Original Article

Knowledge, Attitude, and Practice of Women Referring to Yazd City Health Centers regarding Breast Cancer Screening

Seyed Mostafa Shiryazdi[1], Saeed Kargar[1], Ali Reza Farahbod[2], Hosein Neamatzadeh[3], Nasrin Ghasemi[4], Mohaddeseh Aboueian-Jahromi*[5]

[1] Department of General Surgery, Breast Diseases Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

[2] Department of Anesthesiology, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[3] Department of Human Molecular Genetic Engineering, Breast Diseases Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

[4] Department of Medical Genetics, Infertility Research and Treatment Centre, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

[5] Departments of Environmental Health Engineering, Breast Diseases Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

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Abstract

Introduction: The early detection of breast cancer is directly relevant to women's knowledge about breast cancer and its screening methods. The knowledge, attitude, and behavior of women in Yazd have not been examined yet; however breast cancer is one of the priorities of the Ministry of Health. The objective of this study is to examine the knowledge, attitude, and practice of women referring to Yazd city health centers regarding breast cancer screening and its relationship with socio-demographic variables.

Material and Methods: This cross-sectional descriptive study was conducted on 438 women referring to health centers of Yazd city in 2010 by using cluster sampling. A standard questionnaire was designed to elicit socio-demographic data, and knowledge, attitude and practices of these women towards breast cancer. The data were analyzed by statistical tests of SPSS software.

Results: 380 (86.8%) participants had moderate to poor knowledge of breast cancer screening methods. There was a significant relationship between the knowledge and educational level and age. 310 (70.8%) participants had moderate attitude. There was a significant relationship between the attitude, age and job. 288 (65.8%) participants had poor practice. There was a significant relationship between the practice and all variables other than familial history. The main reason (184 (59.4%) participants) for not practicing breast self examination is reported to be "not being aware of the correct practice of breast self-examination". The most important source of information was television.

Conclusion: With respect to the results of this study, we recommend the establishment of institutes and guidelines that will spread information about breast cancer screening.

Keywords: Breast Cancer Screening, Yazd, Knowledge, Attitude, Practice.

* **Corresponding Author; Tel:**: 0351-8113815, **Email**: mohaddesehabooean791@gmail.com

Introduction

Breast cancer is the most common type of cancer among women worldwide and represents 14% of total cancer deaths in females in 2008 [1, 2]. Although breast cancer prevalence in developed countries is more than developing countries, the majority of breast cancer mortality (69%) occurs in developing countries [1]. In Iran, like most countries, it is one of the important causes of death among women. In Iran, its prevalence rate is 21.4 cases in 100000 women without considering age and 17 cases in 10000 with considering age (age-standardized rate).

Breast cancer is most prevalent among 35-44 age group [3, 4]. Tehran, Isfahan, and Yazd had the most incidence rate during 2004-2008, in Iran [2].

Breast cancer is one of the health priorities in Yazd province, because total years lost was 580.6 years in 2006 and the resulted burden was twice that of our country, Iran. The mentioned items show the necessity of risk factor findings and prevention [5].

The survival for tumors less than 5 cm is more than 98%, so the researches are focused on early detection [6]. In other words, screening for breast cancer diagnoses the invasive disease in the primary stage [7].

The current recommendations of American Cancer Society for breast cancer early detection are collection of clinical breast examination (CBE), breast self examination (BSE), and mammography [8]. Women should be aware of any changes in their breast and report it promptly [9] and it is possible by doing BSE.

Mammography can decrease breast cancer up to 25% and breast cancer mortality significantly [10]. Having knowledge and generating positive attitude are influential in women's decision to participate in screening programs [11].

Although screening in the form of mammography and/or CBE is strongly recommended for all women without considering background characteristics (like socioeconomic status, race/ethnic, familial history, etc.) for early detection of breast cancer [12], studies show that the prevalence of doing breast cancer screening is low in different parts of Iran like Zahedan, or even Tehran [11].

