

Original Article

## Evaluation of the Nutritional and Physical Activity Habits towards Protection from Cancer of Nurses in a Turkish Hospital

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### Abstract

**Background:** In cancer prevention by health improvement and encouraging positive health behavior in individuals cancer prevention, important responsibilities fall on nurses, who may work in any field of health services. Thus it is important for nurses to adopt healthy dietary and physical activity habits themselves.

**Objectives:** The goal of the study is to determine the nutritional and physical activity habits of nurses in Turkey towards protection from cancer, and to show related factors.

**Methods:** This descriptive and cross sectional study was performed. A total of 342 nurses were included. Data was collected using a sociodemographic questionnaire and a questionnaire regarding the nutritional and physical activity habits of nurses towards protection from cancer. Data were evaluated by descriptive statistics, independent group t test, one-way ANOVA, and Perason correlation analysis.

**Results:** The nutritional and physical activity scores average of the nurses were found to be average. Water consumption, calcium containing product consumption, and storage of foodstuff subgroup score averages of the nurses were found to be better; whereas the grain consumption, alcohol consumption, and weight control subgroup scores were found to be worse. It was found that nutritional habits were affected by age, gender, duration of working, educational status, the amount of alcohol consumed after starting to work in the occupation, and regular physical activity habits ( $p<0.01$ ,  $p<0.05$ ). Physical activity habits were found to be affected by BMI, the daily amount of cigarettes consumed after starting to work, alcohol consumption status, the presence of someone with cancer in the family, and fast food consumption status ( $p<0.01$ ,  $p<0.05$ ).

**Conclusion:** According to the findings, it was determined that the nutritional and physical activity habits of nurses towards protection from cancer were not on the desired level and that certain socio demographical and occupational characteristics affect nutritional and physical activity habits negatively.

**Keywords:** Cancer, habits, nurse, nutrition, physical activity, protection.

### Introduction

Cancer is a disease defined as the cells in the organism multiplying and spreading

uncontrolled, and is among the foremost causes of morbidity and mortality in the world. According to data from 2012, 14.1 million individuals in the world were diagnosed with

cancer and 8.2 million individuals lost their lives because of cancer (Torre et al., 2015). The cancer incidence in Turkey is similar to the world and the developing countries of the world, and the male-female total incidence of cancer in Turkey is 228.6 in a hundred thousand. A 13.5 in a hundred thousand increase in cancer incidence from 2010 to 2011 can be seen in Turkey (Sencan & Keskinilic, 2015). The most common types of cancer worldwide are lung, liver, stomach, colorectal, breast, and esophageal cancers, respectively (American Cancer Society, 2014; WHO, 2015). In Turkey, breast, thyroid, and colorectal cancers in women, and lung, prostate, and colorectal cancers are seen most common (Sencan & Keskinilic, 2015).

Since cancer develops for 5-10% genetic and 90-95% environmental causes (Ozkan & Celik, 2009), it is considered a preventable disease (American Cancer Society, 2014). In literature age, tobacco and alcohol use, ionized radiation, sun rays, some chemicals, some hormones, insufficient and unbalanced nutrition, lack of physical activity, and obesity are listed as risk factors for cancer development (Bayrak et al, 2010; Kushi et al., 2012). WHO stresses that one third of cancer related deaths develop because of five behavioral factors including dietary habits and physical activity habits. These factors are high body mass index (BMI), low fruit and vegetable consumption, lack of physical activity, tobacco use, and alcohol use (WHO, 2015).

