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Knowledge Levels and Health Beliefs of Turkish Young Women About Breast Cancer

Funda Evcili, Esma Erdem

Sivas Cumhuriyet University, Vocational School of Health Care Services, Health Programs Department, Sivas, Türkiye.

Correspondence Author: Funda Evcili
E-mail: fundaevcili@hotmail.com

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ABSTRACT

Objective: This study was conducted to determine the knowledge levels and health beliefs of young women studying at university regarding breast cancer and breast self-examination (BSE).

Methods: This descriptive study's sample consisted of 812 female students. Data were collected using the Personal Information Form, Comprehensive Breast Cancer Knowledge Test (CBCKT) and Champion Health Belief Model Scale (CHBMS). The data were transferred to SPSS for Windows 22.0. The descriptive statistical analysis and Pearson Correlation Analysis was used to evaluate the relationships between parameters. Predictive factors associated with breast self-examination among young women were tested with multivariate logistic regression analysis. The results were evaluated bidirectionally at 95% confidence interval and significance level $p < .05$.

Results: The participants mean age was 20.09 (1.64) years and 12% had a family history of breast cancer. 12.1% of the participants stated that they performed BSE regularly. The mean total score of the participants in the CBCKT was 12.48(2.41); the mean scores in the sub-dimensions of sensitivity, caring/seriousness, health motivation, benefit perception, barrier perception, and self-efficacy/confidence of the CHBMS were 8.26(2.42); 20.80(3.21); 19.20(2.70); 16.50(3.02); 18.28(3.36); 39.92(3.40), respectively. Married young women had a 4.86 times higher likelihood of performing BSE compared to unmarried young women (AOR = 4.86, 95% CI: (2.16–10.48)). A family history of breast cancer was significantly associated with the practice of BSE. It was determined that young women with a family history of breast cancer were 3.46 times more likely to engage in BSE compared to those without a family history (AOR = 3.46, 95% CI: (1.68–9.86)). Young women who perceived their knowledge about breast cancer as sufficient were found to have a 1.86 times higher likelihood of performing BSE compared to those who did not (AOR = 1.86, 95% CI: (1.00–3.40)). Holding other factors constant, there was a 1.72 times increase in the likelihood of conducting breast self-examinations with a one-unit increase in age (AOR = 1.72, 95% CI: 1.06–1.20).

Conclusion: This study found that as participants' knowledge levels about breast cancer / BSE increased, their sensitivity, concern/seriousness, health motivation, perceived benefits, and self-efficacy/confidence also increased, while perceived barriers decreased. There is an urgent need to increase knowledge and practice of breast self-examination to prevent and detect breast cancer at its early stage.

Keywords: Breast cancer, breast self-examination, knowledge, health belief, women

1. INTRODUCTION

Breast cancer is the most common cancer among women worldwide and the leading cause of cancer-related deaths. According to estimates by the International Agency for Research on Cancer (IARC), a subsidiary of the World Health Organization (WHO), approximately 2.3 million new cases of breast cancer were reported worldwide in 2020, indicating that 1 in 8 diagnosed cancers will be breast cancer (1). Again in 2020, breast cancer caused 685,000 deaths and ranked 5th among the cancers that cause death worldwide. In women, breast cancer is responsible for 1 in 4 cancer cases and 1 in 6 cancer-related deaths. In addition, this disease ranks first in terms of mortality (death rate) and incidence (new case rate) in many countries (2). According to 2020 statistics, breast cancer ranks first among the top 5 most common cancers in women in Turkey. The average age of women diagnosed with breast cancer is 51 and 17 percent of patients are under 40 years of age (3). The disease is not only life-threatening, but the medical and surgical treatment process from the time of diagnosis negatively affects a woman's body image, family relationships, roles, sexual health, quality of life, social and professional life. Patients and their families have to cope with this devastating disease and its effects. Treatment and care services provided in the period following the diagnosis of breast cancer impose great economic costs on both individuals and countries (4-6).

