

## RESEARCH ARTICLE

# Predictors Affecting Breast Self-Examination Practice among Turkish Women

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### Abstract

**Background:** Breast cancer (BC) is the most common cancer among females in Turkey. Predictors affecting the breast self-examination (BSE) performance vary in developing countries. **Objective:** To determine the frequency of BSE performance and predictors of self-reported BSEs among women in the capital city of Turkey. **Materials and Methods:** This cross-sectional study was conducted on 376 Turkish women using a self-administered questionnaire covering socio-demographic variables and BSE-related features. **Results:** Of the participants, 78.7% (N=296) reported practicing BSE, whereas 9.5% (N=28) were implementing BSE regularly on a monthly basis, and only 5.7% (N=17) were performing BSE regularly within a week after each menstrual cycle. Multivariate logistic regression modeling revealed that BSE performance was more likely in younger age groups [20-39 years] (p=0.018, OR=3.215) and [40-49 years] (p=0.009, OR=3.162), women having a family history of breast disease (p=0.038, OR=2.028), and housewives (p=0.013, OR=0.353). **Conclusions:** Although it appears that the rates of BSE performers are high, the number of women conducting appropriate BSE on a regular time interval basis is lower than expected. Younger age groups, family history of breast diseases and not being employed were identified as significant predictors of practicing BSE appropriately. Older age and employment were risk factors for not performing BSE in this sample.

**Keywords:** Breast self-examination - demographics - awareness - predictors

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### Introduction

Breast cancer (BC) is the most common type of cancer among the female population and the leading cause of cancer-related mortalities worldwide. In 2008, nearly 1.38 million new cases (23% of all cancers) and 458,400 deaths (14% of all cancers) from breast cancer reported (Jemal et al., 2011). The incidence of BC has been progressively rising in most of the low- and middle-income countries than developed countries (Anderson, 2010). In Turkey, BC frequency in 1993 increased from 24/100,000 cases to 41.6/100,000 cases in 2008 and 50/100,000 cases in 2010 (Ozmen, 2008; Gucuk and Uyeturk, 2013). Changes in the reproductive cycle and daily lifestyle may contribute to this incremental disposition of BC cases (Ozmen, 2008).

Although there is a discrepancy upon the efficiency of breast self-examination (BSE) over BC mortality and diagnose at early stage (Thomas et al., 2002; Semiglazov et al., 2003), it particularly remained as simple and cost-effective method without any requirements of high technological devices in early screening practice (Wilke et

al., 2009; Ma et al., 2012). Ghazali et al. stated that females who never practice BSE in their lives were more likely to be diagnosed with the delay of BC compared to those who regularly implemented BSE (Ghazali et al., 2013). It may lead to increase the BC awareness and might lessen the malignancy stage at admission period in a location where women especially could not take advantage of early diagnostic methods including clinical breast examination, mammography, and ultrasonography (Parvani, 2011; Corbex et al., 2012; Panieri, 2012). Moreover, BSE is a non-invasive intervention carried out by females themselves without any support of medical health-care providers. The American Cancer Society declared that BSE may awake the women for abnormal changes in their breast tissue compared to normal (Allen et al., 2010).

Despite the current controversy, BSE is highly recommended to the admitted patients by most of the health care providers principally at high-risk group. In this study, we hypothesized that the predictors involving socio-demographic attributes and BC related individual characteristics might affect the BSE practice of the females

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## Materials and Methods

### Study design

This cross-sectional study was conducted among 376 Turkish women living in Ankara, Turkey. Women aged 18 years or older were enrolled to the study after taking a signed constant form. Those declined to participate to study voluntarily were excluded. Participants were randomly sampled from the patients of those applied to breast health outpatient clinic of tertiary care hospital in January- May 2011 in Ankara, Turkey.

### Questionnaire

Self-administered questionnaire was delivered to participants attended to breast health outpatient clinic. Socio-demographic attributes included questions about age groups (20-39, 40-49, 50-59 and  $\geq 60$  years), marital status (married, other status-single, widowed, and divorced), education level (0-8, 9-11,  $\geq 12$  years), living location (urban, rural), and BC related individual characteristics comprised of questions about number of births, smoking status, number of visits, previous breast disease history, state of hormonal drug usage and family history of any breast disease.

Practice of BSE was addressed by asking females about whether they had regularly implemented BSE on their breasts in the previous year. Of those responded this close-ended question affirmatively, also filled out the frequency of the examination by selecting amongst the options including "each bath time, whenever I remembered, weekly, monthly, yearly, within a week after each menstrual cycle."

### Ethical approval

Approval for the study was obtained from the Local Institutional Ethics Committee of Gulhane Military Medical Academy, Ankara, Turkey. The aim of the study was described to respondents face to face, and a written document explaining the purpose of the study was supplied. The researchers followed the principles of the Declaration of Helsinki.

