

Knowledge, Attitude, and Practice of Women Regarding Breast Cancer Screening Behaviors in Mashhad, Iran

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ARTICLE INFO	ABSTRACT
<i>Article type:</i> Original article	Background & aim: Breast cancer is one of the most common cancers and second leading cause of cancer mortalities among women. The present study aimed to measure the levels of knowledge, attitude, and practice of women regarding breast cancer screening behaviors.
<i>Article History:</i> Received: 04-Dec-2019 Accepted: 02-Feb-2020	Methods: This cross-sectional study was carried out on 406 women who referred to five health centers in Mashhad and were selected using the multistage sampling technique within July 2018 to June 2019. The data were collected through a self-structured questionnaire, including four sections of demographic characteristics, knowledge, attitude, and practice towards breast cancer screening behaviors. The data were analyzed using Chi-square, Pearson's correlation coefficient and linear regression tests.
<i>Key words:</i> Breast Cancer Knowledge Attitude Practice Screening Behavior Women	Results: The mean score of women's age was 33.5±10.3 years. 49.1% and 7.9% of the participants had a low level of knowledge and negative attitudes toward breast cancer screening, respectively, which led to the poor practice of women in this regard (29.1%). According to the Pearson's correlation coefficient, the practice of breast cancer screening behaviors had a significant positive correlation with the scores of knowledge ($r=0.20$; $P=0.04$) and attitude ($r=0.35$; $P=0.03$). The findings of the linear regression of contextual variables indicated that there was a significant relationship between a family history of breast cancer and positive practice ($P=0.001$). Conclusion: Inadequate knowledge and moderate attitudes toward breast cancer screening led to moderate to poor practice in the majority of women. It is suggested to perform studies on the necessity of appropriate and effective educational methods on breast cancer screening behaviors.

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Introduction

Breast cancer is the most common cancer among women in developed and some developing countries. According to the statistics, it accounts for most of the cancer mortalities after lung cancer (1, 2). Moreover, the average age of breast cancer patients in Iran is 10 years younger than those reported for other countries (3). Furthermore, the highest prevalence is

among people within the age range of 59-40 years (4). The risk factors of breast cancer include genetics, gender, age (more prevalent among women over 40 years and after menopause), menopause after the age of 55, pregnancy in older age, and history of other cancers (i.e., ovarian and endometrial) (5, 6).

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Prompt diagnosis is one of the ways to decrease the risk of mortality caused by breast cancer, reduce the treatment costs, and cure the disease. Screening is introduced as one of the best methods for early diagnosis (7, 8). Timely diagnosis strategies include breast self-examination, clinical examination by a physician, and mammography (9). The screening program approved by the American College of Obstetricians and Gynecologists and American Cancer Society includes 1) monthly breast self-examination after the age of 20, 2) physical examinations within the age of 20-40 by skilled healthcare providers every 3 years and then every year, and 3) practice of mammography every 2-3 years after the age of 40 (10, 11).

Breast self-examination is a procedure not requiring specialized staff and equipment due to its cost-effectiveness, efficiency, and simplicity. Moreover, it can be performed by the individual and if performed accurately and regularly, the person will be able to diagnose the tumors that are smaller than 1 cm (12). However, most women do not regularly carry out this examination (13). Nevertheless, the American Cancer Society no longer recommends monthly breast self-examination since the specialists believe that breast self-examination has the least impact on the diagnosis of breast cancer (14). Nonetheless, some studies emphasized that self-examination might be the only realistic way for the early diagnosis of breast cancer, especially in developing countries (15).

Mammography is the most effective method of screening regarding breast cancer; however, the World Health Organization has recommended mammography practice only in countries that can afford it due to the associated costs. Furthermore, the recommended strategy for the early diagnosis in low- and middle-income countries is awareness-raising about the signs and symptoms of the disease as well as screening through clinical breast examination (16). Breast cancer is diagnosed through mammography 1-3 years before it is felt by the patient. Timely screening mammography in 40-year-old or older women can prevent from 15-30% of breast cancer mortalities (17).

