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Determination of Awareness of University Students about Cancer Risk Factors

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Abstract

BACKGROUND/AIMS: Cancer, a significant health and societal problem, takes first place among causes of death and frequency of cases. The aim of this study was to determine the knowledge and awareness levels regarding the risk factors of cancer for university students studying in various departments of medical sciences.

MATERIALS and METHODS: This study was designed as descriptive cross-sectional feature. This study was conducted at a thematic health university. The knowledge and thoughts of students about cancer risk factors were determined through questionnaires created by the researchers. In this study, students were given questionnaires investigating their socio-demographic parameters and testing their knowledge and attitudes about the risk factors of cancer. In evaluating their state of knowledge, each student was asked to state their opinion on whether a factor is a cancer risk as being "a probable factor", "not a probable factor" or "I don't know". The findings were analyzed taking into account their percentage distributions.

RESULTS: The average age of the participant students was 20.4±2.18 years and their ages ranged from 17 and 30 years. 74.8% of the sample students were female and 25.8% of them were male. In the families of one-fourth of the sample students (24.2%), the existence of cancer cases was present.

CONCLUSION: When the students of Medical Sciences graduate from university and begin their professions, they are thought to be guides in the maintenance and development of health care. It is important to increase the awareness of health professionals regarding cancer and its risk factors in the early stages of their student life. Universities are advised to include cancer and the risk factors of cancer in their curriculum.

Keywords: Cancer, risk factors, awareness, university students

INTRODUCTION

Cancer, which has a high mortality rate, occurs by the uncontrolled division of cells. Cancer is spread to the surrounding tissues and organs from the organ of origin.[1,2] It was determined to be the second highest cause of death after cardiovascular system diseases in the world and also in Turkey.[3] The number of deaths from cancer exceeds 8 million per year worldwide. The cause of 13% of all deaths is cancer.[4,5] 14 million new cancer cases and 8.2 million deaths from cancer were reported in the study which the International Cancer Research Committee published in 2012.[5,6] Cancer incidences vary according to age and gender in Turkey. Cancer incidences were 0.246 percent in males, 0.173 in females, and 0.210 in the total population in 2014 according to the 2015 cancer report of Turkey statistical yearbook.

According to the 2014 data, the most common type of cancers in Turkey are lung, breast, thyroid, colorectal and uterus, respectively.[7] Cancer risk

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factors can be classified as behavioral, biological, environmental and genetic risk factors.[8]

Major risk factors are advanced age, cigarette consumption, alcohol consumption, radiation, ultraviolet sun rays, chemicals, some hormones, insufficient or unbalanced nutrition, a lack of physical activity and obesity.[9] The cause of one third of cancer mortalities are excess body mass index, low consumption of fruit and vegetables, insufficient physical activity, and tobacco consumption.[10] The use of tobacco and its products, which is the world's largest public health threat, causes 6 million deaths each year. According to the 2014 data in Turkey, 14.8 million people use tobacco.[8] Habits are conditioned behaviors which occur when internal and external actions take place in the same way. As a result of research, 30 percent of cancer deaths can be prevented. Prevention can occur by behavioral change in individuals in those populations at risk.

Health workers should be role models for the maintenance of health and for the achievement of positive behaviors in cancer prevention in the future.[11] Awareness means having knowledge or a perception of a situation or phenomenon. It was found that students do not increase their healthy behavior habits; they do not integrate these habits into their lives even when they have the proper knowledge and awareness.[12] The hypothesis that most of the students studying at a thematic health university would know cancer risk factors correctly and change their health behavior accordingly was tested in this study. This study was performed for the purpose of determining the awareness levels regarding cancer risk factors of university students studying in health related departments.

MATERIALS AND METHODS

This study was designed as a descriptive cross-sectional one. The data of this research was obtained from the students in all departments of the thematic university which only has health related departments. The sample number of this research was calculated using the sample formulation formula in certain groups. According to this analysis, the sample size was 393 (universe=957) with 99% reliability. 454 students who willingly participated in this research were included in order to increase reliability further in the universe of 957 people. 22.24% percent of all 957 students were studying medicine, 25.55% percent were nurses, 29.07% were nutrition dietetics and the rest were studying in the physical therapy and rehabilitation departments.

Data Collection

An introductory information form investigating information about the students and an information and awareness form for cancer risk factors were used to collect the data. The Information awareness form for cancer risk factors was created by the researcher using the literature. The cancer risk factors awareness form contains 50 questions with questions regarding topics such as being overweight, alcohol and cigarette consumption, and exercise in order to measure the awareness levels of the participating students regarding cancer risk factors. The students were asked to choose between "possible factor", "not possible factor" and "I do not know" options and their awareness level was measured. The introductory information form was developed by the researchers. The introductory information form contains 20 questions covering information about the personal characteristics of participating students.[13-16] Applications for cancer prevention were written in a table after scanning various scientific resources. There are 20 options in this table such as, periodic check-ups, lung scans, breast scans, PAP smear tests, or testing for blood cells in the stool. The students were asked to answer based on "what should be done", and "what are you doing". Their awareness levels were measured with a prepared form.

Ethics committee approval for this study was received from the Ethics Committee of the Clinical Research Institute of Sanko University with the decision number 01 prior to starting the survey on 02.03.2017. Verbal informed consent was obtained from the students who participated in this study.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS) program was used in the data analysis. The confidence interval was accepted as 95%. Alpha values less than 0.05 were considered significant. Descriptive statistics such as number, percentage, mean standard deviation were used in the data analysis. Independent sample t-test, Pearson correlation analysis, One-Way ANOVA and post hoc test least significant difference analysis were carried out.

