

## RESEARCH ARTICLE

# Effects of Breast Self-Examination Consultation Based on the Health Belief Model on Knowledge and Performance of Iranian Women Aged Over 40 Years

Parisa Parsa<sup>1</sup>, Ameneh Mirmohammadi<sup>1\*</sup>, Batoul Khodakarami<sup>1</sup>, Godratalah Roshanaiee<sup>2</sup>, Farzaneh Soltani<sup>1</sup>

## Abstract

**Background:** Breast cancer is the most prevalent malignancy in women worldwide; lack of awareness of symptoms and delay on diagnosis of breast cancer are the main causes of mortality among women. This study was conducted with the purpose of assessing the effect of educational consulting for breast self-examination (BSE) based on the health belief model (HBM) on the knowledge and performance of women over 40 years attending health care centers in Hamadan, Iran. **Materials and Methods:** In this quasi-experimental study, eligible women admitted to health centers in Hamadan city in 2015 were randomly assigned to intervention and control groups (n=75 in each group). The intervention group received 4 weekly sessions of breast cancer screening consulting based on the HBM. Control group received only routine care. Knowledge, HBM constructs, and BSE practice were compared between the groups before, immediately after and three months after the consultation. **Results:** Before the intervention, no significant differences were observed in knowledge, health belief and practice between two groups. However, after the intervention a significant difference was observed between two groups in mean scores of perceived benefits, perceived barriers, self-efficacy and the health motivations (p <0.05). Significant differences were also observed in terms of knowledge and BSE practice (p <0.01). **Conclusions:** The results indicate the importance of consultation on knowledge and beliefs to improve BSE performance and prevention of breast cancer in Iranian women.

**Keywords:** Breast cancer - screening - self- examination - health belief model - Iranian women

*Asian Pac J Cancer Prev*, 17 (8), 3849-3854

## Introduction

Breast cancer is the most common cancer in women and the main cause of women dying from cancer. This cancer alone allocates 29% of all new cancers of women to itself (Torre et al., 2015; Siegel et al., 2015). In Iran, the rate of breast cancer incidence is 22 per 100,000 women 15-84 years (Mousavi et al., 2007). The studies in this area confirm that the best ways to save the lives of women is to improve women's awareness symptoms and the screening methods of breast cancer (Montazeri et al., 2008).

Most breast cancer are detected by own patient, 41% are diagnosed by imaging from the breast; and just 11% of them are diagnosed by the physical examination by the physician (Novak, 2007). The breast cancer in the women that do the breast self-examination regularly, is diagnosed in the earlier stages in comparison with the women that do not do the breast self-examination. Although the usefulness of breast self-examination depends on the

quality of examination (Clarke and Savage, 1999).

Based on the available statistic, the age of breast cancer occurrence in the developing countries including Iran is about one decade less than the developed countries; and more than 30% of patients are under 40 years counterpoised Western countries that only 6% of patients are under 40 years (Harirchi et al., 2000; 2004; Parsa et al., 2006; Nkiani et al., 2007; Jemal et al., 2010).

The evidence in Iran showed that BSE is done rarely by Iranian women and there is no any scheduled program for training the BSE (Mousavi et al., 2009). According to the conducted study by Noorouzi et al. (2011), only 7.6% of participants in the study had done BSE regularly (Noorouzi et al., 2011). In addition, a study conducted in Saudi Arabia showed that 41.6% of women did BSE 1-12 times per year with the average of 4.1 (6.3) and only 21.1% of women do BSE regularly (Abolfotouh et al., 2015).

Avci (2008) in a Muslim community in Turkey found that only 4.3% of participates did BSE on a regular

<sup>1</sup>Department of Mother and Child Health, Faculty of Nursing and Midwifery, <sup>2</sup>Department Statistics, Faculty of Public Health, Hamadan University of Medicine and Health Sciences, Hamadan, Iran \*For correspondence: pparsa2003@yahoo.com

basis. In this line, Rayeisi et al. (2011) investigated the knowledge, attitude and performance of staffs in health care center in Esfahan regarding BSE. The results of this study showed that the level of knowledge was good and the most of them had positive attitude but only 39.5% of them did BSE regularly (Rayeisi et al., 2011).

