RESEARCH COMMUNICATION

Dietary Habits Contributing to the Cancer Prevention Among Health College Students in Turkey

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Abstract

This descriptive study was made to evaluate the dietary habits contributing to cancer prevention of 319 health college students. Data collection form included questions about demographic characteristics and 33 statements which evaluate dietary habits contributing to cancer prevention. Among the students, 56.1% consumed fast food outside the home/dormitory twice a week or more and 47% never exercised. Moreover, 63.9% of the students reported that their dietary habits changed negatively and 69% stated that their fruit and vegetable consumption decreased after starting the health college. The students mostly paid attention to preserving food and water consumption while they paid least attention to maintaining healthy weight and whole grain consumption. Female students, those who paid attention to the amount and calorie of the food they consumed, students who did not consume fast food, and students who exercised twice a week or three times a week had better dietary habits contributing to cancer prevention ($p<0.05$). According to these results we recommend that interventions which will reduce fast food consumption and increase fruit and vegetable consumption and exercising in university students should be implemented. For this purpose, appropriate conditions for preparing and preserving healthy food should be provided as well as increasing the frequency of vegetable containing meals and providing fruits and salads in every meal at school cafeterias.

Keywords: Cancer - prevention - dietary habits - university students - Turkey

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Introduction

Cancer is a leading cause of death worldwide, accounting for 7.6 million deaths (around 13% of all deaths) in 2008 (WHO). In Turkey, cancer is the second most frequent cause of death (Hamzaoglu & Ozcan, 2006). About 30% of cancer deaths are due to the five leading behavioral and dietary risks: high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use, and alcohol use (Danaei et al., 2005; WHO, 2012).

Nutrition, as a determinant of growth and body composition, also influences cancer risk, directly due to carcinogens in foods or indirectly by the hormonal and metabolic response to growth and obesity (Uauy & Solomons, 2005; Kushi et al., 2006). It has been determined that various nutritional factors including the high consumption of red meat, high saturated fats, and alcohol; insufficient fruit, vegetable, and whole grain intake; and obesity increase the risk of colorectal, breast, and stomach cancers (Key et al., 2004; Norat et al., 2005; Beliveau & Gingras, 2007; Ozkan & Celik, 2009; Gonzalez & Riboli, 2010). On the other hand, reducing the consumption of red meat and increasing the consumption of fiber containing nutrients such as fruits and vegetables, whole grains, and fat-reduced foods reduce the cancer risk (Schatzkin et al., 2007; Flood et al., 2008; Park et al., 2009; Gonzalez & Riboli, 2010). The dietary recommendations of the American Cancer Society (ACS), based on scientific research about cancer and nutrition, include avoiding excessive weight gain, consuming foods and drinks which would help maintaining normal weight, losing weight in case of obesity, consuming 5 servings of fruits and vegetables every day, consuming whole grains instead of refined grains, and limited consumption of processed meat and red meat (Byers et al., 2002; Kushi et al., 2006).

It has been reported that the majority of the Turkish population (78%) have insufficient information about cancer (Cetingoz et al., 2002) and that 82.9% of Turkish people do not receive information about cancer from health professionals (Gultekin et al., 2011). Additionally, it has been reported that the nurse practitioners working at public health departments in North Carolina did not provide satisfactory services regarding dietary counseling for cancer prevention (Tessaro et al., 1996). These findings indicate that all age groups, especially risk groups, should

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be informed about cancer and cancer prevention in order to reduce cancer prevalence. The promotion of health education, particularly in the area of nutritional habits, is an important part of the professional practice of health workers (Norton, 1998; Hellman, 2001). Because students of the health professionals will be responsible for the health education of the general population, it is important to assess the nutritional habits of these students to ascertain if current nursing education programs encourage salutary attitudes in this regard. There are no studies yielding data on the dietary habits contributing to cancer prevention of health college students in Turkey. This study aimed to evaluate the dietary habits contributing to cancer prevention among health college students.