In Iran, most patients present in advanced stages, although they are younger than patients in western countries [11]. Encouraging patients to have annual mammography and CBE is the most and only important step that physicians can take in order to decrease breast cancer suffering and death [13].

Cultural views, occupational and material problems are some important causes of late referral in many Asian countries including Iran. It can daringly be said that non-existence of a broad and solid network for training

screening methods, and early detection of breast cancer in Iran is an important reason for the lack of general knowledge about breast cancer and its screening [3, 4].

Early detection of breast cancer, optimal time of initial treatment, and increased survival has a direct relationship with women's knowledge about breast cancer and its screening methods [3, 4, 14, 15].

Most previous studies with similar titles in different cities survey specific groups [16-19], that make judgment about knowledge, attitude, and practice of a total society of women complicated. The main objective of this study is to survey knowledge, attitude, and behavior regarding breast cancer screening among women referring to health centers of Yazd city in 2010.

Material and Methods

This cross-sectional study is carried out from March 2010 to June 2010 on 438 women referring to health centers of Yazd city. Yazd city has a population of 550904 comprising 270383 women and 280521 men according to 2011 general census of urban areas. Considering 95% confidence interval, 40% knowledge about screening methods with respect to previous studies and 5% minimum difference, the sample size was determined 438 participants.

The sampling method was cluster from 5 different health centers and the sample size was determined according to the population of the regions (Khatamalanbia 100, Shahid Sadoughi 100, Azadshahr 75, number 2 of Maskan 75, and Akbari 50).

Table 1 shows socio-demographic grouping of the sample. The only including criterion was being over the age of 20 and the only excluding reason was refusal to complete the questionnaire.

After a brief explanation about the way of completing the questionnaire by trained experts, the completed questionnaires were collected. For collecting data, a standard questionnaire was designed. The validity of the questionnaire and its reliability were confirmed by professional experts and Cronbach's Alpha respectively. This questionnaire contains 4 questions about socio-demographic data (age, marital status, educational level, and occupation), 2 questions about history (breast lump or cancer in the individual herself and familial cancer of breast, large intestine, and ovary), 22 questions of knowledge (about symptoms, risk factors, early detection method and time), 10 questions of attitude, and 2 questions of practice (about visiting a doctor for mammography and doing BSE). Also, this questionnaire has 2 five-part and seven-part questions surveying practicing and not practicing BSE in women's opinion. At the end, one question about the importance of informing tools in breast cancer and its screening was given.

Table 1: Frequency distribution of surveyed variables in women referring to health centers of Yazd city

Personality Traits	Variable	Frequency	Percentage (%)
Educational Level	Diplomma and lower than diploma	315	71.9
	Associate and Bachelor	115	26.3
	Master's and Higher	8	1.8
	Total	438	100
Age (Years Old)	21-30	215	49.1
	31-40	155	35.4
	>40	68	15.5
	Total	438	100
Occupation	Housewife	266	60.7
	Women with Jobs Outside the House	112	25.6
	University Student	60	13.7
	Total	438	100
Marital Status	Single	52	11.9
	Married	386	88.1
	Total	438	100
Familial History of Breast Cancer, Colon, and Ovary	Yes	30	6.8
	No	408	93.2
	Total	438	100
History of Breast Lump or Cancer in Individuals Themselves	Yes	18	4.1
	No	420	95.9
	Total	438	100

Scoring ways

For correct answers 1 score and for incorrect and "I don't know" answers 0 score were considered for the 22 questions about knowledge levels. On the basis of total calculated scores, 3 levels as good (17-22), moderate (10-16), and weak (0-9) were considered.

The attitude level determination questions contain 10 five-part questions scored 1 to 5 and

on the basis of calculated total score were categorized into 3 levels as good (40-50), moderate (34-39), and weak (10-33).

The practice level determination questions comprised 2 questions of which the first three-part question was about visiting a doctor for mammography.

