Original Article

J Breast Health 2017; 13: x-x
DOI: 10.5152/tjbh.2017.3255

The Effects of Training on Knowledge and Beliefs about Breast Cancer and Early Diagnosis Methods among of Women

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ABSTRACT

Objective: Breast cancer (BC) is the most common female malignancy in the world and Turkey. Its prevalence and mortality are surprisingly increasing at a rapid rate. The objective of this study was to determine the effectiveness of training sessions on women's knowledge of relevant risk factors of BC and screening methods, screening behaviors and health beliefs among of healthy women in Turkey.

Materials and Methods: In this study, in order to establish the efficiency of BC training, a semi-empirical single group pre-test & post-test research model was used. The data were collected by using a self-administered questionnaire and by using the Turkish version of Champion's health belief model scale (CHBMS). The pre-test was performed before the training and after one week of the training, post-test was performed with a questionnaire having the same content.

Results: In total, 244 women participated in the study. The average age of the women was 39.44 (SD=1.06) years. The mean total knowledge score increased significantly (p<.001) from 9.05 in the pre-test to 16.53 in the post-test. The results showed that both mean knowledge scores and CHBMS subscales scores of the women were increased significantly (p<.001) from the pre-test to the post-test. In multiple linear regression analysis, BC screening knowledge of women with susceptibility, benefit, self-efficacy and health motivation subscales of CHBMS, breast self-examination (BSE) practice and self-efficacy were also significant in the post-test; in the pre- and post-tests, a significant relationship among the level of education of women, susceptibility and seriousness was found (p<.001).

Conclusion: The study showed that the training program had profound effects on BC knowledge, screening behaviors and health beliefs of women.

Keywords: Breast cancer, health belief model, early diagnosis methods, breast cancer risk factors, training

Introduction

International studies have indicated that breast cancer (BC) is one of the most fatal cancers that affect women and it is also a global health problem in both Turkey and the world. In 2012, the International Agency for Research on Cancer (IARC) stated that 1.7 million women were diagnosed with BC. Now, it represents one fourth of all cancers in women (1). In Turkey, according to the Ministry of Health's cancer statistics data, while BC in women was 35.0% in 2005, it rose to 45.9% in 2013 (2). These figures suggest that measures taken on an international dimension for the prevention of BC are very important not only in Turkey, but throughout the world. The reduction in BC mortality depends to a large extent on early diagnosis initiatives because BC pathogenesis is multifactorial, primary prevention is difficult. Therefore, it is important to identify it early. The World Health Organization (WHO) (2012) states that there are two components of early detection efforts: 1) Early diagnosis; the awareness of early signs and symptoms in order to get them diagnosed and treated at early stage. In the absence of any early detection or screening and treatment intervention, patients are diagnosed at very late stages when curative treatment is no longer an option. 2) Screening aims to identify individuals with suggestive abnormalities of a specific cancer or pre-cancer and refer them promptly for treatment or when feasible for diagnosis and treatment (3). Screening programmes are especially effective for frequent cancer types for which cost-effective, affordable, acceptable and accessible screening tests are available for the majority of the population at risk. The focus of BC screening is to reduce the disease mortality (4). In Turkey, a nationwide organization called Cancer

This study was presented at the 11th National Congress of Breast Diseases, 5-9 October 2011, Antalya, Turkey.
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Received: 24.06.2016
Accepted: 04.10.2016
Available Online Date: 04.04.2017

