



## THE EFFECT OF SURGICAL NURSES' FEAR OF BREAST CANCER ON PROTECTIVE BEHAVIORS: A CROSS-SECTIONAL STUDY

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**Abstract:** This research was carried out to determine the relationship between nurses' breast cancer fear levels, breast cancer prevention behaviors, and early diagnosis application behaviors. It was conducted with 177 nurses working in the surgical clinics of a university hospital between 15 May and 15 June 2022. In addition to questions about nurses' characteristics, Breast Cancer Fear Scale (IDFS), Affecting Factors Scale and Breast Cancer Prevention Behaviors Scale (FABCP) were used. Descriptive, bivariate, and multivariate analyzes were performed. The P value smaller than 0.05 was used to indicate statistical significance. Breast cancer fear levels of nurses; are high, and protective and behavioral BSE and mammography/USG application levels are quite high except for clinical breast examination.


**Keywords:** Early diagnosis, Nurse, Clinical Breast examination, Mammography, Breast self examination


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### 1. Introduction

Breast cancer ranks first among the ten most common cancers in women, both in the worldwide and in our country. There is a risk of developing breast cancer in one out of every 8 women in her lifetime. One of every 4 female cancers in our country is breast cancer. The breast cancer screening program aims to detect breast cancer at an early stage, before clinical findings appear in women, to reduce the death rate from breast cancer, increase the rate of breast-conserving surgery, and reduce morbidity related to treatment (Niell et al., 2017). Self-examination from the age of 20, clinical examination after the age of 20, and mammography after the age of 40 are recommended as screening methods for breast cancer (TC Ministry of Health, 2020).

Anxiety about catching cancer is an important factor in gaining healthy lifestyle behaviors that will lead the person to early diagnosis and treatment (Nacar, 2018). The high incidence of breast cancer causes increased concern and awareness of breast cancer risk. Women's concern about getting breast cancer is effective in exhibiting health-protective behaviors against breast cancer (Gözüyeşil et al., 2019). It is known that the rates of breast cancer screenings in our country are at the level of 30-35%, breast cancer awareness and education activities should be increased to carry out more screening, and screening programs should be arranged

according to our country, more effort should be made and transformed into active programs based on population-based screening (Akova et al., 2019; Akyolcu et al., 2019). In this context, the training of physicians (surgeons, radiologists, family physicians), nurses, and other related health disciplines to raise awareness is very valuable (Akyolcu et al., 2019).

Although there are studies on the breast cancer knowledge levels of healthcare professionals in our country (Şeker et al., 2018; Soyak, 2019), a limited number of studies have been found on the relationship between breast cancer anxiety and fear levels and the level of using screening methods of healthcare professionals, who encounter more breast cancer cases compared to the general population (Bakır and Demir, 2020). This study aimed to determine the relationship between nurses' breast cancer fear levels and factors affecting breast cancer prevention behavior and early diagnosis application behaviors.

### 2. Materials and Methods

#### 2.1. Design and Participants

In this cross-sectional, descriptive study, we investigated the relationship between nurses' breast cancer fear levels and breast cancer prevention behavior, and early diagnosis application behaviors. Participants are female nurses working in the surgical clinics of a tertiary



university hospital in Türkiye. Inclusion criteria were nurses working in surgical clinics who were active during the study period, confirmed their understanding of the purpose of the study, and agreed in writing to participate after listening to the study's description. The study, it was aimed to reach all 203 female nurses working in surgical clinics. At the end of the study, the study was conducted with a total of 177 nurses who were active and agreed to participate in the study.

## 2.2. Measurement Tools

The data of the study were collected using the Introductory Information Form prepared by the researcher by examining the literature on the subject, the Breast Cancer Fear Scale (BCFS), and the Determination of Factors Affecting Women's Breast Cancer Prevention Behaviors (FABCP).

**Personal Information Form:** Socio-demographic characteristics of the individual (age, marital status, the clinic where she works, educational status, age of first menstruation, menstrual pattern, pregnancy experience, whether there is a first-degree relative with breast cancer, education and practice of Breast Self-Examination, mammography/ Knowing and applying the frequency of breast USG application, frequency of clinical breast examination, information about KETEM and application status consists of 20 questions (Turan and Yiğit, 2021).