A healthy and balanced diet is very important for the protection of health and the continuation of a healthy lifestyle. Nutrition should not be perceived as only the foodstuff consumed. Dietary habits that are performed insufficiently, excessively, or just wrong and foodstuff being stored, prepared or cooked wrong may directly or indirectly pave the way for the development of cancer, as may foodstuff containing carcinogenic materials (Uauy & Solomons, 2005). Inappropriate nutritional habits cause weight increase and obesity (Ozkan & Celik, 2009). Various epidemiologic studies have shown that obesity, which increases mortality and morbidity rates, causes an increase in breast, endometrium, esophagus, stomach, colon/rectum, gall bladder, pancreas, kidney, and liver cancers (Basen-Engquist & Chang, 2011; Kushi, et al, 2012; Williams, 2013). The rate of cancers related to obesity is stated to be 12% in the literature

(Popkin et al., 2006). Additionally studies have shown insufficient calcium intake (Park et al., 2009), excessive red meat and processed red meat consumption (Wang, et al, 2015), excessive fat intake (Sieri et al., 2008), and salted canned foodstuff consumption (Lin et al., 2014) to increase cancer development. Thus, the adoption of healthy nutritional habits is important in preventing cancer development related to unhealthy and excessive diets.

One of the factors playing an important role in individuals maintaining physical, mental, and social health and wellbeing is regular exercise (Kushi et al., 2012). A habit of regular moderate physical exercise is an important protective factor in the prevention of obesity, osteoporosis, diabetes, hypertension, and some cancers (Rogers et al., 2008). In previous studies, it was determined that physical activity reduces the risk of certain cancers including breast, colon, prostate, and endometrium cancers (Davies, Batehup, & Thomas, 2011; Kushi et al., 2012). Regular physical activity can reduce the risk of colorectal cancer by 40-50% through mechanisms like its effect on prostaglandins, the increase in the speed with which foodstuff passes the intestines, and the increase in antioxidant levels. Additionally, through its strengthening function on the immune system and its positive effects on insulin levels, it stated to decrease the risk of breast cancer by 30-40% (Kruk, 2009).

Protection from cancer is the most important method of fighting cancer from a public health point of view. In cancer prevention by health improvement and encouraging positive health behavior in individuals cancer prevention, important responsibilities fall on nurses, who may work in any field of health services (McIlfratrick et al., 2014). In this context, nurses should first show healthy behavior for protection from cancer themselves, and act as a role model for future nurses and individuals who take health services. When the literature is examined, it can be seen that studies determining the nutritional and physical activity behavior of nurses for protection from cancer and examining related factors are insufficient. This study will make learning the knowledge and behavior of nurses regarding protection from cancer and determining their educational needs regarding controlling the factors affecting their cancer protection habits possible.

## Objectives

This study was performed in order to determine the nutritional and physical activity habits of nurses a Turkish hospital towards protection from cancer, and to show related factors.

## Materials and Methods

### Setting

This descriptive and cross sectional study was performed in Dr. Lutfi Kirdar Education and Research Hospital tied to the Ministry of Health between September 1<sup>st</sup> and December 2<sup>nd</sup> 2015.

### Samples

The universe of the study consisted of 582 nurses working in the aforementioned institution. We were not applied the sampling method, and strived to reach all nurses. Three hundred forty two nurses, who weren't cancer patients and were working in the institution in the dates when the study was performed, agreed to participate, and who filled out the data forms completely were included in the study. Ratio of the attendance in this study was calculated 58.7%.

### Data collection tools

Data was collected using a socio demographic questionnaire and a questionnaire regarding the nutritional and physical activity habits of nurses towards protection from cancer.

The sociodemographic questionnaire consisted of 30 questions including: age, gender, marital status, level of education, years employed in nursing, workplace, worktype, the state of being satisfied with the profession, size, weight, waist and hip circumference, history of cancer in the family, waist circumference, general health perception, smoking and alcohol, an increase in the daily amount of cigarettes and alcohol consumed after they started, frequently being on a diet, regular exercise, changes on eating habits and physical activity after starting work as nurse.