Early Detection and Education Center (Kanser Erken Teşhis, Tarama ve Eğitim Merkezi-KETEM) has recently been launched by the Ministry of Health and began to screen for some cancers (2). It is recommended for early detection of BC, there are basically three methods of screening programs complementing each other; breast self-examination (BSE), clinical breast examination (CBE) and mammography (MMG) (5). This is emphasized in order to increase the effectiveness of the screening methods, it is needed to use two or three of the methods in combination. However, in this regard, studies published in many countries and in Turkey have shown that the rate of participation of women in the BC screening program was low (6-13). The reasons why women did not participate in the screening program included lack of information and pain ranking the first, not wanting to be exposed to radiation, being afraid to discover the cancer, embarrassment, fatalism, and misinformation, not seeing a physician unless ill, possibility that screening might be refused by the family, negligence, lack of physician recommendation, health-care provider attitudes, not remembering to do it, discomfort, and having not enough time to handle it (12, 14-19). The results of the studies indicate that knowledge, attitudes, and motivation are important individual determinants of health behavior. Also, many social, cultural, and economic factors contribute to the development, maintenance, and change of health behavior patterns (20). The health belief model (HBM) theorizes that people's beliefs about whether they are at risk for a disease or health problem, and their perceptions of the benefits of taking action to avoid it influence their readiness to take action (21). In Turkey and in many studies in various societies, training has been shown to increase the participation in screening programs and the BC information of women. In Turkey, the Ministry of Health, Department of Cancer established one of the primary objectives of public training to be the national screening program in 2004 (2, 22-27). The aim of this study was to determine the effects of the training given about BC, risk factors, health beliefs with knowledge and practices related to screening behavior to females who were trainees at an adult education center during the cancer week (April 1-5) in the Central Anatolia region of Turkey.

Materials and Methods

In this study, a semi-empirical, single group pre-test-post-test research model was used in order to establish the efficiency of BC training.

Participants and Setting

The research was done with 244 volunteers in total aged 20 and over, who were women that were not diagnosed with BC. The study was conducted at a community education center located in Sivas, a city in the Central Anatolia of Turkey.

Instruments

In this study, the data were collected by using a structured questionnaire prepared by the authors themselves and the Turkish version of Champion's Health Belief Model Scales (CHBMS).

Questionnaire Form

A questionnaire form was developed for this study by the researchers. The questionnaire form included two sections: the first section included demographic characteristics (e.g. age, education level, current marital status, work status) and BC risk factors of women (e.g. menarche age, family history of BC, personal history of BC, having any children, childbearing age, number of children, physique (thin, normal, obese), the use of oral contraceptives, menopausal status the use of postmenopausal hormone) and the screening practices. The second section included multiple-choice questions and it had 18 items, which measured the level of knowledge about BC risk factors and screening; 12 questions were about high risk factors for BC including age (>40), early menarche (<12 years), being a female who did not give birth, later age at first full-term pregnancy (>30 years), breast-feeding, long-term use of oral contraceptives, late menopause (>55 years), having first-degree relatives with history of breast cancer, physical exercise, smoking, high level of education and obesity and 6 questions were related to knowledge of BC screening (e.g. a woman was asked about BSE, CBE and MMG screening), each item was answered as true or false. The correct answers were scored as 1, wrong answers as 0. The higher scores indicated a higher level of knowledge about BC risk factors and screening. This form was applied before and after the training.

The Health Belief Model Scale

The Health Belief Model (HBM) was originally developed in the 1950s by social psychologists in the public health arena as a way of predicting who would utilize screening tests and/or vaccinations (28). The HBM Scale was developed in 1984 and was revised in later works by Champion (29, 30). Champion's revised tool has 42 items representing 6 subscales. The six basic concepts contained in the HBM are: susceptibility, seriousness, general health motivation, benefits, barriers, and self-efficacy as they relate to BC and BSE MMG self-efficacy (revised 1997), and it also included 7 items related to health motivation (revised 1993). All the items from the subscales were formatted using a five-point Likert scale. Each individual had six separate scores. In this study, the version of CHBMS was used that was adapted to Turkish by Karayurt and Dramalı (31). Cronbach's Alpha value for each subscale ranged from 0.58 to 0.89. For this study, Cronbach's Alpha value was determined as 0.74-0.88 in pre-test and 0.76-092 in post-test.

