

## RESEARCH ARTICLE

# Breast, Cervix and Colorectal Cancer Knowledge among Nurses in Turkey

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### Abstract

**Background:** Cancer is one of the most common causes of death in Turkey. Nurses are essential providers of preventive care for patients, especially breast, cervical and colorectal cancer screening as part of routine preventive practice. The aim of this study was to assess knowledge of these cancers among nurses in Karabuk State Hospital. **Materials and Methods:** This cross-sectional and descriptive study was performed from April 1 to July 30, 2013. The study sample consisted of 226 nurses working in Karabuk State Hospital. **Results:** Mean age of the nurses was  $32.07 \pm 8.39$ . 62.4% of nurses practiced breast self examination when they remembered it, while 39.8% of them did not take a Pap smear test since they did not think it was necessary. 64.2% of nurses would like to receive information about cancer and screening tests. Majority of them had given true answers to questions on breast, cervical and colorectal cancer. There were significant relationships between cancer knowledge scores and marital status, working experience, and level of education. **Conclusions:** Nurses possess adequate knowledge about breast cancer but they need more information on cancer risk estimation. Awareness may be raised in nurses by establishing continuing education programs regarding the risk factors, symptoms, protection methods, early diagnosis, and scanning of breast, cervix and colon cancers.

**Keywords:** Breast cancer - cervical cancer - colorectal cancer - cancer screening programs - knowledge

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### Introduction

Cancer is most important problems in the world (Tastan et al., 2013). Cancer is a leading cause of death developed countries and second leading cause of death in developing countries such as Turkey (Jemal et al., 2011). 7.6 million cancer deaths (around 13% of all deaths) are estimated in 2008, and about 70% of all cancer death occurred in low and middle income countries (WHO, 2013). Breast cancer in females and lung cancer in males are the most frequently diagnosed cancers and the leading cause of cancer death for each sex in both developed and developing countries (Jemal et al., 2011). According to the 2008 data of the Turkish Authority for Fighting Cancer, the most common cancer types among women are breast (40.7%), thyroid (16.2%), cervical (13.2%), colorectal (8.6%), followed by other types of cancer (KETEM, 2012).

The detection of early sign and symptom for cervical, breast and colorectal cancer provides early treatment and prevents disease progression (WHO, 2013). Breast cancer is the most common type of cancer in women and is an important cause of death (Ozmen, 2008; WHO, 2008). In Turkey, breast cancer incidence rates are rapidly increasing (Ozmen, 2008). The most dependable method of reducing mortality in breast cancer is early diagnosis and treatment. Early diagnosis, in turn, is only possible through informing

women on the subject and establishing early diagnosis programs (Golbassi et al., 2007; WHO, 2008). Breast self examination (BSE), clinical breast examination (CBE) and mammography (MG) are the most commonly used screening programs for breast cancer (Ozmen, 2008; Yilmaz et al., 2013). In our country, every woman between the ages of 40-69 are tested by MG every two years, and counseling is provided on BSE to every woman above the age of 20 (KETEM, 2012).

Colorectal cancer is the second most common type of cancer in worldwide and the third most common cause of cancer related deaths in women (Jemal et al., 2011). The disease can be caught in its early stages through effective personal risk evaluation and scanning programs, and has a high chance of recovery (Tastan et al., 2013). Colonoscopy, sigmoidoscopy, barium lavement, and fecal occult blood test (FOBT) are among the scanning methods used in colorectal cancer (Tinmouth et al., 2012). In our country, men and women between the ages of 50-70 are advised to be tested for FOBT every two years, and have a colonoscopy every 10 years. The scanning test is stopped for men and women over 70 whose last two FOBT tests were negative, and people with high risk are tested after the age of 40 (KETEM, 2012; Turkey incidence of cancer, 2013).

Among women in the worldwide, cancer of the cervix

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uteri is the third most common cancer (WHO, 2010; Jemal et al., 2011). Prevention and early diagnosis of cervical cancer reduces the incidence of invasive cancer and mortality (WHO, 2007). The Pap smear scanning method reduces deaths by cervical cancer by almost %80-90 (WHO, 2007; Perry, 2011; Abreu et al., 2012). In our country, women between the ages of 30-65 are suggested to have a Human Papilloma Virus (HPV) or Pap smear test every five years (KETEM, 2012; Turkey incidence of cancer, 2013).

