

RESEARCH ARTICLE

Assessment of the Effects of Breast Cancer Training on Women Between the Ages of 50 and 70 in Kemalpaşa, Turkey

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Abstract

Background: In both developed and developing countries; breast cancer is the major cancer observed in women. The aim of this study was to assess the effect of nursing and mammographic intervention on women with breast cancer between the ages of 50 and 70. **Materials and Methods:** A training program, which was quasi-experimental and had a pretest-protest design, was applied in Kemalpaşa district of Izmir, between October 2008 and August 2010. The target population was women between the ages of 50 and 70, who were registered in the list of 3rd Family Medicine Unit in Izmir's Kemalpaşa metropolis. A total of 106 women who were in conformity with the study criteria participated in the study. Research data were collected through home visits that included face-to-face interviews; Ministry of Health education material and video films were modified and used for the training. Data analysis was performed through 82 women who were paired at the first and the second phase. **Results:** It was observed that although the rate of breast self examination significantly increased after the training ($p=0.022$), the rate of clinical breast examination ($p=0.122$) and mammographic screening ($p=0.523$) did not. Differences in the stages of change after training were found to be statistically significant ($p<0.001$) and the group showed a progression in the stages of change in general (46.3%). In women mean scores of breast cancer awareness ($p<0.000$), severity ($p<0.000$), health motivation ($p<0.000$) and perception of the benefits of mammography ($p<0.000$) increased significantly and mean score of perception of mammography barriers decreased significantly ($p<0.000$) after the training. **Conclusions:** After the training on breast cancer and mammography it was determined that nursing interventions provided positive progression of stages of change of women, affected health beliefs positively and significantly increased BSE incidences. However, it did not have a significant effect on CBE and mammographic screening.

Keywords: Nursing interventions - breast cancer - behavior change- mammography- Turkey

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Introduction

In both developed and developing countries; breast cancer is the major cancer observed in women (WHO 2014). One of the 4 women diagnosed with cancer in the world has breast cancer and among the most diagnosed cancer types, breast cancer is in the second rank with an incidence of 11,9%. According to predictions of International Cancer Agency it was stated that incidence of breast cancer has increased 20% and mortality from breast cancer has increased 14% (Ferlay et al., 2013; WHO 2013). Approximately 232,340 new cases of invasive breast cancer and 39,620 breast cancer deaths are expected to occur among US women in 2013 (DeSantis et al., 2014). According to the 2009 statistics of the Department of Cancer Control-the Ministry of Health, breast cancer is the most frequently observed cancer type among the women in Turkey with an incidence of 40.6 per hundred thousand (Health Ministry of Turkish Republic, 2009).

According to International Cancer Agency; the incidence of breast cancer is higher in developed countries and the incidence of mortality from breast cancer is higher in developing countries. It was stated that this situation arises from the difficulties experienced by women in developing countries to reach breast cancer diagnosis, screening and treatment services and it was emphasized that efforts to provide these services should be increased (Jemal et al., 2011; Ferlay et al., 2013). Mammography screening behavior has a critical role in the early detection of breast cancer and for the decline of its mortality (Avci et al., 2014; WHO 2014). Consequently, it is known to be used for routine breast cancer screening in many countries. American Cancer Society suggests annual mammographic screening after the age of 40 and after the age of 50 in Turkey (International Agency for Research on Cancer, 2001; Health Ministry of Turkish Republic, 2009; American Cancer Society, 2011).

Through the studies it seems clear that there is a

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lack of information and practice about the protection against breast cancer and early diagnosis among the women both in our country and in world (Demireloz et al., 2010; Yucel et al., 2014). Educational programs have an important role to promote breast cancer screening behaviors and the health of women (Erbil and Bolukbas 2014). Stages of Change and Health Belief Models are the two most common models that have been applied for mammographic screening behaviors (Glanz et al., 2008; Hayden, 2009). It was stated in several studies that screening increases successful treatment and decreases mortality risk among women (Tabar et al., 2003; Rahman et al., 2009; Secginli and Nahcivan, 2011). In our country the usage of mammography, was encountered and there is limited number of studies in which CHBM was used (Secginli and Nahcivan 2004; Secginli and Nahcivan 2006; Gozum et al., 2010; Erbil and Bolukbas 2012; Avci et al., 2014).

