Original Article

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Fear of Breast Cancer and Assessment of the Efficiency of Mammography Scanning in Working Women

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ABSTRACT

Objective: To determine the fear of breast cancer and assess the efficiency of mammography scanning among a female population working in a university.

Materials and Methods: This descriptive study was performed in a university in the city center of Samsun between March 2019 and October 2019. Instead of choosing samples, all volunteers were included. The data were collected by a study-specific form prepared by the researchers, the breast cancer fear scale and mammography efficacy scale. Descriptive statistical analyses were performed and data were analyzed using the Statistical Package for the Social Sciences, version 20.0.

Results: The mean age of women participating in this study was 38.07±8.58 (range 20–62) years and the mean health perception score was 7.46±1.51 (range 3–10). Most (70.3%) women were academic staff and 17.9% reported income less than expenses. Of the participants, 16.1% had breast-related health problem and 18.4% had breast cancer in the family. Most (85.0%) believed that they should have mammography scanning to be protected from breast cancer. The mean score on the breast cancer fear scale was 25.60±7.29, indicating a high score and the mean score on the mammography efficacy scale was 41.18±6.47, indicating a high score of mammography efficacy. The score of breast cancer fear scale was higher for; married women (26.19±7.21) than single women (24.33±7.39) and women with history of having health problem related with breast (28.94±7.30) while those without a history of health problem (24.96±7.13) and postmenopausal women (27.64±6.19) while non-menopausal women (25.30±7.40).

Conclusion: The score of breast cancer fear scale was higher for; married women, history of having health problem related with breast and postmenopausal women.

Keywords: Breast cancer; fear; mammography

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Key Points

- The majority of working women participating in the study know the importance of early diagnosis in breast cancer, believe that mammography is necessary for early diagnosis and consider it necessary.
- The high mammography self-efficacy scores of working women participating in the study is an indication of high breast cancer awareness.
- In order for the positive results seen in the above two items to be seen in women from all parts of society, awareness of this viewpoint and scientific studies on the subject should be increased.

Introduction

According to the Globocan (2020) data published by the World Health Organization, cancer is a global health problem that is the most common and the largest cause of mortality among non-communicable diseases. Among the top ten cancer types seen globally, breast cancer ranks second after lung cancer and has a rate of 11.7% among all cancer types. Worldwide, there were 2,261,419 new registered breast cancer cases in 2020. With 24,175 new breast cancer cases in Turkey, it has a rate of 10.3% among all cancer types (1, 2). It has been stated that 12.9 out of every hundred thousand registered breast cancer cases in the world in 2021 resulted in mortality. In addition, the International Agency for Research on Cancer argues that the reason for the increase in cancer cases in the world, 2–3 times higher incidence in cancer cases in developed countries compared to other countries may be due to limited access to diagnosis and treatment (2). In Turkey, according to the data of Head of Cancer Department, breast cancer in women is the most common and also the most common cause of death. Breast cancer is an important public

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health problem and in Turkey the lifetime risk of developing breast cancer for a woman is 7.8% and the risk of the mortality is 2.3%. Early detection has an important role in decreasing the mortality rate due to breast cancer. Although various methods have been proposed for early diagnosis, only the effectiveness of mammography has been proved. Breast cancer scans performed by screening mammography have been shown to decrease breast cancer mortality rate (3).

The Turkish Society of Gynecological Oncology (TJOD) has defined fear of breast cancer as the negative, psychological and physiological warnings that occur against the perceived threat of breast cancer and the response that individuals exhibit against this threat. TJOD has also reported that fear that prevents performing breast cancer early detection behavior occurs because of thoughts such as being diagnosed with breast cancer, losing the breast, death, and feeling of pain (4). Self-efficacy, on the other hand, is the individual's own will, determination and belief in performing the action in order to achieve the expected results, and fear is thought to be both a preventive and a facilitating factor in performing breast cancer early diagnosis behavior (5, 6). Studies have shown that women with a family history of breast cancer and risk factors experience fear of developing breast cancer (7). However, it has been claimed that the fear of having breast cancer does not always negatively affect early diagnosis behavior, but sometimes positively affects this behavior and facilitates early diagnosis promoting behavior (8). The frequency of mammography in Turkey is lower than in many other countries. Women's age, family history of breast cancer, mammography barriers, genetic risk in women, and the presence of individuals with breast cancer in their environment make women more sensitive to breast cancer, not knowing about mammography, not being able to spare time, not thinking that they will have breast cancer. Conditions such as not needing to have a mammogram, not giving importance to health, and concern about seeing a male doctor are factors that prevent mammography (9, 10).