Materials and Methods

Sample

Data were gathered from 336 of the 466 students studying at Kirklareli University Health College, between the 12th and 16th of December, 2011. It was observed that 15 of the question forms contained missing data and these forms were excluded from the study. Thus, the was made on 319 students (68.5%).

Data Collection Form

Data were gathered using the data collection form developed by the researchers. The development of the data collection form was based on a literature review. Various national and international publications, especially the American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention (Byers et al., 2002; Kushi et al., 2006), were utilized to evaluate dietary habits contributing to cancer prevention of health college students. In the data collection form, there were questions about demographic characteristics and 33 statements which evaluate dietary habits contributing to cancer prevention of the students. The statements were grouped under 10 different dimensions including fruit and vegetable consumption (4 items), whole grain consumption (4 items), red meat consumption (6 items), fat consumption (2 items), consumption of nutrients with high energy content (4 items), maintaining healthy weight (3 items), preserving food (5 items), salt consumption (2 items), water consumption (2 items), and alcohol consumption (1 item). Every statement evaluating the dietary habits contributing to cancer prevention was scored in three categories: “always” (1 point), “sometimes” (2 points), and “never” (3 points). Total scores obtained from the form ranged between 33 and 99. Higher scores indicated worse or unhealthy dietary habits.

Ethical Consideration

In order to conduct a study on Health College students, a written permission was obtained from the Health College Directorate. Additionally, the students were informed about the study before data collection and those who agreed to participate in the study completed the forms.

Statistical Analysis

Data were analyzed using the SPSS 15.0 program. Descriptive (mean, SD [standard deviation], range and frequency), comparative (the ANOVA test and the t test for independent groups) and correlational (Pearson correlation) statistics were used to analyze the data. A level of significance of $p<0.05$ was established prior to data collection.

Results

The mean age of the participants was 20.00±1.6 years. Among the students, 80.9% were female, 39.8% were freshmen, 45.5% stayed in state dormitories, and 18.2% had a relative diagnosed with cancer. The mean Body Mass Index (BMI) of the participants was 21.96±3.1kg/m^2. It was determined that 62.7% of the students perceived their own health as good, 11.3% were frequently on a diet, 56.4% did not pay attention to the amount and calorie of the food they consumed, and 90.3% consumed fast food when they were outside the home/dormitory. Among the students, 25.4% consumed fast food outside the home/dormitory once a week and 47% never exercised. Moreover, 63.9% of the students reported that their dietary habits changed negatively and 69% stated that their fruit and vegetable consumption decreased after starting the health college.

The mean scores of the students regarding fruit and vegetable consumption, whole grain consumption, red meat consumption, fat consumption, consumption of nutrients with high energy content, maintaining healthy weight, preserving food, salt consumption, water consumption, and alcohol consumption were 8.0±1.3, 8.5±1.3, 12.1±1.7, 3.4±1.2, 8.1±2.2, 6.4±1.5, 7.1±2.3, 4.1±1.2, 2.9±0.9, and 2.0±0.9, respectively. Other characteristics of the students can be seen in Table 1.

There was a significant difference between the two genders in terms of dietary habits contributing to cancer prevention mean scores ($p<0.05$) and female students had better dietary habits compared to their male counterparts. There was a significant difference in dietary habits contributing to cancer prevention mean scores related to paying attention to the amount and calorie of the food being consumed ($p<0.05$). Students who paid attention to the amount and calorie of the food they consumed had better dietary habits than those who did not. There was a significant difference in dietary habits contributing to cancer prevention mean scores related to consuming fast food outside the home/dormitory ($p<0.05$). Students who consumed fast food outside the home/dormitory had worse dietary habits than those who did not consume fast food. There was also a significant difference in dietary habits contributing to cancer prevention mean scores related to the frequency of fast food consumption ($p<0.05$). These differences were between students who eat three times a week and students who never eat fast food, students who eat once in fifteen days, students who eat twice a week, students who eat fast food four times or more a week. In addition differences were between students who eat four times or more a week and students who never eat fast food, students who eat monthly, students who eat once in fifteen days, students who eat once a week, students who eat twice a week, students who eat three times a week. There was