The nutrition and physical activity habits towards protection from cancer determination questionnaire is a form developed by the researchers according to literature taking national and international studies into consideration (Bayrak et al., 2010; Davies et al., 2011; Kushi et al., 2012; Nogay et al., 2012; Ozkan & Celik, 2009; Thomson et al., 2014; World Cancer Research Fund / American Institute for Cancer

Research, 2007), and questions the nutritional and physical activity habits of nurses. There are 35 questions evaluating nutritional habits and 10 questions evaluating physical activity habits in the questionnaire. The nutritional habits part of the questionnaire includes 11 sub dimensions, namely fruit and vegetable consumption (4 items), grain consumption (4 items), consumption of foodstuff with calcium (1 item), red meat consumption (6 items), fat consumption (2 items), consumption of foodstuff exceeding energy (4 items), weight control (3 items), storage of foodstuff (5 items), salt consumption (3 items), water consumption (2 items), and alcohol consumption (1 item). The physical activity habits part of the questionnaire includes habits such as using the stairs instead of elevators, walking at least 10.000 steps a day, vehicle choice in short distances, watching TV or using the computer for less than 2 hours a day, not sitting more than 4 hours a day, having moderate physical activity at least 5 days a week and 30 minutes a day, and going to the gym regularly. The scoring of the questionnaire is in the form of "always (1), sometimes (2), and never (3)". The scores from nutritional habits changed between 35 and 105, while scores from physical activity habits changed between 10 and 30. A high score in any habit described bad or unhealthy nutritional or physical activity habits.

Content validity was used for ensuring the validity of the instruments, in which the opinions of one dietician, one oncologist, and three nurse academicians were obtained with regards to content validity.

The validity and comprehensibility of the instruments was tested in a pilot study with a sample group of 20 nurses. During the pilot study, content validity of the form was investigated, and similar questions were excluded. In addition, the instruments was administered to the nurses three weeks later, and the test-retest reliability of the measure was checked.

The Cronbach alpha value of the questionnaire was found to be 0.81 (moderate=0.60-0.90). All ambiguities were corrected before the administration of the instruments to the final sample. The evaluation of their results indicated no problems in terms of the clarity and the implementation of the form.

## Data Collection

Data were collected through face-to-face nurses by the researchers. The sociodemographic questionnaire and the nutrition and physical activity habits towards protection from cancer determination questionnaire were completed together with the researchers and those who accepted to participate in the study through face-to-face interviews. It took the nurses about 20–30 min to fill in the questionnaires.

## Data Analysis

Data was evaluated using the SPSS 16.0 package program. The socio demographical characteristics of the nurses and their nutritional and physical activity habits regarding protection from cancer were evaluated using descriptive statistical methods (percentages, mean values, standard deviation). In the comparison of socio demographical characteristics of the nurses and their nutritional and physical activity habits regarding protection from cancer ANOVA, independent group t tests, and the Pearson correlation analysis were used. Meaningfulness was accepted to be  $p < 0.05$  in the statistical evaluation of the data.

## Ethical Approval

Written ethical board permission from the hospital was taken for the study (Permission no: 2014-514/4311) Additional written permission was taken from the hospital. The researchers informed the nurses on the goal and importance of the study. Also, it was stated that no private information would be disclosed someone else besides the researcher, since confidentiality of patients and their privacy were respected by the researcher. Informed consent was taken from the nurses who agreed to participate in the study.

## Results

The sociodemographic and occupational characteristics of the nurses were given in Table 1. It was found that 53.2% of the nurses stated that there was a change for the worse in their dietary habits after they started working as nurses, while 38.9% stated there was such a negative change in their physical activity habits.

The scores pertaining to the nutritional and physical activity habits of the nurses regarding protection from cancer were given in Table 2. The average nutritional habits score of the nurses

was  $60.57 \pm 8.09$ , and they can thus be said to have average healthy dietary habits. The water consumption ( $2.71 \pm 0.86$ ), calcium containing product consumption ( $1.33 \pm 0.51$ ), and storage of foodstuff ( $6.80 \pm 1.85$ ) sub group score averages were found to be better compared to other sub groups; whereas the grain consumption ( $7.76 \pm 1.41$ ), alcohol consumption ( $1.91 \pm 0.90$ ), and weight control ( $5.70 \pm 1.53$ ) sub group scores were found to be worse than the other nutritional sub groups. The physical activity score average of the nurses ( $20.33 \pm 3.07$ ) was found to be average.