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Breast cancer is one of the most preventable and curable diseases in case of early diagnosis. Early detection of breast cancer causes 90% of women to live at least 5 years after diagnosis and increases survival (7). The widespread use of screening programs and advances in treatment methods contribute to early detection, treatment and follow-up of the disease. For this reason, WHO recommends the establishment and dissemination of early diagnosis and screening programs for breast cancer based on countries' own realities, taking into account economic, social and cultural factors, and eliminating existing barriers (7). In this context, for early diagnosis of breast cancer, it is necessary to increase women's breast cancer awareness (education), breast self-examination (BSE), clinical breast examination (CBE) and screening mammography (8). But BSE a recommended method for early detection of breast cancer in less developed countries, albeit relatively early, because it is economical, easy and can be easily performed by women themselves. Particularly in developing countries, including Turkey, when socio-economic realities are taken into consideration, it is accepted that BSE is an indisputably important necessity and an inevitable practice (9). One of the important methods for early detection of breast cancer is CBE. When performed in combination with mammography, it is reported to increase the detection rate of cancer by 5-20%. Mammography is the most important screening method that reduces breast cancer mortality. Studies show that mammographic screening (with or without CBE) is effective in women aged 50-69 years (8). The American Cancer Society recommends that women in the 20-39 age group should undergo monthly BSE and every 3 years CBE; women in the 40-49 age group should undergo monthly BSE every month, yearly CSE, and mammography every 1-2 years; women aged 50 years and older are recommended to undergo monthly BSE, yearly CBE, and yearly mammography (8). In our country, as part of the National Cancer Screening Program for breast cancer, women aged 40-69 undergo a clinical breast examination once a year and a mammogram every two years (11). The Ministry of Health emphasizes the importance of BSE training and recommends that women perform a self-examination of their breasts every month starting at the age of 20 (11).

Although the effect of early diagnosis and screening on prognosis is known, many studies in the literature reveal that women do not benefit from early diagnosis due to many factors such as lack of knowledge about disease symptoms / screening programs, economic problems, inadequate access to health services, fear of pain, embarrassment, beliefs that their privacy will be ignored and that screening is unnecessary (6,8-10). At this point, informing women about the subject from their youth and raising awareness about breast cancer in the society emerges as an important requirement. Young women are the key stakeholders of "breast cancer" themed health education programs. This is because knowledge about breast cancer, positive health beliefs and healthy lifestyle behaviors are acquired early in life. The decision to participate in screening programs is often strongly influenced by the level of knowledge / attitudes / beliefs of individuals. Informing young women and enabling them to effectively use screening services that contribute to early diagnosis is the most effective way to reduce breast cancer-related mortality rates. In this context, firstly, young women's level of knowledge about breast cancer and their health beliefs related to breast cancer should be determined. There are studies evaluating the level of knowledge about breast cancer in the literature (10,12-14). However, the level of knowledge alone may not be sufficient to create behavioral change on that subject. The Health Belief Model is used to explain health-related behavior change and to plan intervention research on health maintenance and preventive health behavior. The model was developed to explain why some people exhibit health maintenance behaviors while others participate poorly in disease prevention and screening programs. The model is also used to evaluate the factors affecting breast cancer early diagnosis/ screening behaviors as well as other protective behaviors (15-17). According to the Health Belief Model, individuals' health behaviors are influenced by their values, beliefs and attitudes. The model argues that the value placed on health is influenced by beliefs about illness and its consequences. If individuals have the belief that a health problem will cause serious harm to them, they think that when they take action to reduce the risk, the harm to themselves will decrease. Therefore, people who perceive themselves to be at risk for negative outcomes may control their risky behaviors or existing risk factors more than those who do not perceive themselves to be at risk (17,18). It is aimed to evaluate women's health beliefs as well as their level of knowledge about breast cancer and breast self-examination. The data obtained can be used in determining the scope of health education and structuring the content of education.

2. METHODS

2.1. Design

This study was a cross-sectional study. The study was conducted in the fall semester (October, 10-November, 30) of the 2022-2023 academic year at the Vocational School of Health Services of a state university.

2.2. Participiants and study size

The population of the study consisted of 1959 female students enrolled in 15 programs of the Vocational School of Health Services of a state university in the fall semester of the 2022-2023 academic year. When the population was known, the number of samples was calculated as 756 with 95% reliability (with α=0.05 error) with the help of the formula used to examine the frequency of the event (n= Nt2pq/d2(N-1)+t2pq). Then, the number of participants to be included in the sample from each program was determined by stratified sampling method. The determined number of participants from each program was included in the study by simple random sampling method. The sample consisted of 812 participants who were willing to participate in the study and completed the data collection tools completely.