Table 1. Sociodemographic Characteristics of the Students

Variables	Mean±SD	Range	n	%
Age (year)	20.00±1.6	18-27		
Gender:				
Female			258	80.9
Male			61	19.1
Classroom:				
I			127	39.8
II			88	27.6
III			67	21.0
IV			37	11.6
Living place:				
State dormitory			145	45.5
Private dormitory			67	21.0
At home with parents			18	5.6
At home with colleagues			84	26.3
Others			5	1.6
People with cancer in the family:				
Yes			58	18.2
No			261	81.8
BMI (kg/m^2)	21.96±3.1	15.4-35.5		
General health perception:				
Excellent			23	7.2
Good			200	62.7
Moderate			95	29.8
Bad			1	0.3
Frequently being on a diet:				
Yes			36	11.3
No			283	88.7
Pay attention for the amount and calorie of the food:				
Yes			13	4.1
Sometimes			126	39.5
No			180	56.4
Fast food consumption out of the home/dormitory:				
Yes			288	90.3
No			31	9.7
Frequency of fast food consumption out of the home/dormitory:				
Never			31	9.7
Monthly			11	3.4
Once in fifteen days			17	5.3
Once a week			81	25.4
Twice a week			71	22.3
3 times a week			68	21.3
4 times or more a week			40	12.5
Frequency of exercise (at least 30 min):				
Never			150	47.0
Monthly			150	47.0
Once in fifteen days			2	0.6
Once a week			6	1.9
Twice a week			57	17.9
3 times a week			52	16.3
4 times or more a week			35	11.0
Changes on eating habits after beginning school:				
Yes (Positively)			17	5.3
Yes (Negatively)			204	63.9
No			67	21.0
Changes on fruit and vegetable consumption habits after beginning school: Yes (Negatively)			220	69.0
Yes (Positively)			39	12.2
No			60	18.8
Dietary habits contributing to cancer prevention:				
Fruit & vegetable consumption	8.0±1.3	4-12		
Whole grain consumption	8.5±1.3	4-12		
Red meat consumption	12.1±1.7	8-17		
Fat consumption	3.4±1.2	2-6		
Consumption of nutrients with high energy content	8.1±2.2	4-12		
Maintaining healthy weight	6.4±1.5	3-9		
Preserving food	7.1±2.3	5-15		
Salt consumption	4.1±1.2	2-6		
Water consumption	2.9±0.9	2-6		
Alcohol consumption	2.0±0.9	1-3		
Total score	62±7.5	39-85		