**FABCP Scale;** The scale developed by Khazae-Pool et al. (2016) in Iran to determine the factors affecting the breast cancer prevention behaviors of women; 5 sub-dimensions with 33 items, including attitude (TT), motivation (MOT), self-efficacy (TO), support systems (SS), information seeking (SA), self-care (SA) and stress management (SA). It is a Likert-type scale ("1" never, "2" rarely, "3" sometimes, "4" often, "5" always). The high average taken from the relevant dimension of the scale shows that the participant exhibits positive behavior in that direction (Khazae-Pool et al., 2016). The lowest score that can be obtained from the scale is 33, and the highest score is 165 (Turan and Yiğit, 2021).

**BCFS Scale:** The scale was developed by Champion et al. in 2004 and its Turkish validity and reliability were performed by Seçginli (2012). The scale consists of 8 items and is in a 5-point Likert type. The minimum score to be taken from the scale is 8 and the maximum score is 40. The items in the scale range from 1 point of "strongly disagree" to 5 points of "strongly agree". In the calculation of points; 8-15 points indicate low-level fear, 16-23 points indicate medium-level fear and 24-40 points indicate high-level fear.

## 2.3. Statistical Analysis

Descriptive analyses have been carried out for all the variables used in the study, including means and standard deviation for continuous variables, and numbers and valid percentages for categorical variables. The normality of the distribution of continuous variables was assessed through the calculation of skewness and kurtosis, whereby values between -2 and +2 were

considered acceptable to prove normal distribution. The "Independent Sample-t" test (t-table value) was used to compare the measurement values of two independent groups, and the "ANOVA" test (F-table value) method was used to compare the measurement values of three or more groups. Bonferroni Correction was used to find from which group the significant difference originated. The Statistical Package for Social Sciences (SPSS), version 25 was used for statistical analyses. A p-value<0.05 was used to indicate statistical significance.

## 3. Results

83.6% of the participants were between the ages of 18-40, 52.5% were married, and 58.5% had a bachelor's degree or higher. When we look at the menstrual cycles, 79.1% of them were regular and 53.1% of them had pregnancy experience. 13% of them had breast cancer diagnosis near I degree. 72.9% of them had received training on BSE and the rate of application was 84.2% every month. The rate of participants who knew the frequency of mammography/USG was 62.2%, the rate of having it was 93.8%, and the rate of having regular clinical breast examination was 20.9%. The rate of participants who knew KETEM was 55.9%, and no one applied to KETEM (Table 1).

Participants' FABCP score average was  $115 \pm 17$  (min=47, max=161), FABCP subscale motivation score average was  $16 \pm 2.87$  (min=8, max=23), self-efficacy average was  $14 \pm 2.77$  (min= 7, max=20), mean score of support  $13 \pm 6.87$  (min=4, max=90), mean score of seeking information  $14 \pm 3.13$  (min=7, max=20), mean score of attitude  $29 \pm 4.64$  (min=17, max=42), self-care mean score  $18 \pm 4.68$  (min=6, max=34), stress management mean score  $11 \pm 3.03$  (min=3, max=15). The total BCFS mean score of the participants was  $28 \pm 6.38$  (min=8, max=40), and according to the mean score, 7 (4%) people had low, 23 (13%) people had medium, 147 (83.1%) people had BCFS levels. high (Table 2).

No statistically significant correlation was found between the BCFS scores of the participants and their socio-demographic characteristics ( $P > 0.05$ ) (Table 3).

When the FABCP scores of the participants were compared with their socio-demographic characteristics, there was a statistically significant relationship between age, getting information about BSE, and having knowledge about KETEM (respectively;  $t(20.5) = -2.03$ ,  $P < 0.05$ ), (No relationship was found between  $t(83.9) = 2.18$ ,  $P < 0.05$ ),  $t(163) = 2.35$ ,  $P < 0.05$ ), marital status, breast cancer history in first-degree relative, menstrual cycle pattern, and pregnancy experience. ( $P > 0.05$ ) (Table 4).

While there was a significant relationship between the participants' FABCP scores, BSE and mammography/USG (respectively  $t(40.1) = 2.32$ ,  $P < 0.05$ ),  $t(11.4) = 2.40$ ,  $P < 0.05$ , respectively), no relationship was found with clinical breast examination ( $P > 0.05$ ). As the mean score of the FABCP scale decreases, BSE application rates increase, and as the mean scores increase, the rates of

mammography/USG increase. The FABCP scores of the participants who performed BSE (mean=11.6±1.71) were found to be significantly higher than the mean scores of the participants who did not do BSE (mean=1.08±15.6).

There was no statistically significant relationship between BCFS and breast cancer protective behaviors (p>0.05) (Table 5).

