

## RESEARCH ARTICLE

# Breast, Cervical, and Colorectal Cancer Screening Status of a Group of Turkish Women

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### Abstract

**Introduction:** The aim of the study was to determine the breast, cervical, and colorectal cancer screening rates and the influencing factors in a group of Turkish females. **Methods:** This descriptive study was conducted in a School of Nursing. The study sample consisted of 603 females who were the mothers/neighbors or relatives of the nursing students. Data collection forms were developed by the investigators after the relevant literature was screened and were used to collect the data. **Results:** Of the women aged 30 and over, 32.8% had undergone a pap smear test at least once in their life. Of those aged 50 and over, 48.2% had undergone mammography at least once and FOBT had been performed in 12% of these women in their life. Having heard of the screening tests before, knowing why they are done, and having information on the national cancer screening program were important factors influencing the rates of women having these tests done. **Discussion:** The results of this study show that the rates of women participating in national cervical, breast, and colorectal cancer screening programs are not at the desired levels. Having heard of the screening tests before, knowing why they are done, and having information on the national cancer screening program were important factors influencing the rates of women having these tests done. It is suggested that written and visual campaigns to promote the service should be used to educate a larger population, thus increasing the participation rates for cancer screening programs.

**Keywords:** Cancer screening - breast cancer - cervical cancer - colorectum - Turkish women - factors

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### Introduction

Cancer is an important public health problem and affects everyone, including females, males, the young, the elderly, the rich, and the poor. It is believed that cancer will be an important cause of increased mortality and morbidity rates in the world in the next few decades. Independent of present and future measurements, it is estimated that the number of new cancer cases will increase from 12.7 million in 2008 to 21.4 million by 2030 (WHO, 2007a; 2011).

Comprehensive cancer control programs include primary protection, early diagnosis/screening, treatment, and palliative care (WHO, 2007; 2011). Primary protection from cancer includes eliminating risk factors and some vaccine administrations (WHO, 2007a; WHO, 2007b). There are two main approaches to the early diagnosis of cancer. The first is to provide training to increase the awareness of cancer risk factors and early stage signs and symptoms; the second approach is to screen individuals systematically. There is adequate evidence to conduct screening programs only for cervical, breast, and colorectal cancer (CRC) at present. The results show that the effect on the mortality rate of screening for cancer types such as ovarian, oral, lung, and prostate are inadequate (Martin-Moreno et al., 2009).

Some tests recommended for cancer screening are mammography for breast cancer (BC), the pap test for cervical cancer (CC) (Cuzick 2010; Jeong et al., 2011), and the fecal occult blood test (FOBT) and colonoscopy/sigmoidoscopy for colorectal cancer (CRC) (WHOa, 2007). Mammography has been shown to decrease breast cancer mortality by 20-35% in women aged 50-69 years (Gøtzsche and Nielsen 2009; Nelson et al., 2009). The WHO recommends women aged 50-69 to undergo screening by mammography at 24 month periods (at most) for breast cancer, and women aged 30-65 years to be screened with conventional cytology every 3-5 years for cervical cancer (WHO, 2007b). The strongest evidence is for fecal occult blood tests for CRC screening. The WHO recommends males undergo screening for CRC in locations with adequate resources (WHO, 2007b), and it is said that screening yearly or every two years with the fecal occult blood test decreases colorectal cancer mortality by 15-33%. Although the position of sigmoidoscopy or colonoscopy in screening is controversial, a sigmoidoscopy at 10 year intervals can be beneficial (NCI, 2010; Courtney et al., 2012).

Many healthcare institutions in Turkey provide services related to the tests and examinations for the early diagnosis of cancer, but community-based cancer screening programs are conducted by ‘‘Cancer Early

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Diagnosis and Screening Centers” (KETEMs). KETEMs have been established to increase the awareness of the community regarding cancer through training, to make early diagnosis and screening of cancers more widespread, to eliminate preventable cancers, and to decrease the mortality of screenable cancers. There were a total of 84 KETEMs in 81 provinces in Turkey at the end of 2008, and they continue their free breast, cervical, and colon cancer screening activities within state hospitals. KETEMs conduct community based screening for cervical cancer in women aged 30-65, breast cancer in women aged 50-69, and CRC in women and men aged 50-70 years (Tuncer, 2009).

