



Evaluation of Breast Cancer Risk Levels and Its Relation with Breast Self-Examination Practices in Women

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ABSTRACT

Objective: This study was performed to determine the breast cancer risk levels and its relation with the frequency of breast self-examination practices in women who were 20 years old and over.

Materials and Methods: This descriptive study was conducted on 867 women, who were 20 years old and over presenting to a family medicine outpatient clinic for any reasons. The participants filled in the "Breast Cancer Risk Assessment Form" which is recommended to assess the risk of breast cancer by the Ministry of Health. The participants' risk levels have been classified as low, medium, high, and the highest risk.

Results: The mean age of the participating women was 38.2±13.4 years, 69.7% (n=604) were married, 54.8% (n=475) were housewives, 33.9% (n=294) were working, 42.7% were graduated from primary school. The average risk score of the patients for breast cancer was 131.26 ±45.11 (50-325). As a result of this study, 87.3% (n=757) of the women were identified as having a low breast cancer risk, 12.6% (n=109) medium and 0.1% (n=1) of them were identified as having a high risk. The data demonstrated that 75.5% (n=655) of the women weren't doing breast self-examination (BSE). The rate of previous breast USG or mammography screening was 33.7% (n=292). There were no statistical relations between the breast cancer risk levels and BSE (p=0.396).

Conclusion: The risk of developing breast cancer was low among the women in the study group and breast self-examination rates were insufficient. In addition to training women by emphasizing the importance of breast self-examination in early diagnosis, the breast cancer risk questionnaire - an easy to implement, simple and costless tool - is recommended to be administered in the primary health care centers.

Keywords: Breast cancer risk questionnaire, breast self-examination, woman

Introduction

Breast cancer is the most frequent type of cancer and cause of death in women not only all over the world but also in Turkey (1, 2). Breast cancer composes about 23.0% of all cases of cancer in women with 1.38 million new cases in the world every year, so it is a major public health concern (3). According to the World Cancer Report published in 2008 by the World Health Organization (WHO), breast cancer is one of the most frequent types of cancers in women globally (4). In 2013, 1,8 million breast cancer cases and 464 million deaths were reported in the world (5).

The most frequent type of cancer in women is breast cancer in Turkey and in a study performed in 1993, it was 24.1/100,000; in 2006, its incidence was 37.6/100,000 and this frequency reached 41.6/100,000 in 2008 (6). The studies indicate that the frequency of breast cancer in Turkey over the last two decades has had a two-fold increase in comparison to previous years (7).

Early diagnosis is the most effective way for health protection/improvement and to reduce the morbidity and mortality in breast cancer. Clinical breast examination and mammography are the primary methods recommended for the early diagnosis of breast cancer (8). Although there are various views and studies about the efficiency of breast self-examination (BSE), it is recommended to detect the palpable breast tumors and it is stated to be effective for increasing awareness of breast health in women especially in developing and under-developed countries (9).

This study was performed by using the breast cancer risk questionnaire to assess the risk levels, the frequency of breast self-examination (BSE) and its relation with the risks in women who were 20 and over.

Materials and Methods

Study Design, Setup and Population

This is a descriptive study. It was conducted on 867 women who were 20 and over who presented to the Necmettin Erbakan University Meram Family Medicine, Outpatient Clinic for any reason between the dates of 01.10.2012 and 30.11.2014. A sampling method was not used in the study and all women who could be contacted, who did not have a breast cancer history and who volunteered to do so were included in the study.

Ethics Committee Approval for the Study

Ethics Committee approval for the study was received from the Ethics Committee of Necmettin Erbakan University, Meram School of Medicine with the board decision dated 21.09.2012 and number 2012/233.

Collecting the Data

All the participants were informed before the study and their oral consents were received. The data were obtained through the face-to-face interview technique by using a questionnaire form created in accordance with the literature. The patients' age, occupation, educational status, marital status, present illnesses, body weight and tall stature were recorded in the questionnaire. The Breast Cancer Risk Assessment Form, recommended by Ministry of Health to evaluate the breast cancer risk, was applied to the cases. Participants were asked whether they did breast self-examination (BSE) or not.

