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Knowledge, Attitudes, and Practices toward Breast Cancer among Midwives in a Breast Cancer Educational Seminar in Tehran

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ABSTRACT

Background: The incidence of breast cancer is rising rapidly worldwide. Midwives have an important role in early detection of the disease by providing the patients with awareness and an accurate Clinical Breast Examination (CBE) of the patients that are effective in early detections. This study investigated the knowledge, attitudes and practices of midwives toward breast cancer.

Methods: The study was conducted on 210 of midwives aged 20-62 who participated in a seminar for clarifying the role of knowledge, attitudes and practices in breast cancer early detection and prevention. The data were collected using a standard questionnaire which has 4 sections with 55 items including age, educational level, number of family members, marital status, family history of breast cancer and their knowledge, attitude and practices about breast cancer screening. Data were analyzed using SPSS version 13.0.

Results: About two-third of the participants (65.9%) had excellent knowledge about the signs and symptoms of breast cancer. The results revealed that 30.8% of respondents performed self-examination once a month. There was a significant correlation between the knowledge of breast cancer and adopting preventive practices ($P = 0.02$). The level of their attitude was significantly associated with a positive family history of breast cancer ($P = 0.03$). There was no significant relationship between marital status or family history of breast cancer with CBE.

Conclusion: An appropriate level of knowledge and practice of breast cancer screening was observed to help prevention among midwives. The findings can have remarkable practical implications as midwives can play an important role to broaden the breast-cancer-related knowledge of women.

Introduction

Breast cancer is the second cause of cancer-related mortality among women in the US. Also, it is

the most common cancer in women in many countries such as Iran, Turkey, etc.^{1,2} The incidence of breast cancer was near 46.8 in 100,000 in 2012.³ Based on a global report, 13,835,000 patients suffer from cancer and 458,400 deaths were caused by breast cancer in 2010.³ In Iran, the incidence of breast cancer is 24% of the total of malignancies among women, that is approximately 36 per 100,000.⁴ Although the incidence of breast cancer is

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rising, the mortality rate has decreased, due to early diagnosis and good treatment options. Insufficient screening examinations is a main reason for diagnosis of breast cancer in advanced stages which contributes to heavy burden of this cancer in Iranian women.⁵

The appropriate screening procedure has an important role in early detection and diagnosis that can promote the treatment response. Early diagnosis can improve the effectiveness of the treatment and decrease the disease burden in all types of cancer, including breast cancer.⁶ It also plays a pivotal role in the prevention of breast cancer. The 5-year survival rate has reached approximately 85% with early detection, whereas the late detection can decrease the survival rate to 56%.⁷ Therefore, screening has an undeniable role in prolonging life expectancy and decreasing the complications and mortality rate of breast cancer.⁸ Screening methods include mammography, clinical breast examination (CBE), and breast self-examination (BSE). Despite the existence of advanced screening methods, some of techniques such as mammography (approximately 10% of cases) fail to diagnose of tumors or may show false-positive results.¹⁰ Today, BSE is not recommended as a screening method in early breast cancer detection. Most of the renowned algorithms have omitted BSE from the list of early detection measures, although it seems that it cannot be a global recommendation. In some limited-resource countries that have not incorporated the screening program in their health care system, BSE can spot large tumors and is considered a good method for breast cancer awareness. Obviously, it is an easy, cost-effective, and safe method of screening in these countries. Also, about 90% of patients with breast cancer detect their disease by self-examination.¹⁰ The clinical sign of tumor in BSE is any mass, swelling, discharge, redness or any change in the breast.^{11,12} Despite its benefits, most women would rather not do BSE. Hence, educating people to do BSE seems to be necessary for countries that may not have access to the screening programs such as mammography and CBE.

Midwives can play an important role in BSE education. Indeed, understanding the beliefs and attitudes of midwifery students about breast cancer and BSE, and subsequently broadening their knowledge, can improve the early diagnosis of breast cancer and reduce breast-cancer-related deaths.¹ On the other hand, in some countries, breast surgeons are inaccessible and in some cultures, women prefer not to refer to a male health center for CBE, which may reduce the referral rate to health care provider.⁸ Although many women in nearly all medical fields might have insufficient knowledge about breast cancer, midwives usually have enough information about this malignancy.^{9,13} Thus, they can play an important role in educating other women about breast cancer who refer to them for gynecologic

exams. Besides, if midwives educate other women well, they can also convey these experience to their other counterparts.¹⁴

The aim of this study is to investigate the knowledge, attitudes, and practices of midwives toward breast cancer screening and the association with socio-demographics among the Iranian female midwives who participated in a breast cancer prevention seminar in Tehran.