The participation rate of females in the screening programs depends on the service presentation, as well as many personal and social factors (Bonfill et al., 2001). Many factors that influence the participation of females in cancer screening programs have been defined in relevant studies. Educational level, family income status, whether or not the female works in paid employment, level of information on the service, having health insurance or not, place of residence, ability to access healthcare services and similar socio-demographic and economic features, health-related beliefs and attitudes of the place of residence, and similar socio-cultural features can influence female participation in screening programs in various ways (Whitman et al., 2007; Goel et al., 2010). When we look at studies on the subject from Turkey, we see that the participation of females in breast cancer and cervical cancer screening has been the most common subject evaluated (Yavan et al., 2010; Guvenc et al., 2011). There are very few studies on colorectal cancer screening (Altuğ et al., 2002; Bas et al., 2012). We also did not come across any study evaluating the cancer screening participation status of women in general and the influencing factors. An understanding of the factors that influence the decision to attend a cancer screening is essential for any attempts to increase uptake. The aim of the study was therefore to determine the breast, cervical, and colorectal cancer screening rates and the influencing factors in a group of Turkish females.

## Materials and Methods

### *Participants*

This study was conducted in a school of nursing in Turkey. The universe of this descriptive study consisted of the mothers and neighbors or relatives, suitable for inclusion in the study, of the 405 nursing students who continued their training in the 2011-2012 training and education year. Inclusion criteria for the participants of this study were: 1) volunteering to participate in the study, 2) being in the suitable age range for cervical, breast, and colorectal cancer screening (30 years old and over), and 3) not being diagnosed with any type of cancer. In the end, the study sample consisted of 603 females who were the mothers/neighbors or relatives of the nursing students. Students of the school of nursing come from various regions of Turkey and from families with different socio-economic and cultural characteristics. We therefore believe that the mothers of the students making up the

sample are an important group in regard to possessing the general features of the female population in Turkey. Measures

Data collection forms were developed by the investigators after the relevant literature was screened and were used to collect the data.

### *Socio-demographic information*

The age, education status, employment status, province of residence, marital status, menopausal status, and the history of cancer in the family were queried in this section.

### *Knowledge about cancer screening programs*

The participants' knowledge about cancer screening programs was determined by asking them the following questions: 1) Have you ever heard about the national cancer screening program? (no, yes); 2) Do you know why a mammogram is done? 3) Do you know why a Pap smear test is done? 4) Do you know why a FOBT is done? (open ended). We classified the women's answers as "knows" if they reported that these tests are done for early detection of breast, cervical, and colorectal cancer and "does not know" otherwise.

We queried whether or not the subjects had heard of the national cancer screening program in this section. We provided the information that "the Cancer Early Diagnosis and Education Centers (KETEM) in our country work as separate units within state hospitals and conduct screening programs in breast, cervical, and colorectal cancer, without charge, at the community level." We then asked the participants whether or not they had ever heard of KETEM.

### *Breast, Cervical, and Colorectal Cancer Screening*

Breast Cancer (BC) screening adherence was determined by asking participants the following questions: 1) "Have you ever had a mammogram?" (no, yes); and 2) "If yes, when did you have your most recent mammogram to check for breast cancer?" Cervical Cancer screening was determined by asking participants the following questions: 1) "Have you ever had a Pap smear?" (no, yes); and 2) "If yes, when did you have your most recent Pap smear?" CRC screening utilization was assessed based on the use of the Fecal Occult Blood Test (FOBT) and colonoscopy and asking the following question: Have you ever had a stool blood test performed? Respondents who answered "Yes" were then asked about the timing of their last blood test. For endoscopic screening, respondents were told "A colonoscopy is a test that examines the bowel by inserting a tube in the rectum", and then asked "Have you ever had a colonoscopy?" Individuals responding "Yes" to this question were asked "When did you have your most recent colonoscopy to check for CRC?"