Scanning programs are very important in the early diagnosis and prevention of cancers. In the Cancer Early Diagnosis, Scanning, and Training Centers established by the Ministry of Health Authority for Fighting Cancer in our country, scans including the Pap smear test, mammography, and colonoscopy are performed (KETEM, 2012). In Turkey, to decrease of cancer as primary prevention and early detection of cancer and reduction mortality are among target (Karabulutlu, 2013). In the successful implementation of cancer screening programs, health workers especially nurses may play an important role (Fotadar et al., 2013; Özkahraman and Yildirim, 2013; Yilmaz et al., 2013). Therefore, nurses must be aware of current regular cancer screening program. The study was performed in order to evaluate the knowledge of nurses had on cancers appropriate for early detection that have scanning programs, such as breast, cervix, and colorectal cancers, and the knowledge they had on the application of those tests.

## Materials and Methods

### Study design

The study was conducted as a descriptive cross-sectional design.

### Setting and sample

The study was carried out at Karabuk State Hospital which is located at the Western Black Sea Region of Turkey from April 1 to July 30, 2013. Two hundred forty-six nurses work at the Karabuk State Hospital. 20 male nurses were excluded in the study. Hence, the study was conducted with the participation of 226 nurses.

### Data collection

Data for the study was collected by researcher in face-to-face interviews. Nurses who agreed to participate were given a two page self-administered questionnaire. The questionnaire, contains of 44 items, was developed by researchers after a review of the literature (WHO, 2010; Ertem, 2009; Ozmen 2011; Karabulutlu, 2013; Tastan et al., 2013). The questionnaire was divided into three parts.

The first part included 14 questions about socio-demographic information such as; questions regarding title, educational level, work experience, marital status, age of marriage, number of children, age of first menstruation, alcohol and tobacco consumption, exercise, dietary habits and history of cancer in the family.

In part two 10 questions were included; the nurses status in applying scans for breast, cervix, and colorectal cancers, their self-perception on cancer risk, and willingness to

receive training.

The last part 20 questions were included; evaluating the knowledge of the nurses on breast, cervix, and colorectal cancers. The response categories for this section on knowledge were in a yes/ no/I don't know format. Each correct answer was 5 points, every wrong answer was 0 points, and the questionnaire was calculated from a total of 100 points.

### Statistical analysis

Statistical analysis of the data was performed frequency; means, standard deviations and percentage were calculated for all responses in the survey. Data analysis was performed using the student T tests and variance analysis (ANOVA). The Bonferroni test was used in order to determine the group from which the results that turned up meaningful in the variance analysis arose from. Results had 95% confidence interval with p<0.05, indicating statistical significance.

### Ethical considerations

The permission from the institutional ethical committee was taken before starting the study. The researchers followed the principles of the Declaration of Helsinki and received oral consent of participants. Participation in the survey was voluntary and nurses were free to withdraw from the study at any time. Nurses were exposed to

**Table 1. Characteristics of Nurses**

Variable	N	%
Age (mean±SD)	32.07±8.39	(min= 17 max= 55)
Education		
High school	56	24.8
Associate degree	101	44.7
Bachelors and masters	69	30.5
Task type		
Clinical nurse	194	85.8
Nurse managers	32	14.2
Work experience		
5 years and under	72	31.8
6-15 years	77	34.1
16 years and over	77	34.1
Marital status		
Married	147	65.0
Single	79	35.0
Age of marriage (mean±SD)	22.57±2.99	(min=18 max=40)
Age of first pregnancy (mean±SD)	22.23±3.25	(min=19, max=37)
Number of children		
None	12	5.3
Less than 3	137	60.6
4 and above	7	3.1
Smoking		
Yes	78	34.5
No	148	65.5
Alcohol use		
Yes	10	4.4
No	216	95.6
Exercise		
Never	42	18.6
Sometimes	156	69.0
One a week	23	10.2
Three times per week	5	2.2
Nutrition		
Lots of fruits and vegetables	116	51.3
Low-fiber, high-protein and fat	110	48.7
Having a family member with any cancer		
Yes	77	34.1
No	149	65.9
If yes, (n=77) cancer type		
Breast cancer	24	31.2
Lung cancer	19	15.6
Colorectal cancer	12	24.7
Cervical and ovarian cancer	6	7.8
Stomach cancer	6	7.8
Bladder cancer	8	10.3
Leukemia	2	2.6

minimal, if any, risk during participation. Each interview took approximately 20 minutes and nurses received no benefits for their participation. Interviews were anonymous and data remained confidential throughout the study.