Training

The public education center serves in two different buildings. Therefore, training was conducted twice between the hours of 2:00 and 4:30 p.m. (April 1-5) in the afternoon on separate days. One week before, institutional managers announced that training about breast cancer would be provided to all women who were attending courses at the community health center. On the day of the training, the researchers went to the institution one hour before the training and completed the preparations for the hall. Later, women who wanted to participate in the training were gathered in the hall. Before the training began, the purpose of work was explained by the first researcher who gave the training and it was announced that volunteers would participate in the study, those who did not want to participate in the study could listen the training. Questionnaries for pre-test were distributed before the training started. Women completed the questionnaire in 15-20 minutes. The training program provided for women aimed to improve their knowledge about BC and to promote their practical performance of BC screening methods. The training program took place after the participants completed the pre-test. In the training, a power point presentation was given by the first author to women for improving their knowledge of BC and screening, which took 60-90 minutes. Specifically, a phase of the training program included the following: (a) high risk factors of BC (b) risk factors of BC; (c) symptoms of BC; (d) screening methods (BSE, and CBE, MMG) for the early detection of BC. The researchers went to the institution again one week later for the post-test. Women filled in their survey forms once again.

Data Collection

The study was carried out in two phases: the first phase (pre-training phase) and the second phase (post-training phase).

First Phase (Pre-training): The following tools and techniques were used: A pre-designed, structured interview questionnaire was used to collect the following data from the women: demographics and pre-test of knowledge scores, risk factors and screening methods for BC and scores for the CHBM.

Second Phase (Post-training): The post-test was done by using the same pre-test questionnaire for evaluation of the impact of the training program. Women filled in their survey forms again after one week. Women's responses for the pre- and post-test questions were obtained via face-to-face interviews. The study continued for 4 weeks.

In this study, no ethics committee approval was obtained. Written permission was received from the institution where women worked. The purpose of the study was explained to the women during the first stage. Verbal consent was received from the women who voluntarily participated in the study.

Statistical Analysis

The data were analyzed using the Statistical Package for Social Sciences 22.0 (SPSS Inc.; Chicago, IL, USA). It was determined by the Shapiro-Wilk test that the data (-1.5 to +1.5) showed a normal distribution. Descriptive statistics were used to evaluate the socio-demographic characteristics of the sample. Early detection practices (BSE, CBE and MMG) and scores for the CHBM were analyzed with student t-test to compare the scores. The data were determined using frequency, mean and standard deviation Paired Samples-t test. For comparisons between pre- and post-test knowledge, the McNemar Chi-square test was used. Paired samples t-test was performed to determine the difference between repeated measurements. To determine the causal relationship between continuous variables, the multiple linear regression analysis was applied. The findings were evaluated at a 0.05 significance level with a 95% confidence interval.

Results

Participant Characteristics

Table 1 describes the study population. The women had a mean age of 39.44 years (SD=1.06). Of the 244 women who participated in the study, most reported to be married (76.6%) and having elementary education (51.7%), being housewives (92.6%), doing no physical exercise (77.5%), having children, breast-feeding their children, having had a menarche age of 12-14 years (75.8%), not being in menopause (88.9%) and never having smoked (78.7%).

Knowledge Score

Table 2 includes the states of the women who had the following knowledge levels: pre-test 53.7%, post-test 85.2% BSE; pre-test 50.8%, post-test 80.3% CBE; pre-test 74.2%, post-test 93.9% MMG for early diagnosis of BC and the difference between pre- and post-test was statistically significant. While the mean score for the questions about knowledge of BC risk factors at the pre-test was 3.65, it was increased to 9.36 in the post-test and the difference between pre- and post-test was statistically significant (-25.865, p=.000). While the mean knowledge scores for BC screening was 3.58 in the pre-test, it was increased to 6.65 in the post-test and difference between pre- and post-test was statistically significant (-22.916, p=.000). The total mean knowledge score increased significantly from 9.05 in the pre-test to 16.5 in the post-test and the percentage of correct answers increased at a statistically significant rate (-25.910, p=.000).

