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Investigation of the Impact of HBM-Based Training on BSE in Women Referred to Health Centers in Zahedan in 2010-2011

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ABSTRACT

Background: Women of all ages are at risk for developing breast cancer. More than 90% of patients can be treated if diagnosed early. However, most women do not perform a regular BSE (Breast Self-Examination), which is an effective and inexpensive way to prevent considerable cancer-related death and morbidity.

Objectives: This study was performed to investigate the impact of Health Belief Model (HBM)-based training on BSE behavior.

Patients and Methods: The study involved a controlled intervention performed with 200 women referred to health centers in Zahedan; 100 women were included in the intervention group and 100 other women in the control group. Before undertaking intervention training, a questionnaire designed according to HBM principles was completed by the subjects. The intervention training was then carried out with the intervention group using a lecture, question and answer sessions, and a film. Two months after the intervention, the questionnaire was readministered. Data were analyzed using SPSS 19 software, an independent t-test, a paired t-test, and a chi-square analysis; $P < 0.05$ was considered significant.

Results: The independent t-test showed that before the intervention, there was no statistically significant difference in mean knowledge scores or HBM parameters among the control and intervention groups ($P > 0.05$). However, a significant difference was found after the intervention as the mean knowledge score increased and the HBM parameters differed in the intervention group ($P < 0.05$). A paired t-test showed that the mean differences in knowledge scores and HBM parameters before and after the intervention were statistically significant ($P < 0.05$), but no significant before and after differences were identified among the control group ($P > 0.05$). Before the study, the percentage of women who regularly performed a BSE was 7% in the intervention group, but this was increased to 51% after the intervention.

Conclusion: It seems that a training program based on HBM principles is effective for inducing BSE behavior. Also, based on the findings of this study, there may be a need to increase the awareness of the perceived severity of breast cancer and the possible benefits of BSE and a self-efficacy approach to health. It is recommended that training programs emphasizing such changes be designed and implemented.

▸ *Implication for health policy/practice/research/medical education:*

The results of this study is to be used for health and medical authorities, It is recommended that Training programs with emphasis on changing knowledge, perceived severity and benefit, and self-efficacy, toward improving the health of women should be designed and implemented.

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1. Background

Cancer is the second leading cause of death after cardiovascular disease (1). Breast cancer is the most common cancer in women both in Iran and globally, and, after lung cancer, it is the second leading cause of cancer deaths among women (2). According to research in Iran, the cancer incidence in women is 22 per 100 thousand and its prevalence is 120 per 100 thousand (3). Unfortunately, breast cancer occurs at a younger age in Iranian women compared with their western counterparts (4). If the cancer is detected and treated at its early stages, the chance of recovery increases and the lifespan of more than 90% of breast cancer sufferers can be lengthened compared with those diagnosed with advanced-stage disease (5). Due to the characteristics of breast cancer, such as its slow growth, early detection and effective treatment is important and breast cancer screening is thus an essential method of disease control. Today, BSE is an important component of breast screening programs as it can help with early detection of breast cancer (4, 6); early detection can ensure the most appropriate therapy, and 70–80% of patients who receive an early diagnosis of breast cancer will not require breast removal (4). Monthly BSE is a simple, affordable, and appropriate means of monitoring breast health that does not require specialized equipment or personnel, and can prevent progression to more advanced stages of breast cancer by 95%. Unfortunately, awareness and practice of BSE among women is low (7), and the majority of women do not regularly perform a BSE (8). Karimi and Sam in the Ramsar study concluded that most women are not able to perform a BSE correctly (9). In a study in Bandar Abbas, Hassani and colleagues showed that only 31.7% of women had performed a BSE, and only 7.1% performed a regular BSE on a monthly basis (10). In Iran, due to a lack of regular screening programs for cancer control, there appears to be a lack of awareness of the signs and symptoms of the disease (1). Moreover, social and cultural factors (11), including beliefs and demographic variables, have a considerable effect on the performance of BSE (12). Because of the fear of breast cancer and of findings obtained from a BSE, most women do not have a positive attitude towards BSE. Provision of an appropriate training program can lead to a reduction in fear and anxiety, and subsequently improve the practice of BSE (13). On one hand, women are aware of the need for BSE, and on the other hand, they rarely practice BSE. This gap between awareness and practice can be reduced by training (6). Women need to undertake regular training to increase their level of awareness and alter their attitudes to and participation in screening programs (14). According to a number of studies, the use of video and in-person training in relation to BSE can have a positive impact on women's learning of this method (15). Selection of a model for health training is the first step in the planning of every training program. HBM is an accurate and significant model of behavior patterns that highlights the association between health beliefs and behavior. The parameters of this model, namely perceived susceptibility and severity of illness, and perceived benefits and barriers, are helpful for illustrating both the operational aspects and the self-efficacy of preventive BSE behavior. The model is comprehensive and has a role in disease prevention; it is based on the premise that preventive behavior is related to personal beliefs. The HBM used in this study is a model of individual study of behavior that was established by Rosenstock in America. This model is effective for planning and evaluating interventions for changing behavior (16). Training programs based on HBM among women have shown that there is a relationship between BSE and the model parameters (17, 18). However, based on a study of 1387 Zahedanian women, only about 5.4% performed BSE, and they were not well informed about BSE screening procedures (19), which emphasizes the importance of the current study in a city such as Zahedan. Since preventive health behavior is based on individual health beliefs and understanding, beliefs about BSE are discussed in the HBM. This model can be a good framework for developing a health training program.

