Improving Breast Self-Examination: an Educational Intervention Based on Health Belief Model

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Abstract

Background: This study evaluated the effect of an educational program on breast self-examination (BSE) among women living in Bandar Abbas, Iran.

Method: This trial studied 240 eligible women attending at eight health centers of Bandar Abbas who were randomly divided into intervention (n = 120) or control (n=120) group. Data regarding belief on breast self examination were collected through the Champion's Health Belief Model Scale (CHBMS).

Results: At the initial of the study, there were no differences between two groups in terms of socio demographic data, the mean scores of Champion's Health Belief Model (CHBM) sub-scales and breast self-examination rate. At follow up time the intervention group compared to control group has obtained significant higher mean score of CHBM in terms of all sub-scales except for the subscale of BSE benefit.

Conclusion: This study indicated that the designed program could improve Breast Self Examination among studied women.

Key words: Breast self examination; Breast cancer; Health belief model

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Introduction

Breast cancer remains a major public health problem worldwide. It is the most common type of cancer among women in all over the world. The incidence of breast cancer varies from the highest rate in the United States to the lowest rate in Asia. However, the incidence of breast cancer has been rising in traditionally low-incidence in Asian countries due to their life style change [1].

In Iran, the incidence of the disease is increasing, patients present with advanced stage of disease and they are relatively younger [about 10 years] than their western counterparts. Although, there are no precise statistics on breast cancer in Iran, but informal data indicate that the crude incidence rate of the disease is about 20 new cases per 100000 women per year [2]. Previous study conducted in Iran, estimated that breast cancer accounts for 21.4% of all female malignancies in this country [3].

Thus, with no clear prevention strategies, early detection of breast cancer can play an important role in reducing the number of deaths from this disease. There are only three methods for early detection of breast cancer including mammography,

clinical examination, and breast self-examination (BSE). It is argued that for women younger than 50 years old, mammography is ineffective, and clinical examination is infrequent. Therefore, BSE is highly significant for these women [4].

BSE is an effective tool to aware women regarding on breast cancer and direct them to consult with a doctor early. Research has shown that the women, who were diagnosed with breast cancer, had consulted the doctor consequent to a felt mass in their breast followed by BSE [5].

BSE is a screening method that should be taught at early ages to aware women about the importance of early detection of breast cancer. This screening method can be performed without the assistance of health professionals and requires no special equipment [1]. Despite these benefits and well-known efficacy of BSE, previous study conducted in Iran showed that only 6% of studied women had performed BSE regularly. This study revealed that the most common reasons for not doing BSE and not going for clinical examination were lack of knowledge and belief that BSE was not necessary [1].

The previous studies from Iran revealed the low rate of BSE practicing among Iranian women was being related to lower level of education [1], lack of breast cancer knowledge and lack of knowledge regarding BSE practice [6-9]. Furthermore, there are other evidences that in Iran, the rate of BSE is not satisfactory [1, 9].

It has been demonstrated that educational interventions can enhance women's knowledge regarding the importance of breast cancer and its' screening methods. Also these education programs could improve the attitudes of individuals regarding BSE and improve the behaviour as well [10- 12]. In other hands, many studies have shown that, lack of knowledge and belief regarding the necessary of regular BSE could affect on not performing this behaviour [13- 16]. According to recommendations of many evidences, understanding women's beliefs regarding BSE and designing suitable educational interventions could promote this screening healthy behaviour among women [13- 18].

The health belief model (HBM) has been widely used to examine beliefs related to breast cancer screening behaviours, such as receipt of BSE, clinical breast examination (CBE), and mammography. Based on the HBM, individuals are more likely to engage in preventive health behaviours if they perceive themselves to be susceptible to a certain disease / illness (perceived susceptibility), perceive the condition to have potentially serious consequences (perceived severity), believe that a course of action will produce positive outcomes (perceived benefits), and perceive that barriers to taking actions are outweighed by the benefits [17, 19]. In addition, the model assessed perceived self efficacy that reflects the perception of patients about their abilities to perform BSE correctly.

Yet, to our knowledge there is no educational program specifically based on health belief model with the aim of BSE improving among Iranian women.