For not visiting, 0 score; for visiting irregularly, 1 score; for visiting in regular periods of time, 2 scores were considered. The second question about doing BSE was scored as 0 for never, 1 for 1-6 times in a year, 2 for 7-11 times in a year, and 3 for every month regularly. On the basis of total scores calculated from this part, 3 levels consisting of good (4 & 5), moderate (2 & 3), and weak (0 & 1) were categorized.

Participants who did not practice or practiced BSE were asked to answer a seven-part question about the cause of not doing or a five-part question about the cause of doing, respectively.

Frequency of practicing BSE, referral to a physician or midwife (CBE) and the factors affecting these practices were surveyed. The variables considered for this analysis were comprised of educational level, age, occupation, familial history of cancer, and breast lump or cancer in the individual herself.

Finally, the collected data were analyzed by SPSS and by using Chi-square, ANOVA and t-test. The p-value < 0.05 is considered significant.

Results

Socio-demographic Information of the Studied Subjects:

438 women were surveyed whose personality characteristics are presented in Table 1 indicating that most participants were 21-30 years old, had high school diploma and lower degrees, were housewives, were married and without familial history of breast; colon; or ovary cancer, and without history of lump or breast cancer in the individual herself.

Knowledge about breast cancer screening

Most knowledge questions were "Yes", "No", and "I don’t know" types in three key subjects consisting of signs, risk factors of development, and early detection of breast cancer. In this study, the knowledge level of 380 (86.76%) participants was weak to moderate levels. Mean ± Standard Deviation (SD) of knowledge scores were 10.38 ± 3.84 for diploma and lower than diploma degrees, 11.71 ± 4.62 for associate and bachelor degrees, and 21 ± 1.06 for master’s and higher degrees.

Also it was 10.02 ± 3.66 for the age of 21-30 years, 12.07 ± 4.82 for the age of 31-40 years, and 11.17 ± 4.29 for those older than 40 years. The knowledge level has a significant relationship with educational level and age, but does not have a significant relationship with occupation, familial history of breast cancer, and individual history of breast lump or cancer (ANOVA and T-test).

Attitude about breast cancer screening

92 (21%), 310 (70.8%), and 36 (8.2%) of subjects had weak, moderate, and good attitudes to breast cancer screening methods. In this study, the attitude level of 310 (70.8%) participants was at moderate level. Mean ± SD of attitude scores were 33.59 ± 4.20 for 21-30 years, 34.80 ± 4.67 for 31-40 years, and 33.00 ± 4.91 for older than 40 years. Also, they were 34.66 ± 4.28 for housewives, 33.21 ± 4.21 for women with job outside the house, and 32.00 ± 5.34 for university students. The attitude has a significant relationship with age and occupation, but does not have a significant relationship with educational level, familial history of breast cancer, and individual history of breast lump or cancer.

Practice of breast cancer screening

The trait of women's practice in Table 2 shows that most women [288 (65.8%)] had a weak practice of breast cancer screening. The practice scores are weak for 208 (66%) subjects with diploma and lower than diploma degrees, weak for 80 (69.6%) subjects with associate and bachelor degrees, and good for 8 (100%) with master's and higher degrees. They are weak for 164 (76.3%) of subjects at the age of 21-30 years, 88 (56.8%) of subjects at the age of 31-40 years, and 36 (52.9%) of subjects older than 40 years. Also, they are weak for 160 (60.2%) housewives, 92 (82.1%) subjects with job outside the house, and 36 (60.00%) university students.

But they are good for 10 (57.1%) and 55 (12.7%) subjects with and without, respectively, history of breast lump or cancer in the individuals themselves. The practice has a significant relationship with educational level, age, occupation, individual history of breast lump or cancer but does not have a significant relationship with familial history of breast cancer.

It can be seen that the variable of age has a significant relationship with all the three factors of knowledge, attitude, and practice.

Table 2 shows the knowledge, attitude, and practice scores grouping distribution of women referring to Yazd city health centers in 2010.