Based on the results of a study performed by Abedzadeh et al. (2001) on women who

referred to a health center in Kashan, Iran, 42%, 5.5%, and 65.3% of the subjects had poor knowledge, indifferent and negative attitudes, and poor practice, respectively (18). In another study conducted by Jamalludin et al. (2003), 70% of the women in the states of Alur Batu and Kuantan, Malaysia, were aware of the correct method regarding breast self-examination; nevertheless, only 43% of them performed breast self-examination on a monthly basis (19). Moreover, according to the findings of another study conducted by Rastad et al. (2012), 55% of the participants had poor knowledge of breast cancer; however, 90% of them were reported with poor practice (20).

Given that breast cancer is the most common cancer in the female population, screening is of great importance. Furthermore, the adoption of a better attitude toward screening and raising awareness are effective measures (6). Studies conducted in this domain suggest that enhancing positive attitude and awareness of the public regarding breast cancer can have a positive impact on the screening behaviors of individuals (21). Considering the growing trend of breast cancer in Iran and many individuals' referrals to doctors in advanced stages, it is important to consider and address this problem in order to reduce the mortality rate (6). Therefore, the present study aimed to determine the level of knowledge, attitude, and practice of women in terms of breast cancer screening behaviors in Mashhad, Iran, within 2018-2019.

Materials and Methods

The sample size of this descriptive cross-sectional study was estimated at 406 samples using similar studies (27, 3) and sample size formula with an attrition rate of 10%. The sample size formula is presented as it follows: ($Z=1.96$; $P=0.58$; $d=0.05$)

$$n = \frac{z^2 \times p(1-p)}{d^2}$$

To fulfill the purpose of the study, the samples were chosen using stratified, cluster, and convenience sampling methods. The five major health centers in Mashhad (i.e., health centers 1, 2, 3, Samen, and 5) were each considered as one category (five categories in total). Moreover, there was also a list of other

health centers that they covered. Afterward, each category was divided into subcategories based on the socioeconomic similarities of the districts. Subsequently, one district was randomly selected from each category, and two health centers were randomly chosen as clusters from the list of centers in that region.

The random allocation method was used so that the names of both health centers were written on two separate sheets and placed in a bag. Then, the first and second sheets were assigned to the intervention and control groups, respectively. According to the number of categories, a total of 10 healthcare centers were selected. After obtaining the approval of the research proposal from the Ethics Committee of Mashhad University of Medical Sciences, Mashhad, Iran, the sampling was performed within July 2018 to June 2019. Firstly, the objectives of the study were explained to the participants. Afterward, written informed consent was obtained from the subjects. Subsequently, the participants who gave their consent were required to complete the researcher-made questionnaires.

The questionnaire included demographic characteristics, such as age, marital status, educational level, occupation, occupation of the spouse, household income, number of family members, insurance status, family history of breast cancer, as well as history of breastfeeding and breast self-examination. Moreover, it consisted of 10 awareness items regarding familiarity with breast self-examination, breast examination methods, number of fingers used in self-examination, usage of different types of pressure, practice of self-examination while lying on one side, familiarity with mammography, recommended age for mammography, diagnosis of disease stage in mammography, and frequency of mammography screenings within the age of 40-50. Furthermore, the questionnaire comprised of 18 attitude items in terms of mammography as a cause of anxiety, elimination of the need for mammography due to breast self-examination, barriers to mammography, and disadvantages of mammography. Finally, the questionnaire included 5 practice items considering breast examination, examination in a supine position, usage of different types of pressure, as well as

referring to a physician for breast examination and mammography.

The required data were collected using the researcher-made questionnaire. The content validity of this tool was confirmed through the distribution of the questionnaire among 10 faculty members of Mashhad University of Medical Sciences, Mashhad, Iran, and it was used after reviewing and making the necessary changes. Moreover, the reliability of this questionnaire was confirmed using Cronbach's alpha coefficient (0.86).