### Statistical analysis

Analysis was performed by using the package program SPSS 22.0 for Windows (Chicago-USA). Descriptive statistics was obtained for all independent variables in the study. Chi-Square analysis was used to assess for the association between BSE practice and other categorical variables. Multivariate logistic regression analysis was executed to achieve significant determinants related with BSE among females. A response of the question asking whether BSE was performed was coded as [1] in the meaning of "Yes" and as [0] in the meaning of "No". All independent categorical variables in chi-square analysis were included in the multivariate logistic regression model. Statistical significance was accepted for p-values lower than 0.05.

## Results

In our sample of 376 adult females admitted to breast health outpatient clinic, the average age was  $46.16 \pm 9.93$  (22-75). Nearly half of the participants were between ages of 40 and 49 (42.6%). Only one-fifth (20.7%) of the sample had a university or equivalent educational level ( $\geq 12$  years of schooling). Most women in the sample were married (92.6%); almost four fifth (82.7%) were housewives. Majority of the participants (86.4%) were living in an urban area. All females had at least one child, more than half (60.1%) had two children. Almost one-fifth of the sample (23.4%) were smoking, 17.8% were using hormonal drugs. In the study group, 29.8% had admitted to breast outpatient clinic at first time, 52.9% were previously diagnosed at least one type of breast diseases, 26.3% had a family history of breast diseases. Descriptive statistics of demographics and breast health related features are shown in Table 1.

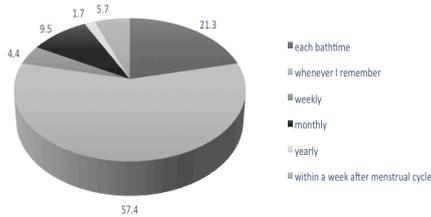
While 21.3% (N=80) of the participants were not practicing BSE; 9.5% (N=28) was implementing BSE regularly on a monthly basis, 57.4% (N=170) was making BSE practice whenever they remembered among the women practicing BSE (N=296). Of those women practiced BSE in a previous year, only 5.7% (N=17) was implementing BSE regularly within a week after each menstrual cycle accepted as a precise period term for the eligibility of the breast tissue (Figure).

In assessing groups of females who were performing BSE versus those were not, univariate chi-square analysis revealed four individual features that were statistically significant: younger age groups ( $p=0.007$ ), being not married ( $p=0.016$ ), housewives ( $p=0.040$ ), have a family history of breast diseases ( $p=0.043$ ). Not significant characteristics in the univariate chi-square analysis were presented in Table 2.

Multiple Logistic regression analysis (Table 3) confirmed these associations, except being not married became non-significant. Participants performing BSE

**Table 1. Socio-Demographic Features of the Participants (N=376)**

		No.	%
Age categories	20-39 years	90	23.9
	40-49 years	160	42.6
	50-59 years	84	22.3
	$\geq 60$ years	42	11.2
Marital status (Married)	348	92.6	
Employment status (Housewife)		311	82.7
Education levels	0-8 years	156	41.5
	9-11 years	142	37.8
	$\geq 12$ years	78	20.7
Location (Urban)	325	86.4	
Smoking status (Current smoker)		88	23.4
Previous breast disease history		199	52.9
Family history of breast disease		99	26.3
Number of births	1	85	22.6
	2	226	60.1
	$\geq 3$	65	17.3
Number of visits	1	112	29.8
	2-3	94	25.0
	4-9	103	27.4
	$\geq 10$	67	17.8
Hormonal drug usage	67	17.8	



**Figure 1. Distribution of the BSE Frequencies among Patients Admitted to Breast Outpatient Clinic (N=296)**

**Table 2. Comparison of Demographics and Related Factors Due to BSE Practice (N=376)**

Variables	BSE practice (%)		X <sup>2</sup>	P*
	Yes	No		
Age categories (years)			12.069	0.007
20-39	83.3	16.7		
40-49	82.5	17.5		
50-59	76.2	23.8		
≥60	59.5	40.5		
Marital status			5.858	0.016
Married	60.7	39.3		
Others (single, widow)	80.2	19.8		
Employment status			4.228	0.040
Employed	69.2	30.8		
Housewife	80.7	19.3		
Education levels (years)			5.785	0.055
0-8	74.4	25.6		
9-11	85.2	14.8		
≥12	75.6	24.4		
Location			0.625	0.429
Urban	79.4	20.6		
Rural	74.5	25.5		
Smoking status			0.046	0.830
Yes	79.5	20.5		
No	78.5	21.5		
Previous breast disease history			0.349	0.555
Yes	79.9	20.1		
No	77.4	22.6		
Family history of breast disease			4.085	0.043
Yes	85.9	14.1		
No	76.2	23.8		
Number of births			4.039	0.133
1	76.5	23.5		
2	81.9	18.1		
≥3	70.8	29.2		
Number of visits			0.119	0.989
1	78.6	21.4		
2-3	77.7	22.3		
4-9	79.6	20.4		
≥10	79.1	20.9		
Hormonal drug usage			0.817	0.366
Yes	74.6	25.4		
No	79.6	20.4		

