



Socio-demographic Factors Associated with Utilization of Breast and Cervical Cancer Screening Methods in Turkey

İD Duygu ÜREK,¹ İD Sevilay KARAMAN,² İD İpek BİLGİN,³ İD Oğuz IŞIK,² İD Özgür UĞURLUOĞLU²

¹Department of Health Management, Karadeniz Technical University, Trabzon-Turkey

²Department of Health Care Management, Hacettepe University, Ankara-Turkey

³Department of Health Care Management, Istanbul Medeniyet University, Istanbul-Turkey

OBJECTIVE

Early screening methods are very important in reducing morbidity and mortality, especially in breast cancer (BC) and cervical cancer (CC). This study aims to investigate the sociodemographic factors associated with utilization of BC and CC screening methods among women in Turkey.

METHODS

The data were used from the Turkey Health Survey conducted by Turkish Statistical Institute in 2014. We included 8606 women aged 25 and over in the study. The utilization of early screening methods (breast self-examination [BSE], mammography, or Pap smear [PS] test) was the dependent variable. Chi-square test was used to assess the association between sociodemographic factors and utilization of early screening methods.

RESULTS

As a result of the analysis, it was found that 46.5% of the women practiced BSE, 32.4% and 35.4% had mammography screening and PS test at least once, respectively. The results also indicated that there were statistically significant associations between sociodemographic factors such as age, marital status, education and income level, having chronic diseases, consulting a family physician, health status, and utilization of early screening methods.

CONCLUSION

Improving access to early screening methods is of great importance in reducing mortality and morbidity related to BC and CC. It is believed that certain enhancements, such as increasing women's awareness about cancer screening, should become widespread to increase the number of women using these methods.

Keywords: Breast cancer; cervical cancer; screening methods; Turkey.

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Introduction

Cancer, which is expected to cause 24.1 million new cases and 13 million deaths by 2040, is an important public health problem worldwide, including Turkey. Among cancer types, breast cancer (BC) is the most common cancer in women in almost all countries worldwide. In 2018, approximately 2.1 million new

cases and 630,000 deaths occurred due to BC. With about 570,000 new cases and 312,000 deaths reported in 2018, cervical cancer (CC) is the fourth most common cancer among women worldwide. In Turkey, BC, which is the most common female cancer type, constitutes 24.4% of cancers. The age-standardized incidence rate of BC is estimated to be 45.6 (per 100,000) in 2018.[1] CC is the 13th most common cancer

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Dr. Duygu ÜREK
Karadeniz Teknik Üniversitesi,
Sağlık Yönetimi Bölümü,
Trabzon-Turkey
E-mail: duyguurek@ktu.edu.tr

type among women for all age ranges and fourth for women aged 15-44 in Turkey. The age-standardized incidence rate of CC is estimated to be 4.8 in 2018 (per 100,000).[2]

Early screening methods are particularly effective in reducing morbidity and mortality associated with these two cancer types.[3,4] According to the World Health Organization,[5] the only BC screening method that has proved to be effective is mammography screening (MS). Recommendations for MS vary by country. For example, while MS is recommended for women aged 40 and over every 1 or 2 years in Greece, it is recommended for women aged 50-74 every 2 years in Israel.[6] According to national standards in Turkey, MS is recommended for women aged 40-69 every 2 years.[7] However, population-wide implementation of MS is limited due to the lack of infrastructure and trained workforce in developing countries. Hence, breast self-examination (BSE) is advocated in view of its cost-effectiveness in these countries.[8] Although there are debates about BSE, it is still involved in screening programs in many countries.[9] For example, in Turkey, BSE is recommended for women since the 20s for raising awareness about their own health.[7] It is stated that the diagnosis of BC is much less common in women under the age of 40.[10] However, in Turkey, it is seen that 40.4% of women diagnosed with BC are between the ages of 25-49.[11] BC diagnosis in younger women can have a greater impact than older counterparts due to its tendency to appear at a later stage, to be more aggressive and have a worse prognosis.[10] Hence, younger women also need to practice BSE or perform MS in Turkey.

In the diagnosis of CC, Pap smear (PS) test is a commonly used cost-effective method.[12] There are different recommendations about when to start PS screening. For example, PS is recommended for women aged 25-65 every 3 years in France and Israel.[6] According to national standards in Turkey, PS is recommended for women aged 30-65 every 5 years.[7] On the other hand, many jurisdictions recommend that CC screenings begin when a woman becomes sexually active, regardless of age.[13] Considering that the mean age at first marriage is 25s for women in Turkey,[14] it is also important to screen younger women.