The aim of this study was to evaluate the effect of a designed educational intervention on beliefs regarding breast self-examination behaviour in women living in Bandar Abbas, Iran.

Materials and Methods
Subjects

This interventional study was conducted in eight health centers of Bandar Abbas in Iran. The study population consisted of women attending at these eight health centers. In each health center 30 women were selected randomly, so totally 240 women, 120 ones in each group were studied. The women were eligible for the study if they were not pregnant, not breast feeding and were satisfied to participate in the study.

Measures

At the initial visit, data were collected on sociodemographic characteristics such as age, education, marital status and history of breast health problems. Beliefs on BSE were assessed using an adaptation of CHBMS.

The CHBMS was developed in 1984 and revised three times [18, 20, 22]. The CHBMS for breast cancer screening is a commonly used instrument to measure the HBM variables of susceptibility, seriousness, benefits, barriers, and health motivation associated with breast cancer screening [18]. The Champion instrument measures the HBM concepts of susceptibility, seriousness, benefits, barriers, health motivation, and self-efficacy as they relate to breast cancer screening. The original scales were tested and found to be valid and reliable for measurement of BSE practices and breast cancer beliefs [18, 21, 22].

The latest version of the scale was adapted for Iranian use in this study. The questionnaire consisted of 31 items. All items have five response choices ranging from "strongly disagree (scores 1 point)" to "strongly agree (scores 5 points)". Higher scores indicated a positive attitude towards health care except for barriers to BSE. Susceptibility of breast cancer consisted of 3 items ranging from 3 to 15 scores, seriousness of breast cancer consisted of 6 items ranging from 6 to 30 scores, BSE benefits consisted of 4 items ranging from 4 to 20 scores, BSE barriers consisted of 8 items ranging from 8 to 40 scores and BSE self-efficacy consisted of 10 items ranging from 10 to 50 scores.

CHBMS was translated in Persian using a back-translation technique, which includes the use of a panel of experts and interpreters to translate the items from the source language to the target language and then back-translate them to the source language. Then some changes were made to adapt this instrument to Iranian culture. The reliability coefficient for each subscale was calculated using Cronbach alpha technique. Cronbach alpha coefficients of the original CHBMS for susceptibility, seriousness, BSE benefits, BSE barriers and BSE self-efficacy were 0.87, 0.80, 0.69, 0.83 and 0.90 respectively [23], and Cronbach alpha coefficients of CHBMS calculated for this study for susceptibility, seriousness, BSE benefits, BSE barriers and BSE self-efficacy were 0.68, 0.77, 0.78, 0.77 and 0.87 respectively. CHBMS was used before educational intervention and four months later.

Table 1. Socio demographic variables of participants

Variables	Intervention group (n=120) N(%)	Control group (n=120) N(%)	P
Age [M ± SD]	37.4 ± 5.7	37.1 ± 6.6	0.67[a]
Education			
Primary school	32(26.7)	38(31.7)	0.48[b]
Secondary school	24(20)	28(23.3)	
High school	40(33.3)	38(31.7)	
University	24(20)	16(13.3)	
Marital status			
Married	5(4.2)	4(3.3)	0.73[b]
Widow	115(95.8)	116(96.7)	
History of breast Health problems			
Yes	14(11.7)	15(12.5)	0.84[a]
No	106(88.3)	105(87.5)	
Performing BSE			
Yes [regularly]	8(6.7)	9(7.5)	0.40
Yes [irregularly]	34(28.3)	25(20.8)	
No	78(65)	86(71.7)	

a: Independent t-test   b: Chi-square

Behaviour

To assess BSE behaviour, participants were asked about doing BSE or not, frequency of BSE, how to perform BSE and having a regular BSE (every month). BSE behaviour was assessed before educational intervention and four months later.