The sociodemographic and occupational characteristics of the nurses that affect their nutritional and physical activity habits regarding protection from cancer were given in Table 3. In the study, it was determined that there was a negative relationship between the dietary habits score average and age and duration of working as a nurse ( $p < 0.01$  and  $p < 0.05$ ), and that dietary habits improve with increasing age and duration of employment. A statistically significant ( $p < 0.01$  and  $p < 0.05$ ) relationship was found between dietary habits regarding protection from cancer and gender, educational level, increase in alcohol consumption after starting to work as a nurse, frequent dieting, fast food consumption, and regular exercise. The dietary habits regarding protection from cancer of male, high school graduate nurses who increased the amount of alcohol consumed after starting to work as a nurse, who don't regularly diet or exercise but regularly consume fast food were found to be on an undesired level. A statistically significant ( $p < 0.01$  and  $p < 0.05$ ) relationship was found between dietary and physical activity habits regarding protection from cancer and BMI, increase in the amount of cigarettes smoked after starting to work as a nurse, alcohol consumption, the presence of someone with cancer in the family, fast food consumption, regular exercise, and changes in diet and physical activity after starting to work as a nurse was found. The dietary habits regarding protection from cancer of obese, high school graduate nurses who increased the amount of tobacco consumed after starting to work as a nurse, who don't have someone with cancer in their family, who didn't have changes in their dietary and physical activity habits after starting to work as a nurse, who don't regularly exercise but regularly consume fast food were found to be on an undesired level.

**Table 1. The sociodemographic and occupational characteristics of the nurses (n=342)**

Variables	Mean±SD	Range	Variables	n	%
Age (year)	33.56±8.10	17-56	Smoking status		
Years employed in nursing	12.46±8.69	1-36	Yes	98	28.7
Waist circumference (cm)	76.71±15.2	51-130	Forwent	43	12.6
Hip circumference (cm)	97.69±11.3	76-140	Never used	201	58.8
	<b>n</b>	<b>%</b>	An increase in the daily amount of cigarettes consumed after they started working as		
Gender			Yes	79	80.6
Female	306	89.5	No	19	19.4
Male	36	10.5	Alcohol consumption status		
Marital status			Yes	76	22.2
Married	217	63.5	Forwent	23	6.7
Single	125	36.5	Never used	243	71.1
Level of education			An increase in the daily amount of alcohol consumed after they started working as		
Health vocational	59	17.3	Yes	15	19.7
Associate's degree	68	19.9	No	61	80.3
Bachelor's	157	45.9	Frequently being on a diet		
Postgraduate	58	17.0	Yes	59	17.3
Workplace			No	283	82.7
Internal diseases	166	48.5	Fast food consumption		
Surgical clinics	124	36.3	Yes	184	53.8
Emergency	52	15.2	No	158	46.2
Worktype			Regular exercise (at least 3 times and 30 minutes a week)		
Day and night	179	52.3	Yes	85	24.9
Always day	139	40.6	No	257	75.1
Always night	24	7.0	Changes on eating habits after starting work as nurse		
The state of being satisfied with the profession			Yes-Positively	56	16.4
Very satisfied	35	10.2	Yes-Negatively	182	53.2
Partially satisfied	247	72.2	No	104	30.4
Not satisfied	60	17.5	Changes on physical activity habits after starting work as nurse		
General health perception			Yes-Positively	41	12.0
Good	200	58.5	Yes-Negatively	133	38.9
Moderate	133	38.9	No	168	49.1
Bad	9	2.6			
Body Mass Index (kg/m <sup>2</sup> )					
<18.5	20	5.8			
18.5-24.9	202	59.1			
25-29.9	86	25.1			
≥30	34	9.9			