Despite evidence that early screening methods reduces morbidity and mortality, BSE practice rates, mammography, and PS performing rates are quite low in Turkey.[15-17] In addition to determining the rates, it is also very important to identify related factors. The previous studies conducted for this purpose have in-

vestigated the situation at a provincial level in Turkey. [3,15,17] Not only to ascertain probable fields of intervention that may lead to an increase in screening rates but also to track down women across the country who insufficiently use these methods, it is of essential importance determining factors associated with the utilization of these methods.

Materials and Methods

Study Design

The aim of this study is to investigate the utilization of early diagnosis methods for BC and CC by women in Turkey based on several factors. In this context, the study investigates the BSE practice rates, mammography, and PS performing rates and further determines whether there is a difference in these rates with respect to several personal features. This study utilized data from Turkish Statistical Institute (TURKSTAT)'s[18] Turkey Health Survey 2014 by obtaining necessary permissions from the relevant institution. This study, which is a secondary analysis of the data from Turkey Health Survey 2014, does not require ethical approval for research on human/animal subjects.

Turkey Health Survey has been conducted by the TURKSTAT every 2 years since 2008 to ascertain the general health profile of the population. The geographical scope of the Turkey Health Survey 2014 constitutes all households residing in settlements within the borders of the Republic of Turkey. The soldiers, people who stay permanently in dormitories, prisons, hospitals, nursing homes, etc., were excluded. The sample size was calculated to do estimations on the base of total of Turkey and the required total sample size was found to be 9740 households. The survey was concluded with 8634 households out of 9740 households. TURKSTAT reached 26,075 individuals representing the entire population of the country by face-to-face interviews.[18] Although early screening methods are recommended for specific age groups, considering that approximately half of women diagnosed with BC are between the ages of 25 and 49[11] and the mean age at first marriage is 25s for women in Turkey,[14] we excluded male participants and women between 0 and 24 years of age. After excluding, the final sample of this research includes 8606 women aged 25 and over.

Study Variables

The dependent variables of this study were utilization of BSE, mammography, and PS tests. For the evalua-

tion of these variables, the participants were asked three questions: (i) “How often do you practice BSE?” (ii) “When was the last time you had a MS?” and (iii) “When was the last time you had a PS test?” Those who responded negatively to these questions were classified under “never practiced” for question (i) and “never performed” for the questions (ii) and (iii).

Variables defined in literature that were associated with the utilization of early screening methods by women for BC and CC, which included age,[17,19] marital status,[15] education level,[15,20] income level,[17] health coverage status,[19] consulting with a family physician,[19,21,22] having chronic diseases,[23] body mass index (BMI),[24] and health status,[25] were integrated into the present study as independent variables.

In this context, while marital status and availability of health coverage were evaluated in two categories, the variables of education and income level and age were evaluated in four and five categories, respectively. The chronic disease variable was evaluated based on incidence; in other words, an individual diagnosed with one of 19 different chronic diseases within the past 12 months was categorized as “having a chronic disease.” The evaluation of the variable of consulting with a family physician was based on the service received: Those who had received at least one health-related service from a family physician over the past 12 months were categorized under “yes.” The variable of BMI was evaluated using calculations made on the basis of parameters such as the height and weight of participants, whereby they were categorized into four categories, namely, underweight ($<18.49 \text{ kg/m}^2$), normal range ($18.5\text{--}24.99 \text{ kg/m}^2$), overweight ($25\text{--}29.99 \text{ kg/m}^2$), and obese ($>30 \text{ kg/m}^2$). To evaluate the variable of general health status, the question “How is your health in general?” was posed to participants, and the findings were categorized into two groups, “good” and “bad.”

Analysis of Data

The data obtained in the Turkey Health Survey 2014 were analyzed through descriptive statistics (frequency and percentage) and besides Chi-square test to ascertain whether the practices of early screening methods for cancer by women showed a difference with respect to their personal features. SPSS (Version 23.0) program was used to process the related analysis. The alpha level was accepted as 0.05 in statistical tests.

Results

The descriptive findings show that 52.3% of the women who participated in the study were aged 45 and over. While, of these women, 77% were married, 51.2% were primary school graduates, and 53.5% had an income of 1550₺ and below. As for the health coverage status, 94.3% had health coverage. A total of 75.6% of the participating women had a chronic disease, and 87.6% visited a family physician for consultation at least once over the past 12 months. A total of 64.3% of the participants were classified as overweight or obese based on their BMI. With regard to their health status, 55.4% expressed having bad health. The results also indicated that while 46.5% of the women practiced BSE, 32.4% and 35.4% had MS and PS tests at least once, respectively (Table 1).

