

Breast self-examination stages of change and related factors among Iranian housewives women

Maryam Miri¹, Mitra Moodi^{2*}, Mohammadreza Miri², Gholamreza Sharifzadeh², Soudabeh Eshaghi³

¹MSc Student, Member of Student Research Committee, Faculty of Health, Birjand University of Medical Sciences, Birjand, IR Iran

²Social Determinants of Health Research Center, Birjand University of Medical Sciences, Birjand, IR Iran

³General Practitioner, Health Deputy Director of Non-Communicable Diseases, Birjand University of Medical Sciences, Birjand, IR Iran

*Corresponding author: Mitra Moodi, Associate Professor of Health Education and Health Promotion, Social Determinants of Health Research Center, Faculty of Health, Birjand University of Medical Sciences, Birjand, IR Iran Tel: +05632381251, Email: Mitra_m2561@yahoo.com

Received 2017 February 08; Revised 2017 March 01; Accepted 2017 March 13.

Abstract

Background: Breast cancer is the most common type of cancer among women worldwide. Given its low cost, wide availability, and lack of need for complex training, breast self-examination has turned into an important tool for early detection of cancer, especially in developing countries. This study aimed to determine the housewives' awareness of breast self-examination, stages of change of BSE behavior, and the related factors among women referring to health centers of Birjand city in 2016.

Methods: This descriptive, analytic study was conducted on 450 housewives aged between 20 to 40 years referring to healthcare centers of Birjand. Sampling was performed through multistage cluster sampling method. The data were collected using a researcher-made questionnaire which included a demographic characteristics section and various items on knowledge and stages of change. The validity and reliability of the questionnaire were confirmed. The data were analyzed in SPSS-19 using descriptive and inferential statistical tests.

Results: Mean age of the participants was 30.7±5.2 years and 97.8% of them were married. According to behavior change stages, 32.9% of the participants were in the pre-contemplation stage, while 19.68%, 23.3%, 18.2% and 6% were respectively in contemplation, preparation, action, and maintenance stages. The mean awareness score was 6.72±2.49. Fisher exact test showed a significant relationship between the stages of change with the level of education (P=0.001), family history of breast cancer (P=0.03), and awareness (P<0.001).

Conclusions: Given the low performance of women in breast self-examination, it is required on the part of health authorities to plan and implement the needed educational interventions.

Keywords: Breast self-examination; Change stages; Housekeeping women

1. Introduction

Breast cancer is the most common type of cancer among women across the world and it comprises 23% of all cancers among women (1). It is also considered the most frequent cause of death of women in developed and developing countries (2). Over the last two decades, due to its high incidence and mortality, breast cancer has turned into one of the new concerns of developing countries (3). Although this type of cancer is known as a "western" disease, it is also on the rise in Asian countries. Furthermore, in Asia, the morbidity rate of the disease for

women below 40 years of age is higher than their western counterparts with a similar age (4). The age of onset of breast cancer in Iran is approximately a decade lower than that of the developed countries. Moreover, as a source of serious concerns, more than 30% of Iranian breast cancer patients are below 40 years of age compared with Western countries where only 6% of patients have less than 40 years of age (5). Based on this, screening the women for breast cancer is of great importance as it facilitates detecting the cancer in early stages.

The severity of this disease is strongly influenced by the stage it is diagnosed. However, when treatment has the greatest potential, breast cancer shows few symptoms (6). Almost 70% of Iranian women visit doctor within the advanced stages of breast cancer when it is often too late for appropriate treatment (7). Early detection of breast cancer is possible by clinical breast examination, mammography and breast self-examination (BSE) (8). Although BSE alone is not sufficient for the early detection of breast cancer, it continues to be an important screening tool for early detection of the disease in developing countries due to low cost, wide availability and simple technical education (9). Breast self-examination can be performed by every woman above 20 years. Because of cost-effectiveness, simple implementation, safety, non-invasiveness and no special or material requirement, BSE is regarded as an effective method for breast cancer screening that only takes 5 minutes to implement (10).

A study of 384 women in Taiwan demonstrated that 69% of them practiced breast self-examination (11). Similarly, in an investigation on 251 students in Malaysia, Redhwan et al (2011) showed that 50% of the students performed breast self-examination (12). The results of various studies also reveal a range of 4 to 40% breast self-examination practices among Iranian women (13-16). In this regard, the findings of several studies suggest that training is one of the important factors in raising awareness about breast cancer screening behaviors (17).

