

RESEARCH ARTICLE

Health Beliefs and Breast Cancer Screening Behaviors among Iranian Female Health Workers

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Abstract

Background: Breast cancer is a serious health problem. Early detection is crucial for optimal treatment and reducing mortality. **Objective:** The aim of this study was to evaluate health beliefs concerning performance of breast self-examination (BSE) and mammography in a sample of Iranian female health workers. **Materials and Methods:** This cross-sectional study was performed among 441 female health care workers (physicians=88, nurses=163, midwives=38, officers=68, and others=84) in 3 different health centers in Yazd, Iran. Data were collected using a self-administered questionnaire which included demographic characteristics and then Persian version of the Champion's Health Belief Model Scale (CHBMS). **Results:** The mean age of the participants was 34.7±13.7. It was found that 41.9% of the workers performed BSE in the past and 14.9% of them regularly, but only 10.6% of them had undergone a mammogram. Perceived barriers to BSE ($F=6.351$, $P=0.021$) and mammography ($F=5.214$, $p=0.022$) were significantly higher in officers than physicians, nurses or midwives. Perceived barriers were lower among those who had performed BSE and mammography, but not significant ($p=0.34$ and $p=0.56$, respectively). Furthermore, perceived susceptibility and perceived benefits of the workers who had BSE and mammography were significantly higher than who did not ($p<0.05$). Perceived seriousness was not a significant variable in BSE and mammography ($p=0.71$ and $p=0.43$, respectively). **Conclusions:** The health beliefs of health workers concerning the perceived susceptibility of breast cancer and the perceived benefits BSE and mammography significantly impact their screening practices.

Keywords: Breast cancer screening - Champion's health belief model scale - mammography - Iranian health workers

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Introduction

Breast cancer is one of the major health complications among women worldwide (Fouladi et al., 2013). It is expected that every year over than one million new breast cancer will happen worldwide.

Epidemiological studies based on age-specific incidence in Iran showed that the cancer has the highest prevalence among 45-55 years old women (Taghavi et al., 2012). As other developing countries, these studies show that breast cancer tends to accumulate among younger women in our community. Despite that in the western communications each women has the chance that be diagnosed a few months before the clinical onset of the breast cancer, in Iran nearly 70% of the cases were die just a few months after starting treatments, due to the late diagnosis (Harirchi et al., 2012).

There are several different reasons for these gaps among Iranian women; the most common reason is the low levels of knowledge about its nature and possibility of early detections. It seems that the lower knowledge is associated with lower screening practices (Noroozi and Tahmasebi, 2011). However, it should be said that

the knowledge and performance of Iranian women are increasing in some populated cities such as Tehran (Montazeri et al., 2008).

Some of the studies have shown that decreasing the cancer mortality have direct relations with several reasons such as breast cancer early diagnosis and screening, advent new screening and diagnosis techniques and improvements the old techniques outputs. One of the most accepted reasons is the role of women's knowledge about breast cancer risk factors and early detection which can increase survival of them. Some techniques such as CBE, BSE, mammography and sonography have been used to breast cancer early detection and or its screening. Regardless of some the continuing debates about the techniques controversies; each of these techniques has specific advantages (Karadag et al., 2014).

Recently, we have established a research center for breast diseases and one of our goals is to increase women awareness about breast cancer in Yazd province, therefore this study is designed to approaches the goals.

The purpose of this study was to determine the relationship between variables of the translated Health Belief Model including: perceived susceptibility,

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perceived severity, perceived benefits, perceived barriers, cues to action, self-efficacy, and modifying factors; and adherence to BSE and mammography screening in health workers.

Materials and Methods

Participants

This study was conducted as a cross sectional survey among female health care workers, working in Shahid Sadoughi, Afshar, and Seyed Al-Shohada Hospitals, Yazd, Iran. All female workers were invited to participate in the study. The study included a total number of 441 participants, 92 of which were physician, 84 nurses, and 123 were midwives.