Methods

This analytic cross-sectional study was conducted among midwives who participated in a one-day seminar entitled "clarifying the duty of midwives in early detection and prevention of breast cancer". The questionnaires were distributed among participants at the beginning of the seminar before presentations and collected 30 minutes after the end of the presentations. The study population consisted of 210 midwives who attended the event. Data collection was performed through a researcher-made questionnaire. The validity and reliability of the questionnaire were attested (Cronbach's alpha = 0.86).¹⁵

In the questionnaire, there are various items to assess the level of knowledge, attitude, and practices of the midwives toward breast cancer prevention and BSE. It consisted of 55 questions split into four parts. The first part consisted of 6 socio-demographic questions including age, educational level, number of family members, marital status, and family history of breast cancer. The second part comprised of 22 questions on the respondents' knowledge of breast cancer including signs and symptoms (10 items) and risk factors (12 items). The third part consisted of 12 statements about attitudes toward breast cancer (breast cancer prevention, BSE, early detection and the odds of developing breast cancer). The final part consisted of 15 questions about the practice of midwives regarding breast cancer prevention.

With reference to the scoring of part two, every correct response received 1 point, while every incorrect response was scored 0. The total score ranged within 0-22. Respondents with scores 0-6 were assumed to have poor knowledge, those with scores 7-14 were considered to have moderate knowledge, and those with scores 15-22 were regarded to have excellent knowledge about breast cancer. In analyzing each section of part two, in the 'Sign and Symptoms' section, respondents with scores 0-3 were regarded as having poor knowledge, those with scores 4-6 as moderate, and those with scores 7-10 as excellent knowledge of breast cancer signs and symptoms. For the questions concerning Risk Factors, respondents with scores 0-4 were categorized as having poor knowledge, those with scores 5-8 as moderate, and those with scores 9-12 as excellent.

In the section dedicated to breast cancer attitudes, the participants scored each statement using a 5-



point Likert scale (one to five for absolutely disagree, disagree, without no ideas, agree, and absolutely agree, respectively). The overall score of attitudes was calculated according to the total points acquired by the respondents regarding the 12 items. Respondents with scores 12-36 were considered to have negative beliefs, and those with scores 37-60 were assumed to have positive beliefs.

Evaluation of the final part involved calculating the percentage of correct and incorrect responses to questions about breast cancer prevention. Data were analyzed with descriptive statistics, chi-square test, one-way Analysis of Variance (ANOVA), independent-samples t-test, and logistic regression analysis by SPSS version 13. The significance level for the two-tailed test was set at $P < 0.05$.

Results

Socio-demographic characteristics

From a total of 210 participants, 185 midwives returned their questionnaires. Among the respondents, there was one individual with a personal history of breast cancer. There was no divorced woman and the mean number of family members was $3.93 (\pm 1.33)$. In terms of the education level, nine (4.9%) of women had a diploma (a certificate in the field of midwifery) and the rest had an academic degree, two of whom had a PhD. The

age range of participants was between 20 and 62 years, with a mean age of 35.61 ± 11.81 .

A considerable proportion of participants aged 40 years and above (80 members, 43.2%), had a bachelor's degree (148 members, 80%), were married (101 members, 54.6%), and did not have family history of breast cancer (141 members, 76.2%). Table 1 presents the demographic characteristics of the respondents.

knowledge about breast cancer sign and symptoms

The results for the 'Signs and Symptoms' section had a mean score of $6.60 (\pm 1.73)$, meaning that overall, the participants had relatively favorable knowledge of the signs and symptoms of breast cancer (weak (n=7,13%), moderate (n=27-50%), and excellent (n=122-65.9%). The three correct answers with the highest frequency in this part were suspicious mass (n=175, 94.6%), dimpling (n=171, 92.4%), and changes in the skin texture (n=167, 90.3%). Painful breasts near menstruation (n=176, 96.2%) and breast pain (n=93, 50.7%) were the factors that most of the respondents wrongly answered. No significant relationship was found between education level and knowledge about breast cancer signs and symptoms ($P = 0.057$); however, a significant relationship was found between the knowledge and family history ($P = 0.020$).