**Table 1.** Distribution of descriptor characteristics (n=177)

Variable	n	%
<b>Age Classes</b>		
18-40	148	83.6
40 years and older	29	16.4
<b>Marital status</b>		
Married	93	52.5
Single	84	47.5
<b>Educational Status</b>		
High School	37	20.9
Associate Degree	22	12.4
Graduate and Post graduate	102	58.5
<b>Periodic Cycle Regularity</b>		
Yes	140	79.1
No	35	19.8
<b>Menopause Period</b>		
2	2	1.1
<b>Pregnancy Experience</b>		
Yes	83	48.9
No	94	53.1
<b>Diagnosis of Breast Cancer Near Grade I</b>		
Yes	23	13
No	154	87
<b>Status of Obtaining Information about BSE</b>		
Yes	129	72.9
No	48	27.1
<b>BSE Implementation Status</b>		
Yes	149	84.2
No	28	15.8
<b>Does She Know the Frequency of Mammography / Usg?</b>		
Yes	110	62.2
No	67	37.9
<b>Mammography/USG Extraction Status</b>		
Yes	166	93.8
No	11	6.2
<b>Status of Clinical Breast Examination</b>		
Yes	33	18.6
No	144	81.4
<b>Information About KETEM</b>		
Yes	99	55.9
No	78	44.1
<b>Application to KETEM</b>		
No	177	100

\*Data are expressed as numbers (n) and frequency (%).

**Table 2.** Examination of participants' FABCP and BCFS scores

Variables	X± SD	Min-Max
Total FABCP score	115 ±17	47-161
FABCP Scale Sub-Dimensions		
Motivation	16±2.87	8-23
Self-sufficiency	14±2.77	8-20
Support	13±6.87	4-90
Information Search	14±3.13	7-20
Attitude	29±4.64	17-42
Self care	18±4.68	6-34
Stress Management	11±3.03	3-15
Total BCFS score	28±6.38	8-40
	n	%
BCFS Levels		
Low (8-15 points)	7	4
Medium (16-23 points)	23	13
High (24-40 points)	147	83.1

**Table 3.** Comparison of participants' BCFS scores and sociodemographic characteristics

Variables	Breast Cancer Fear Scale			
	n	X±SD	Min-Max	F
Age Classes				
18-40 years	159	28.60±6.53	8-40	F=176
41 and above	18	27.88±6.11	20-40	P=0.09
Marital status				
Married	93	28.60±6.53	9-40	F=157
Single	84	28.28±6.45	8-40	P=0.864
History of Breast Cancer in a First Degree Relative				
No	154	28.07±6.38	8-40	F=175
Yes	23	29.52±5.93	18-40	P=0.28
Education Level				
High School	37	27.70±4.74	18-36	
Associate Degree	22	28.90±7.68	12-40	F=176
Undergraduate	102	28.42±6.41	8-40	P=0.865
Master's	16	28.25±6.33	11-38	
Periodic Cycle Regularity				
Yes	140	28.11±6.38	8-40	F=176
No	35	28.77±6.28	11-40	P=0.829
Menopause Period				
Yes	2	29.50±6.36	25-34	
Pregnancy Experience				
Yes	94	29.05±6.66	9-40	F=174
No	83	27.36±5.83	8-40	P=0.76
Status of Obtaining Information about BSE				
Yes				
No	128	28.18±6.21	8-40	F=174
	48	28.39±6.75	18-40	P=0.847
Information About KETEM				
Yes	99	27.93±6.96	8-40	F=175
No	78	28.66±5.44	11-39	P=0.450

\*\*The "Independent Sample-t" test (t-table value) was used to compare the measurement values of two independent groups, and the "ANOVA" test (F-table value) method was used to compare the measurement values of three or more groups.

**Table 4.** Comparison of FABCP scores and socio-demographical characteristics of the participants

Variables	n	X±SD	Min-Max	F
Age Classes				
18-40 years	159	1.14±16.86	47-161	F=-2.03
41 and above	18	1.22±17.84	85-155	P=0.04
Marital status				
Married	93	1.13±17.59	47-161	F=157
Single	84	1.17±16.51	85-155	P=0.19
History of Breast Cancer in a First Degree Relative				
No	154	1.15±16.90	47-161	F=175
Yes	23	1.16±18.80	85-154	P=0.76
Education Level				
High School	37	18.09±2.97	47-154	
Associate Degree	22	13.99±2.98	91-138	F=176
Undergraduate	102	17.11±1.69	85-161	P=0.80
Master's	16	19.62±4.90	85-155	
Periodic Cycle Regularity				
Yes	140	1.15±17.80	47-161	F=176
No	35	1.14±13.76	90-140	P=0.17
Menopause Period	2	1.15±17.11	134-141	
Pregnancy Experience				
Yes	94	1.13±17.30	47-155	F=173
No	83	1.16±16.85	85-161	P=0.230
Status of Obtaining Information about BSE				
Yes	128	1.16±16.91	85-161	F=2.18
No	48	1.10±17.02	47-147	P=0.03
Information About KETEM				
Yes	99	1.17±16.69	85-161	F=2.35
No	78	1.11±17.15	47-141	P=0.02

\*\*= the "Independent Sample-t" test (t-table value) was used to compare the measurement values of two independent groups, and the "ANOVA" test (F-table value) method was used to compare the measurement values of three or more groups.