Anthropometric Evaluation

Anthropometric measurements of the participants (body weight and tall statures) were obtained. After their shoes were taken off, their tall stature was measured with a wall-mounted length meter and after their jackets and redundant clothes were taken off, their bodyweights were measured with a standard bascule and then their Body Mass Indexes were calculated.

The Body Mass Index was calculated with the following formula: $(BMI) = \text{weight}(\text{kg}) / \text{length}^2(\text{m}^2)$. The patients whose BMI values were lower than 18.50 (kg/m^2) were considered to be underweight; those between 18.50 and 24.99 (kg/m^2) were considered to be at a normal weight; those between 25.0 and 29.99 (kg/m^2) were considered as overweight and those whose values were 30.0 (kg/m^2) and over were considered to be obese (10).

Evaluation of Risk Factors

The Breast Cancer Risk Assessment Form, created by American Cancer Society and recommended by Ministry of Health in Turkey to evaluate the breast cancer risk, was applied to the cases. In the Breast Cancer Risk Assessment Form (BCRAF), the risk levels were determined as 'low, medium, high and the highest' with proper scoring according to the risk factors that included age, the history of familial breast cancer, personal breast cancer history, child-bearing age, menstrual history and anatomical features (11).

In Table 1, the subgroups and scores of the risk factors in the BCRAF form are provided. In the cases evaluated for breast cancer risk, the risk levels of those diagnosed with breast cancer were evaluated additionally.

Table 1. Breast cancer risk assessment form*

Risk Factors	Category	Scores	Result
Age	Under 30 years of age	10	
	Between 30-40	30	
	Between 41-50	75	-
	Between 51-60	100	
	Over 60 years of age	125	
History of familial breast cancer	None	0	
	An aunt or a grandmother	50	
	A mother or a sister	100	-
	A mother and a sister	150	
	Mother and two sisters	200	
Personal breast cancer history	There is no breast cancer	0	
	There is breast cancer	300	-
Childbearing age	First birth before 30 years of age	0	
	First birth after 30 years of age	25	-
	No children	50	
Menstrual history	First menstruation age ≥ 15 years	15	
	First menstruation age 12-14	25	-
	First menstruation age ≤ 11	50	
Anatomy	Underweight	15	
	Moderate weight	25	-
	Overweight	50	
		Total score	
Score category			
200 and below: low risk			
201-300 medium risk			
301-400 high risk			
400 and more: the highest risk			
*Spence WR. Health EDCO. A Division of WRS Group, Inc., Waco, Texas, 2000, s.4.			
*Ulusal Aile Planlamasi, Rehber, 3.Baski Damla Matbaasi, Volume 1, Ankara 2000, s.97			

Statistical analysis

While evaluating the results obtained in the study, the SPSS (Statistical Package for Social Sciences) (version 18.0; Inc.; Chicago, IL, USA) program was used for statistical analyses. The descriptive statistics for continuous variables were summarised in mean and standard deviation; the descriptive statistics for categorical data were summarised in frequency and percentage in tabular form. The Chi-square test was used to compare categorical data. The results were evaluated with a 95% confidence interval and significance was evaluated at $p < 0.05$ level.

Results

The mean age of the participating women was 38.2 ± 13.4 years, 69.7% ($n=604$) were married, 54.8% ($n=475$) were housewives, 33.9% ($n=294$) were working, 42.7% ($n=370$) were graduated from primary school and low, 57.3% ($n=497$) had secondary and higher education and 17.2% ($n=149$) were smokers (Table 2). Breast cancer risk average of the cases was 131.26 ± 45.11 (50-325). As a result of the study, it was determined that 87.3% ($n=757$) of the women had low risk, 12.6% ($n=109$) had medium risk and 0.1% ($n=1$) had high risk for breast cancer (Figure 1).