Table 1. Characteristics of the women

Characteristics	n (%)
Age (years)	
≤39 age	121 (49.6)
≥40 age	123 (50.4)
Mean age	X=39.44 (SD=1.06)
Marital status	
Currently married	187 (76.6)
Single, Divorced, Widowed	57 (23.4)
Education level	
Illiterate	31 (12.7)
Elementary	126 (51.7)
≥High school	87 (35.6)
Work status	
Employed	18 (7.4)
House wife	226 (92.6)
Physical exercise	
Yes	55 (22.5)
No	189 (77.5)
Body mass index	
<29 kg/m^2	159 (65.2)
>29 kg/m^2	85 (34.8)
Parity (n=204)	
Nullipara	50 (20.5)
1	24 (9.8)
≥2	168 (68.8)
Age at first birth (194)	
<30	178 (73.0)
≥30	10 (5.3)
Breast feeding (n=194)	
Ever	183 (94.3)
Never	11 (5.7)
Age at menarche	
↓11 age	14 (5.8)
12-14 age	185 (75.8)
↑15 age	45 (18.4)
Family history of cancer	
Yes	21 (8.6)
No	223 (91.4)
Contraceptive pill	
Ever	58 (23.8)
Never	186 (76.2)
Smoking	
Ever	52 (21.4)
Never	192 (78.7)
Menopause	
Yes	27 (11.1)
No	217 (88.9)

SD: standard deviation

Table 2. Distribution of pre- and post-test knowledge scores

	Pre-test (% correct)	Post-test (% correct)	Test	p
BC				
Knowledge	70.5	99.2	68.014	0.000
BC risk factors				
Knowledge	34.4	98.0	153.006	0.000
What risk factors of BC?*				
The probability of BC for women aged 40 and above	49.2	86.1	46.098	0.000
High levels of education	1.6*	58.2	137.007	0.000
Using oral contraceptives	23.4	77.0	129.008	0.000
Smoking	54.9	84.4	61.476	0.000
Family history	66.4	91.4	59.016	0.000
Females not breastfeeding her baby	56.1	91.0	81.103	0.000
Female who did not give birth	30.7	81.1	121.008	0.000
First pregnancy after the age of 30 years	16.8	76.6	140.167	0.000
Physical exercise	18.9	70.5	124.008	0.000
Early menarche	12.3	78.3	159.006	0.000
Late menopause	13.1	69.7	134.064	0.000
Obesity	21.3	72.1	122.008	0.000
Total mean risk factors knowledge score (12 item)	3.648±2.857	9.369±3.097	-25.910	0.000
Screening knowledge (What is needed for early diagnosis methods?)*				
BSE	53.7	85.2	73.114	0.000
CBE	50.8	80.3	68.122	0.000
MMG	44.3	75.4	74.013	0.000
BSE is required to protect against BC	73.4	95.5	50.161	0.000
Do you practice BSE every month?	59.7	66.5	18.776	0.000
MMG is required to protect against BC	75.4	90.2	29.167	0.000
BC screening knowledge score (6 item)	5.451±1.976	8.103±1.191	-22.751	0.000
Total mean knowledge score (18 item)	9.05 (SD=4.15)	16.53(SD=3.68)	-25.910	0.000

*answers are multiple; BC: breast cancer; BSE: breast self examination; CBE: clinical breast examimnation; MMG: mammography

Table 3. The difference between pre- and post-test CHBMS subscales and BC and screening knowledge of women

CHBMS subscales	Pre-test	Post-test		
	Mean±SD	Mean±SD	Test	p
Susceptibility	8.070±2.712	8.865±3.050	-5.362	0.000
Seriousness	21.008±6.680	21.853±6.863	-2.975	0.003
Benefits	15.012±4.376	16.184±4.229	-5.770	0.000
Barriers	27.316±7.130	26.160±8.028	3.037	0.003
Self-efficacy	30.098±8.468	36.586±9.216	-10.415	0.000
Health motivation	25.049±6.044	26.648±5.738	-5.872	0.000
Total	126.553±19.068	136.295±22.030	-9.143	0.000
BC screening knowledge score*	5.451±1.976	8.103±1.191	-22.751	0.000
BC risk knowledge score	3.648±2.857	9.369±3.097	-25.910	0.000