Educational Intervention

Educational program consisted of material such as breast cancer importance, its risk factors, its severity, the value of early diagnosis, what BSE is, why BSE is important, how and when BSE should be performed and its steps. Educational sessions were held in groups of 15 participants at four health centers for intervention group by two midwives weekly. Each session lasted for 1 hour. In each session lecture and demonstration was given and participants' questions were answered, then the participants practiced BSE under vision of midwives. At the end of session, printed materials with guidelines regarding BSE were given to participants. All participants completed questionnaires at baseline and after four months. Data were collected through face to face interview at health centers. As all participants had their own records in the center, in which their home address and telephone number were available, and also there were some valuable gifts for whom referred on time (exactly at 4- month follow up), so the

researcher could complete all questionnaire at follow up time.

The study was funded and approved by the Medical Ethics Committee of Hormozgan University of Medical Sciences. Participants were informed about the aims of the study, and they provided informed consent. The women randomized to control group received no planned educational program, but just education from the clinic as well as intervention group. However, the intervention sessions were offered to this group after the study was completed.

Data Analysis

Data were analyzed using SPSS13 software and $p<0.05$ was considered statistically significant. Independent t-test was used to compare age and health belief model constructs between two groups before intervention. Also it was used to compare health belief model constructs between two groups after intervention. Chi-square was used to compare education, marital status and breast health problems between two groups before intervention, and also it was used to compare BSE behaviour between two groups before and after intervention.

Results

In all 240 participants' data were analyzed. There were no losses to follow up data in this study. Table 1 shows the basic demographic characteristics of the studied women. As this table indicates, there

Table 2. Comparison of mean scores of CHBMS sub-scales before and after Intervention

Sub-Scales	Intervention (n=120) MD ± (SD)	Control (n=120) MD ± (SD)	P-value α
Before intervention			
*Susceptibility	7.6 ± 2.4	7.7 ± 2.5	0.73
*Seriousness	20.9 ± 5.2	21.9 ± 5.1	0.12
*BSE benefits	16.8 ± 2.8	16.9 ± 3.1	0.93
**BSE barriers	17.8 ± 6.2	18.4 ± 5.3	0.41
*BSE Self-efficacy	32.1 ± 8.1	31.1 ± 8.8	0.51
After intervention			
*Susceptibility	11.4 ± 1.7	7.2 ± 2.8	0.000
*Seriousness	24.2 ± 2.3	21.9 ± 5.1	0.000
*BSE benefits	17.6 ± 2.3	17.7 ± 3.1	0.75
**BSE barriers	12.6 ± 4.1	17.9 ± 5.8	0.000
*BSE Self-efficacy	39.1 ± 6.2	32.3 ± 6.9	0.000

a: Independent t-test
*higher number means better situation
** higher number means worse situation

Table 3. Frequency of BSE behavior in two groups before and after Intervention

BSE	Intervention group N (%)	Control group N (%)	P- Value
Before Intervention			
Yes [regularly]	8(6.7)	9(7.5)	0.40
Yes [irregularly]	34(28.3)	25(20.8)	
No	78(65)	86(71.7)	
After Intervention			
Yes [regularly]	92(76.7)	11(9.2)	0.000
Yes [irregularly]	13(10.8)	33(27.5)	
No	15(12.5)	76(63.3)	

a: Chi-square

were no statistical differences between two groups in terms of these baseline data (all P values >0.05). Moreover table 2 shows the mean scores of CHBMS sub-scales in two groups at the beginning of the study and four months after intervention. According to the results of this table, two groups were the same in terms of these variables at the beginning (P >0.05) but were significantly different in all sub scales (P< 0.001) except for sub scale as BSE benefit (P = 0.75).

In addition, table 3 shows the frequency of BES behaviour of control and intervention group before and after intervention. As this table indicates there were statistically significant difference between two groups after intervention (p < 0.001) whereas two groups were the same at initial of the study (P = 0.4).

Discussion

Given the importance of diagnosing breast cancer in Iran, this trial study was conducted to evaluate the effect of a designed educational intervention on improving breast self-examination behaviour.

