fear of losing beauty	52.77 (24.86)	Fear of positive diagnosis	50.49 (23.62)
Fear of positive diagnosis	51.98 (24.04)	Fear of losing beauty	49.80 (24.20)
Lack of concern about breast cancer	50.19 (22.76)	Lack of concern about breast cancer	49.70 (21.69)
Non-recommendation of the physician	48.11 (23.63)	Non-recommendation of the physician	46.63 (23.63)
Unawareness of the potential for personal examination	47.82 (22.30)	Fear of costs	46.43 (22.39)
Belief in destiny	46.03 (22.33)	Inaccessibility of equipped disease diagnosis centers	44.35 (20.56)
Examination by physician and trust in it	45.94 (22.75)	Shame and humiliation of its performance	42.77 (21.85)
Existence of more important issues vis-a-vis my health	42.97 (20.99)	Lack of CBE performed by friends and acquaintances	41.68 (19.72)
Lack of BSE performed by friends and acquaintances	41.18 (20.11)	Fear of potential painful examination	39 (20.22)
Belief in inefficiency of BSE for cancer diagnosis	39.30 (20.28)	Disbelief in physician's/midwife's/health provider's proficiency	38.91 (18.73)
Undesirable experience of friends/acquaintances with its performance	38.21 (20.46)	Undesirable experience of friends/acquaintances with its performance	37.72 (18.73)
Shame and humiliation of its performance	37.92 (22.60)	Unawareness of preventability of breast cancer	33.66 (17.71)
Unawareness of its procedure	36.93 (19.55)	Opposition of spouse or family	30.49 (17.18)
Unawareness of preventability of breast cancer	34.75 (17.22)		

the minor to screening methods in this study. Low level of performance of screening methods, despite having sufficient knowledge about the procedure and performance of these methods was similar to other studies conducted on health team personnel (15, 19). The studies performed on the general population, however, report lack of awareness and lack of familiarity with methods of breast cancer screening methods as the most important reasons for non-adherence to screening methods (17, 22, 29, 30). As health care providers are one of the main educational sources for females and can have a strong influence on their behavior (28), it seems necessary to invest on training programs for healthcare personnel and develop a campaign for public awareness in developing countries (31).

In the current study, there was a significant association between age, marital status, educational field of study, tenure, and BSE. Similar results were found by some other studies (30, 32) although Hajimahmoodi and Hajian did not find a significant relationship between marital status and BSE (19, 22).

In the current study, BSE increased with age, which could be due to the fact that young people do not consider themselves at risk of breast cancer and consequently, they perform screening methods to a lesser degree. Since the

most common type of cancer in Iran is breast cancer (3) with a lower mean age than other countries (5), close attention towards this subject is required.

Farshbaf-Khalili et al. (20) and Al-Naggar (30) reported a significant association between familial history of breast cancer and BSE. No relationship was found in the present study. However, this finding is consistent with the results of some other studies (19, 25). This may be due to the rareness of positive family history in the current study.

The results of this study show that the midwifery personnel performed BSE more than nurses, a finding that could be attributed to the greater number of specialized courses they pass in this regard. Ahmed believed that despite efforts to improve medical education in developing countries, healthcare providers, including nurses, have not received sufficient training about cancer risk factors and screening methods. They have limited information in this regard. Thus, there is a need for improved contents of nursing education syllabi and curricula (28).

According to the results of this study, females, who had a history of benign breast diseases performed CBE to a lesser degree than other females. This is consistent with the results of Parsa and Kandiah's study (29). Perhaps this could be due to the fear of females from being diagnosed

Table 3. The Association of Demographic Characteristics with Breast Self Examination

Variable	BSE Practice, N (%)	Lack of BSE Practice, N (%)	P
Age			
22 - 30	58 (58.6)	41 (41.4)	0.005[a]
31 - 39	57 (79.2)	15 (20.8)	
40 - 50	25 (80.6)	6 (19.4)	
Marital status			
Married	122 (74.4)	42 (25.6)	
Single	18 (47.4)	20 (52.6)	0.001[a]
Field of study			
Nursing	107 (64.5)	59 (35.5)	
Midwifery	33 (91.7)	3 (8.3)	0.001[a]
Tenure (year)			
< 1	13 (56.5)	10 (43.5)	
1 - 10	82 (65.1)	44 (34.9)	0.029[a]
11 - 20	37 (86.0)	6 (14.0)	
> 20	8 (80.0)	2 (20.0)	

[a] χ^2.

with breast cancer, which was also one of the common barriers in the current study. On the other hand, physicians and the health system play an important role in creating and perpetuating fear in females about breast cancer screening methods, where poor communication between the patient and healthcare providers is responsible for high degrees of fear among females (33).

One limitation of this study was that all the data was collected through self-reports and may be prone to recall bias. Performance and proper administration of BSE were not accounted for in this study, which could be considered as one of the limitations of the study.