Early diagnosis and scheduled scanning programs are essential for breast cancer, information about protection from breast cancer and early diagnosis should be given to women so that awareness of women about breast cancer can be raised (Demireloz et al., 2010; Ceber et al., 2013). Public health nurses could ensure prevention of cancer without occurrence by raising social awareness through effective education interventions at the first stage. Moreover, by enhancing mammographic screening and other early diagnosis behaviors of women, could decrease mortality from breast cancer (Gozum et al., 2010; Jemal et al., 2011; Gucuk and Uyeturk 2013). In this regard, the aim of this study is to assess the effect of nursing and mammographic intervention, applied to women between the ages of 50 and 70.

Materials and Methods

Design

A training, which is quasi-experimental and has a pretest-posttest design was applied, in Kemalpaşa district of Izmir, between October 2008 and August 2010. It included 15 sessions of interventions after 6 months of assessment.

Participants

Target population was formed by women, between the ages of 50 and 70, who were registered in the list of 3rd Family Medicine Unit in Izmir's Kemalpaşa metropolis. 106 women who were in conformity with the study criteria participated in the study (Absence of breast cancer history or training on breast cancer and mammography before, to be communicable, full attendance to the training, to be literate, to be volunteered for the "Breast Cancer and Mammography" intervention). 210 women among 4013 women registered to the unit, between the ages of 50 and 70, constituted the population of the study. In the first application, 106 women who were in conformity with the study criteria were interviewed and trained. In the second application, 82 women were interviewed in total (participation rate of 77.4%).

Instruments

In the study "Questionnaire Form" was used for

descriptive findings, "Breast Cancer Risk Assessment Form" for the assessment of breast cancer risk and "Stages of Change" and "Champion's Health Belief Model Scales" for the assessment of the effect of training.

In the light of the relevant literature, questionnaire form includes 17 questions about socio-demographic characteristics (age, marital status, educational status, employment status, health security, the number of children, income status), early diagnosis methods (status of having BSE, CBE or mammographic screening), status of perception of risk of breast cancer and menopausal status.

Breast Cancer Risk Assessment Form

The form that is used for the assessment of the level of breast cancer risk, was developed by American Cancer Society and it is accepted and suggested by the Ministry of Health in Turkey. It is comprised of six parts and 20 items. Women are classified according to the level of risk as "low", "intermediate", "high" and "highest" regarding the age, familial breast cancer history, personal breast cancer history, childbearing age, age at menarche and Body Mass Index (BMI). A score below 200 is evaluated as "low risk", a score between 200 and 300 as "intermediate risk", a score between 301 and 400 as "high risk" and a score higher than 400 as "highest risk". BMI was evaluated according to WHO standards.

Stages of Change

Rakowski et al. published several articles that have started to study the utility of the model on mammography interventions. The following six stages and assessments were used in the stages of change questions related to mammography screening behavior. 1. precontemplation (no mammogram in the past and no plan of a mammogram within the next 2 years); 2. relapse (at least one mammogram in the past, but it is now off schedule and no plan of a mammogram within the next 2 years); 3. relapse risk (currently on a schedule, but no plan of a mammogram in a time frame that will keep her on a schedule); 4. contemplation (no mammogram in the past, but plan of a mammogram in the next 2 years; or off schedule after a prior mammogram, but planning to have one in the next 2 years); 5. action (one mammogram on a schedule and plan of another in a time frame that will keep her on a schedule; or a scheduled mammogram) and 6. maintenance (at least two mammograms on a schedule and intends plan of another in a time frame that will keep her on a schedule) (Ryu et al., 2008; Moodi et al., 2012).