Table 2. Factors Related to Dietary Habits Contributing to Cancer Prevention

Variables		r	p
Age (Year)		-0.081	0.151
BMI (kg/m^2)		-0.065	0.247
	Mean±SD	F/t test	p
Gender:			
Female	62.1±7.1	-1.991	0.047
Male	64.2±8.8		
Classroom:			
I	62.7±7.5	0.209	0.890
II	62.3±7.2		
III	62.0±8.1		
IV	62.9±6.8		
Living place:			
State dormitory	63.0±7.0	1.518	0.197
Private dormitory	60.7±7.8		
At home with parents	61.8±9.9		
At home with colleagues	63.1±7.4		
Others	60.2±5.1		
People with cancer in the family:			
Yes	61.9±6.6	-0.562	0.574
No	62.6±7.6		
General health perception:			
Excellent	62.5±8.0	1.765	1.174
Good	61.9±7.2		
Moderate-Bad	63.2±7.5		
Frequently being on a diet:			
Yes	60.3±7.2	-1.836	0.067
No	62.7±7.4		
Pay attention for the amount and calorie of the food:			
Yes	54.2±9.9	27.76	0.000
Sometimes	60.0±5.9		
No	64.8±7.5		
Fast food consumption out of the home/dormitory:			
Yes	62.8±7.4	2.423	0.016
No	59.4±7.4		
Frequency of fast food consumption out of the home/dormitory:			
Never	59.4±7.4	8.265	
Monthly	60.9±6.4		
Once in fifteen days	59.9±5.3		
Once a week	60.9±6.8		0.000
Twice a week	61.2±6.2		
3 times a week	64.2±7.6		
4 times or more a week	68.5±7.7		
Frequency of exercise (at least 30 min):			
Never	63.9±7.9		
Monthly	64.0±9.9		
Once in fifteen days	61.7±3.7		
Once a week	62.5±6.7	2.591	0.018
Twice a week	60.6±6.8		
3 times a week	59.4±6.2		
4 times or more a week	61.7±8.6		
Changes on eating habits after starting school:			
Yes (Positively)	60.8±7.0	1.471	0.231
Yes (Negatively)	62.8±7.4		
No	62.5±7.8		
Changes on fruit and vegetable consumption habits after starting school:			
Yes (Negatively)	62.8±7.4	2.425	0.090
Yes (Positively)	60.0±7.8		
No	62.9±7.4		

a significant difference in dietary habits contributing to cancer prevention mean scores related to the frequency of exercise ($p<0.05$). These differences were between students who never exercise and students who exercise twice a week and three times a week (Table 2).

There were no significant differences in dietary habits contributing to cancer prevention mean score related to age, academic year, type of residence, having a relative diagnosed with cancer, BMI, general health perception, changes on dietary habits and fruit and vegetable

consumption after starting the health college (Table 2).

Discussion

It has been reported that prostate, breast, lung and bronchus, and colon cancers are the most common types of cancer in the world (National Cancer Institute, 2008); whereas lung and bronchus, prostate, skin, breast, and stomach cancers are most common in Turkey (Cancer Control Department of Health, 2005). Various studies have demonstrated that the risks of prostate (Aune et al., 2009; Vlajinac et al., 2010), breast (Schulz et al., 2008; Engeset et al., 2009), lung (Aune et al., 2009; Buchner et al., 2010), colorectal (Fung et al., 2010; Hu et al., 2012) and stomach (Gonzalez et al., 2006; Hu et al., 2008) cancers are directly related to nutrition. The occurrence of these common cancer types in the world and in Turkey can be prevented by effective education programs, provided by health professionals, which aim to reduce risky dietary habits. Health science students will work in the area of health education; therefore it is important to evaluate the students' dietary habits contributing cancer prevention and the contribution of the current education system to acquiring positive dietary habits.

According to our results, 90% of the students consumed fast food outside the home/dormitory and more than half of the participants consumed fast food twice a week or more. Similarly to our results, a study investigating the dietary habits of female students staying at dormitories showed that 39.7% of the students consumed fast food frequently and 40.3% consumed fast food occasionally (Gulec et al., 2008). Various factors including curricular intensity, long queues at the school cafeteria during lunch time and the possible inappropriate conditions for preparation of meals may have caused negative changes in the dietary habits of the students and consumption of fast food. In a study, 79.8% of the university students stated that they did not have healthy dietary habits (Yilmaz & Ozkan, 2007). Similarly, in our study, it has been determined that more than half of the students (63.9%) experienced negative changes in their dietary habits and 69% reduced the consumption of fruits and vegetables after starting the health college.

According to our results, 27.3% of the students exercised three times a week or more. Similar to this result, other studies reported that 25% of female students who stayed at dormitories exercised four times a week or more (Gulec et al., 2008) and that 24.6% of university students exercise regularly (Bayrak et al., 2010). In a study conducted with Spanish nursing students and students from other departments, it has been found that 17.4% of first-year nursing students, 19.7% of final-year nursing students, and 25% of first-year students from other disciplines exercised three times a week or more (Irazusta et al., 2006). Although the exercise frequency of our participants was insufficient, our findings regarding exercise habits of the students were similar to the results of other studies or higher than the results of mostly other studies.