The results of this study demonstrated the effectiveness of education program in promoting breast self examination behaviour among studied participants as well as an improvement in beliefs, self efficacy and practice of this screening method among participants. The intervention program of this study which was grounded in the health belief model could significantly increase the perceived

susceptibility to breast cancer and cleared the seriousness of breast cancer for participants. Furthermore, this program could decrease studied participants' perceived barriers to breast self examination and increased their perceived self efficacy to perform this behaviour. Moreover, the comparative analyses of two groups of this study showed effectiveness of the intervention in improving practice of BSE in intervention group. The indication is that the participants in intervention group who were educated through educational program practiced more regular BSE behaviour compared to those in control group. However, contrary to our hypothesis, perceived benefits of this screening method did not statistically increase after the intervention that may due to the endorsement of the benefits prior to the intervention. These results are consistent with previous study that was conducted among South Asian [SA] immigrant women who reported the effectiveness of written socio culturally tailored language-specific health education materials -which was designed based on HBM - in promoting knowledge, self efficacy and practice of breast cancer screening within the targeted population [7]. Furthermore, these results of our study were in consistent with previous studies which were conducted among Egyptian and Turkish women. The studies reported that education program could have positive impact on improving knowledge and beliefs about health risk and susceptibility to breast cancer and also enhance perceived self efficacy on breast self examination practice [24, 25].

Our study showed prior to the intervention, just about 7% of participant performed breast self examination regularly, which is much lower than what reported by developed countries [16-26-27]. Furthermore, there are other evidences that in Iran, the rate of BSE is not satisfactory [1, 9]. The previous studies from Iran revealed the low rate of BSE practicing among Iranian women that has been related to lower level of education [23], lack of breast cancer knowledge and lack of knowledge regarding BSE practice [1,9, 28, 29]. Overall, considering these existing literature from Iran, at initial of the study we expected our participants were not knowledgeable regarding BSE and we needed an intervention to promote breast screening among them. Considering evidences regarding the reasons of low rate of BSE in Iran [1, 9, 30, 31], one might explain that the educational program of this study could increase the knowledge of participants regarding breast cancer and BSE practice.

The present study has some strength such as focusing on a unique population at risk for breast cancer, use of a theoretical framework of HBM, the application of a randomized controlled trial to evaluate intervention effects and using CHBMS instrument which was translated and found to be reliable for this population.

Since mammography is not readily available for studied population in this research, so having evidence regarding BSE as an effective program promoting early detection of breast cancer is most helpful. This study could provide this evidence. The other strong point of this study is 100% follow up rate of participants who were contacted and studied. However, participants self report of BSE behaviour may have biased the results, even though this effect has been for both groups.

Conclusion

In conclusion, the results of this study supported the notion that designed health education program based on HBM could be effective in promoting breast self examination through enhancing perceived susceptibility , perceived seriousness, perceived barriers and self-efficacy regarding BSE in women living in Bandar Abbas, Iran. Future research with other vulnerable populations would enhance understanding of the intervention effects.

Acknowledgment

Conflict of Interest

The authors declare that there are not any sources of funding and potential conflicting interest for this study.

Authors' Contribution

TA designed the study, analyzed the data and wrote the paper. LH contributed to the data collection and data entry, literature review and writing-up process. SST contributed to analyze the data and write the manuscript. SZ designed and analyzed the data. All authors read and approved the final manuscript.

References

1. Jarvandi S, Montazeri A, Harirchi I, Kazemnejad A. Beliefs and behaviours of Iranian teachers toward early detection of breast cancer and breast self-examination. Public Health 2002; 116: 245-9.

2.Harirchi I, Ebrahimi M, Zamani N, Jarvandi S, Montazeri A. Breast cancer in Iran: a review of 903 case records. Public Health 2000; 114: 143 – 145.

3. Harirchi I, Ghaemmaghami, Karbakhsh M, Moghimi R, Mazaheirie H. Patient delay in women presenting with

advanced breast cancer: An Iranian study. Public Health 2005; 119: 885-91.

4. Maurer F. A peer education model for teaching breast self-examination to undergraduate college women. Cancer Nurs 1997; 20: 49 - 61.

5. Avci IA, Ozcan A, Altay B, Cavusoglu F. The problems encountered by midwives during breast self-examination training. Eur J Oncol Nurs 2008; 12: 329-33.

6. Montazeri A, Vahdaninia M, Harirchi I. Breast cancer in Iran: need for greater women awareness of warning signs and effective screening methods. Asia Pac Fam Med 2008; 7:6.