5.1. Conclusion

According to the results of this study, it seems that interventions, such as changes in psychological and educational programs to increase the performance and create a positive attitude towards these methods, are necessary in these females.

Acknowledgments

Footnotes

References

1. Parkin DM, Bray F, Ferlay J, Pisani P. Global cancer statistics, 2002. *CA Cancer J Clin*. 2005;**55**(2):74–108. [PubMed: 15761078].

2. Torre LA, Bray F, Siegel RL, Ferlay J, Lortet-Tieulent J, Jemal A. Global cancer statistics, 2012. *CA Cancer J Clin*. 2015;**65**(2):87–108. doi: 10.3322/caac.21262. [PubMed: 25651787].

3. Mousavi SM, Gouya MM, Ramazani R, Davanlou M, Hajsadeghi N, Seddighi Z. Cancer incidence and mortality in Iran. *Ann Oncol*. 2009;**20**(3):556–63. doi: 10.1093/annonc/mdn642. [PubMed: 19073863].

4. Globocan . *Cancer incidence, mortality and prevalence worldwide, estimated number of new cancers, (all ages)*. France: International Agency for Research on Cancer, (IARC); 2012. Available from: http://globocan.iarc.fr/old/burden.asp?selection_pop=91364&Text-p=Iran%2C+Islamic+Republic+of&selection_cancer=3152&Text-c=Breast&pYear=3&type=0&window=1&submit=%C2%A0Execute%C2%A0.

5. Harirchi I, Karbakhsh M, Kashefi A, Momtahen AJ. Breast cancer in Iran: results of a multi-center study. *Asian Pac J Cancer Prev*. 2004;**5**(1):24–7. [PubMed: 15075000].

6. Khatib OM, Modjtabai A. *EMRO technical publications series 30, guidelines for the early detection and screening of breast cancer*. Eastern Mediterranean: WHO Regional Office for the Eastern Mediterranean; 2006.

7. Mousavi SM, Montazeri A, Mohagheghi MA, Jarrahi AM, Harirchi I, Najafi M, et al. Breast cancer in Iran: an epidemiological review. *Breast J.* 2007;**13**(4):383–91. doi: 10.1111/j.1524-4741.2007.00446.x. [PubMed: 17593043].

8. Yoo BN, Choi KS, Jung KW, Jun JK. Awareness and practice of breast self-examination among Korean women: results from a nationwide survey. *Asian Pac J Cancer Prev.* 2012;**13**(1):123–5. [PubMed: 22502653].

9. Babu GR, Samari G, Cohen SP, Mahapatra T, Wahbe RM, Mermash S, et al. Breast cancer screening among females in Iran and recommendations for improved practice: a review. *Asian Pac J Cancer Prev.* 2011;**12**(7):1647–55. [PubMed: 22126539].

10. Smith RA, Caleffi M, Albert US, Chen TH, Duffy SW, Franceschi D, et al. Breast cancer in limited resource countries: early detection and access to care. *Breast J.* 2006;**12 Suppl 1**:16–26. doi: 10.1111/j.1075-122X.2006.00200.x. [PubMed: 16430395].

11. Rezaianzadeh A, Peacock J, Reidpath D, Talei A, Hosseini SV, Mehrabani D. Survival analysis of 1148 women diagnosed with breast cancer in Southern Iran. *BMC Cancer.* 2009;**9**:168. doi: 10.1186/1471-2407-9-168. [PubMed: 19497131].

12. Allahverdipour H, Asghari-Jafarabadi M, Emami A. Breast cancer risk perception, benefits of and barriers to mammography adherence among a group of Iranian women. *Women Health.* 2011;**51**(3):204–19. doi: 10.1080/03630242.2011.564273. [PubMed: 21547858].

13. 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):365–74. doi: 10.1007/s13187-010-0158-y. [PubMed: 20859775].

14. Tavafian SS, Hasani L, Aghamolaei T, Zare S, Gregory D. Prediction of breast self-examination in a sample of Iranian women: an application of the Health Belief Model. *BMC Womens Health.* 2009;**9**:37. doi: 10.1186/1472-6874-9-37. [PubMed: 20040093].

15. Nilaweera RI, Perera S, Paranagama N, Anushyanthan AS. Knowledge and practices on breast and cervical cancer screening methods among female health care workers: a Sri Lankan experience. *Asian Pac J Cancer Prev.* 2012;**13**(4):1193–6. [PubMed: 22799304].

16. Memis S, Balkaya NA, Demirkiran F. Knowledge, attitudes, and behaviors of nursing and midwifery students regarding breast self-examination in Turkey. *Oncol Nurs Forum.* 2009;**36**(1):39–46. doi: 10.1188/09.ONF.E39-E46. [PubMed: 19136330].