Table 1. Frequency distribution and percentage of socio-demographic characteristics of participants

Characteristics		Frequency	Percent
Age, (years)	20-29	69	37.3
	30-39	31	16.8
	40 ≤	80	43.2
	Total	180	97.3
	Missing	5	2.7
	Total	185	100
Educational level	High school certificate	9	4.9
	Associate degree	8	4.3
	Bachelor of science	148	80
	Master of science	14	7.6
	Doctor of philosophy	2	1.1
	Total	181	97.8
	Missing	4	2.2
	Total	185	100
Number of family members	≤ 4	60	32.4
	5 <	42	22.7
	other	83	44.9
Marital status	Single	77	41.6
	Married	101	54.6
	Total	178	96.2
	Missing	7	3
Family history	Yes	32	17.3
	No	141	76.2
	Total	173	93.5
	Missing	12	6.5
Family relationship in patient with positive family history	Mother	7	3.8
	Sister	1	0.5
	Relatives	26	14.1
	Total	34	18.4
	Missing	151	81.6

**Table 2.** Participants' knowledge about breast cancer signs and symptoms. (N= 185)

Characteristics	Correct answers	
	Frequency	Percent
Breast Paresthesia	100	54.1
Feeling breast pain	86	46.9
Changing the skin form	167	90.3
Purulent discharge	96	51.9
Breast enlargement	109	58.9
Painful breast	7	3.8
Painful breast near menstruation	176	96.2
Bloody discharge	164	88.6
Wound on the nipple	147	79.5
Suspicious mass	175	94.6
Depression the part of breast skin	171	92.4

Table 2 reports the participants' knowledge of breast cancer signs and symptoms.

Knowledge of breast cancer risk factors

Our assessment of the participants' knowledge about risk factors showed a mean score of 7.67 (± 2.13). The majority of respondents believed that unhealthy habits (n=174, 94.1%), lack of childbirth (n=161, 87%), and consumption of fatty food (n=156, 84.3%) were the main risk factors for breast cancer. Most of the respondents did not know that oral contraceptives (n=72, 38.9%) and delayed menarche (n=70, 37.8%) are risk factors for breast cancer development. Additionally, they believed that breastfeeding (n=168, 90.8%) and physical exercise (n=170, 91.9%) have protective effects on breast cancer prevention. Some respondents believed that breast imaging (n=78, 42.2%), BSE (n=50, 27.0%), and CBE (n=51, 27.6%) are not effective in breast cancer early detection (Table 3).

Overall, 13 (7%) midwives had weak, 108 (58.4%) had moderate, and 64 (34.6%) had excellent knowledge about breast cancer risk factors. It was observed that knowledge of breast cancer risk factors has no significant relationship with age ($P = 0.09$) and family history ($P = 0.06$). However, there was a

significant relationship between education level and knowledge of risk factors ($P = 0.007$). Table 3 summarizes the participants' knowledge of breast cancer risk factors.

Attitudes

The mean score of midwives' negative beliefs was 38.75 ± 3.30 , and the mean score of midwives' positive beliefs about risk factors was 38.65 ± 3.11 . In contrast, the factors "early detection of breast mass is not valuable and just leads to stress" (n=174, 94.1%) and "BSE is a healthy habit" (n=183, 98.9%) had the maximum average value in the negative and positive attitudes, respectively. The highest scores in attitude belonged to the participants who were above 40 (47.35), had a high school certificate (40.75), were married (39.32), and had a positive family history of breast cancer (40). Figure 1 displays the comparison of demographic variables and attitudes. It was found that family history had a significant correlation with attitudes ($P = 0.03$). Similarly, marital status had a significant relationship with attitudes toward breast cancer screening, BSE, CBE, early detection of breast cancer, and its prevention ($P = 0.009$). There was no association between the total score of knowledge about breast cancer and attitudes ($P = 0.466$).

Table 3. Participants' knowledge toward breast cancer risk factors. (N= 185)

Characteristics	Correct answers	
	Frequency	Percent
Taking OCP	72	38.9
Breast imaging	78	42.2
Delayed menarche	70	37.8
First childbirth between 40 to 45 years	148	80
Consumption of fatty foods	156	84.3
Lack of childbirth	161	87.0
Breastfeeding	168	90.8
BSE	50	27.0
Unhealthy habits (smoking, drinking, etc)	174	94.1
Late menopause	122	65.9
CBE	51	27.6
Regular daily exercise	170	91.9



Practices of midwives regarding their breasts

A total of 28 participants (15.1%) practiced appropriately regarding breast cancer prevention, and 101 participants (54.6%) had harmful and risky practices in their lives (Table 4). Large number of participants said that they perform CBE (136 members, 73.5%). A total of 121 of respondents (67.5%) replied that they had not done mammography. Approximately 179 participants answered question on about doing mammography and a large proportion indicated that they practice it only as a check-up

(n=37, 20%). It was found that knowledge of breast cancer signs and symptoms had a significant correlation with family history ($P=0.012$) and educational level ($P=0.045$), and there was no correlation between marital status ($P=0.388$), age ($P=0.466$), risk factors ($P=0.084$) and positive attitudes toward practices regarding breast cancer ($P=0.293$). Table 5 outlines the correlation values of practice factors with some selected demographic variables. According to the results, marital status and family history had no impact on CBE.