Use of theories and models of health promotion and education is associated with reduced disease level and risky behaviors (18). Among the practical models in health education and promotion is the Trans-theoretical Model (TTM) or Stages of Change (SOC) which was introduced by James Prochaska in 1970s. The fundamental construct of this model is the stages of change (18). According to this model, to change a specific behavior and before accepting any health-related behavior, an individual moves through the following 5 steps: precontemplation, contemplation, preparation, action, and maintenance. The first stage, precontemplation, occurs when a person thinks about a behavior change in an unpredictable future (usually within the next 6 months). In this stage, people can be divided into two categories, the first category of individuals are uninformed or under-informed ones who are unaware of the consequences of their behavior while the second group are those who have experienced change, but do not seek any

change due to previous failure. Members of this class are usually motivated, but resistant to change. The second stage i.e. contemplation (thinking), occurs when a person intends to change in the foreseeable, but not immediate future. This stage usually takes between 1 to 6 months. The third stage is preparation, and occurs when a person is ready to change in the near future (within the next one month). In the fourth stage, action, meaningful modifications is made in the behavior within the past 6 months. As behaviors are realized in the actions of the individuals, one can overtly see the new behaviors in the form of new actions at this stage. A conscious effort is made to achieve these new acts. Finally, in maintenance, as the fifth stage, the individual maintain a behavior for a while (more than six months) (18). According to the stages of change model, which considers the behavioral change a cyclical process, changing people's behavior towards healthy ones requires interventions proportionate with individuals' preparation stage and helping them to move through different stages. Given that this model has been rarely applied in BSE in Iran, this study aimed to use this model to evaluate the breast self-examination knowledge, stages of change of BSE behavior and the associated factors in housewives referring to health centers in Birjand city during 2016.

2. Methods

This descriptive-analytical study was performed on 450 housewife women who referred to health centers of Birjand city in 2016. Multi-stage random cluster sampling was used as the data collection method. To this end, Birjand city was divided into different geographical regions which are also somehow an indicator of varying socioeconomic status. Then, from each region, based on simple random sampling, two centers were selected from the list of the available healthcare centers. The lists of eligible housewives for inclusion were extracted in each health center and then 60 women were selected randomly from this list. The sample size was estimated as $P=0.29$ and $d=0.05$ on the basis of sample size formulas. The correction factor for cluster sampling equaled 1.5 for a sample size of 470 participants. Meanwhile, 20 incomplete questionnaires were excluded from the study. The inclusion criteria were housewives of 20-40 years with no history of breast cancer referring to healthcare centers. The instrument of study was a questionnaire consisting of three parts. The first part entailed six items about demographic variables (age, education, marital status, assessment of income, history of

breast disease and a family history of breast cancer). The second part comprised of eight questions to determine the level of awareness of the BSE according to which the “correct answer” was scored one, whereas “no answer” and “wrong answer” received zero. In total, the minimum score was zero and the maximum score equaled 8. People who earned 50% of the total knowledge score were considered poor, those with 50% to 75% were seen as having an average awareness score, and finally individuals with a score above 75% were taken to have a good knowledge of the issue. The third section consisted of questions about BSE screening behavior that were designed based on the stages of change theory (6 questions). Here, the items were as follows:

1. I have never done BSE, and I do not intend to do it in the next six months (Pre-contemplation).
2. I have never done BSE, but I intend to do it within the next six months (Contemplation).
3. I have never done BSE, but I intend to do it within the next one month (Preparation).
4. It is less than six months that I have been conducting breast self-examination on a monthly basis, and I am going to perform it regularly in the next year (Action).
5. It is more than six months that I have been doing the breast self-examination on a regular basis, and I am going to do it over the coming years (Maintenance).
6. I have been doing the BSE, but I am not going to do it again (Relapse).