With regards to the increasing trend of breast cancer in Iran and detect of breast cancer in the advanced stages, it seems necessary to reflect and solve this problem with efficient educational intervention based on the suitable patterns to reduce the mortality of breast cancer (Azaiza and Cohen, 2006). To plan effective intervention programs to improve breast cancer screening, many researchers have attempted to find out the factors that influence women's practice of breast cancer screening. The Health Belief Model (HBM) has been used in many studies as the theoretical framework for understanding breast cancer early detection behaviors (Barron et al., 1997; Foxall et al., 1998; Choudhry et al., 1998). Champion (1993) developed a tool on Health Belief Model to measure perceived susceptibility, seriousness, benefits, barriers, health motivation, and confidence as they relate to breast cancer screening. This model has been tested in various settings and found to be a valid and reliable tool for measuring beliefs about breast cancer and breast cancer screening (Petro-Nustas et al., 2002; Secginli and Nahcivan, 2006; Champion et al., 1997).

Currently, there are several ongoing programs to raise awareness of and to assist early detection and presentation with breast cancer. The Iranian Cancer Registry and other agencies are actively trying to increase awareness regarding breast cancer and screening methods among Iranian women. Such programs include the distribution of printed materials, setting up of private breast cancer help-lines, and educational programs for women above 40 years. The BSE is as the simplest, cheapest and most accessible way to diagnose the breast cancer in the earlier stages. Training and consulting to the women in the line with persuasion and increasing their skill in performing the self-examination are important steps toward detecting the breast cancer in the earlier stages and reduction of mortality of women. Accordingly, this study was conducted with the purpose of assessing the effect of educational consultation based on the health belief model on BSE performance among women in Hamadan city, Iran.

## Materials and Methods

This study was a semi-experimental research. The studied population was the women referred to the health centers in Hamadan city, Iran. The criterion of participating in this study was to be over 40 years. The criteria of excluding the study including: having the history of breast malignant diseases, history of first-degree relatives (mother, sister or daughter) with breast cancer, pregnancy, breastfeeding, relocation during the studding, absence more than one session in the counseling sessions.

To determine the number of case study the article written by Hatafnia et al. (2010) and the following relation were used:

$$n = \frac{(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta})^2 (\sigma_1^2 + \sigma_2^2)}{d^2}$$

And 5% type one error and  $d=3$ ,  $\sigma_1^2 = 6.5$  and  $\sigma_2^2 = 5.6$  were used; that since the ability of test was obtained 90 % of the number of required cases were 65 . By considering 15% reduction of case study, the number of case study obtained equal to 80 people. Accordingly, in this study 80 people in the test group and 80 people in the control group were studied.

The studied health care centers were chosen in form of cluster in two steps. In the first step, from each of 4 districts of Hamadan, 2 health care centers were chosen randomly and based on the received list from the health care centers of Hamadan that totally 8 health care centers were included in the study.

In the next stage, among the available health care centers in the each region, a health care center was allocated to the test group and another one was allocated to the control group randomly. Then in each health care center, a briefing was held regarding the trend of implementation of program for the health volunteers and the health experts. The case studies were chosen randomly among the women over 40 years of each center; that in each health care center 20 people were selected for participation in the study. Then it has been requested from the experts and volunteers of health to invite the eligible women for holding in a briefing in the health care center.

At the same meeting, consent was obtained from women to participate in the program. The tools of gathering the data in this study were questionnaire and check list that in both groups were filled before, immediately and three months after educational consultation.

The questionnaire included 5 parts: the first part included 20 questions. These questions were in the field of individual demographic information including name, family, age, education level, marital status, marriage age, the number of pregnancy, the number of abortion, the number of children, age of individual in the first pregnancy, age of menarche, age of menopause and the questions related to investigation of risk factor on the occurrence of breast cancer.

The second part was related to the individual knowledge of breast cancer and the methods of early diagnosis of that. This part included 44 questions that had been raised by Parsa et al. in 2008. The questions included assessing the general information in the field of breast cancer (9 questions), the risk factor of breast cancer occurrence (16 questions), the symptoms of breast cancer (7 questions) and the screening methods of breast cancer (12 questions). The response options in these questions was in form of (yes, no, I do not know); and the score of correct response was one and the response of wrong and I do not know was zero. The limitation of scoring was from zero to 44. The reliability of this mean in the study conducted by Parsa et al. (2008) with 0.78 Cronbach's alpha has been confirmed (Parsa et al., 2008).

