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# Health Beliefs and Breast Cancer Early Detection Behaviors among Health Care Providers in Tabriz Healthcare Centers, Iran

Leila Mokhtary[1], Abdollah Khorami Markani[1,*]

## ABSTRACT

***Background:*** Breast cancer is the most common cancer among females that will cause death if it does not be recognized and cured. One out of eight Iranian women in 40-55 years old is likely to develop breast cancer. Early detection of breast cancer by screening programs is a useful approach in controlling the disease.

***Methods:*** In this descriptive study, 196 female healthcare providers were selected from 52 Tabriz health centers by proportional cluster random sampling and their health beliefs about breast cancer early detection behaviors are assessed by using Champion's Health Belief Model (CHBM) questionnaire. Data analyzed by SPSS software.

***Results:*** The mean age of participants was 37.01 (S.D= ± 7.54), and 73.5% of them were married and the job of 45.6% were midwife. 73.2% of participants have performed BSE, but only 26.9% of them performed it regularly. 26.6% of them had mammogram and 10.7% reported performance of CBE. The BSE performance was higher among nurses and midwifes. BSE and mammography performance were higher in married health workers. Health workers who performed mammography and CBE were older (P> 0.05).

***Conclusion:*** In spite of good knowledge of healthcare providers in compare with other people; the results of this study showed that the rate of BSE, mammography and CBE performance is low in Tabriz healthcare providers. So providing educational programs with focus on performance of breast cancer early detection behaviors is strongly recommended by health service policy makers.

***Keywords: Health beliefs, Breast cancer, Early detection behaviors Female health care providers.***



1.Khoy Nursing Faculty, Urmia Medical Sciences University, Khoy, Iran.

***Corresponding Author:**
Abdollah khorami Markani, Phd in Nursing, Assistant Professor, Khoy Nursing Faculty, Urmia Medical Sciences University, Khoy, Iran.
Email: khorami.abdolah@gmail.com

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## Introduction

Breast cancer is most commonly diagnosed cancer in women.[1,2] In Iran 10.7% of cancers are related to breast cancer. One out of eight Iranian women in 40-55 years old are likely to develop breast cancer. Breast cancer affects Iranian women at least one decade younger than their counterparts in developed countries.[3] According to death survey in 18 and 23 provinces of Iran, its mortality rate was estimated 2.5 and 2.7 per 100 000 women in 2001 and 2003, respectively. National Cancer Registry Program was registered 4557 cases, which incidence rate was 18.2 per 100 000 in 2004 and 6000 cases, which its incidence rate was 24 per 100 000 in 2005[4] and 12 per 100 000 for women aged 30 years and over in 2002 in Northwest of Tabriz.[5]

Screening is a crucial first step in the process of early detection and treatment of breast cancer.[6] Early detection of breast cancer is obviously important for effective treatment of the illness and extending survival. The American Cancer Society (ACS) recommends breast self-examination (BSE), Mammography and clinical breast examination (CBE) for early breast cancer detection in women without symptoms.[7] Breast cancer early detection behaviors (BSE, mammography and CBE) are defined as health improvement activities, which facilitate early detection.[8] On the other hands, the mortality rate from this disease has fallen, confirming the important role of early detection and the advances made in this treatment.[9]

Two features of breast cancer challenges are breast cancer control program efforts in Iran. The first is the propensity of breast cancer to affect younger women, especially in their 40s. The second, is the fact that as socioeconomic changes facilitate reduction in family size and later age at first birth for an increasing proportion of women, so will an increase in incidence of breast cancer inevitably follow.[10] Due to the lack of a systematic screening or education program for early detection of breast cancer in Iran, about 70% of Iranian women newly diagnosed with this malignancy have regional or distant disease at the time of diagnosis. In fact, patient delay in seeking medical attention might be a contributing cause in a considerable number of breast cancer deaths.[11]

Health beliefs play a vital role in an individual's interest in health protective behaviors which lead to action.[12] The Health Belief Model (HBM) is frequently cited in literatures about breast cancer screening. According to the assumption inherent this model, individuals engage in health promoting activities because they value health, define disease as a threat with serious avoidable consequences, and expect positive outcomes from preventive health activities.[8] According to the HBM, women who believe that they are susceptible to breast cancer and that breast cancer is a serious condition are likely to perform BSE and have mammography and CBE. Similarly, women who perceive more benefits and fewer barriers from BSE, CBE and mammography are more likely to use breast cancer early detection behaviors. Moreover, women who are more confident in their ability to detect abnormal lumps and more motivated to promote their health are more likely to perform BSE and have mammography and CBE.[8,13]

Primary health care in Tabriz is provided by the Iran Ministry of Health and Medical Services through health centers where family planning and services are provided. There is currently no program for systematic screening BSE, CBE and mammography, although facilities are available in the major government and private hospitals. Furthermore, these centers could be used more effectively in charging and promoting interventions for breast health. The purpose of this study was to evaluate rates of performance of breast cancer early detection behaviors (for BSE, CBE and mammography) and health beliefs of a sample of female health care providers in Tabriz. Furthermore, understanding Tabriz female health care provider's health beliefs related to breast cancer early detection behaviors will help health care professionals to choose more effective health education programs and potentially increase early detection practices.