This scale demonstrates one’s intention to do or not to do BSE by selecting a specific stage of the 6 stages of change. The validity of the questionnaire was checked through face and content validity. The initial version of the questionnaire was given to a panel of 10 experts of health education, epidemiology, nursing and midwifery whose comments were considered prior to the development of the final version of the questionnaire. Next, the questionnaire was given to the 30 women who met the inclusion criteria, but were not included in the final study. The reliability of

awareness questions, which was assessed through split-half reliability method, equaled 0.66. Data collection was performed by the researcher (Msc student of health education and promotion) after providing the necessary explanations to eligible individuals and obtaining their informed consent. Data were collected by interview. The data were analysed by SPSS 19 using the Fisher exact test. Moreover, because the analyzed variables did not have a normal distribution according to Kolmogorov–Smirnov test, the comparison of the mean awareness score in terms of demographic variables was carried out by Kruskal-Wallis and Mann–Whitney at the significance level of $\alpha=0.05$.

3. Results

This study examined 450 housewives aged between 20-40 years referring to health centers of Birjand city. The mean age of the participants was 30.7 ± 5.2 years. The highest frequency of women in terms of level of education, belonged to diploma (28.7%) and in terms of marital status to married ones (97.8%). The assessment of household income confirmed the average income of the households in 64.3% cases (**Table 1**). The results of the study concerning the stages of BSE behavior change showed that the majority of participants were in the pre-contemplation stage (32.9%) (**Table 2**).

Fisher exact test revealed a significant difference in the frequency distribution of behavior change in terms of educational level ($p=0.001$), family history of breast cancer ($p=0.03$) and awareness ($p<0.001$) such that higher education level was directly correlated with women’s increased breast self-examination behaviors. Additionally, people with a reported history of breast cancer in their first-degree relatives conducted the breast self-examination behavior more than other women. The increased awareness of BSE also led to enhanced screening behavior of among women (**Table 3**).

Table 1. Distribution of demographic variables among the investigated women

Variable	Frequency	Percentage	
Age group	< 30 years	221	49.1
	> 30 years	229	50.9
Education	Primary	116	25.8
	Secondary	78	17.3
	High school diploma	129	28.7
	Associate	36	8
Marital status	Bachelor or above	91	20.2
	Married	440	97.8
	Single	10	2.2
Income	High	47	10.5
	Moderate	286	64.4
	Low	112	25.2
	Total	445	100
History of breast problem in participants	Yes and referral to physician	41	9.1
	Yes without referral to physician	24	5.3
History of breast cancer in close relatives	No	385	85.6
	Yes	19	4.2
	No	431	95.8

Table 2. Frequency distribution of the stages of change of breast self-examination practices in women under study

Change stages	Frequency	Percentage
Pre-contemplation	148	32.9
Contemplation	88	19.6
Preparedness	105	23.3
Action	82	18.2
Maintenance	27	6
Return	0	0
Total	450	100

In a similar way, Kruskal-Wallis test showed a significant relationship between the level of education ($p=0.001\%$) and income ($p=0.03$) with awareness. Namely, higher level of education and income among women was associated with higher awareness. The results of post hoc Mann-Whitney test indicated a significant difference in the

level of awareness between the elementary and secondary school group with other groups. This test also demonstrated a significant relationship between the income level of the group with less than 300 thousand Tomans compared with other groups (Table 4.).

Table 3. Comparison of the frequency distribution of stages of breast self-examination behavior change based on the variables studied in women under study

