

## RESEARCH ARTICLE

# Effects of Nursing Education on Awareness of Risk Factors for Colorectal Cancer

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### Abstract

**Background:** The objective of this study is to determine the effect of nursing education on awareness of risk factors for colorectal cancer. **Materials and Methods:** In this descriptive study, the sample is consisted of 132 volunteer students studying in the 1st and 4th grades of School of Health Nursing Department during the fall semester of 2014-2015. Data were collected via a questionnaire including information on the socio-demographic features of the participants and the correlating risk factors of colorectal cancer, prepared by researchers in view of the literature. The questionnaire was distributed to students and completed during class time. Before presenting the questionnaires to the respondents, informed consent was obtained from each. The data obtained were analyzed with a statistical package (SPSS). At first, a Kolmogorov-Smirnow test was performed on the research data. However, since it was seen that variables did not have a normal distribution, the Wilcoxon Signed Ranks Test was applied. P values of  $<0.05$  were considered statistically significant. Percentages, means and standard deviations were also utilized for evaluation. **Results:** Of the total of 132 students participating in this study, 85.6% (n=113) were female, and 14.4% (n=19) were male. The average age was  $20.5 \pm 2.04$ . 54.5% of the students (n=72) were 4th graders and 45.5% (n=60) were first graders. Total score averages of first graders on risk awareness was  $X=12 \pm 7.24$ , and fourth graders was  $X=16.93 \pm 7.71$ . The difference between these two scores were found to be statistically significant ( $Z=-9.333$ ;  $p=0.000$ ). **Conclusions:** Nursing education was found out to have a positive influence on the students' awareness of risk factors for colorectal cancer.

**Keywords:** Colorectal cancer - awareness of risk factors - nursing education

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### Introduction

Cancer is major burden worldwide and a leading cause of mortality (Stubbings et al., 2009; Al-Azri et al., 2014). The incidence of different types of cancer has increased in the past 20 years and is expected to rise further with an estimated 13.1 million deaths per annum by 2030 (WHO, 2014). The incidence of cancer in Turkey is similar to the world's in general. Age standardized rate of cancer in men was 269.7, and 173.3 in women in Turkey, 2009 (per 100000 people). It was announced that colorectal cancer incidence for men was 21 in 100.000 in Turkey (T.R. Ministry of Health, Annual Health Statistics, 2013). According to the 2009 cancer statistics, nearly 98 thousand men and 63 thousand women get cancer every year in Turkey. Among the most common 5 cancer types, colorectal cancer ranks the 4th for men and the 3rd for women. According to data from the year 2012, among the top five most commonly diagnosed cancers, colorectal cancers were ranked the third in men and the second in women. According to data GLOBOCAN 2012, a total of 14.1 million new cancer cases in the world were seen in 2012 and 8.2 million deaths occurred as a result of cancer.

It was stated that colorectal cancer was the third most commonly diagnosed cancer with a percentage of 9.7% in the world. More than a half of both cancer cases (56.8%) and deaths from cancer (64.9%) was found to be in the least developed countries (GLOBOCAN 2012; Tastan et al., 2013; WHO, 2014; WHO, 2015). New cases are estimated to double the number as nearly as 70% in the next two years. Leading behavioral and dietary risks in about 30% of cancer deaths are higher body mass index, inadequate fruit and vegetable intake, physical inactivity, tobacco and alcohol use. Tobacco use is the most important risk factor for 20% of global cancer deaths. More than 60% of total annual new cases in the world are seen in Africa, Asia and Central and South America. These regions comprise the 70% of cancer deaths worldwide. It is expected that annual cancer cases will rise from 14 million in 2012 to 22 within the next 2 decades (WHO, 2014; WHO, 2015). One of the most reliable surveillance systems in terms of cancer statistics is in the United States (US). American Cancer Society estimates that a total of 141,210 people were diagnosed with colorectal cancer and 49,380 people died due to colorectal cancer in 2011 in the USA. It is the third most common cancer in both men and women

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and also ranks third as the cause of cancer-related deaths (Colorectal Cancer Facts & Figures 2013). Since early stage cancers are less deadly and can be treated better than late-stage cancers, if cancer awareness is created, early diagnosis increases the chance of a cure and improves the quality of life in cancer patients. Therefore, health professionals', particularly nurses' (colorectal) cancer-related risk awareness should be increased during their professional training and they should be informed about early diagnosis and screening programs of cancer (Andsoy et al., 2014; WHO, 2015 <http://www.worldcancerday.org>).

As health professionals, nurses have the duty to protect the health of society as well as performing curative services. There are few studies on the effects of nursing education on colorectal cancer risk awareness. Future research on increasing the awareness of nursing students on the risk factors of cancer will help to shape training programs and make effective use of nursing practices combined with evidence based practices. Based on these requirements, this study was carried out to determine the effect of nursing education on colorectal cancer risk awareness.