BC: breast cancer; CHBMS: champion's Health Belief Model Scale

Table 4. The results of linear regression analyses of an independent variable with CHBMS

CHBMS subscales	Independent variable	PRE-TEST							POST-TEST						
		B	SE	β	t	p	F	Model (p)	B	SE	β	t	p	F	Model (p)
Susceptibility	Stable	9.700	1.325		7.321	.000			6.222	1.698		3.664	.000		
	Age	-.017	.020	-.067	-.860	.391			.010	.022	.034	.432	.666		
	Education level	-.459	.133	-.247	-3.445	.001	3.342	.002	-.539	.143	-.257	-3.757	.000	5.511	.000
	Family history of BC	.303	.618	.031	.490	.625			.267	.678	.025	.394	.694		
	BSE practice	-.540	.387	-.093	-1.395	.164			-.586	.383	-.095	-1.530	.127		
	Having MMG	.867	.440	.147	1.972	.049			-.056	.465	-.009	-.121	.904		
	BC screening knowledge	.059	.107	.043	.556	.579			.529	.173	.206	3.048	.003		
	BC risk knowledge	-.053	.067	-.056	-.788	.431			.065	.065	.066	1.009	.314		
Seriousness															
	Stable	21.876	3.384		6.465	.000			21.215	4.039		5.253	.000		
	Age	-.036	.051	-.057	-.700	.485			-.017	.053	-.026	-.314	.753		
	Education level	-.072	.340	-.016	-.212	.832			-.723	.341	-.154	-2.121	.035		
	Family history of BC	1.538	1.579	-.065	.974	.331	.738	1.313	1.313	1.612	.054	.815	.416	1.391	.210
	BSE practice	.206	.988	.014	.208	.835			-1.129	.911	-.081	-1.240	.216		
	Having MMG	.808	1.123	.056	.720	.472			-.097	1.107	-.007	-.088	.930		
	BC screening knowledge	-.412	.272	-.122	-1.513	.132			.550	.412	.095	1.334	.183		
	BC risk knowledge	-.008	.171	-.003	-.045	.964			-.010	.153	-.004	-.063	.950		
Benefit															
	Stable	13.570	2.204		6.157	.000			8.836	2.423		3.647	.000		
	Age	-.019	.033	-.045	-.558	.577			.004	.032	.011	.139	.890		
	Education level	.138	.222	.046	.623	.534			.072	.205	.025	.350	.727		
	Family history of BC	-.744	1.029	.048	-.724	.470	1.132	.344	-1.360	.967	-.090	-1.407	.161	3.334	.002
	BSE practice	-.153	.644	-.016	-.238	.812			-.058	.546	-.007	-.105	.916		
	Having MMG	1.142	.731	.120	1.562	.120			1.049	.664	.116	1.579	.116		
	BC screening knowledge	.254	.177	.115	1.432	.154			.846	.247	.238	3.417	.001		
	BC risk knowledge	-.034	.112	-.022	-.307	.759			.029	.092	.021	.319	.750		
Barrier															
	Stable	35.124	3.562		9.860	.000			29.849	4.750		6.284	.000		
	Age	-.021	.054	-.031	-.391	.696			.015	.063	.020	.243	.808		
	Education level	-.612	.358	-.125	-1.708	.089			-.458	.401	-.083	-1.142	.255		
	Family history of BC	-1.178	1.662	-.046	-.709	.479	1.709	0.108	1.750	1.896	.061	.923	.357	1.009	.425
	BSE practice	-1.772	1.040	-.116	-1.704	.090			-1.171	1.071	-.072	-1.093	.275		
	Having MMG	.711	1.182	.046	.601	.548			.727	1.302	.042	.558	.577		
	BC screening knowledge	-.262	.287	-.073	-.913	.362			-.301	.485	-.045	-.621	.535		
	BC risk knowledge	-.010	.180	-.004	-.057	.955			-.128	.180	-.049	-.710	.478		
Self-Efficacy															
	Stable	19.284	3.817		5.053	.000			18.382	5.169		3.556	.000		
	Age	-.051	.058	-.064	-.890	.375			.089	.068	.102	1.300	.195		
	Education level	-.005	.384	-.001	-.013	.990			.044	.437	.007	.100	.920		
	Family history of BC	-.730	1.781	-.024	-.410	.682	9.810	.000	-3.895	2.063	-.119	-1.888	.060	4.931	.000
	BSE practice	3.997	1.115	.220	3.586	.000			-.448	1.166	-.024	-.384	.701		
	Having MMG	-.750	1.266	-.041	-.592	.554			.860	1.417	.044	.607	.544		
	BC screening knowledge	1.638	.307	.382	5.334	.000			2.105	.528	.272	3.986	.000		
	BC risk knowledge	-.286	.193	-.097	-1.480	.140			.141	.196	.047	.718	.473		
Health motivation															
	Stable	20.314	3.037		6.690	.000			15.991	3.305		4.838	.000		
	Age	.090	.046	.158	1.972	.050			.078	.044	.144	1.788	.075		
	Education level	.563	.305	.136	1.845	.066			.186	.279	.047	.665	.507		
	Family history of BC	.396	1.417	.018	.279	.780	1.305	.249	-1.235	1.319	-.060	-.936	.350	2.927	.006
	BSE practice	-1.067	.887	-.082	-1.203	.230			.086	.745	.007	.115	.909		
	Having MMG	-1.004	1.008	-.076	-.996	.320			-.475	.906	-.039	-.525	.600		
	BC screening knowledge	.352	.244	.115	1.439	.151			1.009	.338	.209	2.991	.003		
	BC risk knowledge	-.019	.154	-.009	-.126	.899			.060	.126	.032	.479	.632		