**Table 2. The nutritional and physical activity habits of the nurses regarding protection from cancer**

<b>Habits contributing to protection from cancer</b>	<b>Range of obtainable scores (min-max)</b>	<b>Range of scores obtained (min-max)</b>	<b>Mean±SD</b>
Dietary habits total score	35-105	39-81	60.57±8.09
Fruit and vegetable consumption	4-12	4-12	7.08±1.42
Grain consumption	4-12	4-11	7.76±1.41
Consumption of foodstuff with calcium	1-3	1-3	1.33±0.51
Red meat consumption	6-18	6-18	11.19±1.68
Fat consumption	2-6	2-6	3.29±1.08
Consumption of foodstuff exceeding energy	4-12	4-12	7.17±1.96
Weight management	3-9	3-9	5.70±1.53
Storage of foodstuff	5-15	5-15	6.80±1.85
Salt consumption	3-9	3-9	5.54±1.61
Water consumption	2-6	2-5	2.71±0.86
Alcohol consumption	1-3	1-3	1.91±0.90
Physical activity habits total score	10-30	12-28	20.33±3.07

**Table 3. The nutritional and physical activity habits of the nurses regarding protection from cancer and related factors**

Variables	Nutritional habits			Physical activity habits		
		r	p		r	p
Age (year)		-0.148	0.006**		-0.086	0.111
Years employed in nursing (years)		-0.139	0.010*		-0.076	0.163
Waist circumference (cm)		0.009	0.903		0.059	0.409
Hip circumference (cm)		-0.112	0.131		0.052	0.488
	<b>Mean±SD</b>	<b>F/t test</b>	<b>p</b>	<b>Mean±SD</b>	<b>F/t test</b>	<b>p</b>
Gender						
Female	60.05±8.07	-3.670	0.000**	20.27±3.10	-1.027	0.305
Male	65.19±6.69			20.83±2.76		
Marital status						
Married	60.33±7.84	-0.784	0.434	20.27±3.15	-0.474	0.636
Single	61.04±8.51			20.44±2.93		
Level of education						
Health vocational school	62.71±8.26	2.972	0.032*	20.54±3.14	0.143	0.934
Associate's degree	60.50±7.09			20.19±2.87		
Bachelor's	60.69±8.01			20.31±3.05		
Postgraduate	58.29±8.78			20.36±3.32		
Body Mass Index (kg/m <sup>2</sup> )						
<18.5	64.20±7.58	1.625	0.183	20.40±2.70	3.017	0.030*
18.5-24.9	60.13±7.98			20.50±2.99		
25-29.9	60.96±8.63			19.56±3.21		
≥30	60.26±7.31			21.23±3.04		
An increase in the daily amount of cigarettes consumed after they started working as nurses						
Yes	61.28±2.89	1.555	0.123	21.12±2.89	2.965	0.004**
No	58.50±8.69			19.08±3.17		
Alcohol consumption status						
Yes	60.93±8.56	1.699	0.184	19.85±3.02	3.865	0.022*
Forwent	63.39±7.97			21.86±2.82		
Never used	60.22±7.92			20.34±3.11		
An increase in the daily amount of alcohol consumed after they started working as nurses						
Yes	65.33±8.20	2.283	0.025*	20.40±3.71	0.777	0.440
No	59.85±8.35			19.72±2.84		
People with cancer in the family ( mother, father, sister, child)						
Yes	60.00±7.33	-0.557	0.578	19.28±2.92	-2.610	0.009**
No	60.69±8.21			20.51±3.06		
Frequently being on a diet						
Yes	56.69±7.00	-4.168	0.000**	19.86±3.39	-1.299	0.195
No	61.40±8.07			20.43±2.99		
Fast food consumption						
Yes	61.49±8.12	2.228	0.027*	20.74±3.14	2.678	0.008**
No	59.55±7.95			19.86±2.91		
Regular exercise (at least 3 times and 30 minutes a week)						
Yes	58.61±7.70	-2.631	0.009**	18.12±2.99	-8.386	0.000**
No	61.25±8.12			21.06±2.73		
Changes on eating habits after starting work as nurse						
Yes-Positively	58.37±7.35	2.597	0.076	19.21±2.96	4.587	0.011*
Yes-Negatively	60.91±7.98			20.52±2.93		
No	61.23±8.51			20.60±3.24		
Changes on physical activity habits after starting work as nurse						
Yes-Positively	58.26±6.11	2.175	0.115	18.43±3.03	9.369	0.000**
Yes-Negatively	60.55±7.87			20.54±2.95		
No	61.19±8.60			20.63±3.02		

p&lt;0.05\*, p&lt;0.01\*\*

A statistically significant ( $p > 0.05$ ) relationship was found between dietary and physical activity habits regarding protection from cancer and the unit in which the nurse works, style of occupation, contentment with occupation, general health, and smoking couldn't be found.