Informed verbal consent of each participant was sought and obtained. Participants were assured of the confidentiality of their responses.

Data collection

In this study, data were collected by using a self-administration questionnaire prepared by researchers and the Persian version of Champion's Health Belief Model Scales (CHBMS).

Champion's health belief model scales

The Health Belief model (HBM) has been used extensively as a conceptual theoretical frame work to addresses issues regarding perceived susceptibility to the disease, perceived severity of the disease, perceived benefits of seeking preventive actions as well as perceived barriers to seeking the preventive actions. The HBM has been used in several studies to measure the concepts in relation to breast cancer screening: breast self-examination (Champion and Miller, 1992) and mammography (Champion et al., 1999). It has also been utilized to explore culturally relevant differences associated with screening behaviors (Cohen and Azaiza, 2005).

The scale was originally developed by Champion in 1984 and revised in 1993, 1997 (Champion and Scott, 1997), and lastly in 1999, to assess health beliefs concerning breast self examination and mammography screening among participants (Champion et al., 1999). Citing the lack of a reliable and valid tool for measuring HBM concepts, Champion sought to develop a tool using reliable and valid scales for use in research (Champion et al., 1984). The key concepts of CHBM include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, confidence, and self-efficacy (Champion and Scott, 1997; Champion et al., 1993).

All components of the HBM are addressed during this study, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Janz et al., 2002).

For the purpose of this study Champion's Health Belief Model with a 38-item instrument which previously was translated and adapted the CHBMS into Iranian was used. It has 8 subscales namely, susceptibility to breast cancer (5 items), seriousness of breast cancer (7 items), benefits of BSE (6 items), barriers of BSE (6 items), confidence (11 items), health motivation (7 items), benefits of

mammography (6 items), and barriers of mammography (5 items). The format of five-point Likert-type Scale was used to measure responses. Strongly agree was scored as five and strongly disagree as one. Therefore, A high score meant that the subjects believed they had greater susceptibility to breast cancer, perceived breast cancer risk to be more serious, but also perceived increased benefits, fewer barrier and had more confidence in both BSE and mammography, and in general had higher health motivation (Champion, 1993; 1999). According to the previous studies the internal reliability for Iranian CHBMS version on the original scales was found to be between 0.75 and 0.87 for all subscales (Secginli and Nahcivan, 2004).

Data analysis

The data collected were entered and analyzed using SPSS-11.0 for Windows. Descriptive statistics were used for describing the study health worker's socio-demographic and general health characteristics. One-way ANOVA and student's t-tests were used to compare health beliefs and performance of breast cancer screening behaviors among study subjects and also, Bonferoni and Duncan calculations were utilized for advanced statistical analyses. A P value of less than 0.05 was regarded as significant.

Results

A modified version of the Champion's Health Belief Model Constructs Instrument survey was completed by 441 health workers. The mean age of the study participants was 34.7 ± 13.7 that ranged from 21–53 years. The majority of the respondents (58.3%) were between 20-29 years of age. Work experiences were 9.8 ± 7.24 years. A majority of participants (90.2%) reported no personal or family history of breast cancer.

Participants BSE and Mammography performance according to profession is presented in Table 1. Based on the results of the data, 41.9% of the participants indicated that they had performed BSE in the previous 12 months. In BSE practice group, while 85.1% stated they had examined themselves irregularly, only 14.9% stated that they performed BSE on a regular monthly basis. Only 10.6% of the study group stated that they had had mammography previously.

Comparison of HBMS subscales of the Physician, Nurses, midwife, official and others are shown in Table 2. In this study perceptions of physicians about health motivation ($F=6.899$, $p=0.03$) and BSE self-efficacy ($F=23.475$, $p=0.05$) in the subscales of the CHBMS were significantly higher than other participants. Perceived barriers to BSE ($F=6.351$, $p=0.021$) and mammography ($F=5.214$, $p=0.022$) were significantly higher in officers than physicians, nurses or midwives. Moreover, perceived benefits of BSE and mammography were higher for nurses and physicians as compared to the other groups, respectively, and the differences were found to be statistically significant.