Table 2: knowledge, attitude, and practice scores grouping distribution of women referring to Yazd city health centers (2010)

Variable	Variable Grading	Frequency	Percentage (%)
Knowledge	Weak	168	36.36
	Moderate	212	40.48
	Good	58	13.24
	Total	438	100.00
Attitude	Weak	92	21.00
	Moderate	310	20.78
	Good	36	8.22
	Total	438	100.00
Practice	Weak	288	65.75
	Moderate	82	18.72
	Good	68	15.53
	Total	438	100.00

In women's view referring to Yazd city health centers, the most causes of practicing [120 (96.8%) subjects] and not practicing [184 (59.4%) subjects] BSE were "being aware of health status" and "not knowing about practicing BSE correctly".

Frequency distribution of practicing and not practicing BSE is presented in Tables 3 and 4**.**

The information sources for breast cancer and its early detection are: radio; 56 (12.8%), book 47 (10.7%); television; 264 (60.3%), newspaper and magazine; 119 (27.2%), leaflet and pamphlet; 64 (14.6%), friends and relatives; 136 (31.1%), health professional; 102 (23.3%), physician; 136 (31.1%), poster; 24 (5.5%), video film; 24 (5.5%), present training; 48 (11%) of the subjects. In their view, the most important information source was television.

Table 3: Frequency distribution of practicing BSE in women referring to Yazd city health centers (2010)

Reasons for Practicing BSE	Variable	Frequency	Percentage (%)
Being Free of Charge	agree	108	87.1
	disagree	12	9.7
	No opinion	4	3.2
	Total	124	100
Disease Prevention Because of Early detection	agree	112	90.3
	disagree	11	9
	No opinion	1	0.7
	Total	124	100
Being Convenient and Simple	agree	115	93.5
	disagree	4	3.2
	No opinion	4	3.2
	Total	124	100
Being Aware of Health Status	agree	120	96.8
	disagree	2	1.6
	No opinion	2	1.6
	Total	124	100

Table 4: Frequency distribution of not practicing BSE in women referring to Yazd city health centers (2010)

Reasons for Practicing BSE	Variable	Frequency	Percentage (%)
Being Free of Charge	agree	108	87.1
	disagree	12	9.7
	No opinion	4	3.2
	Total	124	100
Disease Prevention Because of Early Detection	agree	112	90.3
	disagree	11	9
	No opinion	1	0.7
	Total	124	100
Being Convenient and Simple	agree	115	93.5
	disagree	4	3.2
	No opinion	4	3.2
	Total	124	100
Being Aware of Health Status	agree	120	96.8
	disagree	2	1.6
	No opinion	2	1.6
	Total	124	100

Discussion

According to the results of this study, knowledge level was weak to moderate, women's attitude was moderate, and practice level was weak. The most important reasons for practicing and not practicing BSE were "being aware of health status" and "not knowing about practicing BSE correctly", respectively. Also, the most important information source was television. The knowledge level of participants in this study at weak to moderate levels is similar to those of studies performed in Iran and other countries.

In another study on women teachers of Yazd city by Mazloomi et al. their knowledge level was assessed at moderate level [20]. Parsa et al. found that knowledge and perception among 234 women referring to Hamadan city health centers is at moderate level [18]. Haghighi et al. showed that women teachers of Birjand city have a moderate level of knowledge [21]. Dandash et al. reported that the knowledge of women teachers in Saudi Arabia about breast cancer and its screening technique is insufficient [22]. In Sanandaj, most women, referring to health centers, have a weak

knowledge level about breast cancer and the screening method [23]. In Tehran, 61% of respondents stated that they knew about breast cancer screening programs [24]. Okobia et al. stated that overall, the knowledge level of Nigerian women is low [25]. Vahabi in her study with limited sample size of 50 subjects of Iranian women who immigrated to Toronto, Canada showed that more than 75% of them had a low knowledge level about breast cancer and its screening methods [19]. The knowledge level of Iranian women about breast cancer is low in another study on 21 women with high risk of cancer and 10 women with familial history of breast cancer (the sum total, 31 women). The previous study reported that Iranian women are very interested in individual health, but do not have enough knowledge about it. Totally, the Asian women's knowledge is low [17].