\*Chi-Square analysis

were more likely being in younger age groups [(20-39 years) (40-49 years)] than (≥60 years) group (OR=3.21, 95%CI: 1.22-8.46, p=0.018; OR=3.16, 95%CI: 1.33-7.47, p=0.009; respectively). Participants with positive family history of breast diseases were more likely implementing BSE practice than the ones who did not have (OR=2.02, 95%CI: 1.03-3.95, p=0.038). Employed females had lower odds of practicing BSE than housewives (OR=0.353, 95%CI: 0.156-0.802, p=0.013).

## Discussion

This cross-sectional study was designed to assess the

**Table 3. Multivariate Regression Analysis of Predictors about BSE Practice (N=376)**

Variables	p	OR	95% CI	
			(Lower)	(Upper)
Age categories (years)				
20-39	0.018	3.215	1.221	8.465
40-49	0.009	3.162	1.337	7.478
50-59	0.108	2.013	0.857	4.728
≥60	Reference	Reference	Reference	Reference
Employment status (Employed vs. Housewife)	0.013	0.353	0.156	0.802
Family history of breast disease (Yes vs. No)	0.038	2.028	1.039	3.958

\*Controlling for the variables including education level, marital status, number of births, previous breast disease history, smoking status, number of visits, location, and hormonal drugs

BSE performance and related determinants of BSE among Turkish females in Ankara, Turkey. In our present study, being in younger age groups (20-39 years) and (40-49 years), housewives and family history of breast diseases influenced the BSE performance among participants.

In Turkey, as well as other developing countries, early detection methods of BC should be the primary target to be focused on to diminish morbidity associated conditions and mortalities caused by BC. In this context, the Turkish Ministry of Health declared that all females beginning at the age of 20 years should practice BSE and admitted for clinical breast examination (CBE) (Republic of Turkey, 2008). Although the screening of females aged 40-69 years is free of charge in all cancer control departments, the attendance rates for early diagnose methods are not at expected levels most probably due to the lack of organized nationwide breast health screening program in Turkey (Ozmen et al., 2014). In this case, a BSE on a regular basis has an essential importance in Turkish women lives for the risk of this special disease growing steadily in numbers.

In the current study, almost four fifth (78.7%) of the patients were performing BSE. This affirmative high percentage of BSE practice was relatively high than the studies conducted in Malaysia (48%, 55.4%) (Al-Dubai et al., 2012; Al-Naggar et al., 2012), in China (53.9%) (Wong-Kim and Wang, 2006), in Saudi Arabia (18.7%) (Jahan et al., 2006), and in Brazil (67.5) (Silva et al., 2013). The case-control study designed for the purpose of evaluating the effect of training program on BSE also demonstrated low rates both in the control group (47.3%) and test group (33.3%) (Gucuk and Uyeturk, 2013). A recent Turkish study about BSE awareness and practice showed only 40.9% of the women in the previous 12 months (Dundar et al., 2006). A study conducted in Turkey presented a high BSE practice prevalence as 78.4% in health personnel and 76.0% in the GAS workers (Yurdakos et al., 2013).

Based on BSE practice on a regular time intervals is more important as well as performing BSE. This accurate time period is suggested as "within a week after each menstrual cycle". In our present study, since the response options were presented two ways to identify the time period on a monthly basis, two BSE frequencies were demonstrated separately. In this detailed calculation, women only practiced BSE on a monthly basis were found 9.5%, and those performed BSE regularly based on time

intervals of “within a week after each menstrual cycle” were 5.7%. Even the sum of these two rates (15.2%) showed the lack of an active BSE practice. It is observed in the literature that most of the studies did not completely clarify the definition of “monthly” in regular BSE practice. Silva et al. reported the frequency of BSE practice among participants as monthly (48.5%), annually (11.7%), sporadically (7.3%). Percentage of self-examination method were stated to be performed on a monthly basis by 47.2% of the women in Malaysia (Al-Naggar et al., 2012). Inconsistency with this finding in Malaysia, Al-Dubai et al. reported that only 28.5% of the Malaysian females in their study practiced BSE monthly (Al-Dubai et al., 2012). Although having a high rate of BSE practice (84%) in their study, Mbanaso et al. stated that only 47.9% of those were performing BSE monthly (Mbanaso et al., 2005). In another study, only 10.2% Turkish women performed BSE regularly on a monthly basis, whereas 29.5% had practiced this method by themselves irregularly (Dundar et al., 2006). It is predicted that the different findings between studies may arouse from the lack of clarity about precise time period on a monthly basis as well as the existence of cultural and demographic features.