In the knowledge and practice questionnaire, the correct answers were scored 1, while the unanswered or incorrectly answered items were scored 0. Therefore, based on the knowledge and practice scores (total: 100), the participants were divided into three groups of poor/low (0-33), moderate (33-67), and good (67-100). A 5-point Likert scale was used to score the attitudes of the subjects. Based on their scores (out of 100), the participants were divided into three groups, namely positive (67-100), neutral (33-67), and negative (0-33) attitudes.

The inclusion criteria consisted of Iranian nationality, residency in Mashhad, physical mental and psychological health, ability to understand and answer questions in Persian, and referral to healthcare centers. On the other hand, the exclusion criteria included employment in the healthcare system as well as a history of mental illness (With long-term hospitalization or treatment), using mental health medications (Such as imipramine, diazepam, phenobarbital, fluoxetine, haloperidol, and chlordiazepoxide), and breast cancer. The collected data were analyzed in SPSS software (version 19) using descriptive statistics, including mean, standard deviation, frequency, and percentage as well as Pearson's correlation coefficient and linear regression. A p-value of less than 0.05 was considered statistically significant. Linear regression analysis was used to investigate the predictive effects of contextual variables on the knowledge, attitude, and practice of the subjects.

Results

The mean value of the participants' age was reported as 33.5 ± 10.3 years. The study population consisted of 303 (74.6%) married subjects, 127 (31.3%) graduate women, 221

(54.4%) housewives, 191 (61.8%) cases with self-employed husbands, and 368 (90.6%) individuals with no family history of breast cancer (Table 1).

Table 1. Frequency distribution of study population regarding demographic characteristics

Variable	N (%)
Marital status	
Single	91 (22.4)
Married	303 (74.6)
Divorced	12 (3.0)
Education level	
Junior school	113 (27.8)
High school	127 (31.3)
Associate degree	31 (7.6)
Undergraduate degree	98 (24.2)
Graduate degree or higher	37 (9.1)
Occupation	
Employed	157 (38.7)
Housewife	221 (54.5)
Retired teachers	1 (0.2)
Student	26 (6.4)
Retired	1 (0.2)
Family history of breast cancer	
Yes	38 (9.4)
No	368 (90.6)
History of breastfeeding	
Yes	41 (10.1)
No	365 (89.9)
History of breast self-examination	
Yes	18 (4.4)
No	388 (95.6)

The mean values of knowledge, attitude, and practice were reported as 28.7 ± 20.7 , 50.5 ± 13.8 , and 40.7 ± 21.0 , respectively. In total, 49.1%, 7.9%, and 29.1% of the subjects had inadequate

knowledge, negative attitudes, and poor practice regarding breast cancer screening behaviors, respectively (Table 2).

Table 2. Frequency of investigated variables in study population

Variable	0-33 scores	33-67 scores	67-100 scores
	N (%)	N (%)	N (%)
Knowledge	165 (49.1)	163 (48.5)	8 (2.4)
Attitude	32 (7.9)	331 (81.7)	42 (10.4)
Practice	112 (29.1)	243 (63.1)	30 (7.8)

The results of Pearson's correlation coefficient revealed that practice had a significant relationship with the scores of knowledge ($r=0.20$; $P=0.04$) and attitude ($r=0.35$; $P=0.03$). Moreover, the findings of

regression analysis showed that age ($P<0.001$) and education ($P=0.016$) had a significant positive effect on the awareness level of the subjects (Table 3).

Table 3. Results of regression analysis of contextual variables and knowledge in study population

Variable	Coefficient	Standard error	Standardized coefficient	t-statistic	P-value
Constant value	7.393	4.677		1.581	0.115
Age	0.447	0.108	0.224	4.141	<0.001
Marital status (Reference category: Single)					
Married	-2.392	2.727	-0.050	-0.877	0.381
Divorced	4.684	6.190	0.038	0.757	0.450
Educational level (Reference category: Junior school)					
High school	6.265	2.592	0.141	2.417	0.016
Associate degree	8.325	4.064	0.107	2.048	0.041
Undergraduate degree	15.871	2.927	0.329	5.423	0.001<
Graduate degree or higher	13.038	4.102	0.182	3.178	0.002
Occupation (Reference category: Employed)					
Housewife	-0.764	2.398	-0.018	-0.318	0.750
Retired teacher	5.463	19.714	0.013	0.277	0.782
Student	1.885	4.578	0.022	0.412	0.681
Retired	-27.342	19.877	-0.066	-1.376	0.170
Family history of breast cancer	1.615	3.352	0.023	0.482	0.630
Breastfeeding	4.083	3.330	0.060	1.226	0.221
Touching or pressing breasts	4.759	4.757	0.047	1.000	0.318