A study on women university students from one of Malaysia's universities reports that their knowledge level is insufficient. Another study on 336 professionals (physicians, nurses, etc.) in Aga Khan Hospital Karachi shows that more than 75% of them have a good knowledge level. Of course, these results can be interpreted by their specialist education [16].

Okobia et al. stated that women of suburban Nigeria have a weak knowledge level about breast cancer [25]. Grunfeld et al. showed that the population of England has a low knowledge level about breast cancer development risk factors and symptoms [26]. So this low knowledge level is not specific to developing countries.

In our study, knowledge level has a significant relationship with educational level and age, but does not have a significant relationship with occupation, familial history of breast cancer, and individual history of breast lump or cancer. In Sanandaj, there was a weak positive correlation between the pregnancy numbers and knowledge about breast cancer [23]. Haghighi et al. showed the teacher women's knowledge has a significant relationship with educational level only and does not have a significant relationship with age and other variables [21]. In Okobia's study, the Nigerian women's knowledge had a significant relationship with educational level and occupation, but did not have a significant relationship with age, marital status, and religion [25].

Grunfeld et al. showed that older women had a poorer knowledge level of risk factors of breast cancer and women with lower socioeconomic level had a lower knowledge level. In this article, it is mentioned that older women had a poorer knowledge level of risk factors of developing breast cancer in Australia and USA. Older women attribute non-lump breast symptoms to the ageing process. So they think that the warning symptom of breast cancer is not important [26]. In a study by Dandash et al. increasing income and age has a relationship with increasing knowledge among women teachers of Saudi Arabia [22]. It can be seen that educational level is the main factor of

the subject's knowledge about breast cancer and difference in other variables may be due to different surveyed subjects. For example, Haghighi et al. surveyed only the teachers and not the women citizens.

In our study, the women's attitude level is moderate (70.8%). It has a significant relationship with age and occupation, but does not have a significant relationship with educational level, familial history of breast cancer, and individual history of breast lump or cancer. Nafissi et al. in their study with a sample size of 650 subjects, state that Iranian women have a correct perception of breast cancer early detection and surgery at initial stages (70.6%) and also the attitude has a significant relationship with educational level [17]. Haghighi et al. show that women teachers' attitude is moderate and perceived severity has a relationship with marital status in Birjand city [21]. Banaeian et al. report that the attitude of women referring to health care centers in Boroujen is moderate and has a significant relationship with socioeconomic class [27]. In Sanandaj, 55% and 31.9% of participants have a weak and moderate attitude towards breast cancer and breast cancer screening methods [23]. In Qatar, less than half of Arab women believe that breast cancer is preventable [28]. Most studies, in Iran and outside of Iran, report that women's attitude of cancer is positive [25, 27, 29].

In our study, the women's practice is weak (65.8%). In another study on 320 women in Hamadan city, 75% of the participants did not practice BSE. In a study by Godazandeh et al. only 17.1% of the participants practiced BSE monthly, 82.6% of them never went to a doctor, and 47.3% of them had done mammography once during the previous two years [30]. In Sanandaj, more than half of the participants (52.6%) never examined their breast and 95.5% of them did not have or did not intend to have mammography [23]. In Tehran, only 17% said they did BSE regularly [24]. The study on women teachers of Saudi Arabia by Dandash et al. shows that 67.6% of the total population never practiced BSE [22]. The study by Okobia et al. shows that practicing BSE is at a low level, in other words, only 432 (43.2%) subjects claim to do it in the last year [25]. In Jordan, a few women do screening tests with the aim of early detection [31]. In our study, the practice has a significant relationship with all variables except familial history of breast cancer ($P \leq 0.05$). For example, women with breast lump or cancer history in the individuals themselves have a better practice (a significant relationship, $P < 0.005$) and these subjects do not necessarily have a higher knowledge and attitude level than the other subjects (No significant relationship, $P > 0.05$). With respect to the mentioned results [17, 21, 27, 29, 32], teachers and health professionals are often familiar with BSE methods but do not practice it because of other reasons. One explanation for this gap between knowledge and practice could be the fact that breast cancer screening is not a social norm. Participants in every screening program need both knowledge and belief that screening

is useful [1]. In Tehran, doing BSE has a significant relationship with all variables (age, marital status, educational level and even knowledge about breast cancer and screening method) except individual and familial history of breast problems [24].