Table 2. The sociodemographic characteristics of the participants

Marital status	n	%
Married	604	69.7
Single	187	21.5
Widow/divorced	76	8.8
Education level		
Uneducated	37	4.3
Primary school	333	38.4
Secondary/High school	231	26.7
University	266	30.6
Occupation		
Housewife	475	54.8
Civil servant	194	22.4
Retired	29	3.3
Worker	100	11.5
Unemployed	69	8.0
Smoking status		
Smokers	149	17.2
Non-smokers	692	79.8
Former smokers	26	3.0
BSE		
Doing BSE	212	24.5
Not doing BSE	655	75.5

BSE: breast self-examination

The distributions of the common risk factors of breast cancer are given in Table 3. As they aged, their risk of developing breast cancer showed a statistically significant increase ($p < 0.001$). Their marital status did not affect breast cancer risk ($p = 0.996$) but having a relative with breast cancer in the family, having the first menstruation age of ≤ 11 years ($p = 0.002$) and having a fat body increased breast cancer risk ($p < 0.001$) (Table 4). The data demonstrated that 75.5 % ($n = 655$) of the women did not do breast self-examination (BSE). The frequency of breast USG and getting mammography before was 33.7% ($n = 292$). No statistical relation was found between doing BSE and educational status, marital status, employment status, BMI, first menstruation age, menopause age, using oral contraceptives (UOC), the history of familial breast cancer ($p > 0.05$). The relation between doing BSE and breast cancer risk factors in women was shown at Table 5. There was not a statistically significant relation between doing BSE and breast cancer risk distribution ($\chi^2 = 1.854$, $p = 0.396$) (Table 6).

Discussion and Conclusion

This study was conducted on 867 women, who were 20 years old and over presenting to family medicine outpatient clinic for any reasons and the risk levels of the cases were determined after applying the Breast Cancer Risk Assessment Form. The average breast cancer risk score of the women who participated in the study was 131.26 ± 45.11 point (min=50, max=325). As a result of the study, it was determined

Table 3. Distributions of "known risk factors" of breast cancer in women

Risk Factors	Category	n	%
Age	Under 30 years of age	316	36.4
	Between 30-40	215	24.8
	Between 41-50	160	18.5
	Between 51-60	114	13.1
	Over 60 years of age	62	7.2
History of familial breast cancer	None	845	97.5
	Present	22	2.5
Personal breast cancer history	There is no breast cancer	867	100.0
	There is breast cancer		
Childbearing age	First birth before 30 years old	575	66.3
	First birth after 30 years old	292	33.7
Menstrual history	First menstruation age ≥ 12 years	69	8.0
	First menstruation age ≤ 11 years	798	92.0
BMI (kg/m ²)	<18.50 Underweight	31	3.5
	18.50–24.99 Normal weight	377	43.5
	25.0–29.99 Overweight	286	33.0
	≥ 30.0 Obese	173	21.0

BMI: body mass index

that 87.3% of the women had low risk, 12.6% of them had medium risk and 0.1% had high risk for breast cancer.

In a study performed by Özerdoğan et al. (12) on 2025 women between 20 and 55 years old, it was determined that 36.3% of them were at low risk, 23.6% of them were at medium risk, 0.5% of them were at high risk and 2.1 % of them were at very high risk of contracting breast cancer.

In a study performed by Tümer et al. (13) in Muğla in 2008, it was determined that the average breast cancer risk score of the participants was 113 ± 45.79 points and 96.3% of the women were at low risk, 3.1% of them were at medium risk, 0.3% of them were at high risk and 0.3% of them were at very high risk for the breast cancer. In a study performed by Eroglu et al. (14) on 5000 women who presented to the Cancer Early Diagnosis, Screening and Education Centre for breast cancer screening, it was determined that the mean age of the cases was 45 (18-88) years, 94.42% ($n = 4721$) of the women were at low risk, 4.92% ($n = 246$) of them were at medium risk, 0.38% ($n = 19$) of them were at high risk and 0.28% ($n = 14$) of them were at very high risk for breast cancer (14). The results were compatible with our study.

