

The Relationship Between Anxiety and Beliefs Towards Breast Self-Examination and Breast Cancer Among Female University Students

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ABSTRACT

Aim: The aim of this study was to investigate the relationship between anxiety and beliefs towards breast self-examination (BSE) and breast cancer (BC) among female university students.

Method: This descriptive and comparative study was conducted on nursing students (n=534) at a State University in Ankara, Turkey. 1) Questionnaire Form, 2) Champion Health Belief Model Scale, and 3) Beck Anxiety Scale were used to data collection. In data evaluation, frequencies, percentage, mean, standard deviation, the independent t test, the Pearson correlation, and ANOVA were used.

Results: The mean age of the students was 21.30 ± 2.0 (min:18, max:40). 58.2% of the students had knowledge of BC, 47% of BSE and only 28.7% perform SBE. The students with knowledge about BSE and BC showed higher motivation and preventive health behaviors ($p < 0.05$). Students who regularly perform BSE had a low perception of barriers, high confidence perception, and high health motivation ($p < 0.05$). As students' health motivation and confidence increased, their anxiety scores decreased ($p < 0.05$).

Conclusion: The BSE rate was well below the desired level. It was determined that the female students had some positive health beliefs about BC and this situation has decreased their anxiety levels. It is recommended to consider the barriers in front of students' preventive health behaviors and to plan initiatives to develop sensitivity on this issue.

Keywords

Breast cancer, Breast self-examination, Health belief, Anxiety, University students.

Introduction

Breast cancer (BC) has become the most commonly cancer type among women worldwide, with 2.5 million cases (11.7%) were diagnosed with the BC and about 685.000 women died from BC in 2020. There were also approximately 8 million women with BC in the previous five years. Currently, BC has overtaken lung cancer for the first time globally. BC is increasing undeveloped/developing

countries where most of the women are diagnosed in late stage, particularly in Africa, Asia, and South America [1-3]. Many risk factors may have impact on BC, including unhealthy diets, use of alcohol-cigarette, use of oral contraceptive, shorter breastfeeding periods, heredity, lifestyle, obesity, physical inactivity, early age menarche, late age first pregnancy and hormonal menopausal therapy [3-5].

BC generally has a high chance of cure if diagnosed timely and treated. Collaborative actions have been launched to reduce deaths from breast cancer by advocating for appropriate policies, promoting breast self-examination (BSE), improving early

detection and ensuring access to quality care [4,6]. Unfortunately, there are substantial disparities in BC survival between high and low income countries, as well as between different social groups within countries due to limited facilities to achieve early diagnosis methods such as BSE, mammography, and clinical breast examination. BSE is still recommended from the age of 20 years as an easy, non-invasive, reliable, and cost-free method to detect any abnormal swelling or lumps in order to contribute to medical help seeking behaviors and medical attention, which can be used alongside other BC screening modalities [7-10]. Previous studies showed fear of cancer diagnosis, distress, lack of information and awareness of BC screening practices among women. Studies indicated that women's health beliefs and attitudes are the most important factors, which impact BC detection behaviors [11-17].

Aim

The aim of this study was to determine the relationship between anxiety and beliefs towards BSE and BC among female university students.

Material and Method

This descriptive and comparative study was conducted between 01 and 30 May 2015. The population was composed of the female students who recruited to Nursing Department of State University in Ankara, Turkey (N=4190). The study population comprised of 534 students. The sample size was calculated as 534 using population proportion sample size determination formula with 95% CL and 5% marginal error (the incidence of the event is 20%).

Eligibility criteria for nursing students were: (a) can read and write in Turkish, (b) agree to participate in the research. Permission was obtained from the Ethic Board of University to conduct the study. Rules specified in The Helsinki Declaration were observed in the data collection phase.

In the collection of data: 1) Questionnaire Form (QF), 2) Champion Health Belief Model Scale (CHBMS), and 3) Beck Anxiety Scale (BAS) were used to data collection. The pre-test of the research was carried out on 10 students and it was determined that the questions in the data collection tools were understandable. It took approximately 20 minutes to fill out the forms.

QF: This form created by the researchers after the literature review. There are a total of 15 questions concerning about students' age, grade, field of study, health insurance, Body mass index-BMI, habits, their risk factors for BC, their information and practices of BSE, sources of information about BC and BSE, and reasons for not performing BSE.