2. Patients and Methods

This study analyzed the effects of a controlled intervention with 200 women referred to health centers in Mani city, near Zahedan. For sampling, the city was initially divided into 5 regions (North, South, East, West, and City Centre). Two health centers or health sites were then randomly selected from each region, one of which was considered the control and the other the center for intervention. A total of 20 subjects were enrolled from each center. A questionnaire was designed on HBM principles, and included 60 questions relating to demographic characteristics (14 questions), disease awareness (14 questions), behavior (1 question), and model parameters (5 questions each). The questionnaire was graded in a way that ensured that correct answers to awareness questions were allocated 2 points, a "do not know" response 1 point, an incorrect answer 0 points; correct answers to questions relating to the model parameters of perceived susceptibility, perceived severity, perceived benefits, and self-efficiency were allocated 3 points, "do not know" responses 2 points, "do not agree" responses 1 point, agreement related to questions about perceived barriers 1 point, "do not know" responses 2 points, "disagree" responses 3 points, never for guide questions for action 1, sometimes 2, and always 3, and for the behavior question percentage is calculated and the maximum and minimum score for awareness structure are respectively 28 and 0 and scores for the model structures are respectively 15 and 5. To determine the scientific validity of the questionnaire, a content validity technique was

used, and the validity of the designed questionnaire was confirmed by using the corrective opinions of 10 experts. The reliability of the questionnaire was also confirmed by retesting (the questionnaire was administered to a sample of 30 subjects and then readministered after one week)—a Cronbach's alpha reliability coefficient of 0.77 was obtained. Training programs based on health beliefs and the overall goal of the HBM in determining the impact of BSE in women were designed based on pre-test questions, and were applied during a training session using lectures, question and answer sessions, and videotapes. Regarding the distribution of samples in the 5 health centers in the city, the above training programs were the same for each of the 5 groups. One month after the training program, the questionnaire was readministered, and then the data were analyzed by using SPSS 19 software and an independent t-test, a paired t-test, and chi-square analysis; $P < 0.05$ was considered significant.

3. Results

The average age of the study participants in the intervention and control groups was 29.66 ± 10.03 years and 27.46 ± 7.88 years, respectively. The mean age at first breastfeeding among the women was 20.50 ± 3.72 years and 20.49 ± 4.84 years, respectively. The duration of breastfeeding at first breastfeeding was on average 19.65 ± 6.84 months in the intervention group and 18.46 ± 7.73 months in the control group. In the intervention group, 8% of the subjects had a family history of breast cancer (only 2% reported breast cancer in immediate family members), and in the control group 1% of subjects had a family history of breast cancer. Regarding the impact of training on awareness, HBM parameters and the behavior of the participants in the study showed that the mean awareness score in relation to breast cancer symptoms and BSE was 15.92 and 14.72 in the intervention and control groups, respectively, before the study, and 26.94 and 13.56 after the study; the mean perceived susceptibility scores before the intervention in the intervention and control groups were 12.92 and 12.41, respectively, and after the intervention they were 14.19 and 12.83. The perceived severity scores before the intervention in the intervention and control groups were 13.36 and 12.93, respectively, and after the intervention they were 14.60 and 13.23. The perceived benefits scores before the intervention were 13.78 and 13.47 in the intervention and control groups, respectively, and 14.82 and 13.79 after the intervention. The perceived barriers scores before intervention in the intervention in the intervention and control groups were 9.93 and 9.69, respectively, and 11.19 and 10.00 after the intervention. The average self-efficiency scores before the intervention in the intervention and control groups were 13.57 and 13.18, respectively, and 15.13 and 13.24 after the intervention. The mean scores of guide for action before the intervention in the intervention and control groups were 7.00 and 6.82, respectively, and after the intervention they were 9.05 and 6.46. An independent t-test showed that before the intervention the difference between mean scores of awareness and HBM parameters in the intervention and control groups was not statistically significant ($P > 0.05$), but this difference became significant after the intervention ($P < 0.05$). A paired t-test showed that this difference was statistically significant ($P < 0.05$) in the intervention group, but not the control group ($P > 0.05$). *Table 1* shows

Table 1. Comparison of Mean ± SD Scores for the Questionnaire Parameters Before and After the Intervention in Case and Control Groups