## Discussion

Being overweight and obesity are single or combined risk factors for the development of many types of cancer in women such as breast (González-Jiménez et al., 2015), colon, rectum, kidney, esophagus, pancreas (Goday et al., 2015), Hodgkin's lymphoma, and multiple myeloma (Arslan et al., 2013; Kushi et al., 2012). It has been stated that in the United States, being overweight and obesity is 14-20% the cause of cancer related mortalities (Kushi et al., 2012). In our study, 35% of the nurses were found to be overweight or obese. In other studies, the rate of being overweight or obese among nurses was found to differ between 20 and 65.4%. (Blake et al., 2011; Cruz-Domínguez et al., 2015; Miller, Alpert & Cross, 2008; Zapka et al., 2009). The body weight of nurses being high might be explained by social and cultural characteristics, working in shifts, and excessive work load.

Dietary habits are stated in the literature to affect cancer risk by 25-30% (Ozkan & Çelik, 2009). The nurses were found to demonstrate moderate levels of healthy dietary habits in our study. The findings in our study are similar to many studies in literature (Al-Qahtani, 2015; Altay et al., 2015; Curcani et al., 2010; Kirag & Ocaktan, 2013). Some studies have found bad dietary habits in nurses (Blake et al., 2011; Blake & Patterson, 2015; Zapka et al., 2009). However, a study in Taiwan has found the dietary habits of nurses to be very good (Lee et al., 2011). Improving the dietary habits of nurses regarding protection from cancer is important both in the protection of public health and with regard to following generations since most of the nurses were female and married. Additionally, it should be remembered that having healthy dietary habits would contribute to the professional success of the nurses.

The most important aspect of dietary habits protecting from cancer is including at least two servings of fruit and two servings of vegetables daily. Fruits and vegetables are complex foodstuffs that contain many vitamins, minerals,

carotenoid, and fibers (Ozkan & Celik, 2009). In literature, it is stated that consuming fruits and vegetables regularly in high amounts reduces the risk of cancer development (Aune et al., 2009; Ceyhun Sezgin, 2014; Turati et al., 2015). The fruit and vegetable consumption habits of nurses towards protection from cancer were found to be on a moderate level in our study. In other studies, nurses were found not to consume the recommended amount of fruits and vegetables (Blake et al., 2011; Zapka et al., 2009). When it is considered how fruits and vegetables protect from cancer, fresh fruits and vegetables are recommended for every meal in the workplace.

One of the food groups that reduce the risk of cancer is grains. The consumption of grains, which contain protective antioxidants such as Vitamin E, is stated to reduce the risk of many cancers such as oral cavity, pharynx, esophagus, bladder, larynx, and colorectal cancers by 30-70%. In our study, the grain consumption habits of the nurses were found to be on low levels. Nurses in Italy, against our findings, were determined to have a good level of high fiber food consumption for protection from cancer (Pelusi et al., 2007).

The consumption of calcium, which is especially important for bone health, also reduces the risk of colorectal and breast cancers (Davies et al., 2011; Park et al., 2009). In our study, the habits of the nurses regarding the consumption of foodstuff containing calcium were determined to be good. This finding demonstrates that nurses have positive habits regarding the consumption of dairy products for a healthy life.

The consumption of too much red meat and processed red meat products such as salami, sausages etc. are counted among causes for cancer (Kushi et al., 2012). In a meta-analysis study, a meaningful relationship between the excessive consumption of red meat and mortality caused by cancer was found (Wang et al., 2015). In our study, the red meat consumption habits of the nurses were found to be a moderate level. Similar findings were obtained in a study made with nursing students (Nogay et al., 2012). The reduction of the consumption of red meat products with additives is important with regard to protective health applications.