7. Heidari Z, Mahmoudzadeh-Sagheb HR, Sakhavar N. Breast Cancer Screening Knowledge and Practice among Women in Southeast of Iran. Acta Medica Iranica 2008; 46: 321-8.

8. Montazeri A, Haji-Mahmoodi M, Jarvandi S. Breast self-examination: do religious beliefs matter? A descriptive study. J Public Health Med 2003, 25: 154-5.

9. Yavari P, Pourhoseingholi MA. Socioeconomic factors association with knowledge and practice of breast self-examination among Iranian women. Asian Pac J Cancer Prev 2007; 8:618-22.

10. Leight SB, Deiriggi P, Hursh D, Douglas M, Leight V. The effect of structured training on breast self examination search behaviors as measured using biomedical instrumentation. Nurs Res 2000; 49: 283-9.

11. Fitch MI, McPhail J, Franssen E. Evaluation of breast self examination program in breast diagnostic clinic. Can Oncol Nurs J 2001; 11: 140-5.

12. Janda M, Stanek C, Newman B, Obermair A, Trimmel M. Impact of videotaped information on frequency and confidence of breast self-examination. Breast Cancer Res Treat 2002; 73:37-43.

13. Ilknur AA. Factors associated with breast self-examination practices and beliefs in female workers at a Muslim community. Eur J Oncol Nurs 2008; 12:127-33.

14. Gozum S, Aydin I. Validation evidence for Turkish adaptation of Champion's health belief model scales. Cancer Nurs 2004; 27: 491-8.

15. Suk-Yee F. Factors associated with breast self-examination behavior among Chinese women in Hong Kong. Patient Educ Couns 1998; 33:233-43.

16. Salazar MK. Breast self-examination beliefs: a descriptive study, Public Health Nursing 1994; 11: 49-54.

17. Yarbrough SS, Braden CJ. Utility of health belief model as a guide for explaining or predicting breast cancer screening behaviors. J Adv Nurs 2001; 33:677-88.

18. Champion VL, Scott CR. Reliability and validity of breast cancer screening belief scales in African American women. Nurs Res 1997; 46:331-7.

19. Wu TY, West B, Chen YW, Hergert C. Health beliefs and practices related to breast cancer screening in Filipino, Chinese and Asian-Indian women. Cancer Detect Prev 2006; 30:58-66.

20. Champion VL. Instrument development for health belief model constructs. Adv Nurs Sci 1984; 6:73-85.

21. Champion VL. Instrument refinement for breast cancer screening behaviors. Nurs Res 1993; 42:139-43.

22. Champion, V.L. Revised susceptibility, benefits, and barriers scale for mammography screening. Res Nurs Health 1999; 22: 341-8.

23. Rabia H, Sebahat G. The effect of training on the knowledge levels and beliefs regarding breast self-examination on women attending a public education centre. Eur J Oncol Nurs 2008; 12:58–64.

24. Ahmad F, Cameron JI, Stewart DE. A tailored intervention to promote breast cancer screening among south Asian immigrant women. Soc Sci Med 2005; 60 : 575-86.

25. Seif NY, Aziz MA. Effects of Breast Self Examination Training Program on Knowledge, Attitudes and Practice of a Group of Working Women. Journal of the Egyptian National cancer Institute 2000, 12:105-15.

26. Hachihasanoglu R, Gozum S. The effects of training on the knowledge levels and beliefs regarding breast self – examination on women attending a public education centre. Eur J Oncol Nurs 2008, 12: 58-64.

27. Phillips JM, Wilbur J. Adherence to breast cancer screening guidelines among African American women of differing employment status. Cancer Nurs 1995; 18:258-69.

28. Nejla C, Ozge U. Health beliefs and breast cancer screening behaviors among female health workers in Turkey. Eur J Oncol Nurs 2008; 12:148-56.

29. Balogun MO, Owoaje ET. Knowledge and Practice of Breast Self-Examination among Female Traders in Ibadan, Nigeria. Annuals of Ibadan Postgraduate Medicine 2005; 3:52-6.