Age inclusion for analyses was selected based on the National Cancer Screening Guidelines of Turkey (Tuncer 2009). BC and CRC screening was evaluated among women in the sample who were  $\geq 50$  years old. CC screening was evaluated among women in the sample who were  $\geq 30$  years old (i.e., all women in the sample). To be classified as adherent, women needed to have undergone a mammogram, a Pap test, and the FOBT at least once

during their lifetime.

#### Perceived risk for breast, cervical, and colorectal cancers

The perceived risk for developing breast, cervical, and colorectal cancers was determined by asking the participants the following questions separately for each cancer type: 1) Do you think that you are at risk of developing breast, cervical and colorectal cancers? (no, yes); 2) If yes, in general, would you say your risk is...?" with response options ranging from 1 (slightly) to 10 (strongly) (so that higher scores reflected a higher risk perception) on a 10-point Visual Analog Scale (VAS). We obtained the opinions of experts to evaluate the content validity of the data collection forms regarding general suitability and ease of application. The forms were finalized according to the recommendations. Before the study started, a preliminary application was performed on 10 women.

#### Procedures

The study was started following the approval of the institutional review board of Gulhane Military Medical Academy. The data collection stage of the study was conducted by the students. The students were first provided information by the investigators on the aim and method of the study. Survey forms were distributed to all students accepting participation in the study and were told how the forms should be completed. A total of 370 of the 405 students accepted to participate and a total of 740 surveys were distributed to them. The mother and/or neighbor/relative of 58 students refused to participate and 21 surveys were excluded as they were incomplete. The survey forms completed by 603 women within the one-week period were returned by the students.

#### Statistical Analyses

All data were analyzed using the Statistical Package for Social Sciences (SPSS), Version 15.0 for Windows. We used numbers and percentages to show data distribution and univariate and multivariate logistic regression analysis for the statistical comparison of the data. Descriptive statistics were presented with arithmetical mean and standard deviation. For statistical tests, P-values less than 0.05 were considered to be statistically significant.

## Results

The distribution of some socio-demographic characteristics of the women is shown in Table 1. The mean age of women was 44.5±6.6 years, 64.2% of them had a primary school education, and 78.4% were not working. A family history of cancer was present in 26.5%. More than half of the women (56.4%) had heard of KETEM. Although not shown in the table, all the women participating in the study were married and had health insurance.

Table 2 shows whether or not the women had heard of the cancer screening tests previously and whether or not they knew why they were done. Mammography had been heard of by 92% of the women and 41.8% knew that it was used for the early diagnosis of breast cancer. The

Pap test had been heard of by 72% of the women and 39% knew that it was used for the early diagnosis of cervical cancer. The FOBT had been heard of by 45% of the women previously and only 12.3% knew that FOBT was used in the early diagnosis of colorectal cancer (Table 2).

Of the women aged 30 and over (the appropriate age for cervical cancer screening), 32.8% had undergone a Pap smear test at least once in their life and 91.4% of this group had undergone the test in the last five years. Of the women aged 50 and over (the appropriate age for breast and colorectal cancer screening), 48.2% had undergone mammography at least once in their life and 67.5% of this group had undergone the test in the last two years. FOBT had been performed in 12% of the women aged 50 years or more, but only 1.2% of these tests had been performed within the last year (Table 3). Although not shown in the table, a colonoscopy had been requested by 12% of women aged 50 years or more and 50% of these were performed