Fear may have both a positive or negative effect on attendance for mammography, and situations such as mammography self-efficacy levels, knowledge about breast cancer and the presence of a family history of breast cancer will also be factors. This study was conducted to determine the fear of having breast cancer and assess the self-efficacy of having mammography in working women.

Research Questions Were:

1. What is the rate of women using cancer screening methods, specifically mammography?

2. Does the fear of breast cancer affect the effectiveness of mammography screening?

Materials and Methods

Type of Study: This research was planned as a descriptive and relational study in order to determine the fear of breast cancer and self-efficacy of mammography in women working at a university.

Study Place and Time: The study was conducted at a university in Samsun Province of Turkey in March-October 2019.

The Universe and Sample of the Research: The population of the research consisted of women working at a university in Samsun. No sample selection was made for the study because when the mean breast cancer score was found to be 23.81±9.71 in the power analysis, the sample size was calculated as 231 with a 5% margin of error. In total 347 women volunteered to participate in the study. While the research data were collected, oral consents were obtained from the women. In Post-hoc power analysis, the sample size conveyed a power of 93%. While the level of fear of having breast cancer and mammography self-efficacy status of the sample group were independent variables and women's socio-demographic characteristics, breast cancer history and mammography screening history were dependent variables.

Data Collection (Data Collection Tools): In the data collection, the question form prepared by the researchers, the breast cancer fear scale and the mammography self-efficacy scale were used (see below).

Questionnaire form consisted of 19 questions including the socio-demographic characteristics of individuals, their characteristics related to breast cancer and mammography, and their own health perceptions (11). The health perception measure was a general assessment measure to subjectively evaluate participants' overall health perceptions. This criterion was scored from 0 to 10 with "0" indicating very bad health and "10" indicating very good health. High scores indicate that participants perceive their own health as good. Expert opinions were received.

Breast Cancer Fear Scale (BCFS) was developed in 2004 by Champion, Skinner, Menon, Rawl, Giesler, Monahan and Daggy. Cronbach's alpha coefficient was 0.91 for the whole scale. A validity and reliability study of the Turkish version of the BCFS was performed by Secginli (12) in 2012. The Cronbach alpha coefficient of the Turkish version was 0.90. The scale, which was adapted to Turkish, consisted of eight items and the scale score has a minimum of 8 and a maximum of 40. The scale score ranges from "strongly disagree" 1 to "strongly agree" 5 points. A high score indicates that the level of breast cancer fear is high.

Mammography Self-Efficacy Scale (MSS); The Breast Cancer Fear Scale was developed in 2005 by Champion, Skinner, Menon, Rawl, Giesler, Monahan and Daggy. Cronbach's alpha coefficient was 0.87 for the whole scale. A validity and reliability study of the Turkish version of the MSS was performed by Secginli (12) in 2012. The Turkish version consisted of 10 items and the scale score was a minimum of 10 and a maximum of 50. The scale score ranges from "strongly disagree" 1 to "strongly agree" 5 points. A high score indicates that the level of mammography self-efficacy is high (12).

Statistical Analysis

Statistical analysis of the data was performed using Statistical Package for Social Sciences (SPSS) version 20.0 (IBM Inc., Armonk, NY, USA). Significance level was accepted as $p<0.05$. The descriptive statistics (number, percentage and mean, standard deviation and range) were used for the questions in the questionnaire form prepared by the researchers. The t-test, Spearman correlation and ANOVA analysis were performed to investigate breast cancer fear scores, mammography self-efficacy scores and other variables.

Ethical principles: Permission for the research was obtained from the clinical research ethics committee of Ondokuz Mayıs University. Ethics committee decision no: 2019/244. Permission was obtained from the university for the research.

