

# Assistance based on research to encourage women who are concerned about breast cancer to get screened

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### Abstract

**BACKGROUND :** Concerns about breast cancer play a significant role in determining behaviour that supports breast cancer screening.

**OBJECTIVE :** To ascertain the impact of theory-based training on women with varying degrees of breast cancer anxiety towards breast cancer screening.

**DESIGN AND SETTING :** Conducted two family health centres as part of a randomised controlled experiment. **METHODS:** 285 women in all were enlisted. Women with low levels of concern about breast cancer belonged to the first intervention group, which consisted of 112. Women with high levels of concern were part of the second intervention group, which consisted of 37 women, and the second control group, which consisted of 43 women. The groups receiving intervention received instruction based on theory to encourage breast cancer screening. At one, three, and six months, the women's readiness to have a breast cancer screening as well as their anxiety ratings regarding the disease were assessed.

**RESULTS :** Following the training, women in the low cancer-worry intervention group self-examined their breasts more in months 1 and 6, while women in the high cancer-worry control group self-examined their breasts more in month 3 ( $P < 0.05$ ). Regarding breast self-examination, clinical breast examination, or mammography, there was no difference between the women with low or high levels of breast cancer fears ( $P > 0.05$ ).

**CONCLUSION :** The effectiveness of theory-based training was not impacted by anxiety level, and it had a partial positive impact on participants' willingness to get screened for breast cancer.

**CLINICAL TRIAL REGISTRATION :** NCT04225741.

### INTRODUCTION

Among gynaecological cancers, breast cancer is the most common type of cancer and the leading cause of cancer-related deaths. Breast cancer affects one in four cancer-stricken women worldwide. According to data from the International Cancer Agency, 626,679 people died from breast cancer globally in 2018 and there were around 2,088,849 new cases.<sup>1</sup> While the incidence of breast cancer is higher in developed than in developing nations, fewer people die from breast cancer in developed than in developing nations. It is well recognised that mammography, clinical breast examinations, and breast self-examinations are crucial in the early detection of breast cancer. Because mammography is an expensive procedure and not everyone has health insurance and governmental funding is insufficient, particularly in developing nations, the uptake rate for this procedure is low. Therefore, clinical breast examination (which only has a minimal cost) and breast self-examination (which is free) continue to be crucial diagnostic techniques. Additionally, medical professionals have the chance to provide advice on breast cancer, risk factors, preventative strategies, and screening techniques during a clinical breast examination.

It's critical to understand the obstacles that prevent women from voluntarily undergoing breast cancer screening. According to Azami-Aghdash et al., fear, difficulties with transitioning to the clinic, and a lack of knowledge were the main obstacles preventing people from participating in breast cancer screening programmes, in that order.<sup>7</sup> Tuzcu and Bahar's study in Turkey revealed that the main barrier inhibiting willingness to get screened for breast cancer is ignorance.<sup>8</sup> Numerous scholarly investigations have examined the impact of education in surmounting the obstacle of inadequate knowledge about breast cancer screening.

The idea of cancer can be unsettling or frightening. Fear is the third most obstacle to getting screened for breast cancer and can influence women's decisions to get screened. Women who are afraid or anxious about developing cancer may be more inclined to seek an early diagnosis in some cases, but in other cases, they may be discouraged.<sup>11</sup> Research has shown that unfavourable feelings like anxiety and concern about health issues might actually cause people to put off getting an early cancer diagnosis.<sup>13-16</sup> The main focus of cancer-related personal education should be on examining women's concerns about breast cancer and their behavioural choices throughout follow-up. Thus far, there has been little discussion of how women's fear and anxieties about cancer affect their behaviour and learning process when it comes to breast cancer screening. It is anticipated that the current study will significantly advance our knowledge of women's attitudes and behaviours about breast cancer screening.

### OBJECTIVE

The purpose of this study was to evaluate the impact of theory-based training on women who are concerned about breast cancer in order to encourage screening for the disease. Furthermore, women with varying degrees of concern about breast cancer were compared in terms of their screening habits.