RESULTS

As shown in Table 1, the average age of the students participating in this study was 20.4 years, ranging from 17 to 30 years. When the education status of the students was examined, it was determined that 68.5% of them had graduated from Anatolian high schools. It was determined that 94.9% of the students did not work in any job and 43.5% of the students were working in health related fields. 15.4% of the students stated that they used cigarettes and 17% used alcohol. 10.4% of the students had a chronic disease. When the students were asked about going to a state health facility (health institution) for medical reasons, more than half of them (69.6%) remarked that they went to the hospital when they were sick, 3.7% of them had never gone, 7.7% of them went annually, 5.5% of them went when they remembered, and 3.5% of them tried to cure themselves. It was determined that almost one quarter of the students had a family history of cancer.

It was seen that 15.4% of the students used cigarettes, and 17% of then used alcohol. It was seen that the amounts of alcohol use were minimum 1 unit (9.9%) and maximum 40 units (0.2%), with an average of 2 units (3.5%). It was seen that daily smoking amounts were minimum 1 (0.9%) and max 40 (0.2) with an average of 6 cigarettes (0.7%).The number of students exercising was minimum 1 time (11.2%), maximum 35 times (0.2%) and an average of 4 times (5.7%) per week. The duration of exercise was minimum: 10 minutes (0.4%), maximum: 180 minutes (0.4%) with an average of 60 minutes (56.6%) daily. It was detected that 70.9% of the students were normal weight, 17.4% of them were overweight, and 0.2% of them were obese. The majority of the students (91.1%) stated that vegetables and fruits were the main nutrients to reduce the risk of cancer, while 8.9% said that they increased the risk: 69% said that protein and fat rich foods reduced the risk of cancer, while 31% said that they increased the risk; 18.7% said that red meat reduced the risk, while 81.3% said it increased the risk; 10.6% said that acidic drinks reduced the risk, while 89.4% said that they increased the risk; 58.9% said that white meat reduced the risk, while 11% said that it increased the risk; 20.3% said that processed meat reduced the risk, while 79.7% said that it increased the risk; 78.6% said that grain reduced the risk, while 21.4% said that it increased the risk; and finally, 21.4% said that caffeine-containing drinks reduced the risk, while 78.9% said that they increased the risk of cancer.

Table 1. Socio-demographic and health related descriptive characteristics of students-1 (n=454)										
	Nursing		Nutrition and dietetics		Physical therapy and rehabilitation		Medical faculty		Total	
Descriptive characteristics	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Age: Minimum-maximum average 17-30. (20.48±1.45)										
Aged 20 age or under	69	27.9	75	30.4	46	18.6	57	23.1	247	54.4
Aged 21 age or above	47	22.7	57	27.5	59	28.5	44	21.3	207	45.6
Gender										
Female	86	25.5	118	35.0	74	22.0	59	17.5	337	74.2
Male	30	25.6	14	12.0	31	26.5	42	35.9	117	25.8
Marital status										
Single	116	25.8	128	28.4	105	23.3	101	22.4	450	99.1
Married	0	0.0	4	100.0	0	0.0	0	0.0	4	0.9
Education status										
Health vocational high school	4	36.4	6	54.5	0	0.0	1	9.1	11	2.4
Anatolian high school	60	19.3	93	29.9	89	28.6	69	22.2	311	68.5
Normal high school	43	67.2	10	15.6	7	10.9	4	6.3	64	14.1
Vocational high school	3	37.5	5	62.5	0	0.0	0	0.0	8	1.8
Associate degree	0	0.0	1	50.0	0	0.0	1	0.0	2	0.4
License	2	33.3	4	66.7	0	0.0	0	0.0	6	1.3
Other (science, imam hatip, open education high school)	4	7.7	13	25.0	9	17.3	26	50.0	52	11.5
Working status										
Yes	7	30.4	9	39.1	5	21.7	2	8.7	23	5.1
No	109	25.3	123	28.5	100	23.2	99	23.0	431	94.9
Working field (n=23)										
About health	1	10.0	5	50.0	3	30.0	1	10.0	10	43.5
Non-health	6	46.2	4	30.8	2	15.4	1	7.7	13	56.5
Income rate										
Income = expense	74	23.7	99	31.7	72	23.1	67	21.5	312	68.7
Income < expense	33	32.7	21	20.8	28	27.7	19	18.8	101	22.2
Income > expense	9	22.0	12	29.3	5	12.2	15	36.6	41	9.0
Social security										
Yes	103	25.2	113	27.6	96	23.5	97	23.7	409	90.1
No	13	28.9	19	42.2	9	20.0	4	8.9	45	9.9

When students were asked about the most common type of cancer, the most commonly given types of cancer respectively were lung (17.1%), breast (15.8%), colon (11.2%). Skin (7.4%), cervix (6.4%), blood (6.3%), stomach (6%), pancreas (6%), liver (5.7%), lymph (4%), and larynx (4%). Approximately half of the students stated that the reason for self-breast examination was early diagnosis, a small portion of them stated that it was to check, while the others stated that they did not know. Examining the status of the students regarding their knowledge of cancer risk groups, the most commonly given cancer risk groups were genetic (22.6%), malnutrition (21.5%), age (19.9%), stress (6.1%) and gender (65.5%).

Table 2 shows the distribution of answers for necessary/unnecessary procedures for the prevention of cancer according to the gender of the students. When the table is examined, it can be understood that the majority of women did not consider options such as skipping meals, consuming 5 portions or above of vegetable and fruits, consuming bread and cereals every day, frequently consuming caloric and fatty foods, frequently using salt in meals, the consumption of meat and animal products, or using sugar with drinks; which should not be done in cancer prevention. When the difference between the distributions of options by gender were evaluated via chi-square analysis, it was found that there was a significant difference in only the distribution of the "do not know" option. It was noted that men marked the option "I do not know" more than women. When asked whether there were carrying out self-applications and what they should be, it was seen that the majority of the students did not perform the applications in all options. When we evaluated the distribution of options by gender regarding whether they were carrying out their own applications, it was seen that tomography, self-breast examination and 3 main meals with 2 snacks were chosen more by women, and the skipping meal option was chosen more by men.