Furthermore, the results of the regression analysis of contextual variables and attitude in

the subjects indicated that none of the contextual variables had a significant effect on the attitudes of the participants (Table 4).

Table 4. Results of regression analysis of contextual variables and attitude in study population

Variable	Coefficient	Standard error	Standardized coefficient	t-statistic	P-value
Constant value	48.933	3.323		14.725	<0.001
Age	0.032	0.077	0.024	0.423	0.673
Marital status (Reference category: Single)					
Married	1.558	1.937	0.049	0.804	0.422
Divorced	-1.607	4.398	-0.020	-0.365	0.715
Educational level (Reference category: Junior school)					
High school	0.575	1.842	0.019	0.312	0.755
Associate degree	0.247	2.888	0.005	0.086	0.932
Undergraduate degree	-0.477	2.079	-0.015	-0.229	0.819
Graduate degree or higher	-0.585	2.915	-0.012	-0.201	0.841
Occupation (Reference category: Employed)					
Housewife	-1.377	1.704	-0.050	-0.808	0.419
Retired teacher	26.046	14.006	0.094	1.860	0.064
Student	0.258	3.252	0.005	0.079	0.937
Retired	1.027	14.122	0.004	0.073	0.942
Family history of breast cancer	3.505	2.381	0.074	1.472	0.142
Breastfeeding	-2.349	2.366	-0.051	-0.993	0.321
Touching or pressing breasts	-0.975	3.380	-0.015	-0.289	0.773

However, the variables of a family history of breast cancer and practice were reported with a

significant positive effect on the attitudes of the women (Table 5).

Table 5. Results of regression analysis of contextual variables and practice in study population

Variable	Coefficient	Standard error	Standardized coefficient	t-statistic	P-value
Constant value	47.643	5.061		9.414	0.001<
Age	-0.195	0.117	-0.096	-1.671	0.095
Marital status (Reference category: Single)					
Married	4.787	2.950	0.099	1.623	0.105
Divorced	-1.622	6.698	-0.013	-0.242	0.809
Educational Level (Reference category: Junior School)					
High school	-2.792	2.805	-0.062	-0.996	0.320
Associate degree	-3.805	4.397	-0.048	-0.865	0.387
Undergraduate degree	-2.183	3.167	-0.044	-0.689	0.491
Graduate degree or higher	-2.615	4.439	-0.036	-0.589	0.556
Occupation (Reference category: Employed)					
Housewife	-2.718	2.595	-0.064	-1.047	0.296
Retired teacher	18.421	21.330	0.043	0.864	0.388
Student	-10.885	4.953	-0.127	-2.197	0.029
Retired	-12.159	21.507	-0.029	-0.565	0.572
Family history of breast cancer	0.502	3.627	0.007	0.138	0.039
Breastfeeding	0.771	3.603	0.011	0.214	0.831
Touching or pressing breasts	0.532	5.147	0.005	0.103	0.918

Discussion

The present study aimed to investigate the knowledge, attitude, and practice of women in reproductive age regarding breast screening behaviors. Screening is a test performed on the asymptomatic population to identify individuals before the incidence of a disease or those with suspicious symptoms. According to the literature, one-third of cancers can be completely cured by timely diagnosis and treatment. With a comprehensive cancer control program, a significant number of patients can be treated or live longer. However, without early diagnosis, there will be an increase in treatment costs, no effective consumption of resources, and increasing need for healthcare support services (22).