### METHODS

#### Study design, setting, participants and ethics

Two family health centres in eastern Turkey that offered primary healthcare services were the sites of a randomised controlled study. 3,900 women between the ages of 20 and 65 who were registered at these family health centres made up the study's population.

The sample size was calculated by a power analysis using OpenEpi, version 3, a statistical programme that is available to the general public. A significance threshold of 5%, an effect size of 22%, and an 80% power to represent the population were used in this research. Research demonstrated that each group required a minimum of 105 women in the sample size (i.e., 105 in the intervention group and 105 in the control group). In terms of randomization and allocation concealment, women were chosen from Başhark family health centre for the control groups and Sitmapınarı family health centre for the intervention groups. Using basic random selection, these women were cho-

sen from both family health centres. Each family health centre employed a random number table, which made it possible to enrol 1,530 women. For the 420 women who fulfilled the inclusion criteria, the Breast Cancer Worry Scale (BCWS) was administered. Participants in the first intervention group and the first control group were women who had been determined to have low levels of breast cancer anxiety, while participants in the second intervention group and the second control group were women who had high levels of breast cancer anxiety. Based on their BCWS scores, 305 women (intervention 182; control 123) with low levels of breast cancer anxiety and 115 women (intervention 55; control 60) with high levels of breast cancer anxiety were found.

Blinding for group assignment was not feasible for the researchers or the participants after allocation. This occurred as a result of follow-up interviews that were done with the ladies and researchers. A total of 285 women completed the study protocol: 37 women completed it in the high breast cancer-worry intervention group and 43 women completed it in the high breast cancer-worry control group. Similarly, 173 women in the low breast cancer-worry intervention group and 112 women in the low breast cancer-worry control group completed the study. These lower numbers resulted from women changing their addresses ( $n = 33$ ) and wanting to withdraw from the study ( $n = 22$ ) during the data collection phase (Figure 1).

The following were the inclusion criteria. The participants were literate, not pregnant or nursing, had not previously had a mammogram, had not previously had a clinical breast examination, had not been diagnosed with breast cancer, and had not been performing monthly breast self-examinations. The Turkish breast cancer screening programme states that women 20 years of age and older should do a monthly breast self-examination; women 20 years of age and older should have a clinical breast examination every two years; women 40 years of age and older should have a clinical breast examination annually; and women 40-69 years of age should have a mammogram annually.<sup>21</sup> Consequently, ladies who had been performing monthly breast self-examinations were approved. as conducting a self-examination of the breasts. Women who were 40 years of age or older were considered to have undergone clinical breast examination and mammography if they had at least one clinical breast examination within the first six months following training. The largest populations around the Malatya provincial border are served by the Sitmapınarı and Başhark family health centres (2,500 women served by Sitmapınarı and

1,400 by Başharık), and these populations are homogeneous in terms of sociodemographics.

### Ethics

Under approval number 2014/44, the Internal Review Board (Ethics Committee) of İnönü Üniversitesi gave its blessing to this work on April 16, 2014. The Clinical Trial Registry has this trial listed as NCT04225741.

### Measurements

Between January 2015 and August 2017, information was gathered via a personal information form, the BCWS, and the Breast Cancer Screening Behaviour Questionnaire (BCSBQ). Form for personal information: The questionnaire, which was created by the researchers, asked questions about the sociodemographic characteristics of the women.

Questionnaire on Breast Cancer Screening Behaviour: The researchers created this questionnaire, which included inquiries about mammography procedures, clinical breast examinations, and self-examination of the breast.<sup>19</sup> In Turkey, there was no approved instrument for evaluating breast cancer screening behaviour. According to the national guidelines that must be adhered to during studies on breast cancer screening programmes carried out by the Turkish Ministry of Health, the BCSBQ was created. Breast Cancer Worry Scale: This three-item measure was created by Lerman et al. (20) to assess the degree of anxiety about breast cancer and how it affects daily activities and mood. Subsequently, Lerman expanded the scale's scope beyond breast cancer to include general cancer and included six new questions.<sup>20</sup> Timur Taşhan et al. then adapted Lerman's six-item cancer worry scale to evaluate just breast cancer fears, and a Turkish validity and reliability study on the BCWS was carried out. The five-item Likert-type scale used in this Turkish-language validated version of the BCWS requires respondents to select one of the following answers for each question: never = 0, seldom = 1, sometimes = 2, frequently = 3, or always = 4. Consequently, the lowest possible overall score is achieved is zero, and 24 is the maximum. A total score below 12 implies minimal concern about cancer, whereas a total score above 12 indicates significant concern.<sup>21</sup> The Turkish-language validated version of the BCWS had a Cronbach's alpha reliability coefficient of 0.78.