## Methods

This descriptive study was conducted in 52 healthcare centers in Tabriz, Iran, between April and December 2009. Tabriz is a metropolitan city located in the north western part of Iran in which there are 80 health centers. For the performing of this study 52 health centers were selected by using cluster random sampling from the list of health centers of Tabriz University of Medical Sciences and all female healthcare providers in these centers were

entered in the study. The sample consisted of 196 health care providers working in this health centers.

## Data Collection

In this study, data were collected by using a self reported questionnaire prepared by researchers and the Turkish version of Champion's Health Beliefs Model Scales (CHBMS). The questionnaire included questions regarding the socio-demographic characteristics of female health care providers (such as job, age, educational level and marital status); breast cancer early detection behaviors (such as performing BSE, knowledge about BSE, frequency of BSE performance, having mammography and clinical breast exam, history of breast cancer and family history of breast cancer).

In order to preliminarily assess the questionnaire (whether questions were comprehensible to potential participants), a pilot study was conducted in which the questionnaire was administered to 50 individuals, who had the same characteristics as the larger sample. Results of the pilot study indicated that questions were all easily understood. The current study was initiated after assessment results of the pilot study were analyzed and pilot study results were not utilized in this study.

## Champion's Health Beliefs Model Scales

The CHBMS, based on the HBM as it relates to early detection of breast cancer, was developed by Champion in 1984.[14,15] The CHBMS has been adapted for use internationally and has been widely used to determine health beliefs related to breast cancer screening behaviors in different populations.[16,17] The CHBMS incorporates the six basic concepts contained in the HBM, namely, susceptibility, seriousness, general health motivation, benefits, barriers and confidence/self-efficacy as they relate to breast cancer.[18]

In this study, CHBMS consisted of 10 subscales (53 items) which evaluate subjects' decisions related to an individual's breast health as well as general health. These subscales were: susceptibility (2 items), seriousness (5 items), health motivation (4 items), and benefits of BSE (4 items), barriers to BSE (7 items), BSE self-efficacy/confidence (6 items), benefits of mammography (5 items) and barriers to mammography (11 items), CBE benefits (3 items) and CBE barriers (6 items). All items of the subscales were ranked by with a five-point Likert scale [possible replies range from strongly disagree (1 point) to strongly agree (5 point)]. All subscales positively related to early detection behaviors except barriers, which was scored inversely. A high score therefore meant that the subject believed she had greater susceptibility to breast cancer, perceived breast cancer risk to be more serious, as well as perceived increased benefits, fewer barriers and had more confidence in BSE, CBE and mammography, and in general had higher motivation.

For measuring face and content validity of the questionnaire, after translation and cultural adjustment, questionnaire was offered to 10 academic members of Tabriz University of Medical Sciences to assess CVI and CVR indices. Then their opinions are revised and final questionnaire were used for reliability of it. For reliability of questionnaire, it was offered to 12 female healthcare providers with 2 week interval. Correlation coefficient between questions was 0.78, Cronbach's alpha coefficient for the subscales were 0.80.

For data collection, at first researcher went to the health centers where female healthcare providers work and took informed consent from participants. Then researcher distributed the questionnaires to the participants and recollected them when they completed. All participants volunteered for the study and completed the questionnaires. This study was approved by the ethical commitment of Tabriz University of Medical Sciences.

## Data Evaluation

Statistical analysis of data was carried out by utilizing Statistical Package for Social Sciences (SPSS) 14.0 for windows software. Descriptive statistics were used for describing the study healthcare providers' socio-demographic, their performance of breast cancer early detection behaviors and their health beliefs. Chi-square, exact fisher test and independent student's T-test were used to assess relationship among socio-demographic characteristics and performance of breast cancer early detection behaviors. Statistical significance was set at $p \leq 0.05$.