The results of this study showed that in spite of universal recommendations for breast screening, the levels of knowledge, attitude, and practice of women in this regard are not satisfactory. Moreover, 49% and 48% of the subjects in this study were reported with poor knowledge and moderate awareness of breast self-examination. In addition, according to the

results of different studies conducted by Bouya et al. on the early diagnostic techniques of breast cancer, the awareness of Iranian women in this regard was within the range of 4.5-45% (23), which is consistent with the findings of the present study.

According to the results of a study performed by Majidi et al. (2017), 50% of Iranian women were unaware of breast cancer risk factors and screening tests. Moreover, although mammography is one of the most valid diagnostic methods of breast cancer, the majority of women considered breast self-examination as one of the most important standard tests in this regard (24). Similarly, the findings of another study performed by Üçüncü et al. revealed that 71% of Turkish women reported self-examination as the first method for the diagnosis of breast cancer (25). In total, 81% and about 8% of the participants in the present study had moderate and negative levels of attitude toward breast self-examination, respectively. Shiryazdi et al. investigated the attitudes of women toward the screening methods of breast cancer and reported a

moderate level in this regard (26), which is in line with the results of the present study.

In the present study, the level of participants' practice was reported as undesirable, since 29% and 63% of women had poor and moderate levels in this regard. Based on the results of a study conducted by Shir Yazdi et al., 65.8% of women had poor levels of practice regarding breast self-examination, which is in line with the results of the present study (26). Moreover, the findings of another study conducted by Dafei et al. on women in Yazd, Iran, indicated their level of practice as moderate in terms of breast self-examination (27). Üçüncü et al. reported that in Turkey, only 16.3% of women performed regular self-examinations, and 24.3% of them visited a physician for breast examination in the past 2 years (25).

Badakhsh et al. in 2018 systematically reviewed the attitudes and practices of Iranian women regarding the early diagnostic techniques of breast cancer. The obtained results showed that 47.6% of the subjects had a positive attitude toward breast cancer screening techniques. Moreover, 2.6-86.7% of women performed breast self-examination, and only 21.9% of them had a good level of practice regarding breast cancer screening with regular self-examination (28). However, the results of the aforementioned study are not in line with the findings of the present study. This inconsistency is due to the fact that the abovementioned study is a systematic review performed on breast cancer screening in Iran, while the present study is a cross-sectional study. Moreover, most of the studies investigated by Badakhsh et al. were conducted in the provinces with high incidence rates of breast cancer according to a study by Ahmadi et al. Furthermore, only a limited number of studies (out of 21) investigated by Badakhsh et al. were performed in Tehran (n=5), Isfahan (n=2), and Mazandaran (n=2), Iran.

In general, the results of various studies indicated that the levels of knowledge, attitude, and practice of Iranian women are inadequate, moderate, and poor to moderate. No standard tool was used to evaluate the results of studies performed on the knowledge, attitude, and practice of women in terms of breast screening methods, which could be perhaps one of the

reasons for different findings. In addition, the age range of the participants in each study was also different from those reported for other studies. The subjects in studies conducted by Bouya et al. (23), Dafei et al. (27), and Shir Yazdi et al. (26) and Üçüncü et al. (25) were within the age ranges of 15-75, 16-58, and over 20 years, respectively. This finding leads to difficulty in the comparison of variables, such as awareness, in different studies, since individuals might perform cancer screening at an older age, not younger ages.

On the other hand, the priorities of universities in different provinces and cities could also differ since the incidence rates of breast cancer are higher in some provinces of Iran than those reported for others. According to the results of a study performed by Ahmadi et al. in 2018, breast cancer was more prevalent in Mazandaran, Alborz, Tehran, Markazi, and Isfahan provinces in Iran (29). For example, in one province with a higher incidence rate of breast cancer, numerous educational programs were designed and implemented for the prevention of breast cancer.

In addition, educational programs are easier to run in smaller cities; however, in metropolises due to the large population, different ethnicities, cultures, and socioeconomic classes, a variety of educational methods should be used to raise awareness. Furthermore, if the breast cancer education and screening methods are mainly provided by healthcare centers, they should also give individuals visual training aids, such as posters and educational videos. The reason is that the increase of referrals to healthcare centers, heavy workload of healthcare workers, and limited working hours of centers leave no time for quality education.