The mean age of the participating women was 38.2 ± 13.4 years, 69.7% ($n = 604$) of them were married, 54.8% ($n = 475$) of them were housewives, 33.9% ($n = 294$) of them were working, 42.7% ($n = 370$) of them were graduated from primary school and lower, 57.3% ($n = 497$) of them were graduated from secondary and higher schools and 17.2% ($n = 149$) of them were smokers. In a study performed by Eti-Aslan et al. on 1085 women for breast cancer risk, it was determined that 38.6% ($n = 419$) of the women were below 30 years old, 37.1% ($n = 403$) of them were primary school graduates and 49.1% ($n = 533$) of them were housewives (15). According to the data of TNSA-2013, 21.5% of the women in Turkey were literate but were not graduated from any

Table 4. Comparison of the known risk factors of breast cancer and risk groups* (n=866)

Age groups	200 and below low risk		201-300 point medium risk		x ²	p
	n	%	n	%		
Under 30 years of age	313	41.3	3	2.8	282.986	<0.001
Between 30-40	212	28.1	3	2.8		
Between 41-50	147	19.4	13	11.9		
Between 51-60	71	9.4	43	39.4		
Over 60 years of age	14	1.8	47	43.1		
History of familial breast cancer						
None	752	99.3	93	85.3	46.606	<0.001
Present	5	0.7	16	14.7		
Marital status						
Married						0.996
Single						
Childbearing age						
Under 30 years of age	483	63.8	91	83.5	16.515	<0.001
≥30 years/ No children	274	36.2	18	16.5		
First menstruation age						
≥12 years	69	9.1	0	0.0	9.588	0.002
≤11 years	688	90.9	109	100.0		
Body Mass Index						
Underweight/ Normal weight	401	53.0	7	6.4	158.796	<0.001
Overweight	256	33.8	30	27.5		
Obese	100	13.2	72	66.1		

*A case with high risk was not assessed.

Table 5. Comparison of doing BSE and breast cancer risk factors in women

Risk Factors	BSE (+)		BSE (-)		x ²	p
	n	%	n	%		
First menstruation age						
≤11 years	22	31.9	47	68.1		
≥12 years	190	23.8	608	76.2	1.826	0.177
Menopause age						
Menopause did not enter	167	25.9	478	74.1		
Menopause entered before 55 years old	43	20.5	167	79.5		
Menopause entered after 55 years old	2	16.7	10	83.3	3.012	0.233
Childbearing age						
<30 years	142	24.7	433	75.3		
≥30 years/no children	70	24.0	222	76.0	0.055	0.815
Oral Contraceptive Use Period						
Never used	139	23.2	460	76.8		
Used less than 3 years	58	28.2	148	71.8		
Used 3 years and over	15	24.2	47	75.8	1.994	0.361
History of familial breast cancer						
None	206	24.4	639	75.6		
Present	6	27.3	16	72.7	0.004	0.952
Age groups						
Under 30 years of age	74	23.4	242	76.6		
Between 30-40	60	27.9	155	72.1		
Between 41-50	46	28.8	114	71.2		
Between 51-60	21	18.4	93	81.6		
Over 60 years of age	11	17.7	51	82.3	7.088	0.131

BSE: breast self-examination

Table 6. Relationship between BSE * and breast cancer risk groups

Breast Cancer Risks	BSE (+)		BSE (-)		Total		x ²	p
	n	%	n	%	n	%		
200 point and below: low risk	190	25.1	567	74.9	757	100.0	1.854	0.396
201-300 point: medium risk	22	20.2	87	79.8	109	100.0		
301-400 point: high risk	0	-	1	100.0	1	100.0		

BSE: breast self-examination

education institution; 37.2% of them were graduated from primary school, 7.4% of them were graduated from secondary and equivalent schools, 10.6% of them were graduated from high schools and their equivalents and only 3.9% of them were graduated from a faculty or vocational high schools. Half of the participating women were below 30 years of age and 68.0% of them were married (16). In the study

by Yılmazel (17), 52.9% of the women were married and their average age of marriage was 17.58±2.95 age; 33.1% of the women were graduated from primary school and 68.0% of them were housewives. The fact that Turkey had a young population and the educational level was low especially among women and this situation was thought to be reflected in the results.

In this study, marital status did not affect breast cancer risk. However, having a somebody with breast cancer in the family, having a fat body and first menstruation age was ≤ 11 increased breast cancer risk. The frequency of familial breast cancer history was 2.5% (n=22). In the study by Tümer et al. (13), there was breast cancer history in the families of 12.0% (n=39) of the participating women and in 0.6% (n=2) of the women themselves. Breast cancer risk increased 2-3 times when there was a breast cancer in family history.