Comparison of participants' average scores of CHBMS subscales regarding BSE and whether subjects had a mammogram are shown in Table 3. The average scores

Table 1. BSE and Mammography Performance according to Profession of Female Health Workers

Screening behaviors	Physician(n=88)	Nurses(n=163)	midwife(n=38)	officers(n=68)	others(n=84)	Total(n=441)
Yes	31(35.2%)	66(40.5%)	21(55.3%)	31(45.5%)	36(42.8%)	185(41.9%)
No	57(64.8)	97(59.5%)	17(44.7%)	37(54.5%)	48(57.2%)	256(58.1%)
Frequency of BSE						
Monthly	11(12.5%)	22(13.5%)	9(23.6%)	11(16.1%)	13(15.4%)	66(14.9%)
Irregularly	77(87.5%)	141(86.5%)	29(76.4%)	57(83.9%)	71(84.6%)	375(85.1%)
Having a mammogram						
Yes	4(5.7%)	18(11.1%)	5(13.1%)	7(10.2%)	6(7.1%)	40(10.6%)
No	84(94.3%)	145(88.9%)	33(86.9%)	61(89.8%)	78(92.9%)	401(89.3%)

Table 2. Comparison of Health Beliefs according to Profession of Female Health Workers

Beliefs	Physician(n=88)	Nurses(n=163)	midwife(n=38)	officers(n=68)	others(n=84)	F
Susceptibility	8.44±2.11	9.43±3.01	7.23±3.01	6.21±2.13	7.12±4.24	3.324
Seriousness	18.63±4.01	16.11±5.22	15.66±4.26	13.23±4.0	17.79±5.23	1.897
Health motivation	25.53±4.08	24.32±3.65	21.44±5.32	19.88±5.17	22.32±5.45	6.899
BSE benefits	18.10±3.21	19.24±5.27	18.21±4.01	15.67±4.67	17.87±5.19	3.753
BSE barriers	13.40±3.60	18.01±4.55	17.45±3.09	18.33±5.32	17.50±6.0	6.351
BSE self-efficacy	43.78±6.22	39.77±7.0	42.17±8.25	34.78±7.24	40.21±8.24	23.475
Mammography benefits	22.22±5.17	21.03±4.13	21.87±5.07	18.54±4.84	20.88±5.01	6.122
Mammography barriers	22.77±7.63	24.45±8.67	23.65±8.67	26.23±8.88	21.43±7.12	5.214

Table 3. Comparison with Health Beliefs and Performance of BSE and Mammography Utilize among Female Health Workers

Beliefs	BSE performance		t	p	Mammography		t	p
	Yes(185)	No(256)			Yes (40)	No(401)		
Susceptibility	9.71±1.02	8.33±0.98	2.45	0.04	9.22±0.95	7.88±0.99	4.78	0.02
Seriousness	18.03±0.98	17.21±0.77	0.41	0.71	18.45±0.45	16.12±0.78	3.22	0.43
Health motivation	25.32±1.22	22.34±1.22	4.98	0.03	21.02±0.72	19.45±0.76	2.45	0.85
BSE benefits	19.07±1.14	15.67±1.56	8.21	0.04				
BSE barriers	18.22±0.77	21.03±1.34	-4.25	0.342				
BSE self-efficacy	36.56±0.98	33.08±0.67	5.11	0.002				
Mammography benefits					18.66±1.02	20.70±0.88	-2.12	0.034
Mammography barriers					21.45±0.92	22.67±1.02	-1.01	0.56

of BSE and mammography average scores barrier in of participants who had a mammogram and BSE-practice was lower than in the non-practice group. However, this was found to be not statistically significant in groups ($p < 0.001$). A statistically significant finding was seen in the BSE practice group's average scores of BSE-benefit and confidence which were higher than in the non-practice group ($p = 0.003$, $p < 0.001$). It was found that the average scores of mammography-benefit, motivation and confidence in the mammography practice group was higher than in the non-practice group ($p = 0.002$, $p < 0.001$, $p = 0.001$). Seriousness was not significant variable in BSE and mammography, and Susceptibility was not a significant factor in BSE practice.