The study of Dandash et al. in female teachers of Saudi Arabia shows that the following participants were significantly more likely to have done BSE in the last month: unmarried women, women who knew a non-relative breast cancer patient, women who had a better knowledge of breast cancer, and women who were 40 years old or older [22]. Another study on 266064 women workers at a cotton mill shows that after ten-year follow-up, any positive results in mortality decreasing from breast cancer were not observed [33]. Okobia et al showed that practicing BSE has a significant relationship with educational level and higher knowledge score, but does not have a significant relationship with age, religion, and marital status.

In the mentioned study, educational level appears to be the main influential factor on knowledge level and on healthy behavior [25].

Nafissi et al. state that only 12.9% of participants practice BSE monthly. In a recent study, practicing BSE & CBE and educational level have a significant relationship with the knowledge and attitude. Also, CBE has a significant relationship with age, marital status, and educational level [17].

In USA, more than 30% of total women practice BSE regularly. It is mentioned that there is a significant relationship between age and BSE in our study. The results show that the weakest score of practicing BSE is in the 21-30 age group (76.3% of subjects in the 21-30 age group are weak). It seems that younger women wrongly think that breast cancer is especially for old ages. Thinking like this is observed in other studies [17, 18, 34]. In Qatar, less than one third of women participate in breast cancer screening activities [35].

In our study, the main reason for not practicing BSE among women who do not practice this test is "not being aware of the correct procedure of practicing BSE". The other studies in Iran and other countries report "not being aware of the correct procedure" and "the proper time of practicing BSE" are the important reasons. In Tehran, "not knowing the procedure of BSE" was the main reason for not practicing BSE [24]. Nafissi et al. in their study on women referring to clinic for complaints other than breast, state that the main reason (41.6%) for not considering BSE is "forgetfulness" [17]. Haghighi et al. declare that the most frequent reasons for not practicing BSE are "not having a problem in breast" (16.5%) and "I do not know" (16.5%). The main reason for not practicing BSE is "not being familiar with screening methods" in the study of Khanji et al. and "fear of finding lump and having cancer" in the study of Karimi et al. [21]. Banaeian et al. declare that the most frequent reasons for not practicing BSE among

women referring to Boroujen health centers are "I do not know" and "I do not have a problem in breast" [27]. Khani et al. state that the reason for not practicing it among health professionals in the south bank of the Caspian Sea is "forgetfulness" (311 (43.5%)) and "not knowing BSE technique" (210 (43.5%)) [32]. Khaleghnezhad et al. declare that the reasons for not practicing it among female teachers in Tehran are " I do not have a problem in breast" (20 subjects) and "forgetfulness" (17 subjects) [29]. Anyway, the main reason for not practicing it among women referring to health centers is often "not being aware of the correct practicing technique".

Okobia et al. mention the main reason for not practicing BSE is "not having any problem in breast" among suburban Nigerian women [25] which are inconsistent with our results. This difference can be because of different statistical samples. Furthermore, "not being familiar with correct technique of practicing BSE" is not a choice among the not practicing reasons.

In Qatar, the main reason is the lack of doctor's recommendation, fear, and shyness [28]. It seems that these reasons are suitable for not doing BSE in Iran, too. But our questionnaire does not have these choices.

The main reasons for practicing BSE among women is "simplicity", "being free of charge", and also "being aware of health status". In Jordan, the main reason for doing mammography was the physician's influence [31].

In our study, television is the most important source of information in women's view. In Tehran, most women state that the electronic media (television 34% and radio 14%) are their source of information [24]. Okobia et al. report that the most significant source (31%) is television in Niger [25]. But Dandash et al. declare that television (68.2%) is the second source of information after printed media (83.2%) [22]. These differences can be different media politics in various countries.