17. Ertem G, Kocer A. Breast self-examination among nurses and midwives in Odemis health district in Turkey. *Indian J Cancer.* 2009;**46**(3):208–13. doi: 10.4103/0019-509X.52955. [PubMed: 19574672].

18. Mokhtari L, Baradaran Rezaee M, Mohammadpour Asl A, Mousavi S. Health beliefs about mammography and clinical breast examination among female healthcare providers in Tabriz health centers. *Iran J Nurs.* 2011;**24**(71):63–73.

19. Haji-Mahmoodi M, Montazeri A, Jarvandi S, Ebrahimi M, Haghighat S, Harirchi I. Breast self-examination: knowledge, attitudes, and practices among female health care workers in Tehran, Iran. *Breast J.* 2002;**8**(4):222–5. [PubMed: 12100114].

20. Farshbaf Khalili A, Shahnazi M, Vahed L, Javadi L. Status of breast self examination performance among women referring to health centers of Tabriz, Iran. *Crescent J Med Biol Sci.* 2014;**1**(3):90–6.

21. Montazeri A, Vahdaninia M, Harirchi I, Harirchi AM, Sajadian A, Khaleghi F, et al. Breast cancer in Iran: need for greater women awareness of warning signs and effective screening methods. *Asia Pac Fam Med.* 2008;**7**(1):6. doi: 10.1186/1447-056X-7-6. [PubMed: 19099595].

22. Hajian S, Vakilian K, Najabadi KM, Hosseini J, Mirzaei HR. Effects of education based on the health belief model on screening behavior in high risk women for breast cancer, Tehran, Iran. *Asian Pac J Cancer Prev.* 2011;**12**(1):49–54. [PubMed: 21517230].

23. Elshamy K, Shoma A. Knowledge and practice of breast cancer screening among egyptian nurses. *Afr J Haematol Oncol.* 2010;**1**(4):122–8.

24. Kim M, Park Y. Knowledge, attitude, and practice of obstetric nurses in relation to breast cancer and breast Self examination. *Korean J Women Health Nurs.* 2011;**17**(1):88. doi: 10.4069/kjwhn.2011.17.1.88.

25. Akhtari-Zavare M, Juni MH, Ismail IZ, Said SM, Latiff LA. Barriers to breast self examination practice among Malaysian female students: a cross sectional study. *Springerplus.* 2015;**4**:692. doi: 10.1186/s40064-015-1491-8. [PubMed: 26587360].

26. Fouladi N, Pourfarzi F, Mazaheri E, Asl HA, Rezaie M, Amani F, et al. Beliefs and behaviors of breast cancer screening in women referring to health care centers in northwest Iran according to the champion health belief model scale. *Asian Pac J Cancer Prev.* 2013;**14**(11):6857–62. [PubMed: 24377617].

27. Jones CE, Maben J, Jack RH, Davies EA, Forbes LJ, Lucas G, et al. A systematic review of barriers to early presentation and diagnosis with breast cancer among black women. *BMJ Open.* 2014;**4**(2):4076. doi: 10.1136/bmjopen-2013-004076. [PubMed: 24523424].

28. Ahmed F, Mahmud S, Hatcher J, Khan SM. Breast cancer risk factor knowledge among nurses in teaching hospitals of Karachi, Pakistan: a cross-sectional study. *BMC Nurs.* 2006;**5**:6. doi: 10.1186/1472-6955-5-6. [PubMed: 16984630].

29. Parsa P, Kandiah M. Predictors of adherence to clinical breast examination and mammography screening among Malaysian women. *Asian Pac J Cancer Prev.* 2010;**11**(3):681–8. [PubMed: 21039036].

30. Al-Naggar RA, Al-Naggar DH, Bobryshev YV, Chen R, Assabri A. Practice and barriers toward breast self-examination among young Malaysian women. *Asian Pac J Cancer Prev.* 2011;**12**(5):1173–8. [PubMed: 21875261].

31. Anderson BO, Cazap E, El Saghir NS, Yip CH, Khaled HM, Otero IV, et al. Optimisation of breast cancer management in low-resource and middle-resource countries: executive summary of the Breast Health Global Initiative consensus, 2010. *Lancet Oncol.* 2011;**12**(4):387–98. doi: 10.1016/S1470-2045(11)70031-6. [PubMed: 21463833].

32. Avci IA. Factors associated with breast self-examination practices and beliefs in female workers at a Muslim community. *Eur J Oncol Nurs.* 2008;**12**(2):127–33. doi: 10.1016/j.ejon.2007.11.006. [PubMed: 18242140].

33. Peek ME, Sayad JV, Markwardt R. Fear, fatalism and breast cancer screening in low-income African-American women: the role of clinicians and the health care system. *J Gen Intern Med.* 2008;**23**(11):1847–53. doi: 10.1007/s11606-008-0756-0. [PubMed: 18751758].