### Procedure

The Public Health Institution of Turkey as well as the family

health centres in Sitmapınarı and Başharık gave written consent for the study to be conducted. The İnönü University Health Sciences Scientific Research and Publication Ethics Committee also granted approval (April 16, 2014, under number 44). All participating ladies gave verbal agreement prior to the study commencing. Data from the intervention group and the control group were gathered at the same time. The researchers scheduled phone consultations with the ladies and used in-person interviews to gather data in four phases at the women's residences.

During the first interview, the women who had been chosen to form the two control groups were given the BCWS and the personal information form to complete in order to assess their levels of concern about breast cancer. One, three, and six months after the initial interview, follow-up interviews were held, and the BCSBQ was given out at each visit.

After distributing the BCWS and the personal information form to the women who were chosen to form the two intervention groups (a high breast cancer worry group and a low breast cancer worry group) during the initial interview, the researchers provided both intervention groups with breast cancer screening training in the form of group training (8–12 women) in the training room of the Sitmapınarı family health centre under equal conditions. The women in the intervention groups received follow-up consultations through home visits in months 1, 3, and 6 after completing this training. The BCSBQ was given out by the researchers at these intervals. The effectiveness of the theory-based training on breast cancer screening behaviour served as the study's main outcome measure. Changes in the behaviour of screening for breast cancer were the secondary outcome measures.

### The intervention

The 40- to 45-minute single-session training was held in the Sitmapınarı Family Health Center's training room, which served as an appropriate setting. The health belief model explains the low involvement in disease prevention and screening programmes as well as the predictors of the determinants of preventive health behaviours.<sup>22, 23</sup> Moreover, this model assesses the cognitive elements that support health-promoting behaviours in addition to explaining screening behaviour.

Numerous earlier studies have looked at the health belief model and screening behaviour for breast cancer at the same time.<sup>22, 25, and 28</sup> Consequently, this model was applied in the training that was given as part of the current study in order to improve

participant comprehension of the significance of breast cancer screening. According to the health belief model, participants would learn how to properly do breast self-examination and comprehend the value of clinical breast examination and mammography through this training. The concepts listed below were discussed:

- Sensitivity perception: Information about the disease, its epidemiology, the anatomy of the breast, and risk factors for breast cancer were given to women in an effort to raise their perception of their own vulnerability to the disease.
- Severity perception: The features of breast lumps as identified in early and late breast cancer, as well as the variations in treatment protocols, were elucidated to women in order to enhance their perception of the severity of breast cancer.
- Perceived benefit: The treatment benefit of early diagnosis of breast cancer, the role of alternative treatment methods, such as lumpectomy instead of radical mastectomy, and the impact of routine examinations on the breast cancer mortality rate were explained in order to improve women's perceptions of breast cancer screening.
- Perceived trust: The proper way to perform a self-examination of the breast, the components of a clinical breast examination, the purpose of mammography, and the duration of the mammography procedure were all discussed.
- Felt barrier: The factors preventing women from performing breast self-examination, from having clinical breast exams, and from having mammograms were thoroughly addressed in order to lessen the women's felt hurdles against getting breast cancer screenings.

The control group received none of the above-discussed interventions.

### Statistical analysis

The Statistical Package for the Social Sciences, version 16.0, was used to analyse the data. Percentages, means, Fisher's exact tests, chi-square tests, independent-sample t tests, and repeated-measurement analysis of variance (ANOVA) tests were employed in the data assessment. The chi-square test and Fisher's exact test were used to compare the groups with respect to categorical variables. To compare the intervention and control

groups, an independent t test was employed. Repeated-measurement ANOVA was utilised to look for a significant change in means over time. The threshold for statistical significance was determined to be  $P < 0.05$ .