BC: breast cancer; CHBMS: Champion's Health Belief Model Scale; MMG: mammography; BSE: breast self-examination

Health Beliefs

As shown in Table 3, the women's post-test CHBMS subscales scores (susceptibility perception (-5.362, p=.001); seriousness perception (-2.975, p=.003); benefits perception -5.770, p=.001); barrier perception (3.037, p=.003); self-efficacy perception (-10.415, p=.001); health motivation perception (-5.872, p=.001) were found to be statistically significant in all dimensions compared to pre-test.

Multiple linear regression results are given in Table 4. As seen in the table, the relationship between the CHBMS sensitivity subscale and the variables was statistically significant (p=.000) and education level of women (ß=-.539) and knowledge level of breast cancer screening increased the post-training sensitivity level (ß=-.529) while the other variables did not affect the sensitivity subscale (p>.05). There was no significant relationship between CHBMS severity subscale scores and variables (p=.210). In the post-test, the relationship between CHBMS benefit sub-dimension and women's variables was significant (F=3.334; p=.002). After training, the increased breast screening knowledge of women increased the average score of benefit subscale (ß=-.846) while the other variables did not affect the utility sub-dimension (p>.05). The correlation between pre- and post-test of CHBMS obstacle perception was not significant (p=.425), self-efficacy perception was significant (p=.000). After the training, increased breast self-esteem score of women (ß=2.105) increased the self-efficacy perception score and the relationship between health motivation and variables was significant (p=.006). Also, the increased post-training breast screening knowledge increased the level of perceived health motivation as it was determined (ß=1.009) (Table 4).