2.3. Assessment tools

The data of the study were collected with three separate data collection tools: Personal Information Form, Comprehensive Breast Cancer Knowledge Test, Champion Health Belief Model Scale.

Personal Information Form: The form prepared by the researchers includes 17 questions. The form includes questions to determine some socio-demographic characteristics of the participants (age, class, marital status, income status) and questions to determine their history of breast cancer (such as having a history of breast cancer in the family/close environment, finding the level of information about breast cancer sufficient, information sources).

Comprehensive Breast Cancer Knowledge Test (CBCKT): It was developed by Stager in 1993 (19). The scale included two dimensions: 'General Knowledge' and 'Curability'. There are a total of 20 knowledge questions in the scale. Questions from 1 to 12 include general knowledge about breast cancer, while questions 13 to 20 include information about the curability of breast cancer. The scale is answered as True-False. Questions with correct answers are evaluated with 1 point each, questions with incorrect answers and questions with no answer are evaluated with 0 points. There are 8 true and 12 false statements in the questions. Questions 1, 2, 5, 6, 11, 12, 14, 15, 17, 18, 19 and 20 contain false statements, while the other questions contain true statements (19). The validity and reliability in Turkey was conducted by Başak in 2015 and the Alpha value of the 'General Knowledge' dimension was found to be 0.49, the Alpha value of the 'Curability' dimension was found to be 0.80 and the total scale was found to be 0.90 (20). In this study, total Cronbach Alpha coefficient were 0.78; the 'General Knowledge' dimension was found to be 0.56, the 'Curability' dimension was found to be 0.73.

Champion Health Belief Model Scale (CHBMS): The scale was developed and later revised by Champion to determine women's beliefs and attitudes about breast cancer and BSE and contains 42 items (21-24). The scale was adapted into Turkish by Karayurt and Dramalı (28). CHBMS has 6 sub-dimensions and the items are included in the scale in the following order. The "sensitivity perception" sub-dimension of breast cancer refers to the perceived individual risks of developing breast cancer and consists of 3 items. The "caring / seriousness" sub-dimension of breast cancer defines the degree of individual threat perceived from breast cancer and consists of 7 items. The "benefit perception" sub-dimension refers to the perceived advantages of BSE and consists of 4 items. The "barriers perception" subscale defines the perceived barriers related to the practice of BSE and consists of 11 items. The "self efficacy / confidence" subscale refers to the perceived individual competence in the ability to perform BSE to detect abnormal breast masses and consists of 10 items. The "health motivation" subscale refers to individuals' interest and concern about their health status and consists of 7 items. Each sub-dimension of the scale is evaluated separately; the total score including the whole scale is not calculated. A low score on the "barrier perception" subscale and high scores on other subscales indicate that women have positive attitudes and beliefs about breast cancer and BSE practices (25). In the Turkish adaptation of the scale, Cronbach Alpha reliability coefficients were found between 0.58 and 0.89 for the subscales (28). In this study, Cronbach Alpha coefficients were 0.84 for the "sensitivity" sub-dimension, 0.81 for the "caring / seriousness" sub-dimension, 0.90 for the "benefit perception" sub-dimension, 0.73 for the "barrier perception " sub-dimension, 0.87 for the self efficacy / confidence sub-dimension, and 0.84 for the health motivation sub-dimension.

2.4. Statistical analysis

SPSS (Statistical Package for the Social Sciences) for Windows 22.0 (IBM Corp. Armonk, NY: USA. Released 2013) was used for all statistical procedures. The normality of the data was assessed by the Kolmogorov-Smirnov test. The descriptive statistical analysis (Mean, Standard Deviation, Frequency, Minimum, Maximum), Pearson Correlation Analysis was used to evaluate the relationships between parameters. Predictive factors associated with breast self-examination among young women were tested with multivariate logistic regression analysis. The results were evaluated bidirectionally at 95% confidence interval and significance level $p < .05$.