Champion's Health Belief Model Scales (CHBMS)

Champion scale, which was developed by Victoria Champion in 1984, consists of the dimensions of the concepts that are emphasized in the health belief model. CHBMS was adapted to Turkish with three different studies. In the Cronbach's Alpha evaluations of the scales; alpha values were found as .74 and .85 in the study of Secginli and Nahcivan, as .58 and .89 in the study of Karayurt, as .69 and .83 in the study of Gozum and Aydın (Gozum and Aydın, 2004; Secginli and Nahcivan, 2004). In this study, alpha value was found between 0.82 and 0.94

and for the validity and reliability study of the scale, the form conducted by Gozum and Aydın was used. Breast Cancer Health Belief Model Scale has 8 dimensions and 58 items that assess the judgement of individual about breast cancer and general health: “susceptibility (3 items)”, “consideration/seriousness (6 items)” and “health motivation (5 items)”, “barriers (8 items)”, “benefits (4 items)”, and “self-efficacy/confidence (10 items)” of BSE, “benefits of mammography (5 items)” and “barriers to mammography (11 items)” (Gozum and Aydın, 2004).

It is possible to apply the scale in two different ways; the beliefs of mammography and items of BSE dimensions can be applied together or individually. In this study, breast cancer related 5 dimensions (30 items) of the scale, “susceptibility”, “consideration/seriousness”, “health motivation”, “benefits of mammography” and “barriers to mammography” were used. For the evaluation of the scale, 5 Likert scale measurements ranging from 1 to 5 were used. In the scale, “completely disagree” answer was evaluated as 1 score, “disagree” as 2 scores, “indecisive” as 3 scores, “agree” as 4 scores and “completely agree” as 5 scores. High scores indicate increased precision and care, Gozum also indicate that benefits are perceived higher for perception of benefits and barriers are perceived higher for perception of barriers (Gozum and Aydın, 2004; Gozum et al., 2004).

Intervention

Research data was collected through home visits that include face-to-face interviews; Ministry of Health education material and video films were modified and used for the trainings. Pretest and posttest was implemented before training and after six months of training for the assessment of the effectiveness of the training. Early diagnosis behaviors, stages of changes on mammography screening, health perception and breast cancer risk levels were the variables.

In the pilot implementation, the questionnaires were administered to 30 people who were not participants of the study and ambiguous statements were rewritten. Filling the questionnaire form took 20-25 minutes.

Appointments for home visits were taken from the participants by phone calls. Women, who were in conformity with the study criteria and accepted to participate in the study with a written consent, were invited to the health center for the training. Before the training pretest was applied (May 2009-July 2009) and then breast cancer and mammography training was performed (groups of 6-9 individuals and 15 sessions). After six months of the training (Between February 2010 and April 2010), effectiveness of the training was assessed through application of posttest.

Information regarding socio-demographic features of women and Breast Cancer Risk Assessment Form together with the Stages of change and CHBMS were collected by the implementation of women in the pre-test of the study. The stages of change and CHBMS were re-implemented six months after the end of the collection of post-test data. Interviews were made face to face after six months in order to assess the condition of having undertaken a mammography or not.

Procedures

An approval of the Ethic Institute of Ege University Izmir Atatürk School of Health and a permission of Kemalpaşa Health Group Directorate and 3rd Family Medicine Unit at Izmir’s Kemalpaşa, were obtained via official correspondence in order to start the study. Verbal and written permissions of the participants were also taken. Education brochure called “Breast Cancer Early Detection Saves Lives”, which had been prepared by Ministry of Health, were given to individuals who did not want to participate in the study.

Data analysis

SPSS 16.0 software package was used for descriptive analysis and McNemar Test analysis was used to evaluate the relation between the after training and early diagnosis practices. The sub-dimension confidence of the Champion Health Belief Model Scale was evaluated with Cronbach’s alpha analysis, the sub-dimension average scores regarding Champion’s Health Belief Model Scale of women that were assessed by t-test in the dependent groups both before and after the education. Comparison of the stages of change of women before and after training was performed with Wilcoxon Signed Rank Test.

Results

It was found that average age of women was 56.4 ± 5.9 , half of the women participated in the study were primary school graduates (47.6%), majority of them were married (78.0%) and housewives (78.0%). It was also determined that average monthly income of women was 1038.4 ± 726.4 , 30.5% had social insurance and 6.1% had no social security, their average number of children was 2.76 ± 1.4 and 41.5% had a total of 2 children. Average age of entering the menopause was found to be 48.9 ± 3.4 and 89.0% was already in the menopause. Among the study group, relatives of 13.4% had breast cancer.

Majority of the women (79.2%) were found to be at low risk of breast cancer and 8.8% were found to be at high risk group.