The third part included 10 questions related to the performance of individual in the field of doing the screening programs of breast cancer screening. In this

part, the individual mentioned the history of doing the screening programs frequency of doing that and the times of doing it; and at the end the reason of not doing these programs was written as well.

The fourth part included the questions drawn up by Champion (1984 and 1993) and it included 63 questions that in this part, the health belief model structures in the field of BSE, the breast clinical examination and mammography were assessed. In this part, the number of questions related to the perceived susceptibility (5 questions), the perceived severity (7 questions), perceived benefits (16 questions), perceived barriers (17 questions), the health motivation (7 questions) and the created ability (11 questions). (Champion 1984; 1993)

The response to the questions related to the perceived susceptibility, the perceived severity, the perceived benefits, the perceived barriers, the health motivation and the created ability, in form of Likert 5 optional from quite agree the score of 5 to quite disagree the score was one. The mode of response to the questions of this part was in form of quite agree, agree, no idea, disagree and quite disagree. The reliability of this mean was approved in the study conducted by Hajian, et al. (2011) in Iran with 70% Cronbach's alpha (Hajian et al., 2011).

At the end, the checklist related to how to do the BSE was filled out before and after educational intervention by the test and control groups. This checklist included 12 questions. In these questions, the method of doing BSE was assessed. These questions were four questions in the observation stage and 8 questions in the stage of touching the breast. Responding to the questions was in the format of three options of yes, no and I don't know; that the score for the answer yes was one and for the responses of no and I don't know the score of zero was considered.

The higher scores show the awareness and the better performance regarding the physical examination. The reliability of this mean in the study conducted by Ghasemi et al. was approved in 2011 with the 0.87 Cronbach's alpha (Ghasemi et al., 2011). For determining the validity of questionnaire and checklist, the viewpoint of 10 people of midwifery and reproductive health experts were used.

The educational consultation meeting for the test group was held weekly for 90 minutes in four sessions. The meeting was held as a group; and the methods of question and answer, the group discussion and distribution of educational pamphlets were used.

The meetings were held by using the GATHER consultancy technique and by using health belief educational model. The GATHER technique includes G (greeting) as respecting to the referrer with the friendly greeting; A (ask) as asking from the volunteer regarding the knowledge, attitude and the reason of tending to attend in the meetings and helping to the volunteer to express her demands, requirements, beliefs and emotions. T (tell) is as explaining about importance of annual examining and following up the meeting the needs and her concerning by considering the position of referee. And giving the required data regarding the considered subject, H (help) helping the volunteer to make appropriate decision and find the best solution, E (Explain) as explaining the matter that is necessary for reaching to the aim and R

(Return) planning for holding the renewed meeting or meeting after referred to the higher centers (Iran Healthy Ministry, 2010).

In the first session, with respect to the knowledge, belief and performance of women regarding the breast cancer the questions were asked (stages of first and second technique of consultancy). The educational plan for perceiving the sensitivity of this disease includes definition of disease, the statistics of breast cancer in the world, the people at high risk, the symptoms of warning the cancer and susceptibility of women for occurrence of breast cancer.

In the second session, it was discussed about the physical and psychological consequences, mortality caused by breast cancer. In this stage, by recognition of the problems caused by cancer, the participants were helped; that by perception of disease intensity to be encouraged for using the screening methods of breast cancer for preventing from its occurrence (the third stage of consulting technique).

In the third session, it was discussed about the methods of earlier diagnosis, the benefits and advantages of them. Then, the individuals that do the screening programs shared their experiences with those who did not do it. In addition, in this session the mode of doing BSE have been trained by using Moulage and slideshows. By explaining about the screening methods of breast cancer, the third stage was continued.

In the fourth session, all the factors that are considered by participants as the barriers of doing screening in the society were expressed (such as lack of time, expense, being painful, harmfulness of X ray and etc.) Then, the ability of participants in doing the BSE was assessed (practically on Moulage).