**Table 5.** Examination of the relationship between participants' FABCP and BCFS scores and breast cancer protective behaviors

Variable (n=103)	FABCP				
	N	X	SS	F	P
BSE Performing Status					
Yes	149	1.16	17.1	2.32	0.02
No	28	1.08	15.6		
Mammography/USG Extraction Status					
Yes	166	1.14	16.9	2.40	0.01
No	11	1.27	16.3		
Status of Clinical Breast Examination					
Yes	33	1.17	20.4	0.696	0.48
No	144	1.14	16.3		
	BCFS				
	N	X	SS	F	P
BSE Performing Status					
Yes	149	28.53	6.40		
No	28	25.17	6.29	1.03	0.30
Mammography/USG Extraction Status					
Yes	166	28.19	6.42	-1.04	0.29
No	11	30.27	5.79		
Status of Clinical Breast Examination					
Yes	33	29.75	6.35	1.43	0.15
No	144	27.99	6.37		

#### 4. Discussion

Breast cancer is the most common type of cancer among women, and there is no proven method of prevention. Preventive behaviors can reduce the incidence and mortality rate of breast cancer (Turan and Yiğit, 2021). BSE, CBE, and mammography are screening methods that should be performed in the early diagnosis of breast cancer (Özçelik, 2019; WHO 2022). It is the most common type of cancer among women and there is no proven method of prevention. Preventive behaviors can reduce the incidence and mortality of breast cancer (Turan and Yiğit, 2021). BSE, CBE, and mammography are screening methods that should be performed in the early diagnosis of breast cancer (Özçelik, 2019; WHO 2022). There are studies evaluating the effects of breast cancer fear negatively on early diagnosis behaviors (Ersin et al., 2015; Cohen et al., 2016; Taylan and Öncel, 2021) have conducted studies reporting that experiencing a certain level of fear can be an incentive to practice protective behaviors, (Gözüyeşil et al., 2019; Bakır and Demir, 2020). In our study, we examined the relationship between breast cancer fear level of 177 nurses and breast cancer prevention behavior and early diagnosis application behaviors. In our study, 177 nurses examined the relationship between breast cancer fear level and breast cancer prevention behavior and early diagnosis application behaviors.

In areas where breast self-examination (BSE) is not used as a screening tool, the probability of detecting advanced breast cancer cases increases (Albeshan et al., 2020). Looking at the literature, Ghofranipour et al. (2020) reported that only 20% of them performed regular BSE in their study with 410 women (Ghofranipour et al., 2020). In the study of Eroğlu and Özkan (2021) with 144 breast cancer patients, it was determined that 22.9% of the patients performed BSE. Mermer and Güzelyurt (2021) reported in their study that 32% of the participants regularly performed BSE. In our study, 82% of healthcare professionals reported that they performed BSE (Table 1). In our country, the incidence of breast cancer is high in young people and it is known that the breast mass is mostly noticed by the woman herself (Şişman et al. 2022). In cohort studies with nurses, it has been reported that working at night significantly increases the risk of breast cancer (Schernhammer et al., 2001; Schernhammer et al., 2006). The high level of practice of nurses, who are expected to guide women as health workers, is seen as a positive situation for both the health of nurses and the women they will guide. The high level of practice of nurses, who are expected to guide women as health workers, is considered a positive situation for both the nurses' health and the women they will guide.

When the literature is examined in terms of clinical breast examination (CBE), the rate of performing CCM varies between 15.5% and 42.7% in studies conducted in different regions of our country (Chat and Karasu, 2017; Özçelik, 2019). In their study Koçak et al. (2022)

reported that CBE was 24.1. In our study, it was determined that only 18.6 of the nurses had CBE. But the rate of mammography/USG is 93.8%. (Table 1). This is because the follow-up and control of breast diseases are carried out by the radiology unit with direct application within the framework of the institutional policy. In the presence of an abnormal mass detected in BSE or radiology control, the person is referred to the General Surgery Polyclinic. The fact that the rate of BSE and mammography/USG is very high is important for early diagnosis, and it is thought that nurses are conscious of this issue.