**Table 1. Characteristics of Women**

n=603		n	%
Age (years)	30-39	133	22.1
	≥40	470	77.9
Mean age (Mean±SD)		44.5±6.6	
Educational level	Literate	29	4.8
	Elementary	387	64.2
	High school	144	23.9
	University	43	7.1
Working status	Working	97	16.1
	Not working	473	78.4
	Retired	33	5.5
Body mass index (kg/m <sup>2</sup> )	≤25	223	37.0
	>25	380	63.0
Mean body mass index value (Mean±SD)		26.8±4.6	
Menopausal status	Yes	127	21.2
	No	476	78.9
Family history of cancer	Yes	160	26.5
	No	443	73.5
Having heard of national cancer screening program			
	Yes	340	56.4
	No	263	43.6

**Table 2. Status of the Women who had Previously Heard of the Cancer Screening Tests and Understood Why They are Done**

n=603		n	%
Having previously heard of the mammography test			
	Yes	556	92.2
	No	47	7.8
Knowing why mammography is done			
	Yes	252	41.8
	No	351	58.2
Having previously heard of the Pap test			
	Yes	435	72.1
	No	168	27.9
Knowing why the Pap test is done			
	Yes	241	39.9
	No	362	60.1
Having previously heard of the FOBT			
	Yes	271	45.0
	No	331	55.0
Knowing why the FOBT is done			
	Yes	74	12.3
	No	529	87.7

within the last 10 years.

Univariate and multivariate logistic regression analyses were performed separately for each cancer screening test to define the factors influencing the status of undergoing a Pap smear test, mammography, or the fecal occult blood test for females. For the multiple logistic regression model we included the variables that we had determined to influence (p<0.05) undergoing a screening test status of the females for each cancer type in univariate logistic regression analysis.

To evaluate the factors influencing whether or not women underwent a Pap test, we included in the multivariate logistic regression analysis model the woman's age, menopausal status, cancer history in the family, having heard of KETEM, educational status of the partner, having heard of the Pap test previously, knowing why the test is done, and having undergone a mammogram. When these variables were evaluated together, we found that the Pap smear test was done 0.1 times more on women who had undergone mammography, 0.5 times more on women who had previously heard of the Pap test, and 0.1 times more on women who knew why the Pap test was done, compared to the other women. These findings were statistically significant. We also found that women whose partners were primary school graduates underwent Pap smear tests at a higher rate, but this finding

**Table 3. Whether or Not the Women Who Underwent Screening Saw Themselves at Risk for Cancer, by Type**

	≥30 years (n=603)		≥50 years (n=83)	
	n	%	n	%
Having a Pap test done				
Yes	198	32.8	27	32.5
No	405	67.2	56	67.5
Interval since the last Pap test				
0-5 years	181	91.4	21	77.8
5 years and more	17	8.6	6	22.2
Whether or not they feel at risk for cervical cancer				
Yes	226	37.5	20	24.1
No	377	62.5	63	75.9
Perceived risk degrees of those who feel at risk for cervical cancer (Mean +SD)	1.26±1.93		0.82±1.63	
Undergoing mammography status				
Yes	193	32.0	40	48.2
No	410	68.0	43	51.8
Interval since last mammography				
0-2 years	145	75.1	27	67.5
≥2	48	24.9	13	32.5
Whether or not they feel at risk for breast cancer				
Yes	287	47.6	29	34.9
No	316	52.4	54	65.1
Perceived risk degrees of those who feel at risk for breast cancer (Mean +SD)	1.66±2.17		1.42±2.21	
Undergoing FOBT status				
Yes	35	5.8	10	12
No	568	94.2	73	88
Interval since last (FOBT) test				
0-1 Year	7	20.0	1	1.2
≥1	28	80.0	9	10.8
Whether or not they feel at risk for colorectal cancer				
Yes	199	33.0	24	28.9
No	404	67.0	59	71.1
Perceived risk degrees of those who feel at risk for colorectal cancer (Mean +SD)	1.10±1.91		1.00±2.01	

was not statistically significant (Table 4).