Demographics variables		Pre-contemplation No. (Perc.1)	contemplation No. (Perc.)	Preparedness No. (Perc.)	Action No. (Perc.)	Maintenance No. (Perc.)	Sig. ²
Education	Primary	50 (43.1%)	12 (10.3%)	35 (30.2%)	17 (14.7)	2 (1.7)	P=0.001
	Secondary	25 (32.1%)	22 (28.2%)	11 (14.1%)	15 (19.2%)	5 (6.4%)	
	High school diploma	41 (31.8%)	25 (19.4%)	29 (22.5%)	22 (17.1%)	12 (9.3%)	
	Associate	13 (36.1%)	7 (19.4%)	8 (22.2%)	3 (8.3%)	5 (13.9%)	
	Bachelor or above	19 (20.9%)	22 (24.2%)	22 (24.2%)	25 (27.5%)	3 (3.3%)	
History of breast cancer in close relatives	Yes	3 (15.8%)	4 (21.1%)	2 (10.5%)	7 (36.8%)	3 (15.8%)	P=0.03
	No	144 (33.5%)	84 (19.5%)	103 (24%)	75 (17.4%)	24 (5.6%)	
Awareness	Weak	137 (34.6%)	82 (20.7%)	98 (24.7%)	59 (14.9%)	20 (5.1%)	P<0.001
	Average	11 (21.6%)	82 (20.7%)	98 (24.7%)	59 (14.9%)	20 (5.1%)	
	Good	0 (0%)	1 (33.3%)	0 (0%)	1 (33.3%)	1 (33.3%)	
Marital status	Married	147 (33.7%)	85 (19.3%)	104 (23.6%)	79 (18%)	25 (5.7%)	P=0.08
	Single	1 (10%)	3 (30%)	1 (10%)	3 (30%)	2 (20%)	
Age	< 30 years	71 (32.1%)	48 (21.7%)	57 (25.8%)	33 (14.9%)	12 (5.4%)	P=0.28
	> 30 years	77 (33.6%)	40 (17.5%)	47 (21%)	49 (21.4%)	15 (6.6%)	
Income	High	19 (40.4%)	13 (27.7%)	4 (8.5%)	8 (17%)	3 (6.4%)	P=0.07
	Moderate	86 (5.6%)	50 (20.6%)	75 (26.2%)	59 (20.6%)	16 (5.6%)	
	Low	41 (36.6%)	23 (20.5%)	26 (23.2%)	14 (12.5%)	8 (7.1%)	

Table 4. Comparison of mean scores of awareness in terms of demographic variables among the investigated women

Demographics variables	N (%)	Awareness M±SD	Kruskal-Wallis and Mann-Whitney results
Education	Primary	116 (25.8%)	X ² =26.98 P<0.001
	Secondary	78 (17.3%)	
	High school diploma	129 (28.7%)	
	Associate	36 (8%)	
	Bachelor or above	91 (20.2)	
Income (toman)	< 300.000	117 (26.3%)	X ² =8.63 P=0.03
	300.00-700.000	140 (31.3%)	
	700.00-1.000.000	115 (25.7)	
	> 1 million	75 (16.8%)	
History of breast cancer in close relatives	Yes	19 (4.2%)	Z=-0.22 P=0.83
	No	430 (95.8%)	
Marital status	Married	440 (97.8)	P=0.08
	Single	10 (2.2%)	
Age	< 30 years	221 (49.1%)	P=0.28
	> 30 years	229 (50.9%)	

4. Discussion

The present study evaluated the BSE screening behavior of housewives and the related factors using the Transtheoretical Model. Based on the findings, majority of studied women (75.8%) were in the preaction stage (i.e. pre-contemplation, contemplation and preparation) that means they had no experience of breast self-examination. In a similar way, Vahedian (2015) and Pirasteh (2013) indicated that most women in their studies were in pre-action phase and did not undergo any breast self-examination (19, 20). In line with our findings, the results of different studies on breast cancer screening behaviors including Charkazi (2013) and Moodi et al (2012) confirm the low performance of women in breast cancer screening behaviors (21, 22).

In the current study, the level of education was one of the factors that influenced breast self-examination so that with increasing educational level of women, also increased of BSE. Such a finding was compatible with findings by Bahrami (2015), Reisi (2011), Salimi Pormehr (2010) and Farshbaf Khalili (2009) (13-16). In Okobia's research (2006) BSE was significantly associated with a higher education level (23). The reason for this might have been the increased awareness of BSE among women with higher education, their ability in obtaining health-related information through various media especially internet and access to facilities and services of breast cancer screening.

In the present study, there was a significant association between the family history of breast cancer and breast self-examination. Moreover, women with a positive family history of breast cancer had a better performance in BSE than the others. Bahrami's (2015) and Farshbaf Khalili's (2009) findings also approve this finding (13, 16). Li et al (2007) also regard the presence of a family member with breast cancer as the strongest motivation for conducting mammography and breast self-examination (24). Positive family history makes the women feel at risk for breast cancer and increases their sensitivity. As a result increased awareness of breast cancer, its prevention and early detection methods, leads to the optimal performance of this group of women.