Table 4. Participants' practice regarding their breasts

Characteristics		Frequency	Percent
Appropriate practices	Taking vegetables and fruits	177	95.7
	BSE	136	73.5
	CBE	136	73.5
	Mammography	58	32.4
	Regular exercises	12	6.5
Harmful and risky habites	Smoking	7	3.8
	Taking fatty foods	94	50.8
Performing BSE	Once in a month	57	42.8
	More than 2 times in a month	13	9.7
	Once in several months	47	35.4
	Rarely	16	12.03
BSE in relation to menses	Immediately after	78	42.2
	Between 2 menses	12	6.5
	A week before menses	1	0.5
	Anytime they can	43	23.2
Healthy daily habits	Exercise, nutrition, etc.	99	53.5
	Healthy food	21	11.4

Table 5. Participants' practice regarding their breasts

Variables	BSE			CBE			Mammography		
	OR (Sig.)	CI	Correlation (Sig.)	OR (Sig.)	CI	Correlation (Sig.)	OR (Sig.)	CI	Correlation (Sig.)
Age	0.978 (0.923)	(0.622-1.538)	-0.022 (0.381)	0.689 (0.125)	(0.429-1.108)	-0.035 (0.312)	0.812 (0.389)	(0.505-1.305)	0.042 (0.278)
Education level	0.530 (0.082)	(0.259-1.085)	0.054 (0.229)	0.064 (0.002)	(0.064-0.527)	-0.054 (0.229)	0.453 (0.065)	(0.195-1.051)	-0.050 (0.248)
Marital status	0.786 (0.564)	(0.347-1.7800)	-0.066 (0.191)	0.137 (0.011)	(0.137-0.772)	-0.294 (0.001)	0.414 (0.048)	(0.173-0.992)	-0.226 (0.002)
Family history	2.349 (0.167)	(0.700-7.878)	0.067 (0.191)	2.347 (0.001)	(2.347-24.211)	0.282 (<0.001)	4.299 (0.004)	(1.593-11.598)	<0.001 (0.269)
Knowledge of signs and symptoms	0.951 (0.639)	(0.769-1.175)	-0.113 (0.046)	0.772 (0.835)	(0.772-1.233)	-0.030 (0.328)	0.936 (0.610)	(0.725-1.207)	-0.024 (0.359)
Knowledge of risk factor	0.912 (0.325)	(0.759-1.096)	0.089 (0.083)	0.749 (0.356)	(0.749-1.109)	-0.162 (0.006)	0.857 (0.159)	(0.692-1.062)	-0.118 (0.035)
Mean of attitude	2.682 (0.208)	(0.578-12.442)	0.037 (0.292)	0.103 (0.459)	(0.103-2.795)	0.080 (0.120)	0.515 (0.420)	(0.103-2.579)	-0.105 (0.062)

Discussion

Our results demonstrated that more than half of the participants (approximately 66%) had excellent knowledge about breast cancer signs and symptoms, while 13% had poor knowledge. Our findings revealed that "suspicious mass" and "painful breast"

had the highest and lowest frequency rate of the correct answers, respectively. It was observed that only women with an associate degree had negative beliefs regarding breast cancer screening tests, which may be related to this group's overall lower-level knowledge. Ghazanfari et al. reported that the



factor of “early detection of breast mass has nothing but stress” had the highest average in negative attitudes. The most important inhibiting factors for breast cancer screening were women’s beliefs, attitudes towards preventive methods and their explanations about screening tests, shame, and the time-consuming nature of the practice.¹⁵

In our study, 13% of the participants had poor, 50% had moderate, and about 66% had good knowledge of breast cancer. Other studies on Iranian women indicated that about 12-28% of women had a good knowledge of breast cancer and 37% of them had no information about BSE.⁴ This difference in the knowledge of participants can imply the fact that many of our participants have academic education. In a study conducted in the United States-Mexico borderland, Mexican participants were reported to have a higher level of knowledge about breast cancer (86%) compared to U.S Latinas (71%), due to the fact that Mexican women have higher level of knowledge about breast cancer and they believed that BSE and CBE are the ways to early breast cancer diagnose and good treatment. This difference can be related to the age, education and insurance status¹⁶, so about 90% of the breast cancer had been diagnosed by Mexican women themselves 10% of whom being in stage 1 of the breast cancer.¹⁷ In a study in the UK, half of the participants correctly answer 4 out of 5 statements about breast cancer¹⁸, because British women had broader knowledge about breast cancer, who can subsequently receive an early diagnosis and good prognosis.^{19, 20} Based on our findings and another study, there are significant correlations between educational level and breast cancer knowledge and increase adoption of BSE.⁴