### RESULTS

The control group's and the intervention group's age, marital status, work position, educational attainment, and economic standing were identical. Regarding sociodemographic traits, there was no statistically significant difference between the intervention and control groups (Table 1).

From the pre-intervention test to the tests in months 1, 3, and 6, the mean BCWS scores of the women in the intervention group with low levels of cancer fears climbed progressively, and the changes in the scores were statistically significant ( $P = 0.001$ ). Among the women in the control group with low levels of cancer fears, there was no difference in the mean BCWS scores between the pre-test and the tests in months 1, 3, and 6 ( $P = 0.096$ ). Among the women in the intervention group with high levels of cancer fears, there was no difference in the mean BCWS scores between the pre-test and the tests in months 1, 3, and 6 ( $P = 0.263$ ). From the pre-test to the tests in months 1, 3, and 6, the mean BCWS scores of the women in the control group who had high levels of cancer fears steadily declined, and the differences in the scores were statistically significant ( $P = 0.001$ ) (Table 2).

In the first month following the theory-based training, it was discovered that 41.6% of the women in the intervention group and 20.5% of the women in the matching control group conducted breast self-examination, indicating that these women had low levels of concern about breast cancer.  $P = 0.001$  indicates that there was a statistically significant difference in the usage of breast self-examination. Additionally, there was a statistically significant difference ( $P = 0.021$ ) in the number of women who did breast self-examination in month six between the intervention group (56.1%) and the control group (42%). Between the women in the intervention and control groups, there were no differences in the rates of breast self-examination in the third month or of clinical breast examination and mammography during the first six months following training (Table 3). In the third month following training, 45.9% of the intervention group's women and 79.1% of the control group's women performed breast self-examinations, indicating that these women had significant levels of concern about breast cancer. There was a statistically significant difference in the usage of breast

self-examination ( $P = 0.020$ ). There were no differences seen between the women in the intervention and control groups on the frequencies of breast self-examination in months 1 and 6, or between having a clinical breast examination and mammography within the first six months (Table 4).

## DISCUSSION

In order to combat breast cancer, it is crucial that women are encouraged to undergo cancer screening exams on a regular basis. On the other hand, a range of psychosocial factors influence behaviours, including the willingness to participate in cancer screening tests.<sup>3</sup> Anxiety, worry, and despair are just a few of the negative emotions that can arise from thinking about cancer.<sup>11,29</sup> Of these psychological factors, cancer fear or worry is the most common. In this context, research is needed to determine the kinds of disparities that psychosocial factors exhibit in relation to cultural structures and the readiness to seek early diagnosis. The goal of the current study was to ascertain how women's attitudes about breast cancer screening were affected by theory-based training, based on their degree of concern about breast cancer.

The low breast cancer worry intervention group's women's concerns about breast cancer increased gradually and dramatically, according to the results of follow-ups conducted in months 1, 3, and 6. On the other hand, the women in the control group with high breast cancer worries experienced a steady and significant decline in their anxieties ( $P < 0.05$ ). According to Janz et al., people's anxiety over cancer recurrence caused them to enquire more during doctor visits. It has also been said that people are quite likely to heed the advice of those who have a great deal of faith in, including clergy and medical professionals. According to Çaman et al., women were effectively encouraged to frequent cancer screening centres by the recommendations of physicians. These authors also disclosed that women's concern levels were significantly influenced by the conduct of healthcare providers. According to the fundamental components of the health belief model, the present study's explanation of breast cancer risk factors, lump characteristics, and treatment regimen variations based on an early or late diagnosis were categorised under the headings of perceived susceptibility and perceived severity.<sup>18, 25</sup> It was believed that this information would raise the anxiety levels of the women in the low cancer-worry intervention group while lowering the worry levels of the women in the high breast cancer-worry control group. It was suggested

that gradually losing the information was the cause of the rise in anxiety in this intervention group.