Table 2. Socio-demographic and health related descriptive characteristics of students-2 (n=454)

	Nursing		Nutrition and dietetics		Physical therapy and rehabilitation		Medical faculty		Total	
Descriptive characteristics	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Place of residence										
City	84	22.8	112	30.4	83	22.6	89	24.2	368	81.1
County	21	31.1	18	26.9	19	28.4	9	13.4	67	14.8
Village-town	11	57.9	2	10.5	3	15.8	3	15.8	19	4.2
Smoking status										
Non-smoker	94	26.0	109	30.2	80	22.2	78	21.6	361	79.5
Smoker	18	25.7	16	22.9	20	28.6	16	22.9	70	15.4
Quit	4	17.4	7	30.4	5	21.7	7	30.4	23	5.1
Alcohol using status										
Non-user	102	28.5	105	29.3	78	21.8	73	20.4	358	78.9
User	9	11.7	22	28.6	20	26.0	26	33.8	77	17.0
Quit	5	26.3	5	26.3	7	36.8	2	10.5	19	4.2
Chronic disease										
No	7	14.9	14	29.8	12	25.5	14	29.8	47	10.4
Yes	109	26.8	118	29.0	93	22.9	87	21.4	407	89.6
Family history of cancer										
No	22	20.0	34	30.9	29	26.4	25	22.7	110	24.2
Yes	94	27.3	98	28.5	76	22.1	76	22.1	344	75.8

Consecutively, Tables 3-7 above show the distribution of the answers of the students about their knowledge of the risk factors of cancer according to their departments. When the distribution of the options according to their departments was examined it was found that the distribution of the majority of the options differed significantly. When the tables are examined, there are significant differences in terms of knowing risk factors such as, age of sexual intercourse, spicy foods, no prior births, alcohol consumption, being overweight, low fiber high fatty foods, advanced age, UV sunlight, gender, meat not being properly stored, being female, being over 50 years of age, vitamin A, C, E, beta carotene, selenium, calcium and fish oil ($p<0.05$). The results of the advanced analysis showing the source of the differences are given in the table.

DISCUSSION

Cigarette consumption is unquestionable first in terms of cancer risk. Cigarettes also increase the rate of chronic bronchitis and heart disease/crisis. Smoking increases the mortality rate by 3 times. Half of those acquainted with this bad habit at an early age have lost their lives due to smoking. The other half of them have lost their lives due to cancer which is caused by smoking in the last 7-8 years of their lives. The earlier smoking is stopped before cancer occurs, the less the effect of this risk. As a result of research, it was stated that in addition to cigarette smoking, cigar smoking, and chewing or the absorption of tobacco increased the formation of esophageal, oral cavity, larynx and pharyngeal cancer.[17]

According to the World Health Organization (WHO), smoking is one of the first six factors which threaten human health and it is the cause of one in every 10 deaths. This ratio started to decrease with the public awareness in developed countries.[18] The habits of smoking among young people aged 17-24 is indicated to be at a rate of 21.7% according to the 2009 statistical data on Turkey.[19] The smoking rate is 21.7% in Turkey. This ratio is composed of 52% of men and 17.3% of women. Turkey ranks in the top ten in terms of smoking rates. The rate of smoking among university students varies between 14-48%.[20-22] In our study, it was determined that 15.4% of the students still smoked, 5% had quit smoking and 79.5% had never smoked. 20.5% of all students were found to have a history of smoking. As for the results of studies related to alcohol use in situations, Turkish college students stated that it varied from 4%, 8-80% of this rate. In our study, it was determined that 17% of the students still used alcohol, 4.2% had quit and 78.9% had never used alcohol. 21.2% of all students had a history of alcohol use. The results of our study on alcohol use and the proportion of students who continue to use alcohol were found to be lower than some previous studies. The fact that the alcohol usage rate of the students who participated in our study was low could be related to the fact that there were no places selling alcohol in the university, the lack of easy access to alcohol and the fact that the university was a health university.

The incidence of cancer between the ages 20-39 is 13.8/100,000, while for these aged between 40-64 years, it is 114.4/100,000 due to changes in hormones caused by age and decreased immune system resistance [Data according to the Turkish Ministry of Health War Policy against Cancer and Cancer Data (1995-1999-2002)].

The mean age of the students who participated in our study was 20.48±1.45 years and their ages ranged from 17-30 years. It was observed that the students who participated in this study are included in the lower risk groups mentioned in the literature in terms of cancer risk. Our study is similar to the literature studies. Kurtuncu et al.[23] reported a mean age of 21.01±3.63 years, İlhan et al.[16] reported 21.26±1.94 years.

Table 3. Distribution of students' responses to cancer prevention according to gender (n=454)