Training by the indirect method was done by giving an educational booklet including sufficient data regarding breast cancer, the methods of earlier diagnosis and BSE. In this meeting the individuals learned how to do BSE and in case of facing with the problem in the individual examination, where should they refer to their physicians. (the fourth, fifth and sixth stage of consultation technique.)

It is worth mentioning that at the end of each session, the participants could use the consultation services in form of individual and group that was provided by the educational consultant. In these consulting meetings, women could talk strictly confidential with the consultant regarding doing the screening programs of breast cancer; and by helping the consultant found a solution for the problem.

During the study in the control group, no any intervention was made; and the participants of this group just had routine cares of clinic. However, for the ethical considerations, after completion of study, the training booklet was given to them.

The screening educational consultation of breast cancer screening based on the health belief model on the performance of women before starting, immediately and three months after educational consultation was assessed by comparing two groups of test and control. The gathered data was analyzed by using the spss20 software. For analyzing the data, at first by using the descriptive

statistics, it was proceeded to brief the data and then, for comparing the difference of two groups the t-student test and for comparing the difference between before and after the intervention in each group the t-paired test were used. Besides, the GLM REPEATED MEASUREMENT test was used for comparing the changes within each group and between the groups. The significant level of tests was 5%.

**Results**

Due to reduction of case studies in the different stages of study, at the end, 75 people in the test group and 75 people in the control group were participated. According to the results of independent t- test and the Chi-square test for the status of demographic variables such as age and marriage, two groups have same distribution. In addition, the variables of menarche age, the number of abortion, the number of children and having the history of breast disease in two groups has equal distribution. However, the results of Mann-Whitney test for comparing the mode of

education level in the test and control groups shows that the level of education in the control group is significantly higher than test group; that were assessed due to the other studied variables by controlling the education level (Table 1).

Before intervention, the independent t - tests did not show the significant difference before the intervention between two groups of test and control in terms of the main belief variables of study (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-sufficiency, health motivation and doing the screening programs) (Table 2). Therefore, two groups did not have significant difference with each other in terms of mentioned variables in the pre- test stage.

After intervention, there was significant difference between the average of scores, perceived benefits, perceived barriers, self-sufficient, health motivation and doing the screening programs in two groups. However, there was no any significance difference between the average scores of perceived susceptibility and perceived

**Table 1. Comparison of Participant’S Demographic Information**

Individual demographic information		Intervention group	Control group	F	P
Age	Mean (SD)	47.64±7.03	46.60±8.68	0.097	0.422
Education level	Illiterate	11 (7.3%)	8 (3.5%)	0.001	21.29
	Primary	43 (28.7%)	25 (16.7%)		
	Secondary	15 (10.0%)	18 (11.2%)		
	High school	1 (0.7%)	13 (8.7%)		
	Tertiary	6 (4.0 %)	11 (7.3%)		
Marital status	Single	4 (4.5%)	8 (6.10)	0.075	0.681
	Married	71(94.6%)	67 (89.4%)		
History of breast disease	Yes	2(2.7%)	2 (2.7%)	0.075	0.681
	No	73(97.3%)	73 (97.3%)		
Age of menarche	Mean (SD)	58.±1 7.13	22.±1 6.13	1.922	0.818
Number of abortion	Mean (SD)	0.82±1.22	0.36±0.62	8.414	0.004
Number of children	Mean (SD)	4.05±5.04	3.05±1.94	0.381	0.111

**Table 2. Comparison of Mean Rank of Health Belief Model Variables before Starting, Immediately and Three Months After Educational Consultation in Women of the Two Groups**

Structures of HBM	Group	Before intervention	Immediately after intervention	Three months after intervention	F	P
Perceived susceptibility	Intervention	16.79 06±.49	16.56 24±.50	19.57 53±.52	1.747	0.189
	Control	16.80 49±.45	22.03 30±.47	21.66 62±.47		
Perceived severity	Intervention	16.41 23±.63	17.34 65±.66	16.91 56±.67	0.000	0.994
	Control	21.06 07±.67	20.41 62±.65	19.13 81±.65		
Perceived benefits	Intervention	14.42 65±.77	11.96 27±.84	12.39 42±.85	21.36	0.000
	Control	16.11 54±.74	16.43 50±.73	15.60 81±.72		
Perceived barriers	Intervention	19.76 64±.49	14.92 00±.42	15.97 95±.43	8.87	0.003
	Control	16.76 65±.52	20.05 48±.50	18.00 21±.50		
Health motivation	Intervention	18.21 80±.79	12.46 46±.82	12.81 10±.83	9.71	0.002
	Control	12.72 10±.77	13.37 57±.76	12.70 12±.75		
Created ability	Intervention	46 ±21.23.57	16.66 00±.80	15.37 90±.81	47.06	0.000
	Control	20.53 45±.58	20.65 43±.57	20.67 45±.55		