According to our findings, there was a correlation between BSE and awareness level as confirmed by Didarloo (2016), Parsa (2011), Salimi (2010) and Dundar (2006) (15, 25-27). BSE was more frequent among individuals who were more aware of this behavior than

others. This further clarifies the effect of education and awareness as two contributing factors to the test implementation. Given that the level of education was also a factor affecting the BSE behavior, high level of education was considered an effective factor in increasing the individuals' awareness that in turn led to high performance of the women investigated.

In the present study, age and marital status had no relationship with BSE that was in consonance with findings by Bahrami (2015) and Farshbaf Khalili (2009). Because the majority of women participating in the study were married, the relatively large number of participants in this group might have had an important influence in this respect (13, 16).

Based on the results of our study, the household income was not also significantly associated with BSE. However, Khalili Farshbaf (2009) showed that people who had higher levels of income had a better performance in BSE (16). Given that BSE is a cost-free way and can be learned with the least possible cost, it can be said that household income does not play a major role in BSE.

As for the fact that the Stages of Change Theory has been rarely applied in the study of BSE screening behavior, it can be seen as one of the advantages of this study. Nonetheless, the results of the study cannot be generalized to all women living in Birjand because the research only focused on housewives aged between 20-40 years, who referred to healthcare centers of the city. It is thus suggested that future studies conduct a community-level data collection to present a better analysis of breast self-examination screening behavior.

5. Conclusion

This study revealed the low performance of women concerning breast self-examination. Because data collection was conducted in healthcare centers, as one of the most important sources of health information, implementing optimal training programs in such centers is highly necessary to increase women's awareness and performance regarding BSE.

6. Acknowledgements

This article is the result of a research project with the project code 12.95 and the code of ethics Ir.bums.1395.51. The authors express their thanks and gratitudes to the

women who participated in this study and to the Deputy of Research and Technology of Birjand University of Medical Sciences for the financial support granted to the researchers.