Foremost among wrong nutritional habits is the excessive consumption of fat and fatty foodstuff.

Excessive fat consumption increases the rate of cancers such as breast, colon, and prostate (Kushi et al., 2012). The excessive consumption of fat, fatty foods, and deep fried food, the usage of saturated fat instead of oil, the insufficient consumption of oils that protect against cancer (such as olive oil, fish liver oil, linseed oil, walnut oil etc.) all increase the risk of cancer. In our study, the fat consumption habits of the nurses were found to be on a moderate level. In a study by Zapka et al., (2009) the fat consumption of the nurses was found to be above the recommended level.

Carbohydrates form a group of foodstuff that provides the body with energy. The facts that they taste good and they can quickly be converted to energy increase their consumption. However, there is a relationship between excessive sugar consumption and cancer (Kushi et al., 2012; World Cancer Research Fund / American Institute for Cancer Research, 2007). Thus, the consumption of foodstuff dense with energy that contain excessive sugar and fat should be limited (Davies et al., 2011). In our study, the energy excessive food consumption habits of the nurses were found to be on a moderate level. Similar finding were reached in a study by Nogay et al. (2012). In a study by Blake et al., (2011) half of the nurses were found to consume at least one serving of foods high in sugar and fat. Since the consumption of energy excessive food causes many health problems with obesity taking the forefront, the awareness level on this subject should be increased.

The consumption of canned foods high in salt is also one of the nutritional habits that increase the risk of cancer, and causes the development of cancers such as stomach, nasopharynx, and larynx cancers (Kushi et al., 2012). In our study, the salt consumption habits of the nurses were found to be on a moderate level. Since the consumption of salt causes many health problems such as cardiovascular and kidney diseases, it is important to form a dietary context that limits salt consumption.

Although there is not much evidence that it protects from cancer in the literature, it has been stressed that the daily amount of water consumed plays an important role in cancer development (World Cancer Research Fund / American Institute for Cancer Research, 2007). The consumption of water and fluids dilutes

carcinogens and prevents their contact with the stomach epithelium, and may thus reduce the risk of bladder cancers (Ozkan & Celik, 2009). However, the contamination of water by agents such as arsenic causes the development of cancers such as lung, skin, and kidney cancers (World Cancer Research Fund / American Institute for Cancer Research, 2007). In our study, the water consumption habits of the nurses were found to be on a good level. Similar findings were obtained in a study by Pelusi et al., (2007). In another study, only one fifth of the nurses were found to consume eight glasses of water daily (Blake et al., 2011). It is pleasing that the water consumption levels of the nurses are on the desired level.

Alcohol consumption is one of the controllable habits for protection from cancer. Even a small amount of alcohol can exhibit carcinogenic properties and trigger cancer formation (Ozkan and Celik, 2009). In literature, evidence of alcohol causing the development of cancers such as mouth, pharynx, larynx, esophagus, colorectal, liver, and breast cancers is widespread (Chuang et al., 2015; Kushi et al., 2012; Ozkan & Celik, 2009). In our study, the alcohol consumption habits of the nurses were found to be on a social drinking level, and nearly one fifth of the nurses reported an increase in alcohol consumption after starting to work as a nurse. In a study in another country, two thirds of the nurses were found to consume more alcohol than it is recommended daily (Blake et al., 2011). In a study by Bakshi et al., (2015) a quarter of the nurses were found to have alcohol consumption habits on a dangerous level. These different results are thought to be caused by cultural differences. Researching the factors leading to alcohol consumption in nurses, who have an important role in health services, raising awareness on the harmful effects of alcohol, and making the necessary regulations may contribute to the reduction of cancer risks.

In order to preserve the nutritional value of foodstuff, certain rules must be followed. Foodstuff should never be stored in humid conditions. If these criteria aren't met, the aflatoxin accumulation in the foodstuff may increase the risk of cancer (Ozkan & Celik, 2009). In our study, nurses were found to store foodstuff in a healthy manner. This finding demonstrates that nurses have an important cancer protection habit. Social, economic, and

cultural factors affect the nutritional habits of individuals strongly (Kushi et al., 2012). In our study, the nutritional habits of the nurses were found to improve with age and duration of employment. This finding is important with regard to the healthy lifestyle behaviors of the nurses and supports the view that positive behavior in body protection increases with age.