To evaluate the factors influencing the undergoing mammography status of the women, in the multivariate logistic regression analysis model we included the employment status, age, menopausal status, cancer history in the family, having heard of KETEM, knowing why mammography is done, educational status of the partner, and undergoing Pap smear status of the women. When these variables were evaluated together, we found that the mammography rates were 0.3 times higher for women who were menopausal, 0.2 times higher for women who underwent a Pap test, 0.9 times higher for women who had previously heard of KETEM, 2.4 times higher for women who knew why mammography is done, and 0.5 times higher for women who had previously heard of mammography, compared to the other women. These results were statistically significant (Table 5).

Although not shown in the table, to evaluate the factors that influence having a FOBT done in the multivariate logistic regression analysis we included the employment and menopausal status of the women, whether or not they saw themselves at risk for colorectal cancer, and having heard of the FOBT. According to the multivariate logistic regression analysis we found that employed women were 12.3 times more likely to undergo FOBT (p=0.003,

**Table 4. Factors Influencing Whether or Not Women Undergo a Pap Test**

n=603	OR	95% CI	p
Having a mammography done			
No	-	-	-
Yes	0.175	0.109-0.280	0.000
Having heard of the Pap test			
Yes	-	-	-
No	0.052	0.018-0.150	0.000
Partner's educational status			
Literate	-	-	-
Elementary school	2.715	-	0.999
High school	1.017	0.587-1.760	0.167
University	0.646	0.355-1.170	0.779
Knowing why the Pap test is done			
Yes	-	-	-
No	0.138	0.087-0.220	0.000

**Table 5. Factors Affecting Women's Undergoing Mammography Status**

n=603	OR	95% CI	p
Menopausal status			
Menopausal	-	-	-
Not menopausal	0.316	0.198-0.505	0.000
Having undergone a Pap test			
Yes	-	-	-
No	0.226	0.151-0.338	0.000
Having heard of National Cancer Screening program			
Yes	-	-	-
No	0.927	0.610-0.401	0.021
Having heard of mammography			
Yes	-	-	-
No	0.505	0.070-0.009	0.011
Knowing why mammography is done			
Yes	-	-	-
No	2.452	1.643-3.659	0.000

\*CI=Confidence Interval; OR=Odds Ratio

95%CI=2.3-63.5), and women who had heard of the FOBT were 2.5 times more likely to undergo FOBT ( $p=.010$ , 95%CI=1.2-5.1) than the other women.

## Discussion

The present study found that most women had heard of mammography (92%) or the Pap smear test (72%), while less than half had heard of FOBT (45%). The study also found that 41.8% of women knew that mammography is used in the early diagnosis of breast cancer, 39% knew that the pap test is used in the early diagnosis of cervical cancer, and 12.3% knew that FOBT is used in the early diagnosis of colorectal cancer. Dündar et al. (2012) reported that 47.1% of Turkish women had previously heard about breast cancer and that 51.4% of these women had adequate information. Nur (2010) reported that 54.2% of teachers had adequate information regarding breast cancer. Bas et al. (2012) found in a Turkish population that all participants had previously heard of colorectal cancer and more than 60% knew when and how to undergo CRC screening, together with the risks and the protective measures of colorectal cancer, in some way. These results are important as they show that having previously heard of cancer screening tests is not adequate for women to understand why the tests need to be done. When compared with colorectal cancer, the awareness regarding breast and cervical cancer screening that have been included in the national cancer screening in our country can be interpreted as one of the positive results of these activities. Colorectal cancers have been included in the national cancer screening scope in the last few years and CRC screening was only previously carried out as opportunistic screening. Similarly, there are different studies that report partially high awareness and low informational levels regarding cancer screening from various countries in the literature (McFardland 2003; Al-Dubai et al., 2011). Al-Dubai et al. (2011) found that 82.2% of Malaysian women had previously heard of breast cancer and approximately 50% had heard of mammography, but most had no information on the signs and symptoms of breast cancer. McFardland (2003) reported that women had inadequate information on the Pap smear test and cervical cancer.

