

Original Article

Fear of Breast Cancer and Health Literacy Levels in Working Women: A Cross-Sectional Study

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Abstract

Background: Women having a fear of breast cancer oftentimes do not or only belatedly participate in early detection screening programs. Hence, it is important to investigate the fear of breast cancer, which can be attributed to many factors, in all its aspects.

Objective: The purpose of this study was to find out whether Health Literacy levels and certain descriptive characteristics are predictive of the fear of breast cancer among working Turkish women.

Methodology: To this end, a cross-sectional study was conducted on a sample of 147 women working at a university located in the Eastern Black Sea region of Turkey. The collected data were analyzed by Independent Samples Test and One-Way ANOVA. Multiple linear regression analysis was performed to identify the predictors of fear of breast cancer.

Results: As a result, it was seen that working women who participated in this study had a heightened fear of breast cancer. It was found that being married, having no previous birth history, having no family history of breast cancer, and having a low or high breast cancer risk perception were predictors of fear of breast cancer in women, and that these variables explained women's fear of breast cancer to 21%.

Conclusions: It was observed that working women who participated in this study had a heightened fear of breast cancer. To help women better manage their breast cancer fears, nurses should counsel women on risk factors that can be changed and take steps to ensure women's participation in screening programs.

Keywords: Breast cancer; fear of breast cancer; health literacy; nursing; woman

Introduction

Breast cancer is the most frequent type of cancer in women that can lead to death. Whilst breast cancer can be seen at any age after puberty in any country of the world, its incidence increases with age. Although the most common cancer type in women, breast cancer mortality is preventable by early diagnosis. Low awareness and knowledge about breast cancer is a major reason for high breast cancer mortality (Taylan, Ozkan, & Oncel, 2021; WHO, 2021).

It is a known fact that all women in the world are at risk for breast cancer (WHO, 2021). A previous study reported that women with a high perception of risk had a heightened fear of breast cancer (Taylan, Ozkan, & Oncel,

2021). Several studies conducted in different cultures have shown that women have a fear of breast cancer (Demirel-Bozkurt et al., 2021; Flores-Luevano et al., 2020; Gibson et al., 2014).

Fear of cancer is described as a multidimensional construct that prevents women from participating in early diagnosis and screening programs (Consedine et al., 2004; Vrinten et al., 2017). Studies have shown that this is also the case for breast cancer (Kissal et al., 2018; Secginli, 2012; Ozkan & Taylan, 2020). It has been stated that the fear of breast cancer affects women's participation in early diagnosis and screening programs and that the factors underlying this fear are multifarious.

The literature points out that factors such as family history of breast cancer (Schwartz, Taylor, & Willard, 2003; Karayurt & Zorukos, 2008; Kocak et al., 2022), previous birth history (Al Dasoqi et al., 2013; Karayurt & Zorukos, 2008), the culture lived in (Al Dasoqi et al., 2013; Ozkan & Taylan, 2020) and the level of health literacy (Halbach et al., 2016) may have an influence on women's fear of breast cancer. It is however seen that there are very few studies in the literature on breast cancer fear and health literacy in particular. A study reported that limited health literacy was an independent risk factor for fear of cancer and that an increased level of health literacy would contribute to reducing the individuals' cancer-related fears (Halbach et al., 2016).

With a view to protecting and improving public and women's health, it is of great importance for nurses to know the factors that have an impact on women's fear of breast cancer and cause them to not or only belatedly participate in early diagnosis screening programs (Kissal et al., 2018). It was against this background that this study sought to investigate and determine the fear of breast cancer in women working at a university located in the Eastern Black Sea region of Turkey, along with their level of health literacy and the factors predicting their fear of breast cancer.

Answers to the following questions were sought in the research:

- Does the level of health literacy of women predict the fear of breast cancer?
- What are the predictors of women's fear of breast cancer?

Methods

Study design and population: Employing a cross-sectional study design, the research was conducted to determine the fear of breast cancer and the level of health literacy among women aged 18 and over working at a university located in the Eastern Black Sea region of Turkey.

The research was conducted at a university located in the Eastern Black Sea region of Turkey. Data were collected by the researchers face-to-face from June to October 2022.