Table 2 reveals that the participants in the age groups of 35–44 (51.8%) and 45–54 (53.3%) practiced BSE more frequently than those in other age groups; the rate of BSE practice was lowest in women aged 65 and over (29.5%). The study also found that the practice of BSE among married women (48.6%) was higher than among single women (39.4%). This higher utilization rate was also seen among the following: Those with an undergraduate and/or a graduate degree (61.8%), those with an income of 3181₺ and over (60.9%), those who visited a family physician at least once for consultation (48.1%), those who were overweight (46.8%) or obese (48.2%), and those with a good health status (50.4%).

Table 3 reveals that the participants in the age groups of 45–54 (49.0%) and 55–64 (48.4%) had MS more than those in other age groups. The table also shows that married women had MS at a higher rate (33.2%) than single participants (29.6%). This higher utilization rate was also seen among the following: Those with primary education (34.7%), those with an income of 3181₺ and over (39.2%), those having health coverage (32.9%), those with a chronic disease (35.8%), those who consulted with a family physician at least once (33.5%), those who were overweight (34.7%) or obese (39.5%), those with bad health status (37.7%), and those who practiced BSE (46.8%).

Table 4 reveals that the participants in the age groups of 35–44 (39.3%) and 45–54 (46.5%) had a higher rate of PS tests than those in other age groups; this rate was lowest in women aged 65 and over (23.1%). The study findings further indicate that married women had a higher rate of PS tests (38.4%) than single participants (25.1%). This higher utilization rate of PS tests was also

Table 1 Descriptive characteristics of the participants

	n	%
Age		
25-34	2003	23.3
35-44	2102	24.4
45-54	1791	20.8
55-64	1325	15.4
65+	1385	16.1
Marital status		
Married	6630	77.0
Single	1976	23.0
Education level		
No education	2173	25.2
Primary school	4424	51.2
High school and/or 2-year degree	1329	15.4
Undergraduate and/or graduate degree	680	7.9
Income level*		
0-1550₺	4603	53.5
1551-2170₺	1349	15.7
2171-3180₺	1357	15.8
≥3181₺	1297	15.1
Health coverage status		
Have	8114	94.3
Not have	492	5.7
Having a chronic disease		
Have	6503	75.6
Not have	2103	24.4
Consulting with a family physician		
Yes	7535	87.6
No	1071	12.4
Body mass index		
Underweight	192	2.2
Normal range	2878	33.4
Overweight	2946	34.2
Obese	2590	30.1
Health status		
Good	3834	44.6
Bad	4772	55.4
Breast self-examination		
Practice	3998	46.5
Not practice	4608	53.5
Mammography		
Performed	2787	32.4
Not performed	5819	67.6
Pap smear		
Performed	3044	35.4
Not performed	5562	64.6
Total	8606	100

*1 USD=2.188₺ in 2014

seen among the following: Those with an undergraduate and/or graduate degree (46.8%), those with an income of 3181₺ and over (51.2%), those with health coverage

(35.7%), those with a chronic disease (37.0%), those who consulted with a family physician at least once (36.4%), those who were overweight (36.7%) or obese (37.8%), and those with bad health status (37.0%).

Discussion

This study aimed to investigate the utilization of early screening methods (BSE, MS, and PS tests) for BC and CCs by women aged 25 years and above living in Turkey from a perspective based on several factors. The results indicate that while 46.5% of women practice BSE, 32.4% have undergone MS and 35.4% have taken a PS test at least once. Previous research performed in several provinces in Turkey has found that BSE practice rates vary between 27.7% and 66.5%, MS vary between 7.3% and 55.9%, and PS tests vary between 23.7% and 55.9%. [15-17,26,27]

The results demonstrated that married, middle-aged women who had an undergraduate and/or graduate degree with an income of 3181₺ and over, who received health-care services from a family physician at least once, whose BMI was classified as overweight or obese, and who expressed having a good health status practiced a higher rate of BSE than did others. These results concerning BSE practice are similar to findings of previous research. [17,20,21,25] Women with lower education are less knowledgeable about health risks and less informed about screening. For this reason, it is expected finding that woman with higher education levels are more likely to apply to BSE. It is observed that the possibility of using screening methods is low in cases where access to health services is limited. [20] In Turkey, the high of access to primary health care and having information and follow-up program about BC screening methods in primary health-care services is seen important factor that increases BSE.