## Results

### Characteristics of nurses

Table 1 shows the characteristics of the nurses. The mean age of the nurses was  $32.07 \pm 8.39$ . 65% (n=147) of the nurses were married and 44.7% (n=101) had graduated associate degree. Among the nurses, 85.8% (n=194) of them were working as clinic nurses and 34.1% (n=77) were working for 16 years or over. 65.5% (n=148) of the nurses did not smoke and 95.6% (n=216) did not consume alcohol. 69% (n=156) of the nurses reported that they sometimes exercised and 51.3% (n=116) stated that they consumed large amounts of fruits and vegetables. Among the nurses who had a familial history of cancer (n=77), 31.2% (n=24) reported that breast cancer was the most frequent cancer type in family members.

### The risk perception and behavior of nurses for breast, cervix, and colorectal cancers screening program

Among the nurses, 40.7% (n=92) of them thought that they weren't under risk for breast cancer, 62.4% (n=141) were practice BSE when they remembered about it and 46% (n=68) stated that they did not receive mammography because they were not in the relevant age group. 46% (n=104) weren't know whether they are under risk for cervical cancer, 65% (n=147) weren't

undergo gynecological examination unless they have a disease symptom, and 39.8% (n=90) weren't take a Pap smear test since they did not think it was necessary. 40.3% (n=91) of the nurses weren't know if they were under risk for colorectal cancer. In addition, 64.2% (n=145) of the nurses would like to receive information about cancer and screening tests (Table 2).

### Nurses' knowledge about breast, cervical, and colorectal cancer

It has been found that a clear majority of the nurses had given true answers to questions on breast, cervical and colorectal cancers. In general, percentages of "correct" responses for all the knowledge items are higher than "don't know" answers (Table 3). The majority of nurses gave the response "I don't know" to questions regarding the risk factors of cervical cancer and screening methods.

Table 4 shows comparison of the three cancers knowledge scores according to some characteristics of nurses. The differences between marital status, work experience, education level in relation to knowledge scores were found significant ( $p < 0.001$ ). Knowledge score was significantly lower for married nurses ( $56.13 \pm 18.36$ ) compared to single nurses ( $66.22 \pm 17.26$ ). The knowledge scores of the nurses who worked for less than five years ( $57.77 \pm 2.28$ ) were lower than those who worked for 16 years and over ( $66.88 \pm 1.85$ ). The knowledge scores of nurses who graduated from high school ( $55.08 \pm 2.84$ ) were lower than those who had associate ( $62.75 \pm 2.01$ ) and bachelors/master's degree ( $66.88 \pm 1.60$ ). There was no significant difference in breast, cervical, and colorectal cancer knowledge scores according to nurses' familial

