



# Behavior of College Students in Health Related Departments Towards Early Diagnosis of Breast Cancer

Nesrin İlhan, Ayşe Gülnur Çöl, Emine Tanboğa, Alaattin Şengül, Makbule Batmaz  
Haliç University School of Nursing, İstanbul, Turkey

## ABSTRACT

**Objective:** The study was performed in order to determine the behavior of college students studying in health related departments for the early diagnosis of breast cancer.

**Materials and Methods:** This study is a cross sectional study. 336 female students studying in School of Nursing and School of Health Sciences at a foundation university in İstanbul were included. A questionnaire directed to collect data regarding the participants' socio-demographic characteristics and their behavior on the early diagnosis of breast cancer was used. Data were evaluated by descriptive statistics and chi-square test.

**Results:** The mean age of students was  $21.26 \pm 1.94$ , and 30.7% of the participants majored in nutrition, 29.2% in nursing, 22.9% in midwifery, 17.3% in physical therapy and rehabilitation departments. It was determined that 53.3% of the students made regular breast self-examination (BSE), and 88.1% did not get a clinical breast examination (CBE) within the last year. It was noticed that students who had BSE training, made more BSE and CBE as compared to those who did not get any education. Students with family history of breast cancer was performing more BSE than those without a family history. It was identified that students with BSE training and family history of breast cancer used BSE at a higher rate.

**Conclusion:** It was identified that students with BSE training and family history of breast cancer usage of techniques to perform a BSE at a higher rate.

**Key words:** College students, breast self-examination, clinical breast examination

## Introduction

Breast cancer is the most common cancer in women in both developed and developing countries that causes death. Along with increasing life expectancy, urbanization and adoption of western culture of life, the incidence of breast cancer is increasing in developing countries (1). Breast cancer ranks second (11.9%) among the most frequently diagnosed cancers. One of every four women with cancer in the world has breast cancer (2). The mean incidence of breast cancer throughout the world is 38-40 in a hundred thousand, while this rate is 66-67 in a hundred thousand in Europe, and approximately 40 in a hundred thousand in our country (3). The International Agency for Cancer reported that the incidence of breast cancer is increased by 20%, and deaths from breast cancer increased by 14% as compared the previous estimates (2).

Although breast cancer is so common, it is a cancer that usually has a slow growth rate and can be quite successfully treated if diagnosed early. Early diagnosis and treatment of breast cancer play a role in increasing survival, reducing mortality, improving quality of life for women, preventing physical pain and psychosocial problems (4).

Breast self-examination (BSE), mammography and clinical breast examination (CBE) are defined as principal methods for early diagnosis of breast cancer, and the individuals' complying with these applications are expressed as their early diagnosis or screening behavior (5). The American Cancer Society, American Cancer Institute and the Turkish Institute for Cancer Research recommend that women without any breast symptoms should do BSE regularly every month starting from the age of 20 years, should have CBE by physicians who are trained in breast cancer in every three years between 20-40 years, and should have monthly BSE, annual CBE and annual mammography routinely starting from the age of 40 (6, 7). Although mammography is the only diagnostic method effective in reducing breast cancer mortality rates, it cannot be implemented to all age groups and it is not appropriate for especially under developed countries since it is expensive and requires labor and technical expertise (1). The implementation of CBE in the recommended frequency by trained health

## Address for Correspondence:

Nesrin İlhan, Haliç University School of Nursing, İstanbul, Turkey  
Phone: +90 212 924 24 44 (2709) e-mail: nesrinilhan@halic.edu.tr