Results

The socio-demographic characteristics of participants is given in Table 1. Table 2 shows some characteristics of the women and breast

cancer early diagnosis (n = 347). The mean health perception score was 7.46±1.51. While 75.8% did not use oral contraceptives and 13.0% were menopausal. It was found that 63.7% participating in the study received information about breast cancer, 16.1% had breast health problems and 18.4% had a family history of breast cancer. Furthermore, 85.0% thought that mammography should be undertaken in order to prevent cancer and 82.5% of them believed in the necessity of mammography to prevent breast cancer and also knew of the importance of early diagnosis in cancer prevention (Table 2).

Table 3 shows data concerning the women's breast cancer fear scale scores and mammography self-efficacy scale scores. The mean BCFS score was 25.60±7.29 (given a minimum and maximum score of 8 and 40, respectively, and Cronbach's alpha was 0.92. The MSS mean score was 41.18±6.47, given a minimum and maximum of 10 and 50, respectively and Cronbach's alpha was 0.92. Table 4 shows the correlation analysis between the mean BCFS and MSS scores stratified by differences in a range of variables. There was no correlation between the educational status of women and BCFS scores or MSS scores according to income perceptions. BCFS scores were significant higher in married women compared to single women. In terms of MSS scores, no significant difference was found when comparing married women and single women. Menopausal women had higher BCFS scores than pre-menopausal women, and women with a family history of breast cancer had higher BCFS scores than women without such a family history. BCFS and MSS scores were higher among women who had breast health problems and who believed that mammography should be taken to prevent breast cancer. A significant weak positive correlation was found between increasing BCFS score and MSS score (r = 0.180, p<0.001).

Table 1. Distribution of women according to socio-demographic characteristics (n = 347)

Socio-demographic characteristics		
Age	**Mean ± SD 38.07±8.58**	**Range 20-62**
	n	%
Education status		
Primary school	10	2.9
High school	33	9.5
University and higher education	304	87.6
Perception of income satisfaction		
Income is less than expense	62	17.9
Income is equal to expense	179	51.6
Income is more than expense	106	30.5
Job description		
Academicals personal	244	70.3
Administrative staff	103	29.7
Marital status		
Married	237	68.3
Single	110	31.7
Having children		
Yes	217	62.5
No	130	37.5
Total	**347**	**100**

SD: standard deviation

Discussion and Conclusion

The women participating in this study were asked to judge how they perceived their own health on a scale of 0 to 10, and the subjective health perception mean score of women was 7.46±1.51, suggesting a relatively positive self-perception of health among participants In the

Table 2. Distribution of women according to some descriptive characteristics and breast cancer early diagnosis information (n = 347)

Descriptive characteristics and variables		
	Mean ± SD	**Range**
Health perception score average	7.46±1.51	3–10
	n	**%**
Using oral contraceptive		
Yes	84	24.2
No	263	75.8
In menopause period		
Yes	45	13.0
No	302	87.0
Getting information about breast cancer		
Yes	221	63.7
No	126	36.3
Having breast health problem		
Yes	56	16.1
No	291	83.9
Having breast cancer history in family		
Yes	64	18.4
No	283	81.6
Thinking that mammography is necessary to prevent breast cancer		
Necessary	295	85.0
Unnecessary	52	15.0
Believe in the need for mammography screening		
Believer	287	82.5
Unbeliever	60	17.5
Mammography screening		
Yes	284	81.8
No	63	18.2
Total	**347**	**100**

SD: standard deviation

study of Dinçel et al. (13), who made a similar assessment, 32.0% of women perceived their health as good, the majority (59.3%) as medium and 8.7% as bad.