**Table 2. The Risk Perception and Behavior of Nurses for Breast, Cervix, and Colorectal Cancers Screening Program**

Answers given related with Breast, Cervical and colorectal cancers screening		n	%
Does she perceive herself at risk for breast cancer?	Yes	56	24.8
	No	92	40.7
	No idea	78	34.5
Status of practicing breast self-examination (BSE)	I do not practice BSE	43	19.0
	I always practice BSE after taking a shower	19	8.4
	I practice BSE monthly	23	10.2
	I practice BSE when I remember to	141	62.4
Status of receiving mammography	I never received mammography before	36	15.9
	I did not receive mammography because I am not in the relevant age group	68	46.0
	I did not receive mammography because I did not find it necessary	21	9.3
	I did not receive mammography because I did not have any complaints	96	42.5
	I did not receive mammography due to reasons such as fear of pain, radiation, and shame	5	2.3
Does she perceive herself at risk for cervical cancer?	Yes	29	12.8
	No	93	41.2
	I don't know	104	46.0
Status of undergoing regular gynecological examination	I receive regular gynecological examinations	31	13.7
	I do not receive regular gynecological examinations unless I have a disease symptom.	147	65.0
	I cannot receive gynecological examination because I am embarrassed	48	21.3
Status of taking Pap smear test	I take the test regularly	29	12.8
	I did not take the test because I did not find it necessary	90	39.8
	I did not take it since I am single	73	32.4
	I did not take it because I feared it would be a painful procedure	12	5.3
	I did not take the test because I feared the possibility of receiving bad results	10	4.4
	I did not take the test because I was embarrassed of the procedure	12	5.3
Does she perceive herself at risk for colorectal cancer?	Yes	80	35.4
	No	55	24.3
	I don't know	91	40.3
Would you like to receive information on cancer and screening tests?	Yes	145	64.2
	No	81	35.8

**Table 3. Nurses' Knowledge on Breast, Cervical, and Colorectal Cancers**

Answers given related with cancer	True n (%)	False n (%)	I don't know n (%)
<b>Breast cancer</b>			
-Mammography, clinical breast examination (CBE), and breast self-examination (BSE) is very important in the early diagnosis of breast cancer	212 (93.8)	9 (4.0)	5 (2.2)
-BSE should be practiced every month after the age 20. CBE should be practiced by a doctor once in 2-3 years in women aged between 20-40 and every year in women older than 40 years.	184 (81.4)	31 (13.7)	11 (4.9)
-Women who do not have a risk factor for breast cancer should start receiving mammography for screening purposes at the age of 40. Mammography should be received once every two years until the age of 50 and should be received once a year after the age of 50.	166 (73.4)	30 (13.3)	30 (13.3)
-A stressful life and fat rich nutrition are risk factors for breast cancer	205 (90.7)	6 (2.7)	15 (6.6)
<b>Cervical cancer</b>			
-Cervical cancer is observed less frequently between the ages 30-55	42 (18.6)	100 (44.2)	84 (37.2)
-Pap smear test cannot detect cervical cancer at 90-95% accuracy before clinical onset	59 (36.1)	87 (38.5)	80 (35.4)
-Screening program for cervical cancer should start at the age of 30. Until the age of 60, Pap smear test is performed every two years. At the age of 65, Pap smear test is performed every two years. People whose last two tests were negative are excluded from the program.	75 (33.2)	66 (29.2)	85 (37.6)
-Smoking is not a risk factor for cervical cancer	26 (11.5)	158 (69.9)	42 (18.6)
-Gynecological examination is received only if the person has a complaint.	21 (9.3)	191 (84.5)	14 (6.2)
-Experiencing more than 3 pregnancies, having the first pregnancy before the age of 20, and giving birth for the first time at young age are not risk factors for cervical cancer.	61 (27.0)	103 (45.6)	62 (27.4)
-Having the first sexual experience under the age of 18 is a risk factor for cervical cancer.	129 (57.1)	15 (6.6)	82 (36.3)
-Irregular, non-menstruation related bleeding and discharge can be an early symptom of cervical cancer especially if it occurs after sexual intercourse.	175 (77.4)	6 (2.7)	45 (19.9)
-Maintaining a vitamin A, C and folic acid rich diet is not protective against cervical cancer	56 (24.8)	80 (35.4)	90 (39.8)
-Monogamous life style is important for protection from cervical cancer	184 (81.4)	9 (4.0)	33 (14.6)
-Women who are sexually active and aged 18 or more should be followed up with annual Pap smear tests	142 (62.8)	35 (15.5)	49 (21.7)
-Current HPV vaccines protect women 100% against HPV 16 and 18, which cause cervical cancer.	70(31.0)	42(18.6)	114 (50.4)
<b>Colorectal cancer</b>			
-FOBT is a screening method for colon cancer. If the FOBT test is (+), it is not necessary to receive colonoscopy.	51 (22.6)	132 (58.4)	43 (19.0)
-Blood in the rectum or bleeding after defecation, unexplainable fatigue, anemia, and stomach ache can be symptoms of colorectal cancer	173 (76.5)	23 (41.2)	30 (13.3)
-Colon cancer cannot be treated very efficiently even if it is diagnosed at an early stage	80 (35.4)	93 (41.1)	53 (23.5)
-Being aged 50 years or more, a fat rich nutrition, and low fiber intake are risk factors for colon cancer.	175 (77.4)	13 (5.8)	38 (16.8)