With respect to the associated determinants with BSE performance, age groups in the present study were a significant predictor for practicing BSE. The BSE performance ratio was almost three times higher in patients aged with (20-39 years) and (40-49 years) than aged  $\geq 60$  years. Contrast to our findings, a descriptive correlational study in Turkey indicated that those who were practicing regular BSE were more likely older than those were not. This finding may arouse from the sample size of BSE performance group (N=23) and the comparison only the mean value of the age among participants. The authors found out that the practice group was older than those who did not perform BSE, and the mean value of both groups was not exceeding approximately 30 years old (Avci, 2008). In a study, based on the age group categorization of participants, Frie et al. showed that women aged  $\geq 60$  years were significantly less likely performed BSE than women  $< 40$  years (Grosse Frie et al., 2013). In other study, percentage of women with BSE practice was higher in aged  $\geq 45$  years (84.2%) females than those aged 18-29 years (49.7%) (Al-Dubai et al., 2012). Though contradictory results, these findings reveal that age period is an important attribute for participation in BSE performance for the purpose of early diagnose of the BC. According to our findings, preventive women health educations and interventions about to increase the awareness of BC among young adult females in recent years appeared effective in incremental rates of BSE performance.

Another predictor affecting the BSE performance may be the marital status. However, though we detected that being not married were more likely associated with BSE performance comparing to married women, a significant relationship did not remain after the multivariate analysis. We could attribute this finding to the composition of our sample that was comprised of mostly married females. Inconsistent with our study, in a study from Malaysia, Al-Dubai et al. reported that married women were found

out more likely to practice BSE (Al-Dubai et al., 2012). In line with this study, Frie et al. also emphasized that women who were not married (single/divorced/widowed) had less likely practiced BSE regularly than married individuals (Grosse Frie et al., 2013).

The education level issue, which is one of the important factors for determining the social status of the women in the community, is an effective predictor on utilization of health services. However, the present study did not detect any significant relationship between the education levels and BSE performance among the participants, which was inconsistent with the studies by Ravichandran et al. (2011) and Bener et al. (2009). A study among Nigerian women found out that those with a higher level of education were 3.6 times more likely to perform BSE (Okobia et al., 2006). Similar results were indicated in Iran by Khalili et al. Furthermore in line with a significant correlation between with higher academic educational levels and higher rates of BSE practice (Khalili and Shahnazi, 2010). Consistent to our present study, Dundar et al. stated no significant variation of education level among BSE performer than non-performer (Dundar et al., 2006). Though Kilic et al. found out a linear relationship between increased education levels and BSE performance among participants forming the patient group, this association was not statistically significant (Kilic et al., 2006). The lack of significant association between BSE practice and education levels in our study might be linked with the high level of awareness of our participants whom comprised of those four fifth were educated under 12 years on this issue.

Having a family history of breast disease may be an essential predictor among regular BSE performer. In our present study, family history of breast diseases, not only the breast cancer, significantly impacts the BSE performance among participants. Parallel results were presented in several studies conducted in different countries. In these similar studies, Al-Naggar et al. stated the frequency of family history of breast cancer among practice group was 19.6% (Al-Naggar et al., 2012). Karayurt et al. in Turkey specified that females with a positive family history of BC practiced BSE more than females who don't have (Karayurt and Dramali, 2007). In contrast to our finding, there are some studies indicate that there are no significant relationship between having a family member diagnosed with BC or other cancer type and BSE performance (Gucuk and Uyeturk, 2013). Another study supported this lack of significant association between family history of breast cancer, and BSE practices were carried out among Malaysian undergraduate female students in a public university (Akhtari-Zavare et al., 2013). Having family members diagnosed with breast diseases could have empowered participants' awareness about BSE performance and increased sensitiveness towards the risk development of BC.

Results of the present study may not be representative of the actual BSE performance among all Turkish women due to sampling from only restricted area of the capital city of Turkey.

It is determined that BSE performance rates among females over aged 20 years were higher in the present study compared to other studies carried out in different

countries and region of Turkey. However, taking into consideration of regular BSE practice on appropriate time periods among females, the frequency rates were not in desired levels as well. In the present study, younger age groups, family history of breast diseases and, not being in working status are identified as significant predictors to perform enough BSE appropriately. Consequently, health education materials should be tailored for older women and employed women in this community. Outreach efforts should be targeted at these same groups. Additional research is needed to confirm these demographic disparities in other samples.

These promising but insufficient results must divert the attention to our national health policy to pan out the good enough awareness levels of early screening methods including BSE, CBE, and mammography screenings. Community-based education about BSE should be extended in older age groups of women as well as young females. Social and supportive measures to enhance the attentiveness of their health issues should be provided to the employed females as far as possible.

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