The results concerning women's rates of utilization of MS show that married, middle-aged women, with primary level education, an income of 3181₺ and over, who had health coverage, who had received health-care services from a family physician at least once, whose BMI was classified as overweight or obese, and who expressed having bad health status had higher rates of MS than others. These results on mammography utilization correspond to the findings of the previous studies. [4,22,24] Having health insurance is one of the important factors affecting the benefit of women from health services, [15] and studies show that uninsured women are less likely to have MS and PS compared to insured women due to their high cost. [28] For this rea-

Table 2 Factors associated with practice BSE

Variables	Practice (n=3998)		Not practice (n=4608)		χ^2/p
	n	%	n	%	
Age					
25-34	921	46.0	1082	54.0	$\chi^2=219.101$ p<0.001
35-44	1088	51.8	1014	48.2	
45-54	955	53.3	836	46.7	
55-64	626	47.2	699	52.8	
65+	408	29.5	977	70.5	
Marital status					
Married	3219	48.6	3411	51.4	$\chi^2=51.002$ p<0.001
Single	779	39.4	1197	60.6	
Education level					
No education	550	25.3	1623	74.7	$\chi^2=581.876$ p<0.001
Primary school	2229	50.4	2195	49.6	
High school and/or 2-year degree	799	60.1	530	39.9	
Undergraduate and/or graduate degree	420	61.8	260	38.2	
Income level*					
0-1550₺	1799	39.1	2804	60.9	$\chi^2=249.666$ p<0.001
1551-2170₺	671	49.7	678	50.3	
2171-3180₺	738	54.4	619	45.6	
≥3181₺	790	60.9	507	39.1	
Consulting with a family physician					
Yes	3621	48.1	3914	51.9	$\chi^2=62.296$ p<0.001
No	377	35.2	694	64.8	
Body mass index					
Underweight	80	41.7	112	58.3	$\chi^2=8.834$ p<0.05
Normal range	1292	44.9	1586	55.1	
Overweight	1378	46.8	1568	53.2	
Obese	1248	48.2	1342	51.8	
Health status					
Good	1932	50.4	1902	49.6	$\chi^2=43.048$ p<0.001
Bad	2066	43.3	2706	56.7	

*1 USD=2.188₺ in 2014. BSE: Breast self-examination

son, it can be said that women with health insurance have a high rate of MS. Due to the impact of cancer screening program in primary health-care services in Turkey, visiting the family doctor is one of the factors that increase the use of MS.

The results concerning women's rates of utilization of PS tests show that married women in the 45-54 age group, with a higher level of education, an income of 3181₺ and over, health coverage status, having a chronic disease, who had received health-care services from a family physician at least once, whose BMI was classified as overweight or obese, and who expressed having bad health status, had a higher rate of PS tests than others. These results correspond to the findings of previous research.[15,19,23,24] Woman having a chronic dis-

ease, whose BMI was classified as overweight or obese, and who expressed having bad health status needs for doctor consultation. This may indicate that women with more medical conditions are more likely to visit doctors and therefore more likely to be screened. It is observed that women whose BMI was classified as overweight or obese have high rates of using screening methods (SBE, MS, and PS tests) than other. Obese individuals consume more fat, and excessive intake of any kind of fat increases the risk of cancer formation. [29] For this reason, it is expected finding that woman with high BMI have a higher rate of testing than others.

The results of this study appear that self-reported good health was positively associated with BSE practice but negatively associated with utilization of mammog-

Table 3 Factors associated with having mammography

Variables	Performed (n=2787)		Not performed (n=5819)		χ^2/p
	n	%	n	%	
Age					
25-34	293	14.6	710	85.4	$\chi^2=709.606$ p<0.001
35-44	544	25.9	1558	74.1	
45-54	877	49.0	914	51.0	
55-64	641	48.4	684	51.6	
65+	432	31.2	953	68.8	
Marital status					
Married	2203	33.2	4427	66.8	$\chi^2=9.380$ p=0.002
Single	584	29.6	1392	70.4	
Education level					
No education	612	28.2	1561	71.8	$\chi^2=34.618$ p<0.001
Primary school	1537	34.7	2887	65.3	
High school and/or 2-year degree	445	33.5	884	66.5	
Undergraduate and/or graduate degree	193	28.4	487	71.6	
Income level*					
0-1550₺	1324	28.8	3279	71.2	$\chi^2=68.760$ p<0.001
1551-2170₺	454	33.7	895	66.3	
2171-3180₺	500	36.8	857	63.2	
≥3181₺	509	39.2	788	60.8	
Health coverage status					
Have	2668	32.9	5446	67.1	$\chi^2=16.014$ p<0.001
Not have	119	24.2	373	75.8	
Having a chronic disease					
Have	2328	35.8	4175	64.2	$\chi^2=141.691$ p<0.001
Not have	459	21.8	1644	78.2	
Consulting with a family physician					
Yes	2521	33.5	5014	66.5	$\chi^2=31.825$ p<0.001
No	266	24.8	805	75.2	
Body mass index					
Underweight	40	20.8	152	79.2	$\chi^2=163.115$ p<0.001
Normal range	702	24.4	2176	75.6	
Overweight	1021	34.7	1925	65.3	
Obese	1024	39.5	1566	60.5	
Health status					
Good	986	25.7	2848	74.3	$\chi^2=140.361$ p<0.001
Bad	1801	37.7	2971	62.3	
BSE					
Yes	1870	46.8	2128	53.2	$\chi^2=706.009$ p<0.001
No	917	19.9	3691	80.1	