CHBMS: This scale was used to explore the influence of health beliefs of students on BSE practices, which was developed by Champion [18]. The Turkish validity and reliability study of the scale (Cronbach alpha; 0.86) was carried out by Karayurt and Dramalı [19]. The scale consists of 6 concepts and 42 items: 1) Perceived susceptibility to an illness, 2) Perceived seriousness of

the illness, 3) Perceived benefits of practices, 4) perceived barriers for the actions, 5) Confidence with ones's ability, and 6) Health motivation. Each item has a score ranging from 1 to 5 (Likert type; "1 = disagree strongly to 5 = agree strongly". The score of each subscale is considered separately and is not collected under one score. Students who had low scores in the barrier subscale and high scores in the other subscales also held positive beliefs about BC and BSE (Cronbach alpha; 0.89).

BAS: It is a self-assessment scale developed by Beck et al. [20] to determine the frequency of anxiety symptoms experienced by individuals. BAI consists of 21 four-point Likert-type questions, and the answers given to the questions are "How much did it bother you?" It consists of the answers given as "not at all" (0), "mildly (1), "moderately" (2) and "severely" (3). The scores that can be obtained from this scale range from 0 to 63. The higher the total score obtained from the scale, indicates that the anxiety experienced by the individual is more severe. The Turkish validity and reliability of the BAI was performed by Ulusoy et al. [42], and the Cronbach Alpha internal consistency coefficient was found to be 0.93.

The analyses were undertaken in the Statistical Package for Social Sciences 21.0 (SPSS) package software. Data were evaluated using number, percentage, mean and standard deviation, ANOVA, the independent t test, and the Pearson correlation. The significance level was $p < 0.05$.

Results

The mean age of the students was 18-40 y (21.30 ± 2.0). 70.2% of the students were 20-24y. More than half of the students (56.9%) were studying health sciences and 33% of the students were in their last year. 2.2% of the students did not have health insurance (Table 1).

Table 1: Socio-demographic characteristics of students.

Socio-demographic Characteristics	n	%
Age 18-40 (21.30 ± 2.0)		
≤ 19	66	12.4
20-24	375	70.2
≥ 25	93	17.4
Field of study		
Health Science	304	56.9
Non health	230	43.1
Class		
1 st	79	14.8
2 nd	132	24.7
3 rd	147	27.5
4 th	176	33.0
Health insurance		
No	12	2.2
Yes	522	97.8
Total	534	100.0

The students experienced menarche at the age of 12.6 ± 2.0 . 14.4% of the students had taken OCS. The BMI of 12.7% of the students was ≥ 25 (overweight). A total of 14.4% of the students smoked

cigarettes, while 12.5% of the students drank alcohol, 13.7% of the students had regular physical activity. 59.6% of the students stated that they eat mainly daily meat-fruit-vegetables and 9.2% of the students had a chronic disease (Table 2).

Table 2: Medical characteristics and habits of students.

Medical characteristics & Habits	n	%
Menarche age (12.6 ± 2.0)		
≤11	145	27.2
12-14	296	55.4
≥15	93	17.4
OCS*		
No	457	85.6
Yes	77	14.4
Overweight (BMI ≥25 kg/m²)**		
No	466	87.3
Yes	68	12.7
Smoking		
No	457	85.6
Yes	77	14.4
Alcohol intake		
No	467	87.5
Yes	67	12.5
Physical activity (daily)		
No	461	86.3
Yes	73	13.7
Nutrition habits		
Fast-food-greasy	135	25.3
Vegetable	84	15.7
White meat-vegetable-fruit	315	59.0
Chronic diseases		
No	485	90.8
Yes	49	9.2
Total	534	100.0

* OCS: Oral contraceptive, ** BMI: Body Mass Index

In the study, 4.3 % of the students had a breast problem, 3.6% of the students had BC in their friends, and 12.8 % of the students had BC in their family. 49.4% of the students reported that they knew how to do BSE, and 28.7% of them regularly performed BSE (Table 3).

About breast cancer and BSE, 4.5% of the students reported that they received information from books-brochures, 2.6% from the Internet, 58.2% from school and 10.3% from health personnel. Among the reasons for not performing BSE regularly (20.7%), being insensitive (31.8%), afraid of being diagnosed with BC (7.3%), not considering it as necessary because they had no breast-related complaints (28.6%), and being uninterested in health (11.6%) were reported. Reasons for students to do BSE; (7.2%) because she was in the risk group for BC, (34.6%) wanted to take precautions against BC, and (55.6%) because she knew that BC is an important disease (2.6%).

Table 3: BC and BSE characteristics of students.