The dietary habits regarding protection from cancer of male, high school graduate nurses who increased the amount of alcohol consumed after starting to work as a nurse, who don't regularly diet or exercise but regularly consume fast food were found to be on an undesired level. In a study by Altay et al., (2015) nurses that are above 41 years of age who can allocate time for themselves that worked for longer than 11 years and only during the day were found to have good nutritional habits. The same was applicable for nurses with a bachelor's degree in a study by Curcani et al., (2010), and married nurses over 40 with a good income level who had a bachelor's degree in a study by Al-Qahtani (2015). In a study where Nogay et al. (2012) worked with nursing students, the nutritional habits of male students, those who didn't have someone with cancer in the family, and those who consumed a lot of fast food and didn't diet were found to be on an undesired level. These similar findings show that nutritional habits for protection from cancer should be implemented in the training of nurses.

Regular physical activity contributes to weight management and prevents many cancers such as breast, colorectal, and prostate cancers (Davies et al., 2011; Uauy & Solomons, 2005). In our study, the physical activity habits of the nurses were found to be on a moderate level. Lee et al., (2011) found similar results. In other studies conducted in Turkey and other countries, the physical activity level of nurses was found to be low (Al-Qahtani, 2015; Altay et al., 2015; Blake et al., 2011; Curcani et al., 2010; Kirag & Ocaktan, 2013; Zapka et al., 2009). In a study by Bakshi et al., (2015) three quarters of the nurses were found to have regular physical activity habits, and almost half the nurses were found to implement applications that encourage physical activity in clinical applications. The heavy working hours of the nurses and the lack of facilities that support physical activity in their work environment may be the cause of this

undesired level of physical activity. The dietary habits regarding protection from cancer of obese, high school graduate nurses who increased the amount of tobacco consumed after starting to work as a nurse, who don't have someone with cancer in their family, who didn't have changes in their dietary and physical activity habits after starting to work as a nurse, who don't regularly exercise but regularly consume fast food were found to be on an undesired level. Other studies have found a decrease in physical activity with increasing age (Lee et al., 2011), and with having children (Al-Qahtani, 2015; Altay et al., 2015). These findings show a need for raising awareness on regular physical activity.

### Conclusion

According to the findings, it was determined that the nutritional and physical activity habits of nurses in Turkish hospital towards protection from cancer were not on the desired level. Age, gender, duration of employment, educational level, the amount of alcohol consumed after starting to work as a nurse, and physical activity habits were found to affect nutritional habits; whereas BMI, the amount of cigarettes smoked after starting to work as a nurse, alcohol consumption status, the presence of cancer in the family, and fast food consumption status were found to affect physical activity habits. In this context, the following are suggested:

- Nurses should be provided with periodical and regular service training programs on healthy nutrition and physical activity for protection from cancer.
- The importance of nutritional and physical activity habits that protect from cancer should be stressed in scientific activities such as congresses and symposiums
- Encouraging goals for healthy nutrition and physical activity habits such as weight management and reducing alcohol consumption should be developed for nurses in institutions by using the reward methods.
- Starting from college years, healthy nutritional and physical activity habits should be taught to nurses in every phase, and their habits should be evaluated each year
- Facilities in the institutions where nurses work that provide nurses with avenues where

they can practice healthy nutritional and physical activity habits should be formed, and managers should support nurses in this matter

- The working conditions of nurses should be improved
- Nurses should actively participate in services that aim to provide the public with healthy nutritional and physical activity habits.

Since the study was conducted in a single hospital with nurses who fulfilled the inclusion criteria, it has a sample and time limitation. Additionally, the self-reports of the nurses regarding the nutritional and physical activity habits towards protection from cancer are limited to the questionnaire. It is suggested that in further studies, this study should be repeated with a larger sample group.

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