**Table 3. Comparison of Mean Rank Knowledge of Breast Cancer and Methods for BSE before Starting, Immediately and Three Months After Educational Consultation in Women of the Two Groups**

Subject	Group	Before intervention	Immediately after intervention	Three months after intervention	F	P
Knowledge	Intervention	19.35 09±.45	16.59 45±.72	13.76 75±.73	32.09	0.000
	Control	21.78 27±.50	21.63 51±.51	21.53 97±.49		
Method of doing BSE	Intervention	29.22 54±.29	25.32 63±.84	20.67 07±.89	52.84	0.000
	Control	34.08 76±.38	36.25 20±.39	36.91 53±.42		

**Table 4. Comparison of doing BSE before Starting, Immediately and Three Months After Educational Consultation in Women of the Two Groups**

Stages	Group	Yes	No	F	P
Before Intervention	Intervention Control	27 (36.0)	48 (64.0%)	1.348	0.319
		37 (3.49)	38 (50.7%)		
Immediately after Intervention	Intervention Control	58 (77.3%)	17 (22.7%)	14.11	0
		40 (53.3%)	35 (46.7%)		
Three months after intervention	Intervention Control	70 (90.3%)	5 (6.7%)	24.4	0
		41 (5.7%)	34 (45.3%)		

severity in the test group, before and after the study (Table 3).

The results showed that the awareness of breast cancer disease and the mode of doing BSE had significantly increased in test group. (Table 4).

## Discussion

The present study assessed the effect of educational consultation on breast cancer screening based on the health belief model by using the GATHER consultation principles. The common educational methods applied in the health care centers usually are performed without educational model; generally just lead to improvement of awareness. Even if the educational models are used, do not show any strategy for removal of obstacles and problems that are in accordance with the conditions of trainee.

This study showed that using the consultancy principles besides the training based on the health belief model as a method of training the breast cancer screening programs, improvement of behavior by changing the beliefs and attitudes. Moreover, it can consider the requirements of patients; and for removal of obstacles, increasing the ability of self-examination in any special person and suggested consultation can be as a suitable strategy for breast cancer screening in women.

In this study a significant relation has not seen between the final perceived threats and doing the BSE; this finding is in accordance with the results of a study conducted by Aydin, that there was not any relation between the structure of perceived susceptibility and doing the self-examination (Aydin, 2008). In addition, the results of this study is in accordance with the conducted study by Ghorchei (2013) in Iran that based on that there is not any significant relation between high perceived susceptibility with the performance of individual in the field of self-examination and clinical examination (Ghorcheiet al., 2013). However, this result is not accordance with the other studies that in them by increasing the perceived threat and individual performance as well (Petro et al., 2002; Secginli and Nahcivan, 2006). That maybe the reason of using the consultancy principles besides the health belief model because the purpose of consulting is reduction of anxiety and worry and increasing the ability of individual for making decision and dealing with the problems.

In the present study the purpose was introduce the breast cancer as a serious threat in the women's life in the first and second sessions. Considering the received feedbacks from women we found that in the two first sessions the intensity and perceived susceptibility of women have increased; but in the next two sessions

providing the strategies and solutions for dealing with this threat and increasing knowledge and ability of women for self-examination have led to reduction of their fear from the breast cancer. In fact, by increasing their knowledge and ability in self-care, we could reduce women's destructive stress and concern regarding this disease, that lead to changing their behavior and improvement of their performance regarding doing the screening programs of breast cancer. Moreover, in this study there was a significant difference between before and after study in the variable of perceived barriers. So, by training and suitable consultation, a significant reduction in the average score of perceived obstacles was seen.