References

1. Rebecca L. Siegel, Kimberly D. Miller, D. AJ. Cancer Statistics. *CA Cancer J Clin.* 2016; 66 (1): 7-30.
2. Loh SY, Chew SL. Awareness and practice of breast self-examination among Malaysian women with breast cancer. *Asian Pac J Cancer Prev* 2011; 12: 199-202.
3. Al Naggat RAYVB, Karim A. Practice of Breast Self-Examination among women in Malaysia. *Asian Pacific Journal of Cancer Prevention.* 2012; 13 (38): 29-33.
4. Tan SM, Evans AJ, Lam TP, Cheung KL. How relevant is breast cancer screening in the Asia/Pacific region? *Breast Cancer.* 2007; 16: 113-9.
5. Moodi M, Norozi E, Rezaeian M, Mostafavi F, Gh. S. Comparing the Effectiveness of Three Educational Interventions based on Health Belief Model on Mammography Screening Behaviors in Women above 40 Years in Isfahan, Iran. *J Health Syst Res.* 2013; 9 (4): 385-94 [Persian].
6. American Cancer Society. Breast cancer facts & figures Atlanta.: American Cancer Society; 2012. Available: <http://www.cancer.org/research/cancerfactsstatistics/cancerfactsfigures2012/>
7. Fayazi S, Aarabi M, Bagheri M, Latifi S M, Gh. B. A study on Knowledge, Attitude and Practice Of Breast Self-Examination Among Female Students In The Ahvaz University of Medical Sciences. *Jentashapir.* 2013; 4(1): 73-9 [Persian].
8. Yilmaz D, Bebis H, Ortobag T. Determining the awareness of and compliance with breast cancer screening among Turkish residential women. *Asian Pac J Cancer Prev.* 2013; 14: 3281-8.
9. Giridhara RB, Goleen S, Sharon PC, al. e. Breast cancer screening among females in iran and recommendations for improved practice: a review. *Asian Pac J Cancer Prev.* 2011; 12: 1647-55.
10. Kerime B, Birsan Y. The effect of Breast Self-Examination Education Given to midwifery students on their knowledge and attitudes. *Asian Pacific Journal of Cancer Prevention.* 2010; 11: 1761-4.
11. Chiang TT, Tai CS, Lin PC. To survey the implementation of breast cancer screening behaviors of female medical personnel based on health belief model. *VGH Nursing.* 2011; 28: 130-8.
12. Redhwan AA, Dhekra HA, Yuri V BB, al. e. Practice and barriers toward breast self-examination among young Malaysian women. *Asian Pac J Cancer Prev* 2011; 12: 1173-8.
13. Bahrami M, Taymoori P, Bahrami A, Farazi E, Farhadifar F. The Prevalence of breast and Cervical Cancer screening and related factors in woman who refereeing to health center of Sanandaj city in 2014. *Zanko J Med Sci* 2015, 16(50): 1-12. 2015; 16 (50): 1-12 [Persian].
14. Reisi M, Javadzadeh S.H, Sharifirad G.R, Yarmohammadi P. Knowledge, Attitudes and Practice of Breast Self-Examination among Female Health Workers in Isfahan, Iran. *Health System Research.* 1390; 7 (2): 191-9 [Persian].
15. SalimiPormehr S KN, Sheykhkan Z, AlaviMajd H. Investigation of Breast Cancer Screening Tests Performance and Affecting Factors in Women Referred to Ardebil's Health and Medical Centers, 2009. *J Ardabil Univ Med Sci.* 2010; 10 (4): 310-8 [Persian].
16. Farshbaf Khalili A SM, Ghahvechi A , Thorabi Sh. Performance conditions of breast cancer screening methods and its efficient factors among women referring to health centers of Tabriz. *IJNR.* 2009; 4 (13): 27-38 [Persian].
17. Early J, Armstrong SN, Burke S, DL. T. US female college students' breast health knowledge, attitudes, and determinants of screening practices: new implications for health education. *Journal of American college health.* 2011; 59 (7): 640-7.
18. Saffari M, Shojaeizadeh D, Mohammade AR, Ghofranipour F, Heidarnia A, Pakpur Haji Agha A. theories, models and methods of health education and health promotion: Publications Sobhan; 2012 [Persian].
19. Vahedian Shahroodi M, Pourhaje F, Esmaily H, F. P. The relationship between breast self-examination and stages of change model in health volunteers. *J Research Health.* 2015; 5 (1): 13-20 [Persian].
20. Pirasteh A KSK, Kholdi N, Davati A Stages of Change and Predicting of Self Efficacy Construct in Breast Self Examination Behavior among Women Attending at Tehran Health Centers, Iran, 2011. *The Iranian Journal of Obstetrics, Gynecology And Infertility* 2013; 16 (70): 16-23 [Persian].
21. Charkazi A , Samimi A, Moodi M, Seyedghasemi N.S, Heshmati H, H. S. Stages of Mammography Adoption based on Stages of Change Model and its Relationship with Perceived Threat and Fatalism Beliefs: a study on Turkmen Women. *Journal of Health & Development.* 2014; 2 (4) [Persian].
22. Moodi M, Hassanzadeh A, Charkazi A, Shahnazi H, G. S. A survey of the psycho-cognitive factors affecting breast cancer screening behaviors at different stages of change among female teachers in Isfahan, Iran. *J Health Syst Res.* 2012; 7 (6): 770-81 [Persian].
23. Okobia MN, Bunker CH, Okonofua FE, U. O. Knowledge, attitude and practice of Nigerian women towards breast cancer: A cross-sectional study. *J Surg oncol* 2006; 4 (11-19).
24. Lee-Lin F, Menon U, Pett M, Nail L, Lee S, K. M. Breast cancer beliefs and mammography screening practices among Chinese American immigrants. *J Obstet Gynecol Neonatal Nurs* 2007; 36 (3): 212-21.

25. Didarloo A, Shorkhabi Z, Pourali RSS. survey of knowledge, worry and screening behavior towards breast cancer among female students of urmia university of medical sciences, in 2014. *J Urmia Nurs Midwifery Fac* 2016; 14(3): 201-12. [Persian].
26. Parsa P, Kandiah M, N. P. Factors associated with breast self-examination among Malaysian women teachers. *East Mediterr Health J*. 2011; 17(6): 509-16. [Persian].
27. Dundar PE, Ozmen D, Ozturk B, Haspolat G, Akyildiz F, Coban S, et al. Knowledge and attitudes of breast self-examination and mammography in a group of women in a rural area in western Turkey. *BMC Cancer* 2006; 6:43.

Archive of SID