Breast cancer is a common public health problem, and in order to combat this problem, it is necessary to know the factors prevent or increase early screening behavior. These factors are suggested to include having any breast health problem, having a family history of breast cancer, fear of having breast cancer, and not having enough information about breast cancer (14, 15). In the cohort of the present study 16.1% had breast health problems, 18.4% had a family history of breast cancer, and 63.7% had received information about breast cancer before. In a previous study, it was determined that 18.3% of women had a family history of breast cancer (16). In the study of Sönmez et al. (17) 28.7% of women had knowledge about breast and cervical cancer. In another study, 89.1% of women had no previous breast health problems, and 9.6% had a family history of breast cancer (18). Similarly, in the study of Dinçel et al. (13), 12.3% of women

Table 3. Distribution of breast cancer fear scale and Mammography self-efficacy scale scores

Scale	n	Items Numb.	Mean ± SD	Min	Max	Cronbach alpha	Cronbach Alpha
Breast cancer fear score	347	8	**25.60±7.29**	8	40	**0.92**	**0.90***
Mammography self-efficacy scale	347	10	**41.18±6.47**	10	50	**0.92**	**0.90***

[Cronbach Alfa: 0.90*, Seçginli (12)], SD: standard deviation; Min: minimum; Max: maximum

Table 4. Correlation analysis of mean breast cancer fear scale and mammography self-efficacy scale scores with variables

Characteristics and variables	Breast cancer fear scale score		Mammography self-efficacy scale score	
	Mean ± SD		Mean ± SD	
Education Status				
Primary school	27.40±6.27	F = 0.67	34.20±9.36	**F = 10.04**
High school	24.51±8.61	*p* = 0.50	38.54±7.69	***p*<0.01**
University and higher education	25.66±7.17		41.70±6.02	
Perception of Income Satisfaction				
Income is less than expense	25.19±8.11	F = 2.25	40.40±7.91	F = 0.95
Income is equal to expense	26.37±6.99	*p* = 0.10	41.09±6.38	*p* = 0.38
Income is more than expense	24.53±7.21		41.80±5.64	
Job description				
Academic personal	25.75±7.25	t = 0.58	41.85±5.69	**t = 2.99**
Administrative staff	25.25±7.41	*p* = 0.70	39.60±7.81	***p*<0.01**
Marital status				
Married	26.19±7.21	**t = 2.21**	41.59±6.92	t = 1.70
Single	24.33±7.39	***p* = 0.02**	40.31±5.30	*p* = 0.08
In menopause period				
Yes	27.64±6.19	**t = 2.01**	41.95±7.01	t = 0.85
No	25.30±7.40	***p* = 0.04**	41.07±6.39	*p* = 0.39
Having breast health problem				
Yes	28.94±7.30	**t = 3.81**	43.73±5.77	**t = 3.25**
No	24.96±7.13	***p*<0.01**	40.69±6.49	***p* = 0.01**
Having breast cancer history in family				
Yes	27.12±6.84	t = 1.85	41.34±6.21	t = 0.21
No	25.26±7.36	*p* = 0.06	41.15±6.53	*p* = 0.83
Believe in the need for mammography screening				
Believer	25.77±7.23	t = 1.30	41.41±6.50	**t = 2.00**
Unbeliever	24.08±7.81	*p* = 0.19	39.31±5.88	***p* = 0.04**

had a family history of breast cancer, while 52.0% of them had no knowledge of breast cancer. In the study conducted by Açıkgöz et al. (19), it was reported that 46.7% of the women had a family member diagnosed with cancer. In the study of Aslan and Gürkan (20), it was stated that 8.3% of the women had a family history of breast cancer. The results of the present study are similar to other studies in terms of women's knowledge about breast cancer. It can be said that this similarity is due to the increase in early diagnosis studies and the ease of access to information. In addition, while the rates of family history of breast cancer in our study were similar to most studies, it was observed that they differed from some studies. It can be said that these differences are due to the fact that the studies were carried out in different regions.