**Table 4. Comparison of Knowledge Scores According to Some Characteristics of Nurses**

Variables	N	M±SD	t/ F	p
<b>Marital status</b>				
Married	79	56.13±18.36	t=-4.095	0.000*
Single	147	66.22±17.26		
<b>Existence of any cancer in family member</b>				
Yes	77	64.15±18.32	t=-0.861	0.390*
No	149	61.94±18.24		
<b>Willingness to receive education</b>				
Yes	145	62.03±18.52	t=-0.731	0.465*
No	81	63.88±17.83		
<b>Work experience</b>				
5 years and under	72	57.77±2.28	F=4.812	0.009**
6-15 years	77	63.11±2.07		
16 years and over	77	66.88±1.85		
<b>Education</b>				
High school	56	55.08 ±2.84	F=4.812	0.000**
Associate degree	69	62.75±2.01		
Bachelors and masters	101	66.88±1.60		
<b>Risk perception regarding breast cancer</b>				
Yes	56	62.32±2.53	F=1.107	0.332**
No	92	64.72±1.73		
No idea	78	60.57±2.21		
<b>Risk perception regarding cervical cancer</b>				
Yes	29	64.31±3.22	F=0.504	0.605**
No	93	63.65±1.74		
I don't know	104	61.39±1.93		
<b>Risk perception regarding colorectal cancer</b>				
Yes	80	64.18±2.17	F=0.410	0.664**
No	55	61.81±2.47		
I don't know	91	61.39±1.80		

\*Student T test, \*\* Variance Analysis (ANOVA Tests)

history of cancer, willingness to receive education, and risk perception regarding breast, cervical, and colorectal cancer.

## Discussion

This study was conducted to evaluate the current information about the level of knowledge for breast, cervical and colorectal cancer screening among Turkish nurses. Cancer is a preventable disease thus it is important to determine of its precancerous form by screening at an early stage (WHO, 2010). Determining nurses' level of knowledge about cancer screening programs is very important for cancer protection. Approximately one-third of the nurses who participated in our study had a family member diagnosed with cancer. According to Turkish cancer statistics, breast cancer is the most prevalent cancer type in women (Eser et al., 2010). Less than half of the nurses who participated in our study did not think they were under risk for breast cancer. However, every woman is at risk for breast cancer and breast cancer incidence is increasing in Turkey and in the World. The early detection of the breast cancer by screening may reduce mortality (Ozmen, 2011). BSE is the most effective way to recognize the early signs and symptoms. The majority of the nurses practiced BSE when they remembered to, whereas a few are doing it regularly. Among the nurses, 46% did not receive MG because they were not in the relevant age group. In the literature reported that 80% of the masses



in breasts were found during BSE (Yilmaz et al., 2013). Fotedar et al. (2013) stated that 54% of the nurses carried out of BSE practice at least once every month. Odusanya and Tayo (2001) determined that the majority of nurses practices BSE and that only a small number of nurses received MG in the last 3 years. Gencturk (2013) reported that 19.7% of health professionals practiced BSE regularly and that 1.3% received MG once a year. In this study, similar results were found. Although the result of the study are similar to other studies, the fact that the rates of having a MG was low in most of the nurses may be explained by the starting age suggested for MG being lower than 40 in the study group. Additionally, the fact that nurses didn't have scan tests for breast cancer despite almost half of the nurses perceiving themselves as under risk for breast cancer is worrisome.

Colorectal cancers can be scanned just like breast and cervix cancers (WHO, 2007). The main goal of screening for colorectal cancer is to detect adenomatous polyps. Colorectal cancer screening has been shown to decrease the incidence and mortality (Al-Naggar and Bobryshev, 2013; Hwang, 2013). Approximately one third of them think they are not at risk for colorectal cancer, their age is younger can be the cause of this idea. Colorectal cancer incidence rates are rapidly increasing some factors such as; changes in dietary patterns, obesity, and an increased prevalence of smoking (Jemal et al., 2011). Although there were no studies evaluating the colorectal cancer knowledge of nurses in our country, health personnel are aware of the risk factors for colorectal cancer.