Necessary/non-procedures in cancer prevention	What/what should be done?									Are you doing this?								
	Female (n=337)				Male (n=117)				X^2-p (0.)	Female (n=337)				Male (n=117)				X^2-P
	N		UN		N		UN			N		UN		N		UN		
	n	%	n	%	n	%	n	%		n	%	n	%	n	%	n	%	
1. Check-ups at certain periods	259	76.9	78	23.1	96	82.1	21	17.9	1.48-0.224	85	25.2	252	74.8	27	23.1	90	76.9	0.22-0.643
2. Pulmonary film	259	76.9	78	23.1	89	76.1	28	23.9	0.03-0.86	68	20.2	269	79.8	24	20.5	93	79.5	0.01-0.938
3. Breast film grind	272	80.7	65	19.3	90	76.9	27	23.1	0.77-0.380	69	20.5	268	79.5	17	14.5	100	85.5	1.10-0.157
4. Having tomography	237	70.3	100	29.7	84	71.8	33	28.2	0.09-0.76	73	21.7	264	78.3	15	12.8	102	87.2	**4.34-0.037**
5. Self-breast examination	255	75.7	82	24.3	80	68.4	37	31.6	2.39-0.122	137	40.7	200	59.3	23	19.7	94	80.3	**16.77-0.001**
6. Having a sample from the cervix	243	72.1	94	27.9	83	70.9	34	29.1	0.06-0.809	64	19.0	273	81.0	19	16.2	98	83.8	0.44-0.507
7. Searching for blood cells in feces	216	64.1	121	35.9	79	67.5	38	32.5	0.45-0.503	62	18.4	275	81.6	16	13.7	101	86.3	1.36-0.243
8. 3 main and 2 snacks per day	220	65.3	117	34.7	70	59.8	47	40.2	1.12-0.290	131	38.9	206	61.1	29	24.8	88	75.2	**7.55-0.006**
9. Skipping meals	**63**	**18.7**	**274**	**81.3**	**23**	**19.7**	**94**	**80.3**	0.05-0.819	67	19.9	270	80.1	25	21.4	92	78.6	**7.55-0.006**
10. 5 servings or more of vegetables/fruits.	**147**	**43.6**	**190**	**56.4**	**44**	**37.6**	**73**	**62.4**	1.29-0.256	75	22.3	262	77.7	17	14.5	100	85.5	3.21-0.073
11. Bread and other cereals every day	**152**	**45.1**	**185**	**54.9**	**49**	**41.9**	**68**	**58.1**	0.37-0.545	108	32.0	229	68.0	33	28.2	84	71.8	0.60-0.439
12. Consuming 2-3 liters of water per day	250	74.2	87	25.8	83	70.9	34	29.1	0.47-0.494	161	47.8	176	52.2	44	37.6	73	62.4	3.63-0.057
13. Frequent intake of fatty and calorie foods	**59**	**17.5**	**278**	**82.5**	**26**	**22.2**	**91**	**77.8**	1.27-0.260	46	13.6	291	86.4	21	17.9	96	82.1	1.28-0.259
14. Frequent intake of meat and animal products	**118**	**35.0**	**219**	**65.0**	**48**	**41.0**	**69**	**59.0**	1.35-0.245	80	23.7	257	76.3	27	23.1	90	76.9	0.02-0.884
15. Using salt in meals	**55**	**16.3**	**282**	**83.7**	**26**	**22.2**	**91**	**77.8**	2.0630.151	55	16.3	282	83.7	28	23.9	89	76.1	3.37-0.056
16. Using sugar in beverages	**56**	**16.6**	**281**	**83.4**	**27**	**23.1**	**90**	**76.9**	2.43-0.119	61	18.1	276	81.9	22	18.8	95	81.2	0.03-0.865
17. Regular PST between ages of 30-65	217	64.4	120	35.6	65	55.6	52	44.4	2.88-0.090	15	4.5	322	95.5	2	1.7	115	98.3	1.81-0.178
18. Making BSE after each bath	177	52.5	160	47.5	55	47.0	62	53.0	1.06-0.304	70	20.8	267	79.2	17	14.5	100	85.5	2.18-0.139
19. Observing I-wart changes	229	68.0	108	32.0	77	65.8	40	34.2	0.18-0.670	113	33.5	224	66.5	33	28.2	84	71.8	1.13-0.288
20. I don't know	36	10.7	301	89.3	23	19.7	94	80.3	**6.19-0.013**	20	5.9	317	94.1	5	4.3	112	95.7	0.46-0.497

N: necessary, UN: unnecessary, PST: Pap Smear test.

Table 4. Distribution of students' responses to cancer risk factors-1

Cancer with or without risk factor	Nursing (n=116)						Physical therapy and rehabilitation (n=105)						X^2-p
	Possible factor		Non-possible factor		Do not known		Possible factor		Non-possible factor		Do not known		
	n	%	n	%	n	%	n	%	n	%	n	%	
1. Being overweight	103[a]	88.8	4[a]	3.4	9[a]	7.8	81[a]	77.1	9[b]	8.6	15[b]	14.3	**12.84-0.046**
Alcohol use	112[a]	96.6	2[a]	1.7	2[a]	1.7	93[a]	88.6	5[b]	4.8	7[b]	6.7	**14.41-0.025**
3. Smoking use	112[a]	96.63	2[a]	1.7	2[a]	1.7	97[a]	92.4	3[a]	2.9	5[a]	4.8	10.42-0.108
4. Exercise	5[a]	4.3	107[a]	92.2	4[a]	3.4	5[a]	4.8	94[a]	89.5	6[a]	5.7	9.59-0.143
5. Vit. A, C, E, β-carotene. Se, Ca, and fish oil	12[a]	10.3	86[a]	74.1	18[a]	15.5	6[a]	5.7	83[a]	79.0	16[a]	15.2	**16.72-0.010**
6. Low fiber and high fat	88[a]	75.9	15[a]	12.9	13[a]	11.2	74[a]	70.5	14[a]	13.3	17[a]	16.2	14.60-0.024
7. Sedentary life	92[a]	79.3	11[a]	9.5	13[a]	11.2	84[a]	80.0	10[a]	9.5	11[a]	10.5	3.01-0.808
8. Change in intestinal habit.	83[a]	71.6	12[a]	10.3	21[a]	18.1	58[a]	55.2	10[a,b]	9.5	37[b]	35.2	9.37-0.154
9. Advanced age	96[a]	82.8	11[a]	9.5	9[a]	7.8	71	67.6	11[a,b]	10.5	23[b]	21.9	**28.94-0.001**
10. First degree relative having cancer	98[a]	84.5	9[a]	7.8	9[a]	7.8	84[a]	80.0	9[a]	8.6	12[a]	11.4	10.58-0.102
11. Environmental pollution	104[a]	89.7	6[a]	5.2	6[a]	5.2	86[a]	81.9	7[a,b]	6.7	12[b]	11.4	11.23-0.81
12. Unbalanced or unhealthy nutrition	105[a]	90.5	7[a]	6.0	4[a]	3.4	94[a]	89.5	5[a]	4.8	6[a]	5.7	5.65-0.464
13. Poor body	101[a]	87.1	8a	6.9	7[a]	6.0	86[a]	81.9	10[a]	9.5	9[a]	8.6	2.90-0.821
14. Solar UV rays	104[a]	89.7	4[a]	3.4	8[a]	6.9	74[a]	70.5	12[b]	11.4	19[b]	18.1	**29.15-0.001**
15. Base stations	100[a]	86.2	4[a]	3.4	12[a]	10.3	90[a]	85.7	4[a]	3.8	11[a]	10.5	3.71-0.715
16. Noise	61[a]	52.6	29[a]	25.0	26[a]	22.4	55[a]	52.4	22[a]	21.0	28[a]	26.7	6.23-0.398
17. Use of birth control pills	75[a]	64.7	14[a]	12.1	27[a]	23.3	53[a]	50.5	12a,b	11.4	40[b]	38.1	10.09-0.121
18. Genetic factors	104[a]	89.7	6[a]	5.2	6[a]	5.2	90[a]	85.7	6[a]	5.7	9[a]	8.6	7.02-0.319
19. Being stressed for a long time period	107[a]	92.2	5[a]	4.3	4[a]	3.4	89[a]	84.8	6[a,b]	5.7	10[b]	9.5	9.92-0.128
20. Gender	66[a]	56.9	30[a]	25.9	20[a]	17.2	45	42.9	32[a]	30.5	28[a]	26.7	**25.18-0.001**
21. Depression/anxiety	99[a]	85.3	9[a]	7.8	8[a]	6.9	88[a]	83.8	6[a]	5.7	11[a]	10.5	4.55-0.603
22. Consumption of plenty of fruit and vegetables	13[a]	11.2	98[a]	84.5	5[a]	4.3	10[a,b]	9.5	84[b]	80.0	11[a]	10.5	12.18-0.058
23. Poor quality products	104[a]	89.7	7[a]	6.0	5[a]	4.3	88[a]	83.8	8[a]	7.6	9[a]	8.6	11.57-0.072
24. Ignoring health checks	95[a]	81.9	11[a]	9.5	10[a]	8.6	86[a]	81.9	6[a]	5.7	13[a]	12.4	7.92-0.244
25. Industrialization	105[a]	90.5	2[a]	1.7	9[a]	7.8	89[a]	84.8	5[a]	4.8	11[a]	10.5	6.77-0.343