The study population was composed of women aged 18 and over working at a university located in the Eastern Black Sea region of Turkey (N = 238). Sample size was calculated using the sample size formula for finite population $n = (N.t^2.p.q)/(d^2.(N-1)+t^2.p.q)$ (n = 147). The research enrolled women not diagnosed with cancer, who agreed to participate in the study.

Data collection tools: Data were collected by Personal Information Form, Breast Cancer Fear Scale and Health Literacy Scale (HLS).

Personal Information Form: The personal information form was prepared by the researcher based on a review of relevant literature (Kissal et al., 2018; Taylan, Ozkan, & Oncel, 2021), and consisted of 13 questions about the participants' sociodemographic characteristics such as age, educational background, marital status, as well as their behaviors related to early diagnosis and screening of breast cancer such as frequency of Breast Self-Examination (BSE), Clinical Breast Exam (CBE) and screening mammography frequency.

Breast Cancer Fear Scale: This 8-item scale was developed by Champion et al. in 2004 and its Turkish validity and reliability was tested by Secginli in 2012. It is a 5-point Likert scale ranging from 1 to 5. The minimum score that can be obtained from the scale is 8, and the maximum score is 40. The points for each item on the scale range from 1 ("strongly disagree") to 5 ("strongly agree"). A total score of 8-15 points indicates low fear, 16-23 points moderate fear and 24-40 points high fear. The Cronbach's Alpha coefficient of the scale is 0.90. The scale's Cronbach's Alpha coefficient in our study was found to be 0.93.

Health Literacy Scale (HLS): Initially developed by Sørensen (2013), the 47-item European Health Literacy Survey Questionnaire (HLS-EU) was reedited and reduced to a fewer number of items by Toci et al. (2013). Turkish validity and reliability of the scale's reduced version was tested by Aras and Bayik-Temel (2017). The scale consists of 25 items and has a total of 4 subscales. The first subscale, Access to information, has 5 items (items 1 to 5) with a minimum-maximum score of 5 and 25, respectively. The second subscale, Understanding information, has 7 items (items 6 to 12) with a minimum-

maximum score of 7 and 35, respectively. The scale's third subscale, Process/appraise information, has 8 items (items 13 to 20) with a minimum-maximum score of 8 and 40, respectively. The fourth subscale, Apply/use information, has 5 items (items 21 to 25) with a minimum-maximum score of 5 and 25, respectively. The minimum score for the whole scale is 25 and the maximum score is 125. The participants rate the scale items in a Likert-type style: "5: Very easy, 4: Quite easy, 3: Quite difficult, 2: Very difficult, 1: Cannot do". All items on the scale are positively worded; there are no reversed items. The higher the score, the higher the individual's health literacy level. The Cronbach's Alpha coefficient of the scale is 0.92. The scale's Cronbach's Alpha coefficient in our study was found to be 0.95.

Statistical analysis: The data were analyzed in IBM SPSS 25 software. Level of statistical significance was accepted as $p < 0.05$. Normal data distribution was measured by skewness and kurtosis. It was seen that data were normally distributed. Skewness and kurtosis values are considered acceptable when between -2 and +2 (George & Mallery, 2019). Mean, standard deviation, min-max values, number and percentage values were used for descriptive statistics. Data were analyzed by Independent Samples Test and One-Way ANOVA, which are both a parametric test. Multiple linear regression analysis was performed to identify the predictors of fear of breast cancer. Before conducting multiple linear regression analysis, the multicollinearity and normality of the data were analyzed.

Ethical considerations: Ethics committee approval and institutional permission were obtained before the study. The participants were informed about the study in accordance with the Declaration of Helsinki and their consent was obtained for the Informed Consent Form. Volunteer participants were included in the study.

Results

The mean age of women participating in the study was 35.21 ± 6.92 (min = 23, max = 62). The Breast Cancer Fear Scale mean score of women participating in the study was 27.29 ± 8.32 and their HLS mean score was 106.40 ± 15.65 (Table 1). The participants' mean scores in HLS subscales are shown in Table 1.

Table 2 shows a comparison of certain characteristics of women participating in this study and their Breast Cancer Fear Scale and HLS scores. A statistically significant difference in Breast Cancer Fear Scale was only found in breast cancer risk perception ($p < 0.05$).