A pamphlet has a limited and short time effect on the participants' knowledge. So many health experts believe that pamphlets cannot be read by the goal group and television and radio are better media for achieving more contacts. On the other hand, the advantages of these media decrease in the rural society with limited achievement. The existing information shows that participants prefer to receive information related to cancer from physicians and health centers [25].

The large sample size is a strong point of this research and with respect to performed studies in different cities of Iran, it is recommended to carry out a meta-analysis study on knowledge, attitude, and practice of women referring to health centers in different cities and their relationships with socio-demographic information.

Conclusion

The results of the present study show that women referring to Yazd city health centers have a moderate to poor knowledge of breast cancer screening and poor practice. In addition age is relevant significantly with knowledge, attitude, and practice. We recommend the establishment of institutes and guidelines that will spread culturally appropriate information about breast cancer screening.

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References

1. Nojomi M, Namiranian N, Myers RE, et al. Factors Associated with Breast Cancer Screening Decision Stage among Women in Tehran, Iran. Int J Prev Med. 2014;5(2):196–202.
2. Jafari-Koshki T, Schmid VJ, Mahaki B. Trends of breast cancer incidence in Iran During 2004-2008: A Bayesian space-time model. Asian Pac J Cancer Prev. 2014;15:1557-61.
3. Harirchi I, Ebrahimi M, Zamani N, et al. Breast cancer in Iran: a review of 903 case records. Public Health. 2000;114(2):143-5.
4. Jarvandi S, Montazeri A, Harirchi I, et al. Beliefs and behaviours of Iranian teachers toward early detection of breast cancer and breast self-examination. Public Health. 2002;116(4):245-9.
5. Vakili M, Jafarizadeh M, Sadeghian MR, et al. Burden of breast cancer in females of Yazd province, 2006. KAUMS Journal (FEYZ). 2009;13(1):31-6.
6. Gerling GJ, Weissman AM, Thomas GW, et al. Effectiveness of a dynamic breast examination training model to improve clinical breast examination (CBE) skills. Cancer Detect Prev. 2003;27(6):451-6.
7. Bretthauer M, Kalager M. Principles, effectiveness and caveats in screening for cancer. Br J Surg. 2013;100(1):55-65.
8. Madan AK, Aliabadi-Wahle S, Babbo AM, et al. Education of medical students in clinical breast examination during surgical clerkship. The American journal of surgery. 2002;184(6):637-40.
9. Tria TM. Breast cancer screening update. Am Fam Physician. 2013;87(4):274-8.
10. Islam S, Aziz S. Mammography is the most effective method of breast cancer screening. Mymensingh medical journal: MMJ. 2012;21(2):366-71.
11. Nojomi M, Namiranian N, Myers RE, et al. Factors Associated with Breast Cancer Screening Decision Stage among Women in Tehran, Iran. Int J Prev Med. 2014;5(2):196.
12. Sunil T, Hurd T, Deem C, et al. Breast Cancer Knowledge, Attitude and Screening Behaviors Among Hispanics in South Texas Colonias. J Community Health. 2014;39(1):60-71.
13. DeSantis C, Siegel R, Bandi P, et al. Breast cancer statistics, 2011. CA Cancer J Clin. 2011;61(6):408-18.
14. Manassiev N, Whitehead MI. Female reproductive health: Parthenon Publishing Group; 2004.