[a]: post-hoc analysis result = 0.05 indifferent, [b]: post-hoc analysis result = 0.05 show significant difference, Se: selenium, Ca: calcium.

Table 5. Distribution of students' responses to cancer risk factors-2

Cancer with or without risk factor	Nursing (n=116)						Physical therapy and rehabilitation (n=105)						X^2-P
	Possible factor		Non-possible factor		Do not known		Possible factor		Non-possible factor		Do not known		
	n	%	n	%	n	%	n	%	n	%	n	%	
26. Viruses	101[a]	87.1	7[a]	6.0	8[a]	6.9	94[a]	89.5	1[a]	1.0	10[a]	9.5	6.896-0.331
27. Age at starting sexual intercourse	85[a]	73.3	7[b]	6.0	24[b]	20.7	51[a]	48.6	18[a]	17.1	36[a]	34.3	**28.242-0.001**
28. Working conditions	91[a]	78.4	9[a]	7.8	16[a]	13.8	80[a]	76.2	9[a]	8.6	16[a]	15.2	11.224-0.082
29. Air pollution	106[a]	91.4	3[a]	2.6	7[a]	6.0	90[a]	85.7	5[a]	4.8	10[a]	9.5	9.195-0.163
30. Very hot or cold nutrition	82[a]	70.7	12[b]	10.3	22[a,b]	19.0	55[a]	52.4	21[a]	20.0	29[a]	27.6	12.555-0.051
31. Spices/spicy foods	85[a]	73.3	9[b]	7.8	22[a,b]	19.0	47[a]	44.8	25[b]	23.8	33[b]	31.4	**27.201-0.001**
32. Caffeine-containing foods	102[a]	87.9	5[a]	4.3	9[a]	7.8	77[a]	73.3	10[a]	9.5	18[a]	17.1	12.183-0.058
33. Smoked foods	86[a]	74.1	10[a]	8.6	20[a]	17.2	68[a]	64.8	9[a]	8.6	28[a]	26.7	6.397-0.380
34. Meat not stored properly	86[a]	74.1	14[a]	12.1	16[a]	13.8	81[a]	77.1	12[a]	11.4	12[a]	11.4	**16.348-0.012**
35. Chronic diseases	102[a]	87.9	3[a]	2.6	11[a]	9.5	83[a]	79.0	4[a]	3.8	18[a]	17.1	7.105-0.311
36. Cosmetics	102[a]	87.9	6[a]	5.2	8[a]	6.9	93[a]	88.6	1[a]	1.0	11[a]	10.6	8.533-0.202
37. Food additives	110[a]	94.8	3[a]	2.6	3[a]	2.6	96[a]	91.4	3[a]	2.9	6[a]	5.7	5.012-0542
38. Pesticides	102[a]	87.9	6[a]	5.2	8[a]	6.9	91[a]	86.7	3[a]	2.9	11[a]	10.5	4.277-0.639
39. Substance abuse	112[a]	96.6	2[a]	1.7	2[a]	1.7	97[a]	92.4	2[a]	1.9	6[a]	5.7	4.071-0.667
40. Radiation	111[a]	95.7	2[a]	1.7	3[a]	2.6	94[a]	89.5	2[a,b]	1.9	9[b]	8.6	11.980-0.062
41. Difficult living conditions	99[a]	85.3	8[a]	6.9	9[a]	7.8	92[a]	87.6	2[a]	1.9	11[a]	10.5	6.709-0.349
42. Fate	34[a]	29.3	49[b]	42.2	33[b]	28.4	44[a]	41.9	29[a]	27.6	32[a]	30.5	**40.473-0.001**
43. Being a woman	50[a]	43.1	47[a]	40.5	19[a]	16.4	36[a]	34.3	33[a]	31.4	36[b]	34.3	**26.975-0.001**
44. Never having given birth	60[a]	51.7	37[b]	31.9	19[b]	16.4	25[a]	23.8	35[a]	33.3	45[b]	42.9	**46.645-0.001**
45. Having hepatitis	92[a]	79.3	10[a,b]	8.6	14[b]	12.1	71[a]	67.6	6[a]	5.7	28[a]	26.7	10.694-0.098
46. Smoking hookahs	102[a]	87.9	6[a]	5.2	8[a]	6.9	89[a]	84.8	5[a]	4.8	11[a]	10.5	5.945-0.429
47. Starting the day without breakfast	51[a]	44.0	41[a]	35.3	24[a]	20.7	56[a]	53.3	24[a]	22.9	25[a]	23.8	5.503-0.481
48. Consuming 2-3 liters of water per day	13[a]	11.2	97[a]	83.6	6[a]	5.2	9[a]	8.6	84[a]	80.0	12[a]	11.4	6.774-0.342
49. Consuming fatty or calorific foods	101[a]	87.1	7[a]	6.0	8[a]	6.9	83[a]	79.0	10[a]	9.5	12[a]	11.4	7.233-0.300
50. Being over 50	88[a]	75.9	9[a]	7.8	19[a]	16.4	63[a]	60.0	12[a,b]	11.4	30[b]	28.6	**18.863-0.004**