According to post hoc analysis, this difference came from women with no risk perception. Breast Cancer Fear scores of women with no risk perception were found to be lower than women with low and high perception of risk ($p < 0.05$). A statistically significant difference in HLS was only found in field of occupation and BSE ($p < 0.05$) (Table 2).

Table 3 shows an analysis of the variables/factors affecting women's fear of breast cancer. Multiple linear regression analysis was performed to predict the participants' Fear of Breast Cancer based on the variables of Health Literacy level, field of occupation, marital status, family history of breast cancer, loss of a loved one to breast cancer, history of previous birth and breast cancer risk perception.

The results of analysis showed that the model created was statistically significant ($F = 4.706$, $p < 0.001$). From among the variables used in the model, marital status, family history of breast cancer, history of previous birth and breast cancer risk perception were found to be statistically significant predictors of breast cancer fear ($p < 0.05$).

It was found that all variables explained the variance in the participants' Breast Cancer Fear Scale score to 21% ($R^2 = 0.214$).

Table 1. Breast Cancer Fear Scale and HLS total and subscale mean scores (n=147)

	Mean±SD (Min-Max)
Breast Cancer Fear Scale	27.29±8.32 (8-40)
HLS	106.40±15.65 (57-125)
Access to information subscale (1-5)	21.74±3.61 (6-25)
Understanding information subscale (6-12)	30.40±4.87 (7-35)
Process/appraise information subscale (13-20)	33.70±5.78 (15-40)
Apply/use information subscale (21-25)	20.55±3.63 (10-25)

Abbreviations: HLS, Health Literacy Scale.

Table 2. Comparison of certain characteristics of women participating in this study and their Breast Cancer Fear Scale and HLS scores (n=147)

	n (%)	Breast Cancer Fear Scale Mean ± SD	HLS Mean ± SD
Marital status			
Married	92 (62.6)	26.98±8.80	107.07±14.71
Single	55 (37.4)	27.80±7.48	105.27±17.18
<i>Test</i>		-0.570	-0.675
<i>p</i>		0.569*	0.501*
Educational background			
Secondary/High School	9 (6.1)	27.77±6.55	99.11±22.29
University	138 (93.9)	27.26±8.44	106.87±15.11
<i>Test</i>		0.180	-1.448
<i>p</i>		0.857*	0.150*
Field of occupation			
Academic	91 (61.9)	26.94±8.90	108.54±13.42
Administrative Staff/Worker	56 (38.1)	27.85±7.32	102.91±18.30
<i>Test</i>		-0.644	1.998
<i>p</i>		0.521*	0.049*
Socioeconomical Status			
Income less than expenses	24 (16.3)	23.95±10.07	100.75±21.13
Income equal to expenses	74 (50.4)	28.27±8.16	107.02±15.12
Income greater than expenses	49 (33.3)	27.44±7.31	108.22±12.77
<i>Test</i>		2.495	1.982
<i>p</i>		0.086**	0.141**

Smoking habit			
Smoker	13 (8.8)	27.00±10.73	104.92±20.93
Nonsmoker	134 (91.2)	27.32±8.10	106.54±15.13
<i>Test</i>		-0.132	-0.356
<i>p</i>		0.895*	0.723*
BSE			
Yes	97 (66.0)	27.37±7.97	109.90±12.79
No	50 (34.0)	27.14±9.04	99.60±18.37
<i>Test</i>		0.159	3.548
<i>p</i>		0.874*	0.001*
CBE			
Yes	34 (23.1)	27.14±8.95	107.29±12.81
No	113 (76.9)	27.33±8.16	106.13±16.45
<i>Test</i>		-0.116	0.378
<i>p</i>		0.908*	0.706*
Mammography			
Yes	19 (12.9)	26.00±8.20	103.31±13.60
No	128 (87.1)	27.48±8.35	106.85±15.92
<i>Test</i>		-0.724	-0.920
<i>p</i>		0.470*	0.359*
Family history of breast cancer			
Yes	23 (15.6)	25.86±9.08	104.47±15.94
No	124 (84.4)	27.55±8.18	106.75±15.63
<i>Test</i>		-0.892	-0.640
<i>p</i>		0.374*	0.523*
Loss of a loved one to breast cancer			
Yes	9 (6.1)	29.66±7.00	110.00±14.50
No	138 (93.9)	27.13±8.39	106.16±15.74
<i>Test</i>		0.883	0.711
<i>p</i>		0,379*	0,478*
History of previous birth			
Yes	80 (54.4)	26.37±9.03	106.17±15.13
No	67 (45.6)	28.38±7.30	106.67±16.35