## Materials and Methods

Being a descriptive study, its sample was consisted of 132 volunteering students studying in the 1st and 4th grades of School of Health Nursing Department during the fall semester of 2014-2015. Data were collected via a questionnaire including information on the socio-demographic features of the participants and a 24-item questionnaire on the risk factors of colorectal cancers. The assessment of items on colorectal cancer was performed by scoring the right answers "1 point", wrong answers "-1 point" and "0" for the answer "I don't know". The questionnaire was distributed to students and completed during class time. Before presenting the questionnaires to the respondents, informed consent was obtained from each student. Only once a respondent confirmed that they understood the purpose of survey were they handed the questionnaire form. The respondents when required to answer all the questions and hand the questionnaire back to the researcher. The data obtained was analyzed by Statistical Package (SPSS). At first, Kolmogorov-Smirnow test was performed on the research data. However, since it was seen that variables didn't have a normal distribution, Wilcoxon Signed Ranks Test was applied. P values of <0.05 were considered statistically significant. Percentage, mean and standard deviation were also utilized for evaluation.

## Results

A total of 132 students participated in this study. 85.6 % of the participants (n=113) were female, and 14.4 % (n=19) were male. The average age of the participants was 20.46±2.04, with a minimum age of 17 years and a maximum age of 31 years. 54.5 % of the students (n=72) were 4th graders and 45.5 % (n=60) were first graders.

When the risk factors that are least and most well-known among 1st and 4th grade nursing students were

assessed; it was seen that for the 1st graders the most well-known risk factors "smoking", "unhealthy diets" and "long-term red meat / processed meat consumption" rated first with a percentage of 17 %; "stress" rated second with a percentage of 88.3 % and "excess alcohol consumption" rated third with a percentage of 85 %. When the least known risk factors for the same group were examined "subclinical hypothyroidism" ranked first with 25%,"the

**Table 1. Opinions of 1st and 4th Grade Student Nurses on the Risk Factors of Colorectal Cancer**

Risk Factors	1st Grade (N:60) (n, %)	4th Grade (N:72) (n, %)
Familial history of cancer:		
Increases cancer risk	38 (63.3)	65 (90.3)
Involves no risk	7 (11.7)	3 (4.32)
I don't know	15 (25.0)	4 (5.6)
Familial colorectal cancer		
Increases cancer risk	28 (46.7)	64 (88.9)
Involves no risk	12 (20.0)	5 (6.9)
I don't know	20 (33.3)	3 (4.2)
Race and ethnicity		
Increases cancer risk	28 (46.7)	53 (73.6)
Involves no risk	11 (18.3)	6 (8.3)
I don't know	21 (35.0)	13 (18.1)
Smoking		
Increases cancer risk	55 (91.7)	65 (90.3)
Involves no risk	1 (1.7)	1 (1.4)
I don't know	4 (6.7)	6 (8.3)
Hookah use		
Increases cancer risk	49 (81.7)	63 (87.5)
Involves no risk	2 (3.3)	2 (2.8)
I don't know	9 (15.0)	7 (9.7)
Excess alcohol consumption		
Increases cancer risk	51 (85.0)	63 (87.5)
Involves no risk	3 (5.0)	3 (4.2)
I don't know	6 (10.0)	6 (8.3)
Physical inactivity		
Increases cancer risk	37 (61.7)	52 (72.2)
Involves no risk	8 (13.3)	8 (11.1)
I don't know	15 (25.0)	12 (16.7)
Stress		
Increases cancer risk	53 (88.3)	67 (93.1)
Involves no risk	4 (6.7)	2 (2.8)
I don't know	3 (5.0)	3 (4.2)
Exposure to pelvic radiation		
Increases cancer risk	46 (76.7)	65 (90.3)
Involves no risk	1 (1.7)	3 (4.2)
I don't know	13 (21.7)	4 (5.6)
Obesity		
Increases cancer risk	31 (51.7)	57 (79.2)
Involves no risk	8 (13.3)	4 (5.6)
I don't know	21 (35.0)	11 (15.3)
Unhealthy diet		
Increases cancer risk	55 (91.7)	65 (90.3)
Involves no risk	1 (1.7)	3 (4.32)
I don't know	4 (6.7)	4 (5.6)
Long-term red / processed meat consumption		
Increases cancer risk	55 (91.7)	65 (90.3)
Involves no risk	1 (1.7)	3 (4.2)
I don't know	4 (6.7)	4 (5.6)
Fatty food consumption		
Increases cancer risk	43 (71.7)	63 (87.5)
Involves no risk	3 (5.0)	2 (2.8)
I don't know	14 (23.3)	7 (9.7)

presence of chronic diseases” ranked second with 38.3%, and “HIV-positive patients” ranked third with 41.7%. The most well-known risk factors for Senior students were; “Stress” ranked first with 93.1% ; “the presence of cancer in the family”, “smoking”, “pelvic radiation exposure”, “unhealthy diets”, “red meat / processed meat consumption in the long term”, “ presence of another cancer beforehand” ranked second with 90,3% rate, and