Discussion

The Health Belief Model (HBM) was designed by Hochbaum, Leventhal, Kegeles, and Rosenstock in the 1950s to explain health behaviors and identifying the factors that are associated with women's breast cancer beliefs and screening behaviours (Subramanian et al., 2013; Tsunematsu et al., 2013; Avci et al., 2014). Gasalberti et al., used the HBM to examine the factors that influence the decision to perform BSE. Based on

Champion's Health Belief Instrument, among other factors, results demonstrated that a wellness conception of health and frequency were not significantly related, nor did a significant relationship exist between a wellness conception of health and thoroughness of BSE. A negative relationship between barriers and thoroughness was highly significant, while a statistically significant relationship did not exist between barriers and frequency of BSE (Aflakseir and Abbasi, 2012).

The primary goal of the study was to examine the relationships between the health beliefs, and the performance of BSE and mammography among Iranian female health workers.

Previous studies have shown that in Iran, the rate of BSE is not satisfactory. It is determined that the low rate of BSE among Iranian women was related to socio-economic status, lower levels of education, lack of breast cancer knowledge and lack of knowledge regarding the conduct of BSE, and negative family history of breast cancer (Tavafian et al., 2009).

Based on the results of the data, 41.9% of the women in the practiced group ever indicated having practiced BSE in the previous 12 months. In consistent with this study, Lee et al., have found that more than 40% of Korean nurses performed BSE (Lee et al., 2003). In another Turkish

study, Karahan et al., have reported that approximately 87% of Turkish nurses performed BSE. But nearly 49% of them performed in a regular manner (Karahana et al., 2006). In contrast of our study result, Haji-Mahmoodi et al., have found that that only 6% of female health care workers in Tehran performed BSE monthly (Haji-Mahmoodi et al., 2002). In a Norwegian study Rosvold et al., have reported that only 25.6% female workers performed monthly BSE (Rosvold et al., 2001). In two Turkish study by Canbulat et al., and Cavdar et al., of female physicians and nurses reported that 21.9% and 25% of those studied performed regular BSE, respectively (Cavdar et al., 2007; Canbulat and Uzun, 2008).

An increase in perceived susceptibility has been linked to an increase in breast cancer screening (Champion et al., 1999). It was found that the percentage of those that perform regular BSE was rather low (14%). In this study found that for all participants, susceptibility, health motivation, BSE benefits, BSE self-efficacy perceptions of the female health workers who performed BSE were higher than those who did not. These results were complying with the conceptual structure of HBM. According to the CHBM theory higher BSE performance strongly correlated with low barriers, high susceptibility, seriousness, benefits, and confidence.

When mean scores the health belief model variable of barriers to BSE, and mammography total scores showed some differences between participants. The findings from this study revealed that non Physician workers women were more likely to perceive more barriers to BSE and mammography than Physician. Only among female officers barrier perception of BSE had the higher values than it Benefit. Therefore, it seems related educations is important in acquiring health behaviors. The participants with related education can come due to high level of benefit perception.

Data analysis showed a significant positive correlation between susceptibility and BSE practices, while there was no a significant correlation between perceived seriousness and barriers. Frequency of BSE decreases as susceptibility to breast cancer decreases also, which accounts for the fluctuations with BSE practices. According to the results of the data, the participants who practiced BSE on a regular basis were more likely to have more confidence in their ability to perform BSE, lower perceived barriers to BSE, and place a higher value on their health.