BC & BSE characteristics	n	%
Breast problem in their history		
No	511	95.7

Yes	23	4.3
BC history in their family		
No	470	88.0
Yes	64	12.0
BC history in their friends / neighbors		
No	515	96.4
Yes	19	3.6
BC information		
No	223	41.8
Yes	311	58.2
SBE information		
No	116	21.7
Yes	264	49.4
Partially	154	28.8
SBE perform (every month)		
No	381	71.3
Yes	153	28.7
Total	534	100.0

The mean scores of subscales of the CHBMS were as follows: the susceptibility subscale score was 7.59 ± 2.23, the seriousness subscale score was 22.22 ± 5.40, the benefit subscale score was 15.62 ± 3.15, the barrier subscale score was 25.71 ± 6.76, the confidence subscale score was 33.53 ± 9.55, and the health motivation subscale score was 25.53 ± 4.31. A statistically significant difference was found between the mean of scores of students who had previous knowledge of BC and the subscales of benefits, barriers, confidence and health motivation (p<0.05) (Table 4).

Table 4: Distribution of students' BC information and Subscale CHBMS scores.

CHBMS (item)	X ± SD	Min-Max	BC information		Test değeri t; p
			No X ± SD	Yes X ± SD	
Susceptibility (3)	7.59 ± 2.23	(3-15)	7.69 ± 2.07	7.50 ± 2.33	0.997; 0.319
Seriousness (7)	22.22 ± 5.40	(7-35)	22.38 ± 5.01	22.11 ± 5.67	0.570; 0.569
Benefits (4)	15.62 ± 3.15	(4-20)	14.87 ± 2.77	16.16 ± 3.30	4.734; 0.000
Barriers (11)	25.71 ± 6.76	(11-51)	28.17 ± 5.08	23.95 ± 7.25	7.462; 0.000
Confidence (10)	33.53 ± 9.55	(10-50)	27.18 ± 7.83	38.08 ± 7.94	15.743; 0.000
Health motivation (7)	25.53 ± 4.31	(9-35)	24.95 ± 4.08	25.94 ± 4.43	2.626; 0.009

While there was no statistically significant difference between knowing how to do BSE and the mean scores of sensitivities and perception of seriousness (p>0.05), a significant difference was found between benefits, barriers, confidence, and health motivation subscales (p<0.05) (Table 5).

Table 5: Distribution of students' some characteristics and subscale CHBMS scores.

CHBMS	BSE Information		Analysis t; p
	No X ± SD	Yes X ± SD	
Susceptibility	7.41 ± 2.01	7.53 ± 2.31	1.280 0.279
Seriousness	22.51 ± 5.22	22.90 ± 5.60	0.903; 0.406
Benefits	14.29 ± 2.92	16.28 ± 3.21	17.336; 0.000
Barriers	29.0 ± 4.85	23.31 ± 7.37	39.921; 0.000

Confidence	24.67 ± 7.83	39.25 ± 7.92	174.783; 0.000
Health motivation	24.86 ± 3.95	26.27 ± 4.38	7.881; 0.000
CHBMS	BSE Practices		
Susceptibility	7.46 ± 2.13	7.66 ± 2.45	1.147; 0.252
Seriousness	20.58 ± 5.29	22.33 ± 5.57	2.430; 0.015
Benefits	15.28 ± 3.09	17.46 ± 3.16	3.969; 0.000
Barriers	27.47 ± 5.60	21.33 ± 7.38	10.415; 0.000
Confidence	31.02 ± 9.04	39.78 ± 7.76	10.536; 0.000
Health motivation	25.02 ± 4.21	27.80 ± 4.32	4.390; 0.000
CHBMS	BC history in their family		
Susceptibility	7.12 ± 2.13	7.92 ± 2.45	2.346; 0.042
Seriousness	21.01 ± 5.10	24.21 ± 4.92	3.650; 0.055
Benefits	15.16 ± 3.73	17.29 ± 3.16	4.223; 0.000
Barriers	26.01 ± 4.86	21.12 ± 7.38	11.380; 0.000
Confidence	32.90 ± 8.43	38.78 ± 7.76	12.204; 0.000
Health motivation	25.40 ± 3.11	27.76 ± 4.11	6.287; 0.000
CHBMS	Breast problem in their history		
Susceptibility	7.20 ± 2.11	7.48 ± 2.00	3.451; 0.002
Seriousness	22.58 ± 5.29	21.31 ± 5.34	3.425; 0.004
Benefits	15.28 ± 3.09	16.46 ± 3.15	3.233; 0.000
Barriers	26.47 ± 5.13	22.29 ± 7.30	10.200; 0.000
Confidence	32.76 ± 9.04	38.12 ± 6.13	10.231; 0.000
Health motivation	25.88 ± 4.14	28.16 ± 5.30	4.120; 0.000
CHBMS	Health Science		
Susceptibility	7.25 ± 2.10	7.51 ± 2.45	3.119; 0.365
Seriousness	22.00 ± 5.82	23.00 ± 5.00	2.430; 0.048
Benefits	15.13 ± 3.05	17.20 ± 3.11	3.236; 0.000
Barriers	26.45 ± 5.13	22.33 ± 7.21	12.124; 0.000
Confidence	32.32 ± 7.00	39.78 ± 6.13	13.011; 0.000
Health motivation	25.15 ± 4.20	28.80 ± 5.32	5.250; 0.000