<i>Test</i>		1.466	0.191
<i>p</i>		0.145*	0.849*
Breast cancer risk perception			
Zero risk ¹	13 (8.8)	19.30±9.86	110.53±11.75
Low risk ²	63 (42.9)	26.34±7.80	108.11±16.15
High risk ³	71 (48.3)	29.59±7.47	104.12±15.65
<i>Test</i>		10.250 ^a	1.593
<i>p</i>		0.000**	0.207**

*t-test in independent groups, **One-Way ANOVA, ^aBonferroni= 1<2, 1<3

Abbreviations: BSE, Breast Self-Examination; CBE, Clinical Breast Exam; HLS, Health Literacy Scale.

Table 3. Factors Affecting Women's Fear of Breast Cancer

Independent Variable	Unstandardized Coefficients		Standardized Coefficients β	t	p	95.0% CI	
	B	SE				Lower Bound	Upper Bound
(Constant)	16.564	5.391		3.072	.003	5.904	27.224
HLS	-.022	.041	-.041	-.526	.599	-.104	.060
Field of occupation	-1.294	1.356	-.076	-.954	.342	-3.975	1.387
Marital status =Married	3.710	1.842	.216	2.013	.046*	.066	7.353
Family history of breast cancer =Yes	-4.374	1.867	-.192	-2.343	.021*	-8.066	-.683
Loss of a loved one to breast cancer	3.305	2.810	.096	1.176	.242	-2.251	8.861
History of previous birth =No	5.350	1.834	.321	2.918	.004*	1.725	8.976
Breast cancer risk perception = Low risk	8.051	2.390	.480	3.368	.001*	3.325	12.778
Breast cancer risk perception = High risk	12.666	2.433	.763	5.207	.000*	7.856	17.476

Dependent variable: Fear of Breast Cancer, Abbreviations: CI, confidence interval; SE, standard error; β , standardized regression coefficient, HLS, Health Literacy Scale. Notes: Durbin-Watson= 1.970; F=4.706, p<0.001; R= 0.463; R²= 0.214; Adjusted R²= 0.169; * = p < 0.05

Discussion

Women having a fear of breast cancer are known to not or only belatedly participate in early detection screening programs (Ozkan & Taylan, 2020). Hence, it is important to know the factors that affect women's fear of breast cancer. With this in view, the aim in conducting this research was to predict women's fear of breast cancer based on various characteristics with particular focus on health literacy. The Breast Cancer Fear mean score of women participating in the study was 27.29 ± 8.32 (8-40). In a previous study, the Breast Cancer Fear mean score of women in Turkey was reported to be 24.47 ± 8.04 (Demirel Bozkurt et al., 2021). The present study revealed that women had a heightened fear of breast cancer. Previous studies in the literature conducted in different cultures reported that women had a fear of breast cancer. For instance, African American women were reported to have a breast cancer fear mean score of 36.57 ± 17.5 (0-60) (Gibson et al., 2014), whereas Mexican American women were reported to have a breast cancer fear mean score of 25.5 ± 10.52 (8-40) (Flores-Luevano et al., 2020). It is considered that the increase in the prevalence of breast cancer and the high mortality associated with it have spread heightened fear among today's women (Taylan, Ozkan, & Oncel, 2021; WHO, 2021).

Based on the results of the multiple regression analysis conducted as part of this study, it was found that the variables of marital status, family history of breast cancer, history of previous birth and breast cancer risk perception were statistically significant predictors of the participants' score on the Breast Cancer Fear Scale ($F=4.706$, $p < 0.001$). All variables explained the variance in the participants' Breast Cancer Fear Scale score to 21% ($R^2=0.214$).

Based on an assessment of the variables that were found to predict the Breast Cancer Fear Scale score in a statistically significant manner according to regression analysis results, it was seen that the "breast cancer risk perception" variable ranked first in terms of significance. It is a known fact that all women in the world are at risk for breast cancer (WHO, 2021). A previous study reported that young women had a high breast cancer risk perception, and that women with a high breast

cancer risk perception had a heightened fear of breast cancer (Taylan, Ozkan, & Oncel, 2021). Similar to those results, it was observed in our study that women with a high breast cancer risk perception had a higher fear of breast cancer. Compared to women who think they are not at risk for breast cancer, women with low and high breast cancer risk perception are more afraid of breast cancer, that is, the more a woman feels at risk for breast cancer, the more afraid she gets.