[a]: post-hoc analysis result = 0.05 indifferent, [b]: post-hoc analysis result = 0.05 show significant difference.

Table 6. Distribution of students' responses according to departments cancer risk factors-3

Cancer with or without risk factor	Medical faculty (n=101)						Nutrition and dietetic (n=132)						X^2-p
	Possible factor		Non-possible factor		Do not known		Possible factor		Non-possible factor		Do not known		
	n	%	n	%	n	%	n	%	n	%	n	%	
1. Being overweight	94[a]	93.1	2[a]	2.0	5[a]	5.0	116[a]	88.8	6[a]	4.5	10[a]	7.6	**12.842-0.046**
2. Alcohol use	98[a]	97.0	1[a]	1.0	2[a]	2.0	129[a]	97.7	0[a]	0.0	3[a]	2.3	**14.409-0.025**
3. Smoking use	100[a]	99.0	0[a]	0.0	1[a]	1.0	130[a]	98.5	0[a]	0.0	2[a]	1.5	10.416-0.108
4. Exercise	1[a]	1.0	99[a]	98.0	1[a]	1.0	1[a]	0.8	126[a]	95.5	5[a]	3.8	9.585-0.143
5. Vit. A. C. E. β-carotene, selenium, calcium and fish oil	3[a]	3.0	93[a]	92.1	5[a]	5.0	9[a]	6.8	114[a]	86.4	9[a]	6.8	**16.715-0.010**
6.Low fiber and high fat	90[a]	89.1	6[b]	5.9	5[a,b]	5.0	98[a]	74.2	22[a]	16.7	12[a]	9.1	**14.599-0.024**
7.Sedentary life	86[a]	85.1	6[a]	5.9	9[a]	8.9	103[a]	78.0	16[a]	12.1	13[a]	9.8	3.007-0.808
8. Change in intestinal habit.	66[a]	65.3	12[a]	11.9	23[a]	22.8	85[a]	64.4	13[a]	9.8	34[a]	25.8	9.368-0.154
9. Advanced age	93[a]	92.1	2[b]	2.0	6[b]	5.9	90[a]	68.2	16[a,b]	12.1	26[b]	19.7	**28.937-0.001**
10. First degree relative cancer	96[a]	95.0	2[a]	2.0	3[a]	3.0	112[a]	84.8	9[a]	6.8	11[a]	8.3	10.582-0.102
11. Environmental pollution	96[a]	95.0	2[a]	2.0	3[a]	3.0	121[a]	91.7	4[a]	3.0	7[a]	5.3	11.233-0.81
12. Unbalanced and unhealthy nutrition	96[a]	95.0	1[a]	1.0	4[a]	4.0	123[a]	93.2	6[a]	4.5	3[a]	2.3	5.647-0.464
13. Poor body	86[a]	85.1	6[a]	5.9	9[a]	8.9	116[a]	87.9	9[a]	6.8	7[a]	5.3	2.900-0.821
14. Solar UV rays	96[a]	95.0	2[a]	2.0	3[b]	3.0	105[a]	79.5	14[a]	10.6	13[a]	9.8	**29.147-0.001**
15. Base stations	93[a]	92.1	2[a]	2.0	6[a]	5.9	120[a]	90.9	4[a]	3.0	8[a]	6.1	3.713-0.715
16.Noise	47[a]	46.5	33[a]	32.7	21[a]	20.8	65[a]	50.0	42[a]	31.8	24[a]	18.2	6.228-0.398
17. Use of birth control pills	62[a]	61.4	17[a]	16.8	22[a]	21.8	74[a]	56.1	21[a]	15.9	37[a]	28.0	10.086-0.121
18. Genetic factors	95[a]	94.1	3[a]	3.0	3[a]	3.0	122[a]	92.4	2[a]	1.5	8[a]	6.1	7.015-0.319
19. Stress for a long time	97[a]	96.0	2[a]	2.0	2[a]	2.0	122[a]	92.4[a]	4[a]	3.0	6[a]	4.5	9.920-0.128
20. Gender	68[a]	67.3	24[a,b]	23.8	9[b]	8.9	52[a]	39.4	45[b]	34.1	35[b]	26.5	**25.180-0.001**
21. Depression/anxiety	90[a]	89.1	7[a]	6.9	4[a]	4.0	117[a]	88.6	6[a]	4.5	9[a]	6.8	4.550-0.603
22. Consume plenty of fruit and vegetables	14[a]	13.9	85[a]	84.2	2[a]	2.0	8[a]	6.1	118[a]	89.4	6[a]	4.5	12.181-0.058
23. Poor quality products	84[a]	83.2	12[a]	11.9	5[a]	5.0	124[a]	93.9	4[a]	3.0	4[a]	3.0	11.569-0.072
24. Ignoring health checks	84[a]	83.2	11[a]	10.9	6[a]	5.9	117[a]	88.6	9[a]	6.8	6[a]	4.5	7.917-0.244
25. Industrialization	95[a]	94.1	1[a]	1.0	5[a]	5.0	114[a]	86.4	6[a]	4.5	12[a]	9.1	6.770-0.343

[a]: post-hoc analysis result = 0.05 indifferent, [b]: post-hoc analysis result = 0.05 show significant difference.