Received: 19.02.2014  
Accepted: 22.03.2014

personnel is important for the early diagnosis of breast cancer. On the other hand, BSE is simple, can be applied by anybody, does not require special equipment, and the cost is low. BSE is recommended to provide familiarity with breast tissue, and to notice possible changes in time. BSE leads to a women's participation in health care to take responsibility for their own health, and to increase awareness and consciousness of her own body (4). It has been reported that breast cancer was detected at early stages in women who do BSE as compared to women who do not. In a study of women with breast cancer, 94.8% of women have noticed a mass by their own, but only 74% of these women immediately referred to health centers (8). This result reveals the importance of education on the early diagnosis of breast cancer and its value. Therefore, an increase in awareness of consciousness of all women about breast cancer, BSE, and CBE should be provided. College students studying in health-related departments should be a role model to women in the society and their environment with positive health behaviors. However, studies on students studying in health-related sections indicate that they are aware of BSE but they do not apply this adequately (4, 9-15). Although CBE is known by students, the compliance rates are very low (16, 17). However, it is expected that primarily health care students and staff should adopt preventive health behaviors. Studies on this field are important in designing programs that aim to improve preventive health behaviors of college students who are studying in health related departments. Determining the status of college students from health related departments in using BSE and CBE, and the factors affecting their behavior may provide clues in giving direction to the development of educational programs. In this context, this study was performed to determine the behavior of college students studying in health-related sections for the early diagnosis of breast cancer (BSE and CBE).

**Materials and Methods**

The study was performed in order to determine the behavior of college students studying in health related departments for the early diagnosis of breast cancer (BSE and CBE), in a cross-sectional design.

The study was performed in February 2013. Female students from the School of Nursing (279) and the School of Health Sciences (512) of a foundation university at Istanbul constituted the study group. The sample size was calculated using the formula below and the minimum sample size was determined as 276 (N=791, p=0.20) (CBE and BSE performance ratio among college students) q=0.80, d=0.05 t=2.58 [α=0.01] (18). The study was performed with 336 female students who voluntarily agreed to participate.

$$n = \frac{N t^2 p q}{d^2(N-1) + t^2 p q} = \frac{791 \times (2.58)^2 \times 0.2 \times 0.8}{(0.05)^2 \times (791-1) + (2.58)^2 \times 0.2 \times 0.8} = \frac{841,624}{3.039} = 276$$

A questionnaire that contained 33 questions regarding socio-demographic characteristics and the behavior of students on the early diagnosis of breast cancer was used. The questionnaire included questions aimed to determine descriptive information such as age, department, marital status, city of residence and parental education, the level of awareness about breast cancer, BSE training status, presence of breast cancer in the family, concerns about breast cancer, BSE and CBE status, the reasons for not undergoing examination, and the applied BSE methods. The data collection sheet was pre-applied in 20 students to determine the clarity of the questions, and the required adjustments have been made. The questionnaire was distributed to students by re-

searchers, were filled and collected. The mean duration to complete a form took approximately 10 min. Students who completed the questionnaire were given handouts about BSE that was prepared by the researchers.

SPSS 15.0 statistical software package (SPSS Inc, Chicago, USA) was used in data evaluation. Descriptive statistics, chi-square, Yates corrected chi-square and Fisher exact chi-square tests were used. p <0.05 was accepted as significant. Institutional review board approval and informed consent were obtained. Student identification data were not recorded.

**Results**

All students participating in the study were female with a mean age of 21.26±1.94 years. 30.7% of the students majored in nutrition, 29.2% in nursing, 22.9% in midwifery, and 17.3% in physical therapy and rehabilitation departments. 34.2% were first grade, and 31.8% were 2<sup>nd</sup> grade students. 94.3% of the students were single, 45.5% lived with their family, and 59.2% of their mothers and 64.6% of their fathers were high school graduates.

It was determined that 77.7% of the students were aware that the most common type of cancer in women is breast cancer and 98.5% believed in the significance of early diagnosis by BSE.

There was no family history of breast cancer in 56%, 90.5% feared having breast cancer, 91.7% had concerns about breast cancer, 98.8% did not show a negative perception of the breast and 91.4% was afraid of noticing a breast mass (Table 1).

BSE was performed by 86.3% of the students, 36.9% performed BSE during each shower, and 16.4% once every month. The reasons for not doing BSE were listed as consideration of BSE unnecessary due to the absence of any complaints in 8%, and lack of education on how to perform BSE in 5.7%. It was found that 88.1% did not undergo

**Table 1. Concerns and perception of having breast cancer among college students (n=336)**

Properties	n	%
Presence of breast cancer in the family		
Yes	148	44.0
No	188	56.0
Fear of having breast cancer		
Yes	304	90.5
No	32	9.5
Anxious for having breast cancer		
Yes	308	91.7
No	28	8.3
Negative Perception of the Breast		
Yes	4	1.2
No	332	98.8
Fear of detecting a mass		
Yes	307	91.4
No	29	8.6
Total	336	100