According to national and international standards, screening directed towards a specific cancer type in an at-risk group requires 70% of the target population to be reached (Bonfill et al., 2001; WHO, 2007; Nelson et al., 2009; NCI, 2010). The Pap smear test has been performed in a widespread manner in various centers for many years in Turkey, but community-based cervical screening has become more popular in recent years.11 Although women aged 30 or more made up the target population within the scope of screening, women aged 65 or over with two consecutive negative test results are excluded from screening. We found in the study that one-third (32.8%) of the women over the age of 30 had undergone the Pap smear test at least once and almost all of these women (91.4%) had undergone the pap smear within the last 5 years. US data from 2008 show that the rate of having a pap test within the last year in women aged 18 or over changes according to ethnic origin but varies between 65.6% and

75.4% (NCHS, 2010). Gonzalez et al. (2012) found that 86% of Mexican American women had undergone a Pap smear test within the last three years. Cullati et al. (2009) reported that 76.6% of women in Switzerland, aged 30 years or more, had undergone a Pap smear test. Lin (2008) reported from Taiwan that 48.69% of women aged 30-75 years, and Wee et al. (2012) reported from Singapore, that 31.1% of women aged over 40 years had undergone a pap test. Other studies in Turkey reported that the rate of undergoing a Pap smear once in a lifetime was 11.8% (Erbil et al., 2011), 28.9% (Gürel et al., 2009), 51.3% (Yavan et al., 2010), and 56% (Guvenc et al., 2011). Both the results of this study and the results of other studies from Turkey reveal that the rates for cervical cancer screening in women are not at the desired level.

When we evaluate all the women included in the study, approximately one third (32.0%) had undergone mammography at least once; when we only evaluate the women aged 50 or more approximately half (48.2%) had undergone mammography at least once. Approximately two-thirds (67.5%) of the women who had undergone mammography had undergone the test in the last two years. Between 30-69% of the target population has undergone mammography in KETEMs in Turkey (OECD, 2010). The rate of undergoing a mammogram was 70.4% in Canada in 2006, 76% in England in 2007, and 67.5% in Italy in 2008.34 The Centers for Disease Control reported in 2008 that 53.7% of women aged 55-64 years and 76.9% of women aged 65-74 years in the U.S. had undergone mammography within the last two years (NCHS, 2010). Cullati et al. (2009) reported that 90.3% of women aged 50 years or more had undergone mammography in their study from Switzerland. Wee et al. (2012) found that 15.1% of women aged 40 years or more in Singapore had undergone a mammography; Lin (2008) found that 7.5% of women aged 30-75 in Taiwan had undergone a mammography. This rate is reported to be as low as 5% in underdeveloped countries (WHO, 2007; NCI, 2010). In Turkey, the rate of undergoing mammography was reported as 21.3% in Yavan et al.'s study (2010), 20% in Discigil et al.'s study (2007), and 37.5% in Nur's study (2010). The rate of undergoing mammography in this study was similar to the rates reported in other studies of Turkey.

Approximately one-tenth (12%) of the women aged 50 years or more in this study had undergone a colonoscopy or FOBT; half (50%) of these women had undergone the colonoscopy in the last 10 years, while only one subject (1.2%) had undergone a FOBT within the last year. The Centers for Disease Control and prevention (CDC) reported in 2005 that the rate of adults aged 50 or over undergoing the FOBT within the last year, or undergoing colonoscopy/sigmoidoscopy within the last ten years, is 50% (CDC, 2010). Wee et al. (2012) found that 12% of women aged 50 years or more in Singapore had had the fecal occult blood test done in the last year. However, the CDC has reported that effective tests for colorectal cancer screening are available but are still not used as required. Bas et al. (2012) found that 21.1% of the females and males in a specific group from the Turkish population had had the FOBT done. A study on physicians in Turkey found that 7% of their relatives who were aged 50 or

more and/or had a family history of cancer had undergone a CRC screening test (Altuğ et al., 2002). The current colorectal cancer screening test rates are much lower than the cervical and breast cancer screening rates, due to the fact that colorectal cancer screening is much less well known (CDC, 2010; Gonzalez et al., 2012).