Although breast cancer is common, it is a cancer that develops slowly and, with early diagnosis, very successful treatment results can be obtained and the mortality rate can be reduced. In Turkey, the 5-year survival rate is 90.0% in women diagnosed at an before the cancer spreads in the bodyearly stage. Clinical breast examination and mammography are the main methods recommended for early diagnosis of breast cancer. Breast self-examination is recommended in conjunction with mammography as an effective tool in guiding women to seek appropriate medical diagnosis and treatment. It is estimated that mammography reduces the mortality rate in breast cancer by 20–70% (21). Fear of breast cancer is one of the factors associated with breast cancer screening behavior. In their study with African, American women, Champion and Scott (5). reported that women with moderate breast cancer fear were more likely to have a mammogram than women with low breast cancer fear. In the same study, it was determined that there was a positive relationship between women's moderate and high fears and the perception of mammography benefit. In the present study, the mean BCFS score was 25.60±7.29 and the mean MSS score was 41.18±6.47 and a weak positive correlation was identified between these scores. In the study conducted by Sağdıç (22) the mean BCFS score was similar at 26.35±6.61. In the study conducted by Polat (10) in Adıyaman and Şanlıurfa provinces, the mean MSS score was 37.37±13.35, and the mean BCFS score was 25.40±12.69, respectively. The weak positive correlation between IBCFS and MSS scores, also seen in the present study, has been reported previously (23). In a study conducted by Secginli (12), the mean BCFS score was 26.36±7.29, and the mean MSS score was 38.15±7.29, and in the same study, there was no significant difference between the BCFS scores of the groups that had and did not have mammography. Similarly, in another study, the mean BCFS score was 23.81±9.71 and in the same study, the mean BCFS score of women who had mammography was higher than those who did not have mammography (27.27±9.01 *versus* 21.89±9.62, respectively) (p = 0.00) which was reported to be significant (14). In the study of Miller et al. (23), a significant relationship was found between women's fear of breast cancer and undergoing mammography. Erdoğan (24) found that the fear of breast cancer was higher in women between the ages of 30–50 years, and the fear of being diagnosed with breast cancer was among the reasons why women do not go to the doctor. Although the results of the present study are similar to the previous results, we speculate that the level of breast cancer fear was effective in reporting approval of having mammography. Thus, fear of having breast cancer appears to be lead women to adopt early diagnosis behavior.

There are many factors that affect early diagnosis behavior in breast cancer. These factors include structural and behavioral factors, such as education level, health insurance, doctor's advice, knowledge and health beliefs, and social support (21). In our study, the BCFS score of married women was significantly higher than single women. This appears to be age-related as married participants were older than single women and that the risk of breast cancer is known to increase with age which seems to increase the BCFS score. While a significant difference was found in BCFS score between women with and without a family history of breast cancer, no statistically significant difference was found between these groups and the MSS score. Moreover, the BCFS and MSS scores were higher in women who reported breast health problems. Studies have shown that women with a family history of breast cancer tend to undergo more mammography screening than those who do not (25, 26). In the study of Erdoğan (24), the rate of regular mammography in women with a family history of breast cancer was 38.0%, and 15.3% in those without a family history of breast cancer. It was also reported that women with a family history had higher mammography self-efficacy perception and breast cancer fear mean score than those without. It is thought that women's risk perception due to family history, fear of getting breast cancer, getting breast cancer information, and awareness of the importance of early diagnosis increased and this situation positively affected their participation in screening.

The study performed at a university so this was limitation of the study. Research results can be generalized only to these groups.

The BCFS and MSS scores increased in women with a family history of breast cancer. Furthermore, there was a positive weak relationship between BCFS and MSS, as previously reported. Higher BCFS scores were associated with the tendency to use early diagnosis methods. When the effect of fear of breast cancer on women's mammography self-efficacy was considered, there appears to be a need for further qualitative studies to investigate the causes in detail and these should include interventional nursing. In addition, it is suggested that new studies should be conducted with a greater variety of region, age, and socio-cultural characteristics of women and control groups. Finally there should be more social studies into the availability and effectiveness of early detection methods for breast cancer.

Ethics Committee Approval: Permission for the research was obtained from the clinical research ethics committee of Ondokuz Mayıs University. Ethics committee decision no: 2019/244. Permission was obtained from the university for the research.

Informed Consent: While the research data were collected, oral consents were obtained from the women.

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Authorship Contributions

Concept: N.K.B., D.K., İ.A.A.; Design: N.K.B., D.K., İ.A.A.; Data Collection and/or Processing: N.K.B., İ.A.A.; Analysis and/ or Interpretation: N.K.B., D.K., İ.A.A.; Literature Searching: N.K.B., D.K.; Writing: N.K.B., D.K.

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