**Table 2. Practice of college students in early diagnosis of breast cancer (n=336)**

Properties	n	%
<b>BSE Status</b>		
Yes	290	86.3
No	46	13.7
<b>Frequency of BSE</b>		
None	46	13.7
Every shower	124	36.9
Once a month	55	16.4
Once every 6 months	8	2.4
Once a year	3	0.9
Occasional	100	29.8
<b>Reasons for no BSE</b>		
Uses	290	86.3
Lack of knowledge	19	5.7
Lack of complaints	27	8.0
<b>CBE Status in the last year</b>		
Yes	40	11.9
No	296	88.1
<b>Training in BSE</b>		
Yes	268	79.8
No	68	20.2
<b>Trained by *</b>		
Doctor	15	4.5
Nurse	157	46.7
Magazine	74	22.0
TV, Radio	20	6.8
Neighbor, friend	2	0.6
<b>Total</b>	<b>336</b>	<b>100</b>

BSE: Breast self examination; CBE: clinical breast examination  
 \*Only those who were trained responded.

CBE during the past year, 79.8% had received training about BSE, and 46.7% received that training from a nurse (Table 2).

It was detected that 97.4% of the students who had training on BSE performed more BSE than those who were not trained, which was statistically significant (p<0.001). 13.8% of the students who had training on BSE underwent more CBE than those who were not trained, which was statistically significant (p<0.05) (Table 3).

It was seen that 99.3% of the students with family history of breast cancer performed more BSE than those who without a family history, which was statistically significant (p<0.001). There was no statistically significant difference when CBE status of the students was compared in terms of family history (p>0.05) (Table 4).

In comparison of students who received training on BSE with those who did not in terms of using BSE methods, it was found that educated students used methods like visual inspection using the mirror, examining breast size, shape or abnormalities of both breasts, moving fingers over the breast and nipple induction significantly more (p<0.05). There was no significant difference between these two groups in terms of axillary examination (p>0.05) (Table 5).

It was found that students with family history of breast cancer used methods of moving fingers over the breast, nipple induction, and axillary examination significantly more as compared to students without a family history (p<0.05). There was no significant difference between these two groups in terms of visual inspection using the mirror, examining breast size, shape or abnormalities of both breasts ( p>0.05) (Table 6).

### Discussion and Conclusions

Breast cancer is the most common cancer in women and the leading cause of cancer related death (1, 2). Therefore, early detection of breast cancer is important. BSE and CBE play an important role in the early diagnosis of breast cancer in women under 40 years of age. However, studies in our country show that women, and college students from health or non-health related sections are not informed enough about BSE and they do not apply these methods even if they are informed (9, 15-17, 19-22).

It was observed that 77.7% of the students knew that breast cancer is the most common type of cancer in women, and 98.5% believed in

**Table 3. Comparison of BSE and CBE status according to training (n=336)**

	Receiving breast examination training				Statistics
	Yes (n=268)		No (n=68)		
	n	%	n	%	
<b>BSE Status</b>					
Yes	261	97.4	29	42.6	$\chi^2=132.954$ p=0.001*
No	7	2.6	39	57.4	
<b>CBE Status</b>					
Yes	37	13.8	3	4.4	p=0.035**
No	231	86.2	65	95.6	

\*Yates correction chi-square  
 \*\* Fisher's exact chi-square test  
 BSE: Breast self-examination; CBE: clinical breast examination

Table 4. Comparison of BSE and CBE status according to family history of breast cancer (n=336)

	Family history of breast cancer				Statistics
	Yes		No		
	n	%	n	%	
<b>BSE Status</b>					
Yes	147	99.3	143	76.1	p=0,001**
No	1	0.7	45	23.9	
<b>CBE Status</b>					
Yes	20	13.5	20	10.6	χ <sup>2</sup> = 0.407 p=0.523*
No	128	86.5	168	89.4	

\*Yates correction chi-square  
 \*\* Fisher's exact chi-square test  
 BSE: Breast self-examination; CBE: clinical breast examination

Table 5. Comparison of application of methods according to training status (n=336)