The barrier subscale scores for students who practice BSE regularly were lower than other students who do not practice BSE regularly ($p < 0.05$). The seriousness, benefits, confidence, and health motivation subscales scores for students who perform BSE were higher than other students who do not perform BSE regularly ($p < 0.05$). The barrier subscale scores were lower, while the susceptibility, seriousness, benefit, confidence, and health motivation score of students who had breast-related problem in the past and had family members with BC was higher than other students, and the differences were statistically significant ($p < 0.05$). The barrier subscale scores for students who study health science were lower than other students who study non-health science and also their all-other subscale scores were higher than other students ($p < 0.05$) (Table 5).

The scores of the students in BAS vary between 21 and 62, and the average score is 36.59 ± 6.16 . No statistically significant correlation was found between the students' mean scores in the CHBMS susceptibility, seriousness, barriers and perception of confidence subscale and their total BAS score (respectively; ($r = -0.032$; $p = 0.466$), ($r = -0.008$; $p = 0.862$), ($r = -0.027$; $p = 0.538$), ($r = 0.043$; $p = 0.324$). In addition, it was determined that there was a negative correlation between the mean score of the students in the "health motivation" subscale ($r = -0.171$; $p = 0.000$, "confidence" ($r = -0.219$, $p = 0.000$) and the mean score in the BAS (Table 6).

Table 6: Correlations among CHBMS and BAS scores.

CHBMS	BAS Mean: 36.59 ± 6.16 (21-62)	
	r	p
Susceptibility	-0.032	0.466
Seriousness	-0.008	0.862
Benefits	-0.027	0.538
Barriers	0.043	0.324
Confidence	-0.219	0.000
Health motivation	-0.171	0.000

Discussion

BC is also the most prevalent cancer among women in the world. Studies show that when diagnosed early, cancer survival rate can increase by 95.0%. With BSE, which is an easy, cost-free, safe, and non-invasive procedure, women recognize their breast structure and can easily notice a different developing structure. Thus, BSE helps in the early diagnosis of BC. Therefore, it is recommended that every woman after the age of 20 apply BSE regularly [2,3,21]. The Health Belief Model has been used in different studies as a theoretical concept to examine BC screening behaviors. According to this model, a woman who perceives more benefits of and fewer barriers to BSE would be more likely to practice BSE [18,22-28]. We also used this model to detect students' health beliefs towards BC and BSE as a predictor factor of practice of BSE in this study. In the present study, it was determined that approximately half of the students (49.4%) had prior knowledge of BSE. This rate was 20.2% of in the study of İlhan et al. [29], 21.8% [12], 22.3% [28], 30.4% [9], 33.1% [19], 41.7% [30], 44.2% [24], and 55.5% [31], respectively. These results show that the level of prior knowledge about BSE is not higher than the rate we obtained in all studies.

In this study, it was determined that school (58.2%), health personnel (10.3%) and books-brochures (4.5%) were in the first three places among the information sources of students about BC and BSE. In different studies, the rate of getting information from health personnel about BC and early diagnosis methods varies between 3.9% and 47.7%, and health personnel are mostly in the first three places as information sources [7,11,13,32]. The results reported in these studies are similar to our study finding. Health personnel play an important role in students' access to accurate information about BC and early diagnosis methods, and the information provided increases students' awareness on this issue.