2.5. Ethics approval

Before starting the study, the necessary permissions for the use of the scales, ethics committee approval (2022-202980) and implementation permission. The participants were informed about the subject and purpose of the study. Data collection tools were administered online to the participants who agreed to participate in the study.

3. RESULTS

The mean age of the participants was 20.09 ± 1.64 years. 1.8% were married, 75.2% had a moderate economic status, 12% reported a family history of breast cancer. Among those who family member diagnosed with BC, 45.4% stated that their aunt, 31.9% mother, 22.7% sister/cousin had been diagnosed with breast cancer. 79.0% of the participants stated that perceived suffiency of knowledge about BC was 'sufficient' and 71.6% stated that they knew the symptoms of breast cancer. Among those who stated that they knew the symptoms of breast cancer, 82% listed a palpable mass in the breast or armpit, 76.2% listed discharge from the nipple, and 63.4% listed retraction or deformity of the nipple as the first three symptoms. The internet (60.9%), health professionals (58.5%) and mass media (42.5%) were the top three sources of information. 68% of the participants stated that they heard about BSE, 12.1% of them performed BSE regularly, 11.8% of them heard about CBE, and 0.8% of them had at least one CBE. 96.4% of the participants stated that they had heard of the mammography procedure. 62.3% thought that breast cancer is not a fatal type of cancer if detected early (Table 1).

Table 1. *Distribution of young women according to certain characteristics*

Characteristics	Category	n	%
Marital status (n=812)	Single	798	98.2
	Married	14	1.8
Economic status (n=812)	Low	86	10.6
	Moderate	610	75.2
	High	116	14.2
BC in the family history (n=812)	Yes	97	12.0
	No	715	88.0
Family member diagnosed with BC*(n=97)	Aunt	44	45.4
	Mother	31	31.9
	Sister / Cousin	22	22.7
Perceived suffiency of knowledge about BC (n=812)	Sufficient	642	79.0
	Unsufficient	170	21.0
Sources of knowledge*(n=642)	Internet	391	60.9
	Health professionals	376	58.5
	Media (TV, radio, newspaper)	273	42.5
Heard about BSE (n=812)	Yes	552	68
	No	260	32
Perform BSE*(n=552)	Yes (reguler)	67	12.1
	No (irreguler)	485	87.8
Heard about CBE (n=812)	Yes	95	11.8
	No	717	88.2
Heard about mammography (n=812)	Yes	782	96.4
	No	30	3.6
Opinions on the fatality of breast cancer (n=812)	Yes, it is fatal.	307	37.7
	No, it isn't fatal if detected early	505	62.3

Abbreviations: *BC, Breast Cancer; BSE, Breast Self Examination; CSE, Clinic Breast Examination, * percentages are based on 'n'*

The participants' scores on the total, general knowledge, and curability sub-dimensions of the CBCKT were 12.48 (2.41); 7.42 (1.20); 5.20 (1.48), respectively (Table 1). Participants' scores on the sensitivity, caring/seriousness, health motivation, benefit perception, barrier perception, self-efficacy / confidence perception subscales of the CHBMS were 8.26 (2.42); 20.80 (3.21); 19.20 (2.70); 16.50 (3.02); 18.28 (3.36); 39.92 (3.40), respectively (Table 2).

There was a statistically significant positive correlation between the mean score of the general knowledge sub-dimension of the CBCKT and the mean scores of the sensitivity, caring/seriousness, health motivation, benefit perception, self-efficacy/confidence sub-dimension of the CHBMS, and a statistically significant negative correlation between the mean score of the barriers perception sub-dimension ($p< .05$). A statistically significant positive correlation was found between the mean score of the curability sub-dimension of the CBCKT and the mean scores of the sensitivity, self-efficacy / confidence, caring / seriousness sub-dimension of the CHBMS ($p< .05$). A statistically significant positive correlation was found between the mean total score of the CBCKT and the sensitivity, caring / seriousness, self-efficacy / confidence sub-dimensions of the CHBMS ($p<.05$) (Table 3).