Methods	Obtaining breast examination training				Statistics
	Yes		No		
	n	%	n	%	
<b>Visual inspection using the mirror</b>					
Yes	184	68.7	24	35.3	=25.599 p=0.001***
No	84	31.3	44	64.7	
<b>Examining for abnormalities of both breasts</b>					
Yes	161	60.1	29	42.6	=6,704 p=0.001***
No	107	39.9	39	57.4	
<b>Examining breast size and shape</b>					
Yes	117	56.3	20	29.4	=3.987 p=0.046*
No	151	43.7	48	70.6	
<b>Moving fingers over the breast</b>					
Yes	265	98.9	54	79.4	p=0.000**
No	3	1.1	14	20.6	
<b>Nipple induction</b>					
Yes	247	92.2	52	76.5	=12.077 p=0.001*
No	21	7.8	16	23.5	
<b>Axillary examination</b>					
Yes	233	86.9	55	80.9	=1.626 p=0.202***
No	35	13.1	13	19.1	

\*Yates correction chi-square  
 \*\* Fisher's exact chi-square test  
 \*\*\* Chi-square test  
 BSE: Breast self-examination

the importance of BSE in early diagnosis. It is thought that studying in health-related sections helped students to have information about breast cancer.

It was determined that 86.3% of college students applied BSE at least once (36.9% in every shower, 16.4% once a month, 2.4% once every 6 months, and 0.9% once a year). 53.3% of the students were accepted as performing routine BSE. Özkan et al. (13) reported BSE performance rate as 32.7% in nursing and midwifery

students, Beydağ and Yürügen (15) as 26.2% in midwifery students, Avcı et al (9) as 22.7% in nursing students, Gölbaşı et al (4) as 79.7% in students from health-related sections, and as 40.8% from non-health related sections. Karayurt et al (23) reported that only 6.7% of college students performed BSE once a month regularly. Regular monthly BSE performance rate was reported as 28.9% by Göçgeldi et al (20), as 42.3% by Yıldırım et al (22), and as 32.7% by İtilli (21). It was observed that students of health related departments perform BSE more frequently than students from other departments. This

Table 6. Comparison of application of methods according to family history of breast cancer (n=336)

Methods	Family history of breast cancer				Statistics
	Yes		No		
	n	%	n	%	
Visual inspection using the mirror					
Yes	94	63.5	54	36.5	=0.290
No	114	60.6	74	39.4	p=0.59***
Examining for abnormalities of both breasts					
Yes	85	57.4	105	55.9	=0.084
No	63	42.6	83	44.1	p=0.772***
Examining breast size and shape					
Yes	52	35.1	85	45.2	=3.483
No	96	64.9	103	54.8	p=0.062***
Moving fingers over the breast					
Yes	148	100.0	171	91.0	
No	0	0.0	17	9.0	p=0.001**
Nipple induction					
Yes	139	93.9	160	85.1	=5.694
No	9	6.1	28	14.9	p=0.017*
Axillary examination					
Yes	136	91.9	152	80.9	=7.367
No	12	8.1	36	19.1	p=0.007*

\*Yates correction chi-square  
 \*\* Fisher's exact chi-square test  
 \*\*\* Chi-square test  
 BSE: Breast self-examination

difference is thought to result from their higher level of education on breast cancer, the importance of early diagnosis and early detection methods. However, health care workers who will act as role models for the society on health behavior are expected to perform BSE at higher rates. Thus, preventive health practices should be emphasized more in training programs.

The reasons for not doing BSE were listed as consideration of BSE unnecessary due to the absence of any complaints in 8%, and lack of education on how to perform BSE in 5.7%. Memiş et al (14) reported that 57% of students did not know how to perform BSE. Aslan et al. (17) in their study of nursing students showed the reasons for not doing BSE as lack of information in 51.4%, not having any complaints in 39% , and forgetting to do so in 18%. Özer et al (24) found that 36% of their study group did not think BSE was necessary, 53% did not know how to examine their selves, 9.5% forgot routine examination, 1.5% was afraid to do so, and in another study by Itilli (21) 77.1% of the women stated that they did not perform BSE because they were not informed about it. These results indicate that there is a general lack of knowledge regarding BSE.