There was a discernible difference in the breast self-examination between the low cancer-worry intervention group and the other groups in months 1 and 6. In contrast, the high cancer-worry control group did better in month three when it came to self-examination of the breasts. Kim et al.<sup>33</sup> discovered that women who worried about cancer a lot were irrationally pessimistic. Their behaviour in getting an early cancer diagnosis may be negatively impacted by unfavourable ideas about cancer treatment or survival, which may indicate that they do not want to know about the cancer beforehand. Gasalberti demonstrated that concerns about breast cancer prevented women from doing breast self-examinations,<sup>34</sup> while Arts-de Jong et al.<sup>35</sup> discovered a link between cancer fears and demoralisation. The current study's findings are consistent with those of these earlier investigations.

Other studies have demonstrated that training significantly affects women's willingness to perform breast self-examination<sup>9,10</sup>, undergo clinical breast examination, and undergo mammography, despite some earlier research on the effects of training on women's willingness to undergo breast cancer screening suggesting that this training had no effect in relation to clinical breast examination<sup>9</sup> or mammography<sup>8,9,10</sup>. Ngua et al.'s study on cervical cancer (36) revealed that the training provided had no impact after month six. The instruction provided had a short-term impact on the women's behaviour, primarily with regard to breast self-examination, as demonstrated by the results of the current study. It was noted that the degree of cancer anxiety and the instruction provided had no impact on the willingness to undergo the most valuable diagnostic procedures, a clinical breast examination and a mammography. The hypothesis that "theory-based training does not affect women's acquisition of behaviour favouring breast cancer screening" is partially supported by this finding. In this sense, the current study's findings are consistent with earlier research. Concerns about acquiring cancer and the impression of one's own cancer risk are two significant variables that interact with each other, according to numerous research.<sup>3,37-39</sup> Within this framework, research has examined the impact of breast cancer fears and perceptions of breast cancer risk on the willingness to get screened for the disease. While some research indicated that screening behaviour for breast cancer increased with worry or perceived risk,<sup>38,40-44</sup> another research revealed no differences.<sup>45</sup> According to Baysal and Gozum<sup>46</sup>, a lower risk of breast

cancer was linked to a higher mammography uptake rate. The frequencies of clinical breast examinations, mammography procedures, and breast self-examination did not alter between the low and high cancer fear intervention groups. The hypothesis that “the level of breast cancer worry among women does not affect the acquisition of behaviour favouring breast cancer screening” is supported by the results of this study.

According to Amuta et al.<sup>47</sup>, this concern had a transient impact on behaviour linked to health, and that behaviour also changed when there was no emotion involved in making health-related decisions. Furthermore, these investigators discovered that anxiety about cancer had no effect on how frequently people attended cancer screenings. In the Early Diagnosis, Screening and Education Centre for Cancer of Turkey, Çaman et al.<sup>32</sup> conducted a study and discovered that there was no statistically significant correlation between the frequency of breast self-examinations and the perception of cancer risk. Furthermore, there was no discernible correlation discovered between the perception of cancer risk and the consideration of taking part in breast cancer screening programmes in the future. According to Seven et al.<sup>39</sup>, there was no relationship between women's perceptions of their risk of developing breast cancer and their knowledge of the disease, breast self-examination techniques, or mammography procedures. The current study's findings align with those published by Amuta et al.,<sup>32</sup> Çaman et al.,<sup>39</sup> and Seven et al.

The first study restriction was the small percentage of women who were enrolled and who worried a lot about breast cancer. The second was that the ladies in the experimental group received instruction that was portrayed as group-based instruction. Finally, there was no assessment of these women's true breast cancer risks or their pre- and post-training knowledge levels.

### CONCLUSIONS

The current study discovered that theory-based training had no influence on willingness to undergo clinical breast examination and mammography, but it did have a partial effect on willingness to perform breast self-examination. Furthermore, it was noted that the women's degree of worry had no bearing on the effectiveness of theory-based training aimed at promoting breast cancer screening. It is believed that these women worried after learning about the risk factors for developing breast cancer screening behaviours, but their anxiety had little effect on their behaviour. Instead, it sent them more encouraging

messages; as a result, research into how this strategy affects breast cancer screening behaviour is necessary.

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