Table 7. Distribution of students' responses according to departments cancer risk factors-4

Cancer with or without risk factor	Medical faculty (n=101)						Nutrition And Dietetic (n=132)						X^2-p
	Possible factor		Non-possible factor		Do not known		Possible factor		Non-possible factor		Do not known		
	n	%	n	%	n	%	n	%	n	%	n	%	
26. Viruses	86[a]	85.1	8[a]	7.9	7[a]	6.9	116[a]	87.9	5[a]	3.8	11[a]	8.3	6.896-0.331
27. Age at starting sexual intercourse	67[a]	66.3	18[a]	17.8	16[b]	15.8	67[a]	50.8	17[a,b]	12.9	48[b]	36.4	**28.242-0.001**
28. Working conditions	91[a]	90.1	4[a]	4.0	6[a]	5.9	115[a]	87.1	4[a]	3.0	13[a]	9.8	11.224-0.082
29. Air pollution	96[a]	95.0	3[a]	3.0	2[a]	2.0	125[a]	94.7	2[a]	1.5	5[a]	3.8	9.195-0.163
30. Very hot cold nutrition	64[a]	63.4	20[a]	19.8	17[a]	16.8	72[a]	54.5	25[a]	18.9	35[a]	27.6	12.555-0.051
31. Spicy. spicy foods	62[a,b]	61.4	25[b]	24.8	14[a]	13.9	77[a]	58.3	22[a]	16.7	33[a]	25.0	**27.201-0.001**
32. Caffeine-containing foods	77[a]	76.2	13[a]	12.9	11[a]	10.9	102[a]	77.3	9[a]	6.8	21[a]	15.9	12.183-0.058
33. Smoked foods	79[a]	78.2	4[a]	4.0	18[a]	17.8	95[a]	72.0	9[a]	6.8	28[a]	21.2	6.397-0.380
34. Meat not stored properly	93[a]	92.1	5[b]	5.0	3[b]	3.0	100[a]	75.8	21[a]	15.9	11[a]	8.3	**16.348-0.012**
35. Chronic diseases	84[a]	83.2	7[a]	6.9	10[a]	9.9	109[a]	82.6	4[a]	3.0	19[a]	14.4	7.105-0.311
36. Cosmetics	92[a]	91.1	3[a]	3.0	6[a]	5.9	117[a]	88.6	1[a]	0.8	14[a]	10.6	8.533-0.202
37. Food additives	96[a]	95.0	2[a]	2.0	3[a]	3.0	122[a]	92.4	1[a]	0.8	9[a]	6.8	5.012-0542
38. Pesticides	93[a]	92.1	2[a]	2.0	6[a]	5.9	120[a]	90.9	3[a]	2.3	9[a]	6.8	4.277-0.639
39. Substance use	124[a]	93.9	1[a]	0.8	7[a]	5.3	97[a]	92.4	2[a]	1.9	6[a]	5.7	4.071-0.667
40. Radiation	100[a]	99.0	0[a]	0.0	1[a]	1.0	127[a]	96.2	1[a]	0.8	4[a]	3.0	11.980-0.062
41. Difficult living conditions	93[a]	92.1	3[a]	3.0	5[a]	5.0	118[a]	89.4	4[a]	3.0	10[a]	7.6	6.709-0.349
42. Fate	53[a]	52.5	32[a]	31.7	16[a]	15.8	87[a]	65.9	23[b]	17.4	22[b]	16.7	**40.473-0.001**
43. Being a woman	61[a]	60.4	29[b]	28.7	11[b]	10.9	52[a]	39.4	46[a]	34.8	34[a]	25.8	**26.975-0.001**
44. Never have given birth	52[a]	51.5	34[a,b]	33.7	15[b]	14.9	33[a]	25.0	57[b]	43.2	42[b]	31.8	**46.645-0.001**
45. Being hepatitis	67[a]	66.3	11[a]	10.9	23[a]	22.8	90[a]	68.2	9[a]	6.8	33[a]	25.0	10.694-0.098
46. The habit of hookah	93[a]	92.1	2[a]	2.0	6[a]	5.9	117[a]	88.6	2[a]	1.5	13[a]	9.8	5.945-0.429
47. Starting the day without breakfast	49[a]	48.5	28[a]	27.7	24[a]	23.8	71[a]	53.8	34[a]	25.8	27[a]	20.5	5.503-0.481
48. Consume 2-3 liters of water per day	8[a]	7.9	89[a]	88.1	4[a]	4.0	11[a]	8.3	108[a]	81.8	13[a]	9.8	6.774-0.342
49. Consume fatty and calorie foods	88[a]	87.1	7[a]	6.9	6[a]	5.9	111[a]	84.1	5[a]	3.8	16[a]	12.1	7.233-0.300
50. Being over 50	85[a]	84.2	6[a,b]	5.9	10[b]	9.9	87[a]	65.9	17[a,b]	12.9	28[b]	21.2	**18.863-0.004**

[a]: post-hoc analysis result = 0.05 indifferent.", [b]: post-hoc analysis result = 0.05 show significant difference.

Breast cancer is the most common type of cancer and cause of death in women. Urbanization and westernization increase breast cancer incidence.[24] 25% of women are diagnosed with cancer including breast cancer.[25] In our study, it was determined that students knew that self-breast examination should be carried out after each bath but only 19.2% of them applied it. 35.2% of the students applied self-breast examination but not after each bath. In the study conducted by İlhan et al.[16] in order to determine the behaviors of university students studying in health related departments regarding the early diagnosis of breast cancer, it was found that 53.3% of the students performed regularly self-breast examination. There is a difference between our results and theirs. The reason for this difference may be the fact that there was only a female population in the study by Ilhan, and in our study, there was a majority male population. In our study, while 79.7% of the students thought that mammography should be carried out in cancer prevention, 18.9% of the students had mammography at least one. 71% of women had mammography at least once in a study conducted by Karadag et al.[13] in a city in the southeastern region.