The results of present study had higher success in comparison with the similar studies based on the different training models due to observing the consultancy principles besides using the Health Belief Model. In this study, the rate of doing BSE from 36% had increased to clinical 93.3%; and also women awareness regarding how to do BSE changed from 29% to 84%. The results is comparable with the findings of Ghasemi et al. (2014) in Iran that, the rate of doing BSE in women of test group was 41.5% and in the control group was 19.8% (Ghasemi et al., 2014).

Based on the study conducted by Raymer et al. (2002) a significant difference was reported between the knowledge before and after the educational intervention for breast cancer (Raymer et al., 2002).

In addition, based on the results of a study conducted by Nourizadeh et al. (2011) in Tabriz, Iran in the intervention group after the intervention, 41.6% of women performed BSE during last year and 8.2% of them have done it regularly (Nourizadeh et al., 2011).

In conclusions, the obtained results of study showed that the breast cancer screening educational program based on the Health Belief Model if be along with a suitable consultation, can lead to reduction of destructive anxiety and stress in the field of breast cancer in the women. Since the stress is as a basic factor for occurrence of breast cancer, making consultation besides the training could raise the knowledge of society in the field of this disease.

In addition, it is probable to specify the barriers and obstacles for conducting the screening programs. therefore, a suitable strategy such as consulting is e suggested to deal with barriers ahead women. It leads to continuation of following up the implementation of the screening programs of breast cancer in the society.

## Acknowledgements

This manuscript extracted from a MS.c thesis in field

of Consultation on Midwifery in Hamadan University of Medical of Science. This study has been registered under the number of 9311286229 dated February 17, 2014. In addition, the clinical trial code of this study is IRCT2015012310426N5. Hereby, the researchers thank all personnel in health care centers for their unsparing and sincere cooperation.