For first time Taymoori et al., have used the Farsi version of the Champion Health Belief Model Scale to measure health beliefs related to breast self-examination and mammography in Iranian women (Taymoori and Berry, 2009). According their study Iranian women had the lowest perception of susceptibility and confidence to perform BSE but the highest barriers to mammography in comparison with the USA, UK, Jordan, Turkey, and Lithuania women. Tavafian et al., have conducted a study among 240 eligible women who were selected in Bandar Abbas, Iran (Tavafian et al., 2009). They determined that Perceived benefits and perceived self-efficacy of the women who performed BSE were significantly higher compared with women who did not practice BSE ($p < 0.03$). Furthermore, perceived barriers were lower among those

who had performed BSE ($p < 0.001$).

An increase in perceived susceptibility has been linked to an increase in breast cancer screening (Champion et al., 1999). The expectation was for a high BSE frequency to be strongly correlated with low barriers, high susceptibility, seriousness, benefits, and confidence, which clearly was not the findings, susceptibility, barriers, confidence, and seriousness were not significantly correlated to BSE frequency (Champion and Scott, 1997). In this study, there was a positive significant correlation between the concept of health motivation and BSE ($t = 4.98$, $p = 0.03$).

Although no significant differences were found between health workers according to the profession in their perceived barriers to either mammography or breast self examination (BSE) some small differences emerged. Non physicians perceived slightly more barriers than physician to breast self-examination (BSE) (mean=11.2) and mammography (mean=10.5).

The rate of women having mammography was low and similar to that found in previous studies. According to the previous study, the mammography rate among Iranian women is between 1.6-30.5% (Moodi et al., 2012).

It is revealed that women's perception of benefits of mammography is one of the most influential factors in taking mammography. In addition raising women's level of awareness about mammography is an effective factor in shaping women's attitudes (Lagerlund et al., 2000). Aflakseir et al., conducted a study among female staff in Shiraz, Iran. They found that 51% of participants had BSE, and only 21% had a mammogram. Also, they have shown that physician's recommendation, and the perceived barriers significantly predicted mammography screening, which explaining 27% of the total variance of mammography practice (Aflakseir and Abbasi, 2012). In contrast to HBM, perceived susceptibility and perceived severity were not significantly associated with mammography use. This finding is in agreement with findings of previous studies (Farmer et al., 2007; Hatefnia et al., 2010) and is in contrast with some studies.

On the basis the HBM, it is hypothesized that women with perceived seriousness and susceptibility to breast cancer will be more likely to be screened (Secginli and Nahcivan, 2004). Susceptibility involves an individual's beliefs about the possibility of developing breast cancer. Perceived susceptibility explains that people will be more motivated to behave in healthy ways if they believe they are vulnerable to a particular negative health outcome (Rosenstock et al., 1966).

Consistent with findings of previous research, results from the present study indicate that female health workers have a low level of perceived susceptibility towards breast cancer (Champion et al., 1992; Champion et al., 1999). There was significant correlations between BSE, mammography performance and average perceived susceptibility ($p < 0.05$). Perceived susceptibility of breast cancer influenced the performance of BSE or CBE breast cancer screening behaviors. According to Champion an increase in perceived susceptibility has been linked to an increase in breast cancer screening (Champion et al., 1999). Notably, the low perceived susceptibility in the current study among all groups of participants is probably

related not only to low levels of education and knowledge but also it may due to the young age of the participants and their lack of exposure to family or friends with the disease.

Muslims women had higher level of barriers in performing BSE compared to non-Muslims. In this study significantly the lowest mean scores of Barriers was for physician and highest for officers. The present study results have shown that the females perceived susceptibility, severity, benefits, barriers, and self-efficacy were complying with the HBM components. Participants' perceived susceptibility of breast cancer positively influenced their performance of BSE breast cancer screening behaviors. This study found that the HBM components of perceived susceptibility, severity, benefits, barriers, and self-efficacy were related with breast cancer screening behaviors in Iranian female health workers. Participants perceived susceptibility of breast cancer did positively influence the performance of BSE or CBE of breast cancer screening behaviors. The health beliefs of health workers concerning the perceived susceptibility of breast cancer and the perceived benefits BSE and mammography significantly impact their screening practices.

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