In this study, we found that the Pap smear rate was higher in women who had undergone mammography, had previously heard of the Pap test, and knew why it was done. Another study found that women of a young age, those who have undergone breast cancer screening, and those who are premenopausal have higher rates of participating in cervical cancer screening (Gonzalez et al., 2012). Similarly, some studies have reported that the rate of having a Pap smear test is higher in women who have knowledge of cervical cancer and the Pap smear test (McFarland, 2003; AHS, 2010). Some studies report that women with higher educational levels and income undergo the Pap test at higher rates (Lin, 2008; AHS, 2010). However, we did not find any effect of the educational level of the women on Pap test-related behavior.

Women who were menopausal, had previously undergone the pap smear test, had previously heard of the KETEM program, had previously heard of mammography, and knew why it was done had higher rates of undergoing mammography. A report by Alberta Health Services (2010) reported higher mammography rates in women with healthy behaviors, such as not smoking and who have information on the cancer screening program. Similarly, Wee et al. (2012) found that women with a low socio-economic level had higher rates of participation in breast, cervical, and colorectal cancer screening after information was provided on the free national cancer screening program. We also found that socio-economic features such as age, education status, and employment status did not affect the undergoing mammography behavior. Similarly, Gonzalez et al. (2012) evaluated all possible influential factors together and found that factors such as age, marital status, and education level did not influence the undergoing mammography status of the women. However, some other studies report that having health insurance, income level, and education level are important socio-economic factors that influence the mammography rate (Whitman et al., 2007; Lin, 2008; AHS, 2010; Nur, 2010; Gonzalez et al., 2012; Wee, 2012).

The current study found that the employment level of women and having previously heard of the FOBT influenced their undergoing FOBT behavior. Similarly, Bas et al. (2012) found that women with high awareness of FOBT had higher rates of undergoing the test. Also, having information on cancer screening increases the rate of undergoing screening tests (CDC, 2010). Day et al. (2010) found that sending the FOBT kits given to women for colorectal cancer screening back to the clinic was not associated with the colon cancer risk perception of the women. However, having undergone a mammogram had a significant effect on the status of undergoing CRC screening. We found that neither the women's perception of being at risk for colorectal cancer or having undergone other cancer screening tests influenced the women's FOBT test behavior. Gonzales et al. (2012) reported that having

participated in other cancer screening programs, being premenopausal, and having health insurance influenced undergoing colorectal cancer screening. Courtney et al. (2012) state that having the physician recommend the screening test increases the rate of undergoing CRC screening by 23 times.

In conclusion, it was found that one-third of the women aged 30 years or more (the target population for cervical screening) underwent the Pap smear test, and approximately half of women aged 50 years or more underwent mammography and one-tenth of women aged 50 years or more underwent the FOBT. The results of this study show that the rates of women participating in national cervical, breast, and colorectal cancer screening programs are not at the desired levels. Having heard of the screening tests before, knowing why they are done, and having information on the national cancer screening program were important factors influencing the rates of women having these tests done. Limitations and recommendations, this study has several inherent limitations. The data were obtained through self-reporting and collected from the participants by their daughter or a relative/neighbor's daughter. The sample did not reflect the complete universe and the results, which therefore cannot be generalized, only provide a point of view regarding the cancer test status of a specific group of females. We queried in detail the information level of the women on the national cancer screening programs and their information sources. We therefore recommend that another study investigate in detail the ability to access the services provided within the scope of the national cancer screening programs. We also believe that written and visual campaigns to promote the service should be used to educate a larger population, thus increasing the participation rate for these programs. We evaluated the factors that influenced the rate of women undergoing cancer screening tests in the study and did not evaluate the reasons for undergoing or not undergoing the test or the health beliefs. We recommend that other studies be performed to evaluate these causes in detail.

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