The question to inquire the women’s perception of their risk to get breast cancer was answered as “I do not know” by 42.7%, as “I am at low risk” by 29.3%, as “I am at high risk” by 14.6% and “I am at no risk at all” by 13.4%.

Among women, 59.8% were determined to administer BSE and among those who do, 30.6% were determined to administer BSE regularly once in a month.

A percentage of 48.8% of women were found to have clinical breast examination made and 53.7% were found to have a mammography scan.

A total of 11 women who were not applying BSE before education started to apply BSE after the education. In contrast, 2 individuals who were applying BSE before education ceased to apply it after the education. Application of BSE increased significantly after the education.

A total of 18 individuals who did not have CBE before the education started to have CBE after the education. In contrast, 9 individuals who had CBE before education ceased to have it after the education. No statistically

significant difference was determined in having CBE before and after the education.

A total of 13 women who did not have mammography before the education started to have mammography after the education. On the contrary, 9 individuals who had mammography before the education ceased to have it after the education. No statistically significant difference was determined in having mammography before and after the education.

The percentage of having mammography in the study group increased from 53.7% to 58.5% after the education. Among women, 63.4% were determined to make an appointment to have mammography and 36.6% were determined to not. When the reasons women stated for not having mammography/making appointment after the education were examined, 30% were found to forget the mammography appointment, 26.7% were found to have other health problems, 20% were found to complain from broken mammography device or late appointment dates or no dates at all, 13.3% were found to be unable to access the health institution, 10% were found to have no need for it or no complains (Table 1).

Stages of change

The stages of change of women were evaluated in accordance with the answers they give to stages of change questions. Accordingly, 19.5% of women were in the “Before consideration”, 2.4% were in the “Give up”, 43.9% were in the “Consideration”, 6.1% were

in the “Give up risk”, 14.7% were in the “Movement/ action”, 13.4% were in the “Continuation” stage before the education. Moreover, 9.8% of women were in the “Before consideration”, 31.7% were in the “Consideration”, 1.2% were in the “Give up risk”, 41.5% were in the “Movement/ action”, 15.9% were in the “Continuation” stage after the education.

The differences in the stages of change of women before and after the education were compared in two paired groups using Wilcoxon signed rank test. Women who showed regression in the stage of change were 8.6%, those with a progression were 46.3% and those with no stage of change were 45.1%. The difference in the determined stages of change before and after the education was found as statistically significant (Z=-4.258, p<0.001). The overall group showed changes in the direction of progression (Table 2).

When the score averages of Sub-dimensions of Champion’s Health Belief Model Scale of women before and after the education were compared, a statistically significant difference between the groups was determined. Significant increase in the Susceptibility, Consideration/Seriousness, Health Motivation and Benefits of Mammography score averages, significant decrease in the Barriers to Mammography perception score averages were determined (Table 3).

Discussion

It is determined that breast cancer and mammography education given to women provides progression in the stages of change, significantly affects health beliefs and significantly increases BSE rate. However, no significant effect was identified on having CBE and mammography.

The results of the study indicate that women’s perception of risk of having breast cancer (high risk perception: 14.6%) was higher than the calculated risk (high risk: 9.8%). This finding implies women lack the sufficient knowledge regarding breast cancer risks or they are afraid to get breast cancer. Similarly, in many studies aiming to investigate women’s perception of having breast cancer (Buxton et al., 2003; Davids et al., 2004). it is shown that the perception of having breast cancer is higher than the actual risk. These findings are consistent with the results of the study. There are many studies emphasizing the importance of awareness on risk factors (Wood et al., 2002; Kim and Menon, 2009; Yilmaz et al., 2013). In the light of these findings, the vitality of informing the women with high risk of breast cancer and directing them towards early diagnosis methods was revealed.