Lack of information about cancer screenings, not needing to screen without signs of disease, and fear of the procedure or result are the most important factors that reduce participation in screenings (Altun, 2020). When we look at the literature, Koçak et al. (2022) reported that the BCFS mean score of the participants was  $23.76 \pm 6.17$  and the BCFS level was high. Aytekin et al. (2021), in their study with midwifery students, found the average BCFS score of the students to be  $25.00 \pm 7.49$ ,  $24.47 \pm 8.04$ , and their fear level to be high (Demirel et al., 2021). Although our study is consistent with the literature, nurses' mean fear scores ( $28 \pm 6.38$ ) and levels (83.1%) were found to be higher than the literature (Table 2). The mean FABCP score was  $115 \pm 17$ . In parallel with our result, Turan and Yiğit (2021) reported in his study that the participants got  $114.51 \pm 14.19$  points out of 165 points and that they were at a moderate level in terms of breast cancer prevention behaviors. In the literature, it is reported that the fear of breast cancer is effective in the fact that women do not show breast cancer early diagnosis behavior (Masoudiyekta et al., 2018; Kissal et al., 2018; Tyrer and Tyrer 2018; Demirel et al., 2021). Although the BCFS score was high in our study, it was thought that the average FABCP score might have been affected by the low rate of CBE application. The rates of BSE and mammography/USG in the screening program of nurses are at a satisfactory level. In the study, there was also a significant relationship between nurses' FABCP score averages, BSE, and mammography/USG (respectively ( $t(40,1)=2.32, P<0.05$ ), ( $t(11,4)=2.40, P<0.05$ ), no relationship was found with clinical breast examination ( $P>0.05$ ) (Table 5). This result supports our view on this issue. In our study, it was thought that the increase in the age and professional experience of the participants may be effective in the high rates of BSE and mammography/USG, the decrease in their fear levels, and the high level of knowledge about BSE and KETEM. At the same time, it may be effective that nurses have easy access to health services and that BSE practice is easy and applicable. In the study, no statistically significant relationship was found between nurses' BCFS scores and socio-demographic characteristics ( $P>0.05$ ) (Table 3). When FABCP and socio-demographic characteristics were compared, there was a statistically significant relationship between only age, getting information about BSE and having

knowledge about KETEM (respectively;  $t(20.5)=-2.03$ ,  $P<0.05$ ),  $t(83.9)=2.18$ ,  $P<0.05$ ),  $t(163)=2.35$   $P<0.05$ ) (Table 4). As the age increased, the level of fear decreased and the rate of knowledge about BSE and KETEM increased. When we look at the literature, in parallel with our study, studies are reporting that breast cancer fear levels decrease as the age of women increases (Koçak et al., 2022), as well as studies reporting that it decreases (Özçelik 2019; Tehranifar 2018).

## 5. Conclusion

In the study, the breast cancer fear levels of the nurses were high and the factor levels affecting preventive behavior were moderate. In addition, BSE and mammography/USG application levels were found to be very high and CMM levels were low. Low CME is a condition that depends on the policy of the institution in terms of breast cancer follow-up. High levels of FABCP have a positive effect on protective behaviors, and it is a satisfactory result that nurses, who have a guiding mission in terms of early diagnosis, have such a high rate of protective behavior.

## Limitations

Inability to reach the entire population due to the presence of surgical nurses on postpartum leave, illness reports and annual leaves at the time of the study.

## Author Contributions

The percentage of the author(s) contributions is present below. All authors reviewed and approved final version of the manuscript.

	H.Ş.	R.A.	D.A.	S.A.
C	25	25	25	25
D	25	25	25	25
S	25	25	25	25
DCP	25	25	25	25
DAI	25	25	25	25
L	25	25	25	25
W	25	25	25	25
CR	25	25	25	25
SR	25	25	25	25
PM	25	25	25	25
FA	25	25	25	25

C=Concept, D= design, S= supervision, DCP= data collection and/or processing, DAI= data analysis and/or interpretation, L= literature search, W= writing, CR= critical review, SR= submission and revision, PM= project management, FA= funding acquisition.

## Conflict of Interest

The authors declared that there is no conflict of interest.

## Ethical Approval/Informed Consent

University Medical Non-Interventional Clinical Research Ethics Committee Approval (No: 08.04.2022/55) written consent from Çukurova University Medical Faculty Balcalı Hospital, and written consent was obtained after

the informed consent form for the purpose. The study was conducted by the principles of the Declaration of Helsinki.

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