Cervical cancer has an important among women's cancer (Karabulutlu, 2013). In the study, almost half of the nurses stated that they didn't know if they were under risk of cervical cancer. However, 65% of nurses are married and they are at risk for cervical cancer. Sexually transmitted Human Papilloma Virus (HPV) is one of the factor causing cervical cancer (Bekar et al., 2013). In current study, the majority of the group reported that they don't find it necessary and 32.4% of them stated they are single. The American Cancer Society recommends all women should begin cervical cancer testing at age 21, women age 21-29 should have a Pap test every 3 years. Beginning at age 30, the preferred way to screening is with a Pap test combined with an HPV test every 5 years (American Cancer Society, 2013). Pap smear is the appropriate screening test for detection premalignant lesion of cervical cancer (Thippeveeranna et al., 2013). The number of participants who had a Pap smear test regularly was also low. Most of them stated that they wouldn't go for a gynecological examination unless there was a symptom for a specific disease. In similar studies, nurses were found to shy from gynecological examination, and either not have Pap smear tests unless there is a symptom present, or have them regularly but less often than suggested (Udigwe, 2006; Nwanko et al., 2010; Awodele et al., 2011; Singh et al., 2012). Thippeveeranna et al. (2013) determined that nurses' knowledge of Pap smear test as a screening procedure for cervical cancer is high, but practice is low and the most common reason for avoiding a Pap smear test was lack of

any symptoms (58.4%), fear of vaginal examination was 20.5%. It is a point of importance that nurses, who have a goal of preventing disease and protecting, sustaining, and improving the health of individuals, families, and the society, should have cervical cancer scanning tests regularly themselves.

In cancer, alongside scanning programs, it is important to raise awareness regarding risk factors and possible scanning methods (WHO, 2013). In current study, majority of nurses were aware of BSE, CBE and mammography as a screening method for early breast cancer. Nurses are the most effective people for doing these. It is important for studies evaluating the knowledge of nurses on cancer types in our country to be performed (Yaren et al., 2008; Ertem, 2009; Gencturk, 2013). Ertem (2009) found that 60.8% of the nurses thought that nursing was very important in preventing cancer. Other studies found that the nurses have good level of knowledge about breast cancer and its screening (Fotedar et al., 2013; Lemlem et al., 2013). Although the answers nurses gave in our study regarding the methods of scanning for breast, cervix, and colorectal cancers, there were answers signaling lack of knowledge to questions regarding cervical cancer, which was interesting. In similar study, the knowledge of nurses on breast cancer was found to be on a more competent level when compared to cervix cancers (Yaren et al., 2008). There were no studies evaluating the level of knowledge of nurses in our country regarding colorectal cancer. In order to increase the knowledge nurses have on cancer and their awareness on cancer scanning methods, we think that these topics should be covered in continuing education programs.

In our study, nurses' marital status, work experience, and educational status significantly related to cancer information scores. On the other hand, there were no significant relationships between familial history of cancer, willingness to receive education, and risk perception regarding breast, cervical, and colorectal cancer and knowledge scores. Lemlem et al. (2013) found that knowledge of breast cancer was found to be significantly associated with family history of respondents. Kozłowska et al. (2011) found a significant relationship between educational status and knowledge scores. Nwanko (2010) also determined a significant relationship between nurses' work experience and knowledge scores. In our study, the knowledge scores of the nurses who had a bachelor's degree were found to be higher, which was the expected result. Increased work duration leads to an increase in experience as well as theoretical knowledge. Therefore, this was not a surprising result.

In conclusion, it is recommended to detect cancer at early stages and to conduct screening programs in order to decrease the incidence of invasive cancer and mortality. It is essential for nurses to recognize the importance of cancer screening programs, in order to protect their own and other individuals' health. Nurses play an active role in health education and they can be a positive role model in the society. The increase in nurses' self-awareness would, in turn, increase society's awareness. Special education about cancer screening programs may be useful for nurses.

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