Despite the low level of knowledge about breast cancer risk factors, awareness about breast cancer signs and symptoms was appropriate perhaps due to a few barriers for screening services and their important role to enhancing knowledge.²¹ In Iran, the lack of awareness is associated with geographic areas, occupations and education²², and in Iran and other Asian countries educational level can affect the performance of BSE and BCE.^{4,23}

In a research in Turkey about educational level on attitudes toward BSE, evaluating the attitude of the first- and fourth-year nursing and midwifery students, it was revealed that the first-year students did not have adequate information about BSE had more negative beliefs regarding the performance of BSE and the fourth-year students had positive attitudes to do BSE.⁹ Therefore, a college education can change negative attitudes toward more BSE to positive attitudes. In this study, based on our participants’ attitudes, only in its early-stage diagnosis, BSE can be helpful but it is not effective in reducing breast cancer mortality. This demonstrates the importance of educational attainment and how it can lead to increased knowledge of breast cancer risk

factors. As reported by some studies, in most cases in developing countries like Iran the diagnose of cancers is delayed until later stages (> 2).²⁴

A study on Nigerian nurses showed that just 40% of participants knew the appropriate time to perform BSE¹⁸, while in nursing students in the USA about 77% recognized the correct time of BSE, and 80% of participants performed BSE satisfactorily.²⁰ In some studies, the percentage of American and British people who had received one or all cancer screening methods (i.e., BSE, CBE, mammography) was higher than that in developing countries^{20, 25, 26}, because of good public education in advanced countries.

In our study, women aged over 40 years had the most positive beliefs regarding BSE and CBE. Previous studies in Iran demonstrated that 17-94% of women had positive attitudes toward BSE and screening tests, and 83.3% believed that BSE has a positive effect on the early diagnosis of breast cancer. In addition, 72% of participants believed that physical examination of breast and mammography can be effective medical diagnostic procedures.^{20, 27} Overall, 30.8% of participants in our study performed BSE once a month and 42.2% did it immediately after menopause. In a study from the US, 58% of women performed BSE²⁸ -close to 51.5%- in our study, 33.3% of women over 40 years performed it and 31.8% knew how to do it correctly. Only 37% of participants were trained in BSE for which the healthcare staff was the most important source (38.2%).^{15, 20, 29} In North Ethiopia, about 6.5% of participants had ever practiced BSE, and only 6.25% of the respondents practiced BSE regularly.³⁰ A study on 5000 women indicated that only 31% perform CBE because 60.9% of the participant ignore it and they are careless about it, 17.4% of participants have acceptable knowledge and 5.9% did not consider it necessary to diagnose the cancer.²⁹

In Asian countries, the number of individuals performing BCE has grown with increasing knowledge of risk factors and age (30-50 years).^{4, 23, 31} In our study, we demonstrated that the level of knowledge is enhanced with higher ages, too. Generally, 39.6% of women had poor knowledge about mammography. Furthermore, 28.5% of women over 40 have done at least one mammography.⁴ Similarly, in our study, 32.5% of the participants aged over 40 have done at least one BSE in their life. In America, 31% of African-American citizens perform BSE once a month¹⁴, while in Asia it is 10-20%.^{4, 32, 33} These differences can be attributed to various cultural barriers, and knowledge and beliefs regarding breast cancer in different societies. A high incidence of breast cancer in younger women has been reported in different studies and it is recommended that mammography be performed from the age of 40.^{30, 34}

The obstacles to BSE practice were found to be as follows: fear of being diagnosed with breast cancer,



lack of self-confidence, lack of sufficient knowledge, lack of a family history of cancer, forgetfulness and laziness.⁹

There were some limitations to this study such as the mere focus on midwifery students and graduated, so our results may not be generalizable to all health workers, and the sample size was small (n=210) considering the population of women in society and the incidence of breast cancer.

Given the significance of knowledge about breast cancer and its important role in improving women's health, we suggest that further studies be conducted on the knowledge about breast cancer among other health workers.

In conclusion, this study revealed a significant association between some socio-demographic characteristics and knowledge of breast cancer among midwives. According to the results, most of the participants had appropriate knowledge toward breast cancer prevention. The present study focused on the level of knowledge, attitudes and practices of midwives and their important role on educating other women to prevent breast cancer and reduce consequent burdens. Therefore, improving the midwives' education about breast cancer can have a positive influence on other women's health.

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Conflict of Interests

The authors declare no conflict of interests in this study.

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