Table 1. The Effects of Education on Women’s Inclination to Apply to Early Diagnosis Methods

Early Diagnosis Method Before Education	After Education						P*
	Yes		No		Total		
	Number	%	Number	%	Number	%	
Apply BSE	47	95.9	2	4.1	49	100	0.022
Do not apply BSE	11	33.3	22	66.7	33	100	
Have CBE	31	77.5	9	22.5	40	100	0.122
Do not have CBE	18	42.9	24	57.1	42	100	
Have mammography	35	79.5	9	20.5	44	100	0.523
Do not have mammography	13	34.2	25	65.8	38	100	

*McNemar Test

Table 2. Comparison of Stages of Change of Women Before and After the Education

Results	Number	%
Regression in the Stage of Change	7	8.6
Progression in the Stage of Change	38	46.3
No Stage of Change	37	45.1
Total	82	100
	Z=-4.613	p=0.000

*Wilcoxon Signed Rank Test

Table 3. Women’s Education before and after the Champion Health Belief Model Scale Score Average of Sub-Dimensions

Champion Health Belief Model Scale Sub-Dimensions (Minimum and Maximum Scores of Scale Sub-Dimensions)	Pre-test (N:82) X±S	Post-test (N:82) X±S	t*	P*
1. Susceptibility (3-15)	10.29±2.73	12.30±1.29	-7,809	*0.000
2. Consideration/Seriousness (6 - 30)	14.76±2.66	18.91±4.55	-10,877	*0.000
3. Health Motivation (5 - 25)	19.06±3.42	24.73±0.75	-14,221	*0.000
4. Benefits of Mammography (5 - 25)	17.71±3.69	23.26±1.77	-14,936	*0.000
5. Barriers to Mammography (11 - 55)	26.37±7.17	16.01±3.25	14,929	*0.000

*t test *p<0.05

Similar to the findings of the study, the administered intervention was shown to have no effect on rates of having CBE in Ho's study (2006) in which the effect of the intervention on CBE was investigated (Ho, 2007). Contrary to the findings of this study, many other studies showed that the intervention is effective on raising the rates of having CBE (Coleman et al., 2004; Ahmad et al., 2005). It is known that BSE does not increase the survival rate (Jebbin and Adotey, 2004; McCready et al., 2005). However, BSE administration is a practice that should be recommended as it is predicted to increase the awareness on breast health and subsequently develop the level of knowledge on CBE and mammography application especially in the developing countries.

There are many studies in the literature showing that rates of having mammography increase following education intervention (Grindel et al., 2004; Fowler et al., 2005; Russell et al., 2006). Yabroff and Mandelblatt (1999) re-evaluated 63 intervention studies regarding mammography by meta-analysis and determined the interventions using the model as a base as the most effective practices in increasing mammography rates (Yabroff and Mandelblatt, 1999). Rate of having mammography in the experimental group increased from 53.7% to 58.5% following education. Women participating in the study are expected to regularly have mammography screening consistently with their age group as they are at or over the age of 50. However, the finding that there was no significant increase in the rates of having mammography following the education indicates some of those in the experimental group making appointment did not have the mammography. Ultimately, only 58.5% of the women had mammography after the education despite 63.4% made an appointment. This result demonstrates that duration of 6 months is a short period of time to have mammography and at least a year is needed. The short period of 6 months for evaluation has been a limitation.

Progression occurred in the stages of change of women after the education and the overall group showed change towards progression.

The stages of change women were in were evaluated according to the answers they have given to the stages of change questions. Accordingly, half (9.8%) of the women that were in the "Before consideration" stage before the education (19.5%) proceeded to the other stages. All women in the "Give up" stage (2.4%) proceeded to the upper stage and the percentage of women thinking of having mammography before the education (43.9%) decreased after the education (31.7%). This situation is thought to arise from that considering women had mammography or jumped to the action stage. Give up risk decreased from 6.1% to 1.2%. The percentage of women who took action (14.7%) (i.e. who had mammography) increased approximately to three fold (41.4%).

In a study conducted with 258 women chosen randomized, the percentage of women in before consideration stage decreased from 6.3% to 5.6%, the percentage in action stage increased from 21.4% to 41.3%, the percentage in continuation stage increased from 45.2% to 69.8% in two interventions performed over the phone. Percentage of women in the give up stage, on the other

hand, decreased from 4% to 1.6% (Carney et al., 2005). According to these findings, the education given as a part of the study can be stated to provide a change parallel to these results.

In parallel with the study findings, progression in the stages of change after the education was provided in many of the education intervention studies (Clark et al., 2002; Carney et al., 2005; Hur et al., 2005; Ryu et al., 2008). In Kim et al.'s study, there was no transition between stages in the preparation phase for the usage of mammography after the intervention (Kim and Menon, 2009). According to these findings, the education given as a part of the study can be stated to provide a change parallel to these results.