In this study, significant differences were observed in the percentage of making self-breast examination in women who had received education compared to the ones who had not received education on this issue. The reason for this could be that the students had been educated in health departments and had more awareness. When the distribution of the answers of the students about cancer risk factors was examined, 83.5% of the students knew that constant sun exposure, 96.7% knew smoking and 95.2% accepted alcohol as a risk.

Kolutek and Karataş[26] determined the cancer risk factors and early diagnosis of symptoms of individuals. According to their study, 83.5% of the individuals considered constant sun exposure, 52.7% of them considered smoking and 19.4% considered alcohol as a risk. While there was no significant difference between sun exposure being seen as a risk to increase cancer development among students, there were significance differences for smoking and alcohol use.

The types of cancer that students know most are evaluated separately according to the departments. Nursing students stated that the most commonly known form of cancer is the larynx (33.9%), nutrition and dietetics students stated lymph cancer (41.3%), physical therapy and rehabilitation students stated blood cancer (21. 6%) and medical faculty students stated pancreatic cancer (33.3%).

The answers of the students to the question of what the word "cancer" means to you were also examined on the basis of their departments. Nursing students highlighted a deterioration of body image due to a deterioration in the quality of life (75%), nutrition and dietetics students emphasized a difficult period, sadness, stress, and despair (53.4%), physical therapy and rehabilitation students mentioned death, the worst disease, irreversible and untreatable (26.6%) and medical faculty students responded by talking about uncontrolled cell divisions, tumors, metastasis and malign tumors (48.1%).

The distribution of the answers given by the students regarding cancer prevention according to their departments and genders was not discussed because no data was found in the literature.

When the differences between the distribution of the options according to gender was evaluated by chi-square analysis, it was found that only the "do not know" option showed a significant difference. It was determined that men marked the option "do not know" more than women. When asked whether they carry out applications which they say are necessary, it could be seen that the majority of the students did not carry out the application. When the distributions of options according to gender were evaluated in terms of whether they were carrying out the applications themselves, it was observed that having tomography, self-breast examinations and 3 meals with 2 snacks daily were more chosen by women; and skipping meals was chosen more frequently by men.

There are significant differences between the distribution of the options such as periodic check-ups, lung scans, breast scans, tomography, self-breast examination, PAP smear testing, skipping meals, 5 serving or above of fruits and vegetables daily, consumption of bread and cereals, drinking 2-3 liters of water, frequent calorific and fatty foods intake, consumption of meat and animal products, the use of salt with meals, sugar usage with beverages, and being aged between 30-65 years of age. Many of the students correctly stated the cancer risk factors. Between 20% and 25% of the students studying at the health university stated that "they did not know" for questions regarding noise, the use of oral contraceptive, gender, smoked foods, being female, weight, having previously given birth, hepatitis and starting the day with no breakfast. 82.8%-93.8% of students gave the answers "It is not a possible risk factor" to those options which are not cancer risk factors such as drinking 2-3 liters of water, exercise, vitamins A, C, and E, beta carotene, selenium, calcium and fish oil consumption.

Students do not consider exercise, consuming plenty of fruit and vegetables and consuming 2-3 liters of water in a day as a risk factors. The majority of the students (88.1-96.7%) considered options such as, alcohol and cigarette usage, environmental pollutants, an unbalanced diet or malnutrition, genetic factors, base stations, poor quality products, air pollution, industrialization, radiation, cosmetics, foods additives, substance abuse, pesticides, difficult life conditions, and smoking water pipes/hookahs as cancer risk factors. When the distribution of the answers given by the students regarding the knowledge of risk factors of cancer was examined, it was found that the distribution of the majority of the options differed significantly.

CONCLUSION

Based on the results of this research, it was determined that the majority of the students knew about cancer risk factors but many of them did not take any action. It is advised that planning of interventions to create behavioral changes especially in terms of cancer prevention and early diagnosis, by conducting training on these subjects which highlight the responsibility of the individual be carried out. Because of the primary responsibility for protection from cancer is given to the media; as the information resources of the students are mostly health personnel, referring to the guide that has the largest and the most current information, to teach and spread the applications that are known to be effective in early diagnosis such as self-breast examination which a small percentage of students applied despite general student awareness. Planning informative training activities on cancer risk factors is needed due to the fact that the students marked the options "I do not know" option for many risk factors. It is important to increase the awareness of health professionals regarding cancer and its risk factors in the early stages of their student life. Universities are advised to include cancer and the risk factors of cancer in their curriculums. It is very important for students who will become healthcare professionals to know about

cancer risk factors in order to increase their health as well as the health of the society they will provide care for. Another issue is to evaluate whether information is reflected in behavior. Identifying the current situation in this specified area can provide professionals with valuable data.

MAIN POINTS

- It was determined that the students participating in this study did not perform any applications although they knew the cancer risk factors and those practices which are known to be effective in early diagnosis such as breast self-examination.
- In order to improve this situation, initiatives aiming at creating behavioral change especially for cancer prevention and early diagnosis should be planned.
- It should be ensured that these practices, which have an important effect on the early diagnosis and treatment of cancer, are taught and expanded.

ETHICS

Ethics Committee Approval: Ethics committee approval for this study was received from the Ethics Committee of the Clinical Research Institute of Sanko University with the decision number 01 prior to starting the survey on 02.03.2017.

Informed Consent: Verbal informed consent was obtained from the students who participated in this study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: N.P., Design: N.P., M.K., Data Collection and/or Processing: N.P., Analysis and/or Interpretation: M.K., Literature Search: M.K., Writing: M.K., Critical Review: M.K.

DISCLOSURES

Conflict of Interest: No conflict of interest was declared by the authors.

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