*1 USD=2.188₺ in 2014. BSE: Breast self-examination

raphy or Pap testing. This situation can be explained by the trend, need, and possibility factors in the health services usage behavior model developed by Andersen. [30] People who evaluate their perceived health status as good and therefore do not feel any discomfort prefer BSE method without going to a health institution, however, when there is a deterioration in health, peo-

ple can use health services to use screening methods to find out where this problem is caused.

Limitations of the Study

This study has several limitations. First of all, this study was carried out using the data of Turkey Health Survey 2014 and there could be other factors that might be as-

Table 4 Factors associated with having Pap smear test

Variables	Performed (n=3044)		Not performed (n=5562)		χ^2/p
	n	%	n	%	
Age					
25-34	565	28.2	1438	71.8	$\chi^2=250.118$ p<0.001
35-44	827	39.3	1275	60.7	
45-54	832	46.5	959	53.5	
55-64	500	37.7	825	62.3	
65+	320	23.1	1065	76.9	
Marital status					
Married	2549	38.4	4081	61.6	$\chi^2=119.500$ p<0.001
Single	495	25.1	1481	74.9	
Education level					
No education	482	22.2	1691	77.8	$\chi^2=259.803$ p<0.001
Primary school	1653	37.4	2771	62.6	
High school and/or 2-year degree	591	44.5	738	55.5	
Undergraduate and/or graduate degree	318	46.8	362	53.2	
Income level*					
0-1550₺	1294	28.1	3309	71.9	$\chi^2=277.200$ p<0.001
1551-2170₺	523	38.8	826	61.2	
2171-3180₺	563	41.5	794	58.5	
≥3181₺	664	51.2	633	48.8	
Health coverage status					
Have	2898	35.7	5216	64.3	$\chi^2=7.406$ p=0.007
Not have	146	29.7	346	70.3	
Having a chronic disease					
Have	2409	37.0	4094	63.0	$\chi^2=32.613$ p<0.001
Not have	635	30.2	1468	69.8	
Consulting with a family physician					
Yes	2741	36.4	4794	63.6	$\chi^2=26.818$ p<0.001
No	303	28.3	768	71.7	
Body mass index					
Underweight	57	29.7	135	70.3	$\chi^2=25.120$ p<0.001
Normal range	925	32.1	1953	67.9	
Overweight	1082	36.7	1864	63.3	
Obese	980	37.8	1610	62.2	
Health status					
Good	1279	33.4	2555	66.6	$\chi^2=12.235$ p<0.001
Bad	1765	37.0	3007	63.0	

*1 USD=2.188₺ in 2014

sociated with the use of early screening methods, such as living in rural or urban area, knowledge about cancer screening. These variables may also be included in future studies. Data on use of early screening methods were self-reported, which might lead to underreporting.

Conclusion

The study investigates the BSE practice rates, mammography, and PS performing rates and it is found that

the low number of women using screening methods is alarming and suggests that awareness about screening should be increased. Further the study determines whether there is a difference in these rates with respect to several personal features. It is found that there is a relationship between certain personal features of women - such as age, marital status, education and income level, health coverage status, having a chronic disease, having consulted a family physician, and health status - and their utilization of early screening methods for BC

and CC. The results of the study suggest that certain improvements should be made in various fields to allow intervention to increase the utilization rates of early screening methods of women. The study found that women who consult a family physician have higher rates in terms of utilization of early screening methods. However, the lack of an obligatory referral system in Turkey prompts people to directly apply to hospitals. In this respect, it is believed that the provision of information and guidance concerning screening methods by family physicians is of great importance to educate women about cancer screening. It can be said that the results can be generalized across the country, as the research data are obtained from a sample of women across the country.

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