Education significantly affected health beliefs of women. Significant increase was determined in Susceptibility, Consideration/Seriousness, Health Motivation and Benefits of Mammography score averages whereas significant decrease was determined in Barriers to Mammography perception score average.

The increase in the scores indicates an improvement in the sensitivity and attention together with a more elevated perception of benefits. The decrease in the score averages of barrier perception, on the other hand, is an indication of reduced barrier perception. CHBMS, which has a proven significant effect of increasing breast cancer scanning behaviors in many studies, defines attributes that are effective in exhibiting health behaviors (Champion and Skinner, 2003a; Champion et al., 2003b; Champion et al., 2006; Champion et al., 2008).

According to CHBMS, a woman with a feeling of being prone to breast cancer and with a perception of breast cancer as a serious disease is expected have an inclination to have early diagnosis methods performed. Similarly, a woman with a perception of early diagnosis behaviors as beneficial to her health and with an awareness of reasons withholding her from performing this behavior and with an ability to cope with these reasons is expected to have early diagnosis methods performed. In the light of this information, results obtained in the study are important for women to use early diagnosis methods.

According to CHBMS, elevated levels of perception negatively affect behaviors (Gozum and Aydın, 2004). In many studies, it is determined that women who did not have mammography have a more elevated level of perception compared to those who did. In other words, women who regularly had mammography had a reduced barrier perception (Secginli and Nahcivan, 2006; Avcı and Kurt, 2008; Champion et al., 2008; Kim and Menon, 2009) and performed education and guidance decreases the level of barrier perception (Hall et al., 2007). Individuals who display the desired behavior are expected to have reduced barrier perception (Nahcivan and Secginli, 2003). In line with these findings, the significance decrease in women's perception of mammography barrier can be considered as positive regarding behavior of having mammography.

In this study, it can be stated that women accepted breast cancer as a serious problem (perception of attention) and her probability to get breast cancer (perception of sensitivity) and effectiveness of mammography in the early detection of breast cancer (perception of mammography benefit), they had reduced perception of

barriers for the mammography application and they had elevated health motivation.

Many studies, similar to the results of our study, demonstrated positive changes in the average perceived susceptibility and perceived seriousness scores after the education. Moreover, the results of several studies indicate that educational intervention significantly improved the scores of health motivation and benefits of mammography in the intervention group (Rezaeian et al., 2014).

Similar to the findings of the study, Burack and Liang found in the intervention of phone monitoring performed with African American women over the age of 50 that perceived benefits and barriers were the most significant factors in having mammography (Burack and Liang, 1989). In Price et al.'s study, sensitivity, seriousness and benefit perceptions were found as determinative on the will to have mammography, yet barrier perception was found not to be significantly determinative on the will to have mammography (Price et al., 1992). As a result of Hall et al.'s culturally sensitive education program applications, sensitivity sub-dimension, which is one of the sub-dimensions of HBM, significantly increased in the intervention group whereas mammography benefit and barrier sub-dimension did not display a significant change (Hall et al., 2005). In another study of the same researcher where he conducted his study with African-American women, no significant difference was determined in any of the sub-dimensions of the scale in the intervention group (Hall et al., 2007). Han et al.'s study demonstrated that the education intervention made no significant difference in the perception of benefit, sensitivity and barrier of women after 6 months (Han et al., 2009).

In a study in which the impact of model and video methods on educated women in our country was evaluated, no significant difference between intervention and control groups was determined in terms of mammography barrier perception score averages (Aydın and Gozum, 2009). In Gozum et al.'s study, perceived benefits of mammography increased with peer education whereas perceived barriers of mammography decreased with it (Gozum et al., 2004). In Aydın et al.'s (2009) and Ho's (2007) studies, no significant effect of education in changing the perception of health motivation was found (Ho, 2007; Aydın and Gozum, 2009). Ineffectiveness of the program in contributing to the health motivation as indicated in Aydın et al.'s (2009) study was explained with high health motivation of women in the period before the program (Aydın and Gozum, 2009). The standard education given to women as a part of Health Belief Model and TTM's Stages of Change was determined to positively influence the perception of women in this study.

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