Discussion and Conclusion

The most crucial means to develop protective behavior against the disease in the community can be realized by providing training programs for increasing knowledge and creating awareness among people. These study results revealed that, while the knowledge of BC among women was at a low level in the pre-test, it was significantly increased in the post-test. The present study demonstrated that training intervention was effective on increasing women knowledge and beliefs about BC. The results of the present study agreed with the findings by Açıkgöz et al. (32) and Ceber and colleagues in Turkey (22). The results of this study were similar to studies conducted in western Kenya, in Jordan, in the New York State Capital Region, in Taiwan, in studies conducted with immigrant Latino women and in Egypt and they revealed that there was a highly significant improvement in all knowledge items delivered to the intervention group from the pre to the post-test (6, 27, 33-36). As can be understood from the results of the above previous studies, training is the best way to increase knowledge.

Experimental and clinical studies indicate that preventing BC is a critical priority in women' health. Screening programs have a significant impact on prognosis in BC because it is the key to change BC growth rates via early detection and screening to facilitate the treatment of BC. In the current study, women did not have sufficient knowledge and practice about screening activities related to BC before the training. After the training, scores in the BC, screening knowledge and CHBSM subscale scores were increased. BSE is a way that enables a woman to check her breast for changes such as lumps or thickenings. It is still considered a simple, noninvasive, inexpensive, affordable and accessible method for younger and high-risk women to discover early changes in their breasts. Awareness and education on breast health issues have been identified as a key component of early detection (37). Hence, training programs can increase the BC awareness and ensure the regular performance of BSE and MMG. In one study, barriers against implementation of BC screening methods in women were found to be related to the level of education and lack of adequate information about BC screening (38). Recent pre- and post-test research in Turkey (32) determined that the average knowledge level of women was significantly increased after completion of the planned training as compared to the pre-training level. Similarly, Avci and Gözüm (39) found that education was effective in changing health beliefs regarding BC screening. In the study conducted by Abd El-Hay, it was emphasized that MMG could reduce mortality rates for women aged 40 to 74 by 25%. However, previous studies (7, 40-43) reported that the rate of practicing MMG among women was low. MMG has been the "gold standard" thanks to the detection of BC at an early stage for decades. Previous studies showed that educational interventions had a significant impact on increasing the frequency of having MMG and positive attitudes toward MMG (44), BC knowledge and BC health beliefs (45).

In the current study, women' health beliefs post-test scores after the training were increased significantly in all dimensions compared to the pre-test scores.

Women's education level and BC screening knowledge score and BSE practice were significantly associated with perceived susceptibility, perceived benefit, perceived self-efficacy and health motivation subscales of the CHBMS. No significant associations were found with the barrier subscale. Previous studies have shown that knowledge is also an important element in the health beliefs and health beliefs have a significant impact on acquiring positive health behaviors (22, 39). Therefore, accurate information clears the way for the development of health beliefs and has been associated with an increased rate of using the screening methods (6, 28, 36, 40, 45).

In this study, we identified that women had increased knowledge about BC, BC risk factors, and screening after the training. Group training appeared effective for improving BC knowledge, behaviors and health beliefs among women. The information gathered in this study is useful for planning educational programmes.

Limitations of the Study

The study has several limitations. In the study, the level of knowledge of women after education evaluated after one week and it was not determined whether education had triggered behavioral change. It may be recommended that studies be carried out using a combination of methods at longer intervals for evaluating the effectiveness of the training. This limitation needs to be considered when interpreting the results of this study.

The results of this study suggest that women's beliefs and practices and knowledge were significantly increased in the post-test. However, training should be continued because increased knowledge level is important to change behavior about early diagnosis for BC and beliefs.

Ethics Committee Approval: Authors declared that the research was conducted according to the principles of the World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects", (amended in October 2013).

Informed Consent: Verbal informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - M.Y.; Design - M.Y, Y.S., H.Ö.C.; Supervision - M.Y.; Funding - M.Y, Y.S., H.Ö.C.; Data Collection and/or Processing - M.Y, Y.S., H.Ö.C.; Analysis and/or Interpretation - M.Y, Y.S., H.Ö.C.; Literature Review - M.Y, Y.S., H.ÖC.; Writing - M.Y, Y.S., H.Ö.C.; Critical Review - M.Y.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

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