# Results

Results related to Socio-demographic characteristics of participants are presented in **Table 1**. The mean age of

| Table 1. Socio-demographic characteristics of female health care providers. | |
|---|---|
| **Characteristics** | **N (%)** |
| **Age (n=193)[a]** | |
| **20-29** | 38 (19.70) |
| **30-39** | 75 (38.90) |
| **40-49** | 69 (35.80) |
| **≥50** | 11 (5.70) |
| **Marital status (n=196)** | |
| Married | 144 (73.50) |
| Single | 52 (26.50) |
| **Educational status (n=195)[b]** | |
| Diploma | 22 (11.30) |
| Technician | 50 (25.60) |
| BSc | 107 (54.90) |
| Doctor | 16 (8.20) |
| **Job (n=195)b** | |
| Physician | 16 (8.20) |
| Midwife | 89 (45.60) |
| Nurse | 6 (3.10) |
| Health worker | 52 (26.70) |
| Others | 32 (16.40) |
| **History of breast cancer (n=189)[c]** | |
| Yes | 3 (1.60) |
| No | 186 (98.40) |
| **Family history of breast cancer (n=196)** | |
| Yes | 8 (4.10) |
| No | 188 (95.90) |
| a missing cases are 3. | |
| b missing cases are 1. | |
| c missing cases are 7. | |

participants was 37.01 ± 7.54 and the age range was 21 - 54 years. 73.5% of them were married. The majority (45.6%) of them was midwife, 3.1% were nurse and 8.2% were physician.

As shown in **table 2**, 73.2% (n=141), of healthcare providers performed BSE and only 26.9% of them performed BSE regularly. 26.6% (n=50) of participants reported having had a mammogram and 10.7% (n=21) of them had clinical breast examination. 1.6% of female healthcare providers had breast cancer history and 4.1% of them had family history of breast cancer.

When participants were asked to determine the adequacy of their knowledge about proper technique for BSE, 61.5% of participants reported having adequate knowledge, 22.4% of them reported having little knowledge, as well as 1% reported they had no knowledge.

There was a significant relationship between job and BSE performing that nurses and midwifes performed BSE higher than others (X2=21.14, p<0.001), marital status and BSE performing so that BSE performing in married healthcare providers was significantly higher than singles (X2=10.99, p=0.002). There was a significant relationship between marital status and mammography performing that married participants performed mammography significantly higher than single participants (X2=9.61, p=0.001). Moreover there was a significant relationship between age and mammography performing (t=5.44, p<0.001), age and CBE performing (t=2.36, p=0.02) so that health care providers who performed mammography and CBE were older.

56.1% of participants have known proper technique of BSE performing and 58.7% of them were agreed that having mammogram can help them in early detection of lamps. Common barrier for performing BSE was this belief that "if I had routine mammography, there was no necessity for BSE performing", and common barrier for having mammogram was this belief that "mammography performing is very painful". Common reason for not performing CBE was the fear of probably detection of malignant lamps.

## Discussion

In this study, health beliefs and breast cancer early detection behaviors were analyzed in a sample of female health care providers in Tabriz, Iran. We found that the percentage of participants who performed BSE regularly was rather low (26.9%). Likewise in a study, researchers found that 30.4% of female population of metropolitan Sa˜ o Paulo performed BSE regularly.[9] In other study researchers found that 21.9% of female health workers performed regular BSE.[8] In contrast of our study result, only 6% of female health care workers in Tehran performed BSE monthly.[19] However, in a study was determined that 10.2% of participants performed regular BSE.[20] In a study of 32 African-American nurses and 78 Caucasian nurses, found that 42% of African-American nurses performed BSE monthly, but only 20% of Caucasian nurses did.[21]

In this study it was found that nurses and midwifes performed BSE higher than other health care providers,

**Table 2. Early detection behaviors according to profession of female health care providers.**

| Behaviors | Professional groups N (%) | | | | Total |
|---|---|---|---|---|---|
| | physician | Midwife & nurse [a] | Health worker | others | |
| BSE performing [b] | | | | | |
| Yes | 12 (75) | 79 (84.04) | 37 (71.15) | 13 (41.93) | 141 (73.2) |
| No | 4 (25) | 15 (15.96) | 15 (28.85) | 18 (58.07) | 52 (26.8) |
| Having mammogram [c] | | | | | |
| Yes | 5 (31.25) | 20 (21.97) | 18 (36) | 7 (23.33) | 50 (26.6) |
| No | 11 (68.75) | 71 (78.03) | 32 (64) | 23 (76.67) | 137 (73.4) |
| Having CBE[d] | | | a | | |
| Yes | 1 (6.25) | 11 (11.58) | 9 (10.71) | | 21 (10.7) |
| No | 15 (93.75) | 84 (88.42) | 75 (89.29) | | 174 (89.3) |

a for the restriction, two profession groups are merged.
b missing cases are 3.
c missing cases are 9.
d missing cases are 1.