In the present study, only 28.7% of the students reported that they regularly performed BSE. This rate was not at the desired level. Students stated that despite having knowledge of BSE, they failed to perform BSE on a regular basis. It is known that BSE is not very common and this rate varies between 11% and 53% in many studies. Karayurt and Dramalı [19] stated that the rate of regular BSE once a month in participants was only 6.7%. A different study showed that only 11.6% of students practice BSE every month [30]. This rate in study of Söğüt & Cangöl [27] 15.1%, Erbil & Bölükbaş [12] 21.8%, Bihare et al. (2017) 28.3%, Akhtari-Zavare et al. [33] 36.7%, Değer et al. [15] 39.6%, and İlhan et al. [29] 53.3%, respectively. Our findings are consistent with the other studies.

We also found that the factors inhibiting students' BSE perform were fear of BC diagnosis, no time, no necessary to do it, and inability to see any risk to their health. When the studies are examined, the reason for not performing BSE is generally not knowing how it is done, while finding it unnecessary, lack of complaint, forgetting, neglect, and fear of mass gain are stated as other reasons [8,11,13,22,29,32,34-36].

In our study, the barrier subscale scores of students for SBE practice in non-health department were low ($p<0.05$). Similar to our study findings, in the study of Gölbaşı et al. [7], it was reported that while the score of sensitivity subscale on regular BSE was high and the barrier subscale score was low for students studying in health-related departments. In this study, students who had breast-related problems and had BC in their family history had higher benefit and susceptibility subscale scores than others who those not ($p<0.05$). Similar studies have determined that individuals with BC in family members had a higher sensitivity perception [12,27,29,37].

In addition, we found the students' benefit, confidence and health motivation subscale scores at above average; the susceptibility and seriousness subscale score was at the middle level, and the barrier subscale score was low. These results are similar to the other studies [34,37,38]. We also found that the average score of those who had knowledge about BC and BSE in the barrier subscale scores was lower than those who did not know ($p<0.05$). As a matter of fact, in the present study, it was determined that those who had knowledge about BC and BSE had higher mean scores from the confidence and health motivation subscale of the scale ($p<0.05$). However, it can be said that the sensitivity and susceptibility of the students for BC and BSE are not at the desired level. Consistent with the literature, the fact that lack of knowledge is a serious barrier in performing BSE on a regular basis. Studies show that with planned trainings, the importance of early diagnosis of BC can be understood, the knowledge gap can be eliminated, and the habit of BSE can be formed [12,27,30].

Confidence plays an important role in initiating and maintaining behavior change. Also, health motivation is to transform thought into action or to define the willingness to change behavior [18,38]. In our study, it was determined that those who perform BSE had higher confidence and higher health motivations ($p<0.05$). On the contrary, in the study of Söğüt & Cangöl [27], there was no statistically significant difference between the health belief subscales and BSE practice. In different studies conducted on this subject, it has been reported that women with high self-efficacy perception regularly perform BSE every month more than women with low self-efficacy [38,39].

Various social factors such as some socio-demographic characteristics, attitude, belief, minority status, cancer fear, mental or physical problems and health facilities have been linked to poorer BC screening. Anxiety often is defined as barriers of BC screening behaviors and the emotional problems can affect on the decision to engage in screening practices [21,36,40,41]. In the present study, there was a negative correlation between the health motivation/

confidence subscale scores and the anxiety score ($p<0.05$). According to this, as students' anxiety level increased, their health motivation and confidence scores decreased. Similarly, in the studies, students' high levels of anxiety cause them to experience feelings of hopelessness, low self esteem and helplessness about their own lives, while reducing their sensitivity/susceptibility motivation, and seriousness about health-protective behaviors. In this regard, high anxiety levels were negatively correlated with the subscales of the health belief model [21,36,40,41].

Conclusion and Recommendations

As a result of this study, the mean and subscale scores at CHBMS were found to be effective on SBE. It was determined that students with high health motivations scores were more sensitive to SBE behaviors. Considering this result, health beliefs of students may improve to perform BSE regularly. A negative correlation was found between the students' health belief scores and anxiety scores. In this regard, the students with high health motivation and sensitivity had less anxiety about BC. It is recommended that determine the factors that cause anxiety about BC in the students and to establish support mechanisms. In the study, the students' department, SBE & BC information, BSE practices, history of breast problems, and history of BC in their family were factors affecting their health beliefs. Also, although half of the students knew the BSE, the majority of the students did not perform SBE regularly. Therefore, they needed counseling about BC and SBE. Especially, comprehensive educational strategies should be provided to increase their knowledge, motivation and practices of SBE, to improve students' health promotion behaviors in early age.

Limitation

The results are based on self-reports from the students. The generalizability of the results of this study is limited to this study population.

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