15. Steward BW KP. World cancer report, World Health Organization Int Agen for Res on Cancer. Lyon IARC Press. 2003:12-8.
16. Kumar S, Imam AM, Manzoor NF, et al. Knowledge, attitude and preventive practices for breast cancer among health care professionals at Aga Khan Hospital Karachi. J Pak Med Assoc. 2009;59(7):474.
17. Nafissi N, Saghafinia M, Motamedi M, et al. A survey of breast cancer knowledge and attitude in Iranian women. J Cancer Res Ther. 2012;8(1):46.
18. Parsa P, Kandiah M, Mohd Zulkefli NA, et al. Knowledge and behavior regarding breast cancer screening among female teachers in Selangor, Malaysia. Asian Pac J Cancer Prev. 2008;9(2):221-7.
19. Vahabi M. Knowledge of breast cancer and screening practices among Iranian immigrant women in Toronto. J Community Health. 2011;36(2):265-73.
20. Mazloomi SS, Zare Joshghani M, Fesil M, et al. Effect rate of health training on knowledge, attitude, and practice of Yazd city guidance schools women teachers about breast cancer. Journal of Birjand University of Medical Sciences (JBUMS). 2006;13(1):9-15.
21. Haghighi F, Portaghali P, Rafaty Javanbakht L, et al. Knowledge, attitude, and practice of female teachers regarding breast cancer screening in Birjand. Modern care j. 2012;9(2):146-55.
22. Dandash KF, Al-Mohaimeed A. Knowledge, attitudes, and practices surrounding breast cancer and screening in female teachers of Buraidah, Saudi Arabia. Int J Health Sci (Qassim). 2007;1(1):61.
23. Behbahani BM, Tehrani TD, Gharibi F. P0228 Knowledge, attitude, and practice of Iranian women towards breast cancer screening methods. Eur J Cancer. 2014;50:e73.
24. Montazeri A, Vahdaninia M, Harirchi I, et al. Breast cancer in Iran: need for greater women awareness of warning signs and effective screening methods. Asia Pac Fam Med. 2008;7(1):6.
25. Okobia MN, Bunker CH, Okonofua FE, et al. Knowledge, attitude and practice of Nigerian women towards breast cancer: a cross-sectional study. World J Surg Oncol. 2006;4(1):11.
26. Grunfeld E, Ramirez A, Hunter M, et al. Women's knowledge and beliefs regarding breast cancer. Br J Cancer. 2002;86(9):1373-8.
27. Banaeian S, Kazemian A, Kheiri S. Knowledge, attitude and practice about breast cancer screening and related factors among women referred to health care centers in Boroujen in 2005. J Shahrekord Univ Med Sci. 2006;7(4):28-34.
28. Donnelly TT, Al Khater A-H, Al-Bader SB, et al. Beliefs and attitudes about breast cancer and screening practices among Arab women living in Qatar: a cross-sectional study. BMC Womens Health. 2013;13(1):49.
29. Khalegnejad Tabari N, Khalegnejad Tabari A. The assessment of knowledge, attitude and behavior towards breast cancer screening methods among female teachers in Tehran. Iranian Journal of Surgery. 2008;16(1).
30. Godazandeh GA, Khani H, Khalilian AR, et al. Knowledge and practice of above 15 years old females towards breast cancer prevention in Sari township, 2004. J Mazandaran Univ Med Sci. 2006;16(52):64-74.
31. Othman A, Ahram M, Al-Tarawneh MR, et al. Knowledge, Attitudes and Practices of Breast Cancer Screening Among Women in Jordan. Health Care Women Int. 2014(just-accepted):00-.

32. Khani H, Moslemizadeh N, Montazeri A, et al. Knowlege, Attitude, and behavior level regarding to breast cancer prevention among health professional in south bank of Khazar. Iranian Journal of Breast Disease. 2008;1(2):28-37.
33. Ravichandran K, Al-Hamdan NA, Mohamed G. Knowledge, attitude, and behavior among Saudis toward cancer preventive practice. J Family Community Med. 2011;18(3):135.
34. Kadivar M, Joolaee S, Joulaee A, et al. Breast Cancer Knowledge, Attitudes and Screening Behaviors in Two Groups of Iranian Women: Physicians and Non-health Care Personnel. J Cancer Educ. 2012;27(4):770-3.
35. Donnelly TT, Al Khater A-H, Al-Bader SB, et al. Breast cancer screening among Arabic women living in the State of Qatar: Awareness, knowledge, and participation in screening activities. Avicenna. 2012(2012).