The results of other studies in this domain revealed that the knowledge, attitude, and practice regarding breast cancer screening methods are not desirable among women or community health workers. According to the findings of studies conducted by Ansari et al. (30), Babapour et al. (31), and Shahbazi and Heidari (32) in Iran and those reported by other studies in India, Jordan, and Greece, the levels of knowledge, attitude, and practice among

community health workers are moderate and even poor.

The results of a study carried out by Ayoub et al. (2015) indicated the poor level of awareness in 60% of Jordanian pharmacists regarding breast cancer and screening methods (33). Sapountzi-Krepia et al. assessed the knowledge and attitude of female nursing students toward breast self-examination and reported that 58% of them had knowledge of breast self-examination; however, 59.9% of them never performed breast self-examination, and 40% of them practiced it at least once (34). Moreover, Gupta conducted a systematic review on the levels of knowledge and practice of healthcare workers regarding breast self-examination. They reported that the levels of knowledge and practice were within the ranges of 31.4-97% and 15.6-87% in this regard, respectively (35).

Based on the results of the present study, it was demonstrated that practice had a significant correlation with the levels of knowledge and attitude regarding breast cancer screening behaviors in women. According to the findings of a study conducted by Gupta et al., there was a significant relationship between the knowledge of breast cancer screening methods and practice in Indian women (35). The findings of another study carried out by Dafei et al. indicated that practice had a significant relationship with the levels of knowledge and attitude toward preventive behaviors of breast cancer (27).

The similarity between the results of the above-mentioned studies and findings of the present study showed that a positive and favorable attitude in either a hygienic or nonhygienic context can reinforce the practice of a behavior. Moreover, as it is reported, raising awareness can have a similar effect. The results of a study performed by Shir Yazdi et al. confirmed these findings and also revealed that the most important reason for not showing breast cancer preventive behaviors was a lack of awareness among the participants (26).

Based on the obtained results regarding the relationship of demographic characteristics with the knowledge, attitude, and practice of preventive behaviors toward breast cancer in women, it can be concluded that the level of knowledge had a significant relationship with age and educational level. The findings of a

study performed by Shir Yazdi et al. showed a statistically significant relationship between the age and awareness of women regarding breast cancer preventive behaviors (26), which is consistent with the results of the present study.

Moreover, in a study performed by Dafei et al., it was demonstrated that the knowledge of breast screening behaviors has a significant relationship with age and educational level, which is in line with the results of the present study (27). In addition, in a study conducted by Üçüncü et al., a significant relationship was observed between the level of awareness regarding breast screening behaviors and educational level (25). The reason for such a similarity in different studies might be increasing the motivation for breast cancer preventive behaviors with age. Moreover, it can be concluded that with an increase in the educational level and age of women, their knowledge levels of breast cancer screening behaviors also enhances.

According to the obtained results of the present study, it was shown that a family history of breast cancer has a significant correlation with the practice of breast self-examination in women. Üçüncü et al. (25) and Babapour et al. (31) have also reported that the participants with a family history of breast cancer have a desirable level of practice regarding breast self-examination and other breast screening procedures. This is probably because they have realized that simple screening techniques can prevent the problems caused by a disease, such as cancer. According to the theory of planned behavior, it is an individual's attitude and positive or negative evaluation of a behavior, perceived social pressure, and imagined difficulty or easefulness of a behavior that can motivate him/her to display a particular behavior or not (36).

Conclusion

The obtained results of the current study indicated that women had moderate to poor levels of knowledge regarding breast cancer screening behaviors in Mashhad. Furthermore, the attitude toward breast self-examination for the prevention of breast cancer is the reason for moderate to poor levels of practice among the majority of the subjects. Given the increasing prevalence of breast cancer among Iranian

women and necessity of screening for timely diagnosis, it is essential to use appropriate and effective educational methods in this regard.

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Conflicts of interest

Authors declared no conflicts of interest.

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