In our study, the data demonstrated that 75.5% (n=655) of the women did not do breast self-examination (BSE). The frequency of breast USG or getting mammography before was 33.7% (n=292). No statistical relations were found between BSE and educational status, marital status, employment, BMI, first menstruation age, first childbearing age, using oral contraceptives (UOC) and the history of familial breast cancer. In the study by Özyayın et al. (18), 49.1% of healthy women in the research group undergoing mammography in the last 2 years. In the study performed by Dişçigil et al. (19) on 363 women between 18 and 78 years old, the participants' rates of breast self-examination (BSE), clinical breast examination and undergoing mammography were 61.7%, 42.7% and 40.6% respectively. In some several studies, the rates of BSE and mammography of the women were reported to be at wide intervals such as 33.0%-81.0% (20, 21). BSE is recommended as a screening method for breast health and its specificity is high. There is differing data on the relation between age and BSE application (21). In many studies, it was found that marital status, educational status, health insurance and cultural features were related to mammography application (20). In the study performed by Dündar et al. in rural region in Turkey, the frequency of BSE was reported as 3.3.% (22). In our study, the BSE rates were found to be consistent with this outcome. In the study by Yilmazel (17), 39.0% of the women reported doing BSE regularly. While studying the risk factors for breast cancer, 52.3% of the women were 40 years old and over and their mean age was 42.33 ± 15.19 years. The rates of those whose first age at menarche was 12 years and below was 12.2%. 96.2% of the women stated that they gave their first birth before they were 30 and 90.8% of them said they breastfed their babies.

In a study performed by Jirojwong and MacLennan (23) on immigrant women from Thailand, it was stated that 25.0% of 145 women did regular BSE and the possibility of doing BSE was higher among the women with high sensitivity for breast cancer. In the study by Kalichman et al. (24), it was stated that African-American women who had high cancer incidence achieved improvement in their BSE ability improved and their frequency of early diagnosis of cancer also increased as a result of the face to face training. In a study conducted on 345 low-income Vietnamese women who were living in America, it was reported that 18.6% of the women did regular BSE every month, the rate of clinical breast examination was 48.75% and the frequency of undergoing mammography was 32.8%. It was determined in our study that the women who received training on protection from cancer increased their knowledge level for breast cancer and the frequency of early diagnosis increased, as well (25).

In a study performed by Beydağ and Karaođlan (26) in our country in 2007, it was determined that 58.0% of women didn't have any knowledge about the matter, 69.5% of them didn't do BSE and 50% of them didn't do breast examination because they didn't know how to do it. In another study, it was stated that 71.3% of 412 women didn't know how to do BSE and 72% of them didn't do it at all (27).

There are some studies which showed that the behaviors for the early diagnosis of breast cancer were at a low level in poor individuals (19, 28). Educational status was effective on actions related to early diagnosis behaviors for breast cancer. In a study performed by Juon et al. (29) on women over 60 years old, it was stated that women with high educational level applied actions for early diagnosis more than the women with lower educational status.

The limitations of the study

This study was conducted on 867 women who were 20 years and over and who presented to the Necmettin Erbakan University Meram Family Medicine Outpatient Clinic for any reasons between the dates of 01.03.2012 and 30.11.2014. For this reason, the results can only be generalised to the women included in the study.

The risk of developing breast cancer was low among the women in the study group but it was seen that the awareness of breast self-examination (BSE) was insufficient.

In addition to training women by emphasizing the importance of breast self-examination in early diagnosis, the breast cancer risk questionnaire, which is an easy-to-implement, simple and costless tool is recommended to be administered in the primary health care centers. These studies indicate that the actions taken towards early diagnosis behaviors for breast cancer are not sufficient and they reveal that the supportive education models must be structured and applied so as to increase the awareness for the actions of early diagnosis for breast cancer and to perform them regularly. To detect breast cancer at an early stage, it is recommended to determine the risk levels by using the breast cancer risk questionnaire that is easy to implement and to assess the related factors. This will be possible when all women are provided with healthcare education and informed about this and when screening programs are implemented.

Ethics Committee Approval: Ethics committee approval was received for this study from Ethics Committee of Necmettin Erbakan University, Meram School of Medicine (Decision dated and number: 21.09.2012 - 2012/233).

Informed Consent: Verbal informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

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