Table 2. *Total and sub-dimension mean scores of the CBCKT ve CHBMS*

SCALE TOTAL and SUB-DIMENSIONS	Scale Min – Max Score	Study Min-Max Score	m (sd)
CBCKT			
General Knowledge	**0-12**	**2-11**	7.42 ± 1.20
Curability	**0-8**	**0-8**	5.20 ± 1.48
Total	**0-20**	**6-18**	12.48 ± 2.42
CHBMS			
Sensitivity	**3-15**	**3-15**	8.26 ± 2.42
Caring/Seriousness	**7-35**	**8-32**	20.80 ± 3.21
Health Motivation	**7-35**	**7-28**	19.20 ± 2.70
Benefit Perception	**4-20**	**5-20**	16.50 ± 3.02
Barrier Perception	**11-55**	**11-32**	18.28 ± 3.76
Self-Efficacy / Confidence	**10-50**	**12-50**	38.92 ± 3.40

Abbreviations: *CBCKT, Comprehensive Breast Cancer Knowledge Test; CHBMS, Champion Health Belief Model Scale; m: mean; sd: standart deviation*

Table 3. *Correlation of total and sub-dimension scale scores*

CHBMS	CBCKT					
	General Knowledge		Curability		Total	
	r	p	r	p	r	p
Sensitivity	**0.270**	**.000**	**0.452**	**.000**	**0.158**	**.005**
Caring/Seriousness	**0.260**	**.001**	**0.275**	**.000**	**0.280**	**.048**
Health Motivation	**0.170**	**.000**	0.078	.112	0.040	.120
Benefit Perception	**0.346**	**.000**	0.096	.062	0.072	.058
Barrier Perception	**– 0.340**	**.005**	0.076	.110	0.057	.250
Self-Efficacy / Confidence	**0.502**	**.000**	**0.450**	**.000**	**0.230**	**.000**

Abbreviations: *CBCKT, Comprehensive Breast Cancer Knowledge Test; CHBMS, Champion Health Belief Model Scale; r, Pearson's correlation coefficient*

According to the multivariate logistic regression analysis, married young women had a 4.86 times higher likelihood of performing BSE compared to unmarried young women (AOR = 4.86, 95% CI: (2.16–10.48)). A family history of breast cancer was significantly associated with the practice of BSE. It was determined that young women with a family history of breast cancer were 3.46 times more likely to engage in BSE compared to those without a family history (AOR = 3.46, 95% CI: (1.68–9.86)). Young women who perceived their knowledge about breast cancer as adequate were found to have a 1.86 times higher likelihood of performing BSE compared to those who did not (AOR = 1.86, 95% CI: (1.00–3.40)). Holding other factors constant, there was a 1.72 times increase in the likelihood of conducting breast self-examinations with a one-unit increase in age (AOR = 1.72, 95% CI: 1.06–1.20) (Table 4).

Table 4. *Predictive factors associated with breast self-examination among young women*

		BSE Practice			
	Category	**Yes**	**No**	**COR (95% CL)**	**AOR (95% CL)**
Constant					
Age [a]				1.80(1.10–1.48) *	1.72(1.06–1.20)**
Marital status	Married	9	5	3.16(2.02–9.86) *	4.86(2.16–10.48)**
	Single	18	780	1	1
BC in the family history	Yes	86	11	3.24(1.18–10.46) **	3.46 (1.68–9.86)**
	No	46	669	1	1
Perceived suffiency of knowledge about BC	Sufficient	148	494	1.46 (1.10–2.82) **	1.86 (1.00–3.40) *
	Unsufficient	66	104	1	1

** p-value < .001; ** p < = .05; a continuous variables; CI: 95% confidence interval*
Reference categories: 1; Variables: marital status: 1 married; BC in the family history*: 1 yes; perceived suffiency of knowledge about BC: 1 sufficient*

4. DISCUSSION

In this section, the data obtained have been discussed within the relevant literature framework. As participants' level of knowledge about breast cancer increases, sensitivity towards breast cancer (BC) and breast self-examination (BSE), concern/seriousness, health motivation, perceived benefits, and self-efficacy/confidence perception also increase, while perceived barriers decrease. Additionally, it has been determined that young women who find their knowledge about breast cancer sufficient are 1.86 times more likely to engage in BSE behavior compared to those who do not find their knowledge sufficient. This can be considered a noteworthy finding of this study. Many studies have shown a significant relationship between participants' overall knowledge score and BSE practice (10,14,26,29). This data indicates that as knowledge about breast cancer increases, breast awareness and the practice of BSE may also increase.