Our findings indicate that the students paid attention to the preserving food and water consumption. In a study evaluating the dietary habits of students, it has been reported that 81.1% of the students consumed water in every meal (Yilmaz & Ozkan, 2007). This finding supports our results. In our study, it has been shown that the students did not pay attention to maintaining healthy weight. The majority of our participants had a normal BMI and this situation may have affected the results regarding the maintenance of healthy weight.

In our study, it has been found that female students had better dietary habits contributing to cancer prevention compared to male students. The results of other studies support this result. In a study conducted with university students, it has been reported that female students consumed more fruits and vegetables compared to male students and that male students consumed more meat and animal products than their female counterparts. In addition, this study showed that male students added sugar into their beverages (Bayrak et al., 2010). Similarly, in a study conducted with Turkish adolescents, it has been reported that female participants had more information about nutrition and consumed healthier food than male participants; however the difference between males and females was not significant (Can et al., 2008).

It should be noted that education does not necessarily contribute to the development of roles regarding patient education and providing counseling; moreover, education may have a contrary effect, impairing the development of such roles (Spencer et al., 2006). In this study, there was no difference between the dietary habits contributing cancer prevention according to academic years. This finding demonstrates that education did not have a positive effect on the dietary habits of the students. There was also no significant difference between dietary habits according to the type of residence. However, students who stayed in private dormitories and lived with their families had better dietary habits. Students who stay in private dormitories have better financial resources and appropriate conditions to prepare food. In addition, students who live with their families consume meals prepared by their families at home. These factors may have contributed to these results.

The habit of fast food consumption leads to an increase in saturated fats and obtaining energy from fat. In addition, fast food may contain carcinogenic products. Therefore, fast food is assumed to increase the risk of cancer. Our results showed that students who consumed fast food outside the home/dormitory had worse dietary habits contributing to cancer prevention compared to students who did not consume fast food. It was also determined that students who consumed fast food outside the home/dormitory three times a week and four times or more a week had worse dietary habits contributing to cancer prevention compared to other groups.

Our results showed that the students' dietary habits contributing to cancer prevention mean score were better among students who exercise twice a week, and three times a week than students who never exercise. Similarly, in a study conducted with nursing students, it has been reported that knowledge regarding the provision of adequate nutritional counseling was higher among the physically active graduating nursing students than among the sedentary students (45.5% vs. 24.1%) (Irazusta et al.,

2006).

In conclusion; it has been found that 56.1% of the university students consumed fast food outside the home/dormitory twice a week or more, 63.9% had negative dietary changes after starting the health college, and 69% had a decrease in fruit and vegetable consumption after starting the health college. The students mostly paid attention to the preserving food and water consumption. On the other hand, they paid least attention to maintaining healthy weight and whole grain consumption. Female students, students who paid attention to the amount and calorie of the food they consumed, students who did not consume fast food, and students who exercised twice a week or three times a week had better dietary habits contributing to cancer prevention, compared to male students, students who did not pay attention to the amount and calorie of the food they consumed, students who consumed fast food, and students who did not exercise. There were no significant differences in dietary habits contributing to cancer prevention mean score related to age, academic year, type of residence, having a relative diagnosed with cancer, BMI, general health perception, changes in dietary habits and fruit and vegetable consumption after starting the health college.

According to these results; we recommend that interventions which will reduce fast food consumption and increase fruit and vegetable consumption and exercising in university students should be implemented. For this purpose, appropriate conditions for preparing and preserving healthy food should be provided as well as increasing the frequency of vegetable containing meals and providing fruits and salads in every meal at school cafeterias. Implementations of activities aiming to develop new and healthier dietary habits especially for male students, students who consume fast food, and students who do not exercise, are recommended.

Conflict of interest

The authors declare that they have no conflict of interest.

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