**Table 3. Relationship between socio-demographic characteristics and early detection behaviors of female health care providers.**

| Characters \ Behaviors | BSE | Mammography | CBE |
|---|---|---|---|
| Job | P<0.001<br>$x^2$=21.14* | P=0.31<br>$x^2$=3.58 | P=0.81<br>$x^2$=0.40 |
| Education | P=0.21<br>$x^2$=4.48 | P=0.59<br>$x^2$=1.88 | P=0.50<br>$x^2$=1.38 |
| Marital status | P=0.002<br>$x^2$=10.99* | P=0.001<br>$x^2$=9.61* | P=1.00<br>$x^2$=0.08 |
| Age | P=0.06<br>t=1.88 | P<0.001<br>t=5.44* | P=0.02<br>t=2.36* |

and we found that 76.6% of health care providers had adequate knowledge, 22.4% of them had little knowledge and only 1% of participants had no knowledge about the proper techniques of BSE performing. Whereas in Iran, breast cancer is one of the health care priorities and in our health system paying special attention to education of health care providers is good thus, health care providers recognize signs and symptoms of breast cancer and are especially aware of the importance of early diagnosis of breast cancer as it relates to successful outcomes following treatment. Therefore, the result that female health care providers who have higher educational level perform BSE at high rates than the lower educational level was an expected result. This result also supports the results of other studies that showed the significant relationship between individual knowledge related to BSE and performing BSE.[8,13]

Results of this study also demonstrated that 26.6% of participants had mammogram and only 10.7% of them performed CBE. In a study in Turkey researchers demonstrated that 12.5% of health workers had mammogram and mammography rate among health workers aged 40 and older was 31.3%.[8] In contrast of our study results, in a study in Sari, Iran, it was reported that 65.86% of women older than 40 years in the 2 last years performed CBE and 47.3% of them had mammogram.[22] In our study,

majority of participants were under 40 years of age. The reason for the low mammography and CBE use may be attributable to lower age as other factors. Moreover this low use of mammography and CBE revealed in this study may be due to the fact those health care providers in our study did not attach importance to breast cancer screening or that they thought they were not in an at-risk age group for breast cancer. In Iran, mammography and CBE is not part of routine screening procedures for breast cancer, so it has been generally used as part of the diagnostic work up when a problem is raised. Therefore, our low rate for mammography and CBE is not unexpected.

Champion (1999) noted the benefits and importance of the use of mammography as a screening tool, and reported that the early detection can decrease death rates in breast cancer. Results of our study also supported the need for conducting health protective programs in health care system that focus on ways to change female health care providers' mammography and CBE use and BSE performance for early detection of breast cancer.

In this study, health beliefs of participants relating to health motivation were higher than health beliefs relating to susceptibility and seriousness. Meanwhile health beliefs relating to BSE benefits, BSE barriers, BSE self-efficacy, mammography barrier, CBE benefits and CBE barriers were higher than health beliefs relating to mammography benefits. In a study researchers demonstrated that physician's health motivation, perceived BSE benefits and perceived BSE self-efficacy were higher than nurses and midwives.[8] In a study of African-American nurses and Caucasian nurses found no relationship of BSE frequency to benefits and susceptibility[21] while in Turkey in a study was reported that perceived benefits were a significant predictor of the BSE performed for Turkish women[23] and in another study found that health beliefs about seriousness and health motivation were higher than susceptibility.[24]

Consistent with previous studies, our data indicate that there was a significant relationship among job, marital status and BSE performing that nurses and midwifes performed BSE higher than other health care providers and married healthcare providers performed BSE higher than singles. Otherwise in this study we demonstrated that married participants had mammogram higher than singles. Moreover there was a significant relationship between age and mammography and CBE performing.[25,8] In contrast with our study, in a study in Iran, researchers demonstrated that the practice of BSE was significantly associated with age, educational level and personal history of breast problems and knowledge of how to examine the breasts.[19]

## Conclusion

Results of this study demonstrate that although female health care providers have knowledge about breast cancer early detection behaviors such as BSE and having a mammogram and CBE, but rates of performance are not adequate. So, minimizing barriers to early detection behaviors may be effective in convincing women and interventions need to be focused on the benefits of performing BSE and having mammography and CBE. It is therefore recommended that in order to increase rates of regular breast cancer early detection behaviors, mass health protective programs should be executed to especially female health care providers who undertake the responsibility of raising breast cancer prevention and awareness in society. So, female health care providers may perform more breast cancer early detection behaviors regularly and periodically. And also screening mammography and education with clinical breast examination for simultaneous screening and increase breast awareness is recommended.

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## Conflict of interest

The author declares that there is no conflict of interest related to this manuscript.

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