Compared to the perception of cancer risk in the general population, having a relative with a history of cancer can significantly influence individuals' level of knowledge and health beliefs. In this study, it was determined that participants with a family history of breast cancer exhibited increased sensitivity to breast cancer, increased seriousness and concern about breast cancer, increased health motivation, increased perceived benefits, and increased self-efficacy/confidence. According to the multivariable logistic regression analysis, young women with a family history of breast cancer were found to be approximately 3.5 times more likely to engage in breast self-examination (BSE) behavior compared to those without a family history of breast cancer. In a study conducted by Manisha and Kaphle, a significant relationship was found between participants with a family history of breast cancer and a history of mastectomy in the family, and the practice of BSE (27). Another study that respondents with a family history of breast cancer were more likely to be knowledgeable about BSE (OR = 1.41, 95% CI = 0.15–13.18), exhibited a positive attitude towards BSE (OR = 1.15, 95% CI = 0.16–4.50) and had good BSE practices (OR = 1.44, 95% CI = 0.24–8.34) (28). However Meilina and Masluroh showed a but there was no relationship between family breast cancer history and BSE behavior (29).

Marital status is another factor that can be associated with breast cancer. Although the number of married participants in our study was low, it was found that married participants had higher sensitivity to breast cancer, seriousness/concern, and health motivation compared to single participants. It was determined that the likelihood of engaging in breast self-examination (BSE) behavior was 4.86 times higher for married young women compared to unmarried young women. Being married may provide women with strong spousal support, help them undergo more regular screenings for breast cancer, and increase awareness of early detection. For example, married women aged from 45 to 55 years and knowledge were found to significantly moderate the relationship between perceived benefits and behavioral adoption of BSE (30). Similarly, another study reported that being married (AOR = 5.31, 95% CI = 2.19–12.90) was all significant predictors of BSE practice (31). This could be due to spousal support that influences health-related behavior, such as in encouraging them to perform BSE. However in a study conducted by Urunti et al. respondents who were single were more likely to be knowledgeable about BSE (OR = 1.17, 95% CI = 0.13–10.20) and exhibited a positive attitude towards BSE (OR = 2.47, 95% CI = 0.58–10.49) and good BSE practices (OR = 3.05, 95% CI = 0.36–25.67) (28).

In our study, it was determined that breast cancer sensitivity, seriousness/concern, health motivation, perceived benefits, self-efficacy/confidence, and breast cancer knowledge increase as participants' ages increase. When all other factors were held constant, it was found that the likelihood of performing breast examination increased by 1.72 times with a one-unit increase in age. As age increases, women may have a higher likelihood of acquiring knowledge about breast cancer, accessing screening and diagnostic tests, and interacting more frequently with healthcare professionals. Increased knowledge about breast cancer with age may lead to more positive health beliefs about breast cancer (12,16,17). As age decreases, women may perceive their risk

of breast cancer to be lower and thus may have negative health beliefs about breast cancer. In a study conducted by Urunti et al. respondents aged 31–35 years were more likely to be knowledgeable about BSE (OR = 4.00). 95% CI = 0.29–41.99), exhibited a positive attitude towards BSE (OR = 2.39, 95% CI = 0.28–12.32) and practice of BSE (OR = 2.66, 95% CI = 0.38–18.41) (28).

5. CONCLUSIONS

In this study, it was found that the participants' level of knowledge about breast cancer / BSE increased, sensitivity, caring / seriousness, health motivation, benefit perception and self-efficacy / confidence increased, and barriers perception decreased. With the educational programs structured on the data obtained, it may be possible for young women to reach the correct information they need. The fact that the participants are educated in health-related fields may also provide a sense of self-responsibility in recognizing cancer symptoms in professional life, applying prevention behaviors to life and participating in screening programs. There is an immediate need to increase the knowledge and practice of breast self-examination to prevent and detect breast cancer in its early stage.

The data obtained from the study were obtained only from female students studying at the Vocational School of Health Services of a state university. Therefore, it can only be generalized to this group. Similar studies can be conducted in groups with different sociodemographic characteristics where male students are also included in the sample.

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