The variable ranking second in terms of significance was "history of previous birth". Having no history of previous birth is associated with increased risk of breast cancer. Nulliparous women and those who gave birth to their first child after the age of 30 are considered to be in the risk group for breast cancer (Karayurt & Zorukos, 2008). In a qualitative study, it was reported that nulliparous young women had stated that particularly being older than 30 years increased their risk of developing breast cancer (Al Dasoqi et al., 2013). In our study, it was found that women with no history of previous birth had a higher fear of breast cancer than those with, which is thought to be due to the fact that the average age of the participants in our study was over 30.

The variable ranking third in terms of significance was "marital status". According to the results of this study, married women had a higher fear of breast cancer than single women. Previous studies in the literature set forth that being married or single had no effect on/was not predictive of women's fear of breast cancer (Ersin et al., 2015; Flores-Luevano et al., 2020). That said, there are studies reporting that the culture lived in affects women's fear of breast cancer (Al Dasoqi et al., 2013; Ozkan & Taylan, 2020). In a qualitative study conducted on Jordanian women, Al Dasoqi et al. (2013) reported that the participants perceived breast cancer as a disease peculiar to married women and that their fear of breast cancer stemmed from their cultural characteristics. The participants of that study reported that they perceived breast cancer as a hindrance that would prevent them from fulfilling their responsibilities towards their families, and that this made them feel scared and anxious. Ozkan & Taylan (2020) stated in their study that married women in patriarchal societies had to get permission

from men in order to go to health institutions, and that women did not get screened unless they got the approval of men. Hence, women not able to participate in screening programs are considered to have no access to sufficient information, which in turn, puts them in a state of uncertainty and fear.

The variable ranking forth in terms of significance was “family history of breast cancer”. Women with breast cancer experience the emotional impact of this disease very intensely, often together with their relatives (Karayurt & Zorukos, 2008). The literature states that women with family history of breast cancer have a heightened fear of breast cancer (Schwartz, Taylor, & Willard, 2003; Karayurt & Zorukos, 2008; Kocak, Olcar Ece, & Gungormus, 2022). But even though family history of breast cancer increases the risk of breast cancer, the majority of women diagnosed with breast cancer do not have a known family history of the disease (WHO, 2021), suggesting that women feel fear of breast cancer regardless of whether or not they have family history of breast cancer. In a study, it was reported that women with family history of breast cancer had lower fear, albeit not statistically significant ($p > 0.05$) (Flores-Luevano et al., 2020). Similarly, in this study, it was observed that women with family history of breast cancer had lower fear of breast cancer than those without. It is thought that this is because having family history of breast cancer may increase women's knowledge and awareness of the process (Al Dasoqi et al., 2013).

Women with limited health literacy have less knowledge about breast cancer than those with higher health literacy (Rakhshkhorshid et al., 2018). Lack of knowledge about breast cancer is considered as a source of fear in many women (Turgut et al., 2009). A study reported that women with low health literacy had high fear of breast cancer (Halbach et al., 2016). But in our study, it was observed that high health literacy had no effect on women's fear of breast cancer.

There are several limitations to this study. It was conducted on Turkish women working at a university, and hence, the results cannot be generalized to other populations. Since the research data was limited to the participants' self-reported data and since a cross-sectional

study design was employed, the research results are only representative of the situation at the time of data collection.

Conclusions: All in all, it was observed that working women who participated in this study had a heightened fear of breast cancer. It was found that being married, no previous birth history, no family history of breast cancer, and having a low or high breast cancer risk perception were predictors of fear of breast cancer in women, and that these variables explained women's fear of breast cancer. To help women better manage their breast cancer fears, nurses should counsel women on risk factors that can be changed and take steps to ensure women's participation in screening programs. Promoting early detection can be an effective tool in reducing women's fear of breast cancer. It is recommended that longitudinal studies be conducted with a larger sample group to determine the effects of fear of breast cancer on society.

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