The American Cancer Society recommends routine CBE in every three years after the age of 20, and annually after the age of 40 years by trained physicians (6). It was found that the majority of students (88.1%) did not undergo CBE in the past year. In the study by Aslan et al (17) it was found that 95% of nursing students never had a CBE. In a study conducted in the USA, it was determined that 41% of uni-

versity students had at least one CBE (16). Yıldırım ve Ozaydın (22) reported that 37.8% of women over the age of 40 had a CBE in the last two years. The results of these studies suggest that CBE is not being performed at the recommended level in the literature. It is thought that the low incidence of CBE in this study is due to the young mean age of the participants.

79.8% of students had prior knowledge or training on BSE. It was reported by Beydag and Yürügen (15) that 58.3% of midwifery students, and by Karayurt et al (23) that 66.9% of the study group had no knowledge about BSE. These results show that college students do not have sufficient knowledge about BSE whether they study in health-related departments or not. It was detected that students who had training on BSE performed more BSE and CBE than those who were not trained. Uzun et al (25) reported that those with training perform more BSE than those without. Both studies by Erkoç et al (12) and Beydag and Yürügen (15) showed that BSE performance rate increased after training on BSE. Health professionals (nursing, midwifery, nutrition, physical therapy and rehabilitation) who will have an important role in health education in professional life should increase their knowledge about breast cancer and early diagnosis methods, as well as acting as information source for their environment and the society.

Almost all of the students were afraid of having breast cancer, had concerns about developing breast cancer, did not have a negative perception of the breast and feared of detecting a mass within their breast. It is

thought that since they are studying in health related departments they were more or less informed about the disease that caused their anxiety.

Fifty six percent of the students did not have breast cancer in their family. Students with a family history of breast cancer performed more BSE as compared to those without a family history. There was no difference in terms of CBE between these two groups. Özen et al (19) found that women with breast cancer in their family applied BSE more. The presence of family history of breast cancer increases breast cancer risk. Therefore, women with a family history of breast cancer should be carefully and more frequently monitored (26). For early diagnosis, these women should apply BSE regularly once a month, should have regular CBE in accordance with the recommendations of their physician, and should undergo mammography at the recommended frequency according to their age. Although it was observed that students with a family history of breast cancer know that they are at higher risk and apply regular BSE, there was no difference in their CBE performance rates, indicating that they do not have adequate knowledge on early detection methods.

When students who received training on BSE were compared with those who did not it was found that educated students used methods like visual inspection using the mirror, examining breast size, shape or abnormalities of both breasts, moving fingers over the breast and nipple induction significantly more. There was no significant difference between these two groups in terms of axillary examination. As a result, it was found that students who received training on BSE used BSE methods more than those who were not trained. These results show that BSE education is effective in its implementation.

It was found that students with family history of breast cancer used methods of moving fingers over the breast, nipple induction, and axillary examination significantly more as compared to students without a family history. There was no difference in other methods. Students with family history of breast cancer used BSE methods more frequently as compared to those without. These results indicate that students with a family history pay more attention to BSE due to concerns about having breast cancer.

As a result, it was determined that rates of BSE and CBE application are low among students, that students who had training on BSE or a family history of breast cancer applied BSE at a higher rate and used BSE methods more, and that students who had training on BSE underwent CME at a higher rate.

Based on these results it is recommended that breast cancer, the importance of early diagnosis in breast cancer, early detection methods, the role of BSE and CBE, frequency and methods of applying BSE should be included in study programs, since college students in health departments will be the leading individuals in protection and improvement of health once they graduate.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Informed Consent:** Informed consent was received from the students.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept - N.İ., A.G.Ç., E.T., M.B.; Design - N.İ., A.G.Ç., E.T.; Supervision - N.İ., A.G.Ç., A.Ş., M.B.; Funding - N.İ., A.G.Ç., E.T.; Materials - N.İ., A.G.Ç., E.T.; Data Collection

and/or Processing - N.İ., A.G.Ç., E.T., A.Ş.; Analysis and/or Interpretation - N.İ., M.B.; Literature Review - N.İ., A.G.Ç., E.T., M.B.; Writer - N.İ., A.G.Ç., E.T., A.Ş., M.B.; Critical Review - N.İ., M.B.

**Financial Disclosure:** The authors declared that this study has received no financial support.

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