	Before, Mean ± SD	After, Mean ± SD	Different Mean	Independent t-Test
Knowledge				0.0004
case	15.92 ± 7.97	26.94 ± 2.39	11.02	
control	14.72 ± 6.39	13.56 ± 4.98	-1.16	
Perceived susceptibility				0.146
case	12.92 ± 3.84	14.19 ± 3.37	1.27	
control	12.41 ± 2.31	12.83 ± 1.48	0.42	
Perceived severity				0.009
case	13.36 ± 2.18	14.60 ± 0.98	1.24	
control	12.93 ± 2.24	13.23 ± 1.73	0.30	
Perceived benefit				0.01
case	13.78 ± 1.91	14.82 ± 0.60	1.04	
control	13.47±1.56	13.79 ± 1.44	0.32	
Perceived barrier				0.065
case	9.93 ± 2.59	11.19 ± 3.69	1.26	
control	9.69 ± 2.03	10 ± 2.20	0.31	
Self-efficacy				0.0003
case	13.57 ± 1.89	15.13 ± 3.18	1.56	
control	13.18 ± 1.59	13.24 ± 1.62	0.06	
Guide for action				0.0001
case	7 ± 2.23	9.05 ± 1.55	2.05	
control	1.72 ± 6.82	6.46 ± 1.28	-0.36	

Table 2. Comparison of Mean (± SD) Scores for the Questionnaire Parameters Before and After the Intervention in Case and Control Groups

	Always, Frequency (%)	Often, Frequency (%)	Rarely, Frequency (%)	Never, Frequency (%)
Case				
Before Intervention	7(7)	6(6)	26(26)	61(61)
After Intervention	51(51)	21(21)	24(24)	4(4)
Control				
Before Intervention	6(6)	5(5)	16(16)	73(73)
After Intervention	5(50)	12(12)	24(24)	59(59)
Chi-Square Test				
Before Intervention	$P = 0.305$			
After Intervention	$P = 0.0005$			

subject behaviors regarding BSE. Before the intervention 7% "always", 6% "in most cases", 26% "rarely", and 61% "never'" performed a BSE. In the control group 6% "always", 5% "in most cases", 16% "rarely", and 73% "never" performed a BSE. Chi-square analysis showed no relationship between the treatments in the studied groups. After the intervention, 51% of individuals "always", 21% "often", 24% "rarely", and 4% "never" performed a BSE. In the control group 5% "always", 12% "often", 24% "rarely", and 59% "never" performed a BSE (*Table 2*). Chi-square analysis revealed a significant correlation between the percentage reporting BSE and training.

4. Conclusion

The findings from this study indicate that the greatest source of information about breast cancer is books and pamphlets, followed by healthcare employees. In the present study, there was a significant relationship between age, marital status, and education level and the knowledge and practice of research units. Moreover, the study indicates that there was a significant difference between the mean score relating to awareness, which includes possible signs of breast cancer and the appropriate time for BSE, between the control and intervention groups. The mean score relating to awareness in the intervention group was increased after training by 39.28%, whereas that in the control group showed little change. Moreover, raised awareness about breast cancer has been proven to be caused by training in several studies (20, 21). The perceived susceptibility score before intervention in the intervention group was 12.92 but after training it was 14.19. A person will increase her self-examination behavior if she feels threatened by a problem (here, cancer). (22). Various studies have shown that evaluation of clinical results by an individual is effective in altering the perceived severity of a disorder (23). Before for the intervention, the perceived severity score in the intervention group was 13.36, but it was increased to 14.60 after the intervention. In addition, the perceived barriers score before the intervention was 9.93, but this was increased after the intervention to 11.19. According to one study, there is a negative relationship between perceived barriers and BSE (17). Other studies have proposed that perceived barrios are the most powerful parameter associated with expressing or predicting protective health-related behaviors (23). One of the most important perceived barriers before training was identified as the BSE result in this study (34% of subjects agreed). The possibility of breast cancer increases if it is manipulated that 26 percent of those who were surveyed were in favor of this barrier. The mean perceived benefits score of the intervention group in relation to BSE was 13.78 at the beginning of the study but 14.82 after training. Another study based on this model also reported an improvement in the perceived benefits score in the intervention group after training (24). The self-efficacy of women who perform BSE is also significantly higher than that of those who do not (18). In this study, the self-efficacy of women in the intervention group increased from 13.57 to 15.13 after training. The difference in the mean score of all HBM parameters was not significant in the control group before and after training. Before training, only 7% of the intervention group subjects had excellent BSE performance, but after intervention this improved to 51%. Training can result in an increase in the regular performance of BSE (20-22). The use of video and in-person training regarding BSE can have a lasting and profound impact on women's learning of this method (25). Regarding the importance of preventive programs, self-care interventions for early detection of diseases have a special place in such programs, and the high incidence and prevalence of breast cancer in human communities, especially in Iran, indicate that using this type of intervention, given its benefits compared with the relatively low costs, is affordable and should attract the attention of the national health system. However, due to the necessity of using modern training theories and models of intervention, including HBM, that was used in this project and effectiveness of these interventions compared with more traditional training interven-

tions, the use of training models are recommended.

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Authors' Contribution

Behrouz Lotfi Mainbolagh: 33 %
Seyede Zahra Hashemi: 33 %
Dr Alireza Ansari Moghadam: 33 %

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