## References

- Abolfotouh MA, Ala'a AB, Mahfouz AA, et al (2015). Using the health belief model to predict breast self-examination among Saudi women. *BMC Public Health*, **23**, 1163.
- Avci IA (2008). Factors associated with breast self-examination practices and beliefs in female workers at a Muslim community. *Eur J Oncol Nurs*, **30**, 127-33.
- Aydin IA (2008). Factors associated with breast self-examination Practice and beliefs in female workers at a Muslim community. *Eur J Oncol Nurs*, **12**, 127-33.
- Azaiza F, Cohen M (2006). Health beliefs and rates of breast cancer screening among Arab women. *J Women's Health*, **1**, 520-30.
- Barron CR, Houfek J F, Foxall MJ (1997). Coping style, health beliefs, and breast self-examination. *Issues Mental Health Nurs*, **18**, 331-50.
- Champion V, Skinner CS, Hui S, et al (2007). The effect of telephone versus print tailoring for mammography adherence. *Patient Educ Counsel*, **65**, 416-23.
- Champion VL (1984). Instrument development for health belief model constructs. *Advances Nurs Science*, **6**, 73-85.
- Champion VL. (1993). Instrument refinement for breast cancer screening behaviors. *Nurs Res*, **42**, 139-43.
- Choudhry UK, Srivastava R, Fitch MI. (1998). Breast cancer detection practices of South Asia women: knowledge, beliefs, and beliefs. *Oncol Nursing Forum*, **25**, 1693-701.
- Clarke VA, Savage SA. (1999). Breast self-examination training: a brief review. *Cancer Nurs*, **22**, 320-6.
- Foxall M. Ethnic differences in breast self-examination practice and health beliefs. *J Advanced Nurs*, **27**, 419-28.
- Ghasemi B, Kievani Z, Usefi M (2011). The effect of breast cancer examination on function among employed women in Shahrkord university. *Nurs Midwifery J*, **3**, 30-6
- Ghasemi B, Keivani Z, Yousefifard M (2014). The effect of breast self-examination training on Knowledge, attitude and function of employee women in Shahrekord universities in 2010. *J Clin Nurs Midwifery*, **3**, 30-6.
- Ghouchaei A, Charkazi A, Razaq Nejad A (2013). Knowledge, practice and perceived threat toward breast cancer in the women living in Gorgan, Iran. *J Res Dev Nurs Midwifery*, **10**, 25-32.
- Hajian S, Vakilian K, Najabadi KM, Hosseini J, Mirzaei HR (2011). Effects of education based on the health belief model on screening behavior in high risk women for breast cancer, Tehran, Iran. *Asian Pac J Cancer Prev*, **12**, 49-54.
- Hatefnia E, Niknami S, Bazargan M, et al (2010). The effect of "theory of planned behavior" based education on promotion of mammography performance in employed women. *J Birjand Univ Med Sci*, **17**, 50-8.
- Harirchi I, Ebrahimi M, Zamani N, Jarvandi S, Montazeri A (2000). Breast cancer in Iran: a review of 903 case records. *Public Health*, **31**, 143-5.
- Harirchi I, Karbakhsh M, Kashefi A, Momtahan AJ. (2004). Breast cancer in Iran: results of a multi-center study. *Asian Pac J Cancer Prev*, **5**, 24-7.
- Iran Healthy Ministry (2010). Breast Disease and Clinical Exam. Mezarab, 23-28.
- Jemal A, Center MM, DeSantis C, Ward EM (2010). Global patterns of cancer incidence and mortality rates and trends. *Cancer Epidemiol Biomarkers Prev*, **19**, 1893-907.
- Montazeri A, Vahdaninia M, Harirchi I, et al (2008). Breast cancer in Iran: Need for greater women awareness of warning signs and effective screening methods. *Asia Pac Family Med*, **7**, 1-6.
- Mousavi SM, Gouya MM, Ramazani R, Davanlou M, Hajsadeghi N, Seddighi Z. (2009). Cancer incidence and mortality in Iran. *Ann Oncol*, **20**, 556-63.
- Mousavi SM, Montazeri A, Mohagheghi MA, et al (2007). Breast cancer in Iran: an epidemiological review. *Breast J*, **13**, 383-91.
- Nokiani FA, Akbari H, Madani H, Izadi B (2007). Prevalence of breast cancer in breast sample reports in Iran, 2001-2004. *Breast J*, **13**, 536.
- Noroozi A, Jomand T, Tahmasebi R. (2011). Determinants of breast self-examination performance among Iranian women: an application of the health belief model. *J Cancer Educat*, **26**, 365-74
- Nourizadeh R, Bakhtariagdam F, Sahebi L (2011). Knowledge, health beliefs and breast cancer screening behaviors of women referring to health centers of Tabriz, 2010. In The First International and 4<sup>th</sup> National Congress on health Education and Promotion, 2011 May 17. Tabriz University of Medical Sciences.
- Novak E (2007). Berek and Novak's gynecology. Berek JS, editor. Lippincott Williams and Wilkins.
- Parsa P, Kandiah M, Abdul Rahman H, Zulkefli NM (2006). Barriers for breast cancer screening among Asian women: a mini literature review. *Asian Pac J Cancer Prev*, **7**, 509-14.
- Parsa P, Kandiah M, Mohd Zulkefli NA, Rahman HA (2008). Knowledge and behavior regarding breast cancer screening among female teachers in Selangor, Malaysia. *Asian Pac J Cancer Prev*, **9**, 221-7.
- Petro-Nustas W, Mikhail BI (2002). Factors associated with breast self-examination among Jordanian women. *Public Health Nurs*, **19**, 263-270.
- Reisi M, Javadzadeh SH, Sharifirad GhR, Yarmohammadi P (2011). Knowledge, attitude and practice of breast self-examination among female health workers in Isfahan, Iran. *J Res Health System*, **7**, 191-9.
- Rimer BK, Halabi S, Skinner CS, et al (2002). Effects of a mammography decision-making intervention at 12 and 24 months. *Am J Prev Med*, **22**, 247-57.
- Secginli S, Nahcivan NO (2006). Factors associated with breast cancer screening behaviors in a sample of Turkish women: A questionnaire survey. *Int J Nursing Studies*, **43**, 161-71.
- Siegel R, Ma JM, Zou ZH, Jemal A (2014). Cancer statistics, 2014. *Ca-Cancer J Clin*, **64**, 9-29
- Torre LA, Bray F, Siegel RL, et al (2015). Global cancer statistics, 2012. *Cancer J Clin*, **65**, 87-108.