**Table 1.1. Opinions of 1st and 4th Grade Student Nurses on the Risk Factors of Colorectal Cancer**

Risk Factors	1st Grade (N:60)	4th Grade (N:72)
	(n. %)	(n. %)
Inadequate fruit/vegetable consumption		
Increases cancer risk	35 (58.3)	55 (76.4)
Involves no risk	12 (20.0)	9 (12.5)
I don't know	13 (21.7)	8 (11.1)
Inadequate cereal consumpt.		
Increases cancer risk	27 (45.0)	47 (65.3)
Involves no risk	11 (18.3)	10 (13.9)
I don't know	22 (36.7)	15 (20.8)
Part. After 50 years		
Increases cancer risk	33 (55.0)	52 (72.2)
Involves no risk	10 (16.7)	8 (11.1)
I don't know	17 (28.3)	12 (16.7)
Another type of cancer prev.		
Increases cancer risk	44 (73.3)	65 (90.3)
Involves no risk	6 (10.0)	3(4.2)
I don't know	10 (16.7)	4(5.6)
Large intestine polyps		
Increases cancer risk	29 (48.3)	55 (76.4)
Involves no risk	7 (11.7)	6 (8.3)
I don't know	24 (40.0)	11 (15.3)
Inflammatory intestine dis.		
Increases cancer risk	36 (60.0)	62 (86.1)
Involves no risk	4 (6.7)	4 (5.6)
I don't know	20 (33.3)	6 (8.3)
Presence of a chronical dis.		
Increases cancer risk	23 (38.3)	49 (68.1)
Involves no risk	9 (15.0)	8 (11.1)
I don't know	28 (46.7)	15 (20.8)
Some types of occupations		
Increases cancer risk	31 (51.7)	58 (80.6)
Involves no risk	8 (13.3)	2 (2.8)
I don't know	21 (35.0)	12 (16.7)
Taking radiotherapy for prostate cancer		
Increases cancer risk	28 (46.7)	45 (62.5)
Involves no risk	5 (8.3)	8 (11.1)
I don't know	27 (45.0)	19 (26.4)
HIV positive patients		
Increases cancer risk	25 (41.7)	27 (37.5)
Involves no risk	10 (16.7)	15 (20.8)
I don't know	25 (41.7)	30 (41.7)
Subclinical hypothyroidism		
Increases cancer risk	15 (25.0)	29 (40.3)
Involves no risk	9 (15.0)	10 (13.9)
I don't know	36 (60.0)	33 (45.8)

**Table 2. A Comparison of Colorectal Cancer Risk Factor Awareness Scores of 1st and 4th Grade Nursing Students**

1 <sup>st</sup> Grade	4 <sup>th</sup> Grade		
Mean ± SD	Mean ± SD	test*	p
12 ± 7,..24	16.93 ± 7.71	Z= -9.333	0.000

\*Wilcoxon signed ranks test, p<0.001

the third row included “familial colon cancer in the family” as the most well-known risk factor with a percentage of 88,9%. The least known risk factors for the same group were found out to be “HIV positive patients” in the first row with 37.5 % rate, “subclinical hypothyroidism” rated second with 40.3 % and “taking chemotherapy for prostate cancer” rated third with 62.5 %.

First grade students' risk awareness total score average was found to be  $X = 12$   $X = 16.93 \pm 7.24$  while it was  $X=16,93 \pm 7.71$  for the last year students. The difference was found to be statistically significant ( $Z = -9.333$ ;  $P = .000$ ).

## Discussion

In this study, conducted to determine the effect of nursing education on awareness of the risk of colorectal cancer, it was assessed that nursing education positively affected the students' awareness of the risk for colorectal cancer. While first year students emphasized factors such as smoking, unhealthy diet and alcohol use among the most common risk factors, senior students reported factors such as stress, the presence of cancer in the family and exposure to pelvic radiation as the most important risk factors. It can be stated that education influences the awareness of students on risk factors. Tobacco use, alcohol use, unhealthy diet and physical inactivity, obesity, age older than 50 years, genetic predisposition, including hereditary polyposis and nonpolyposis syndromes, are the main cancer risk factors worldwide (MOH, 2009; NCR, 2009; WHO, 2014). The common other risk factors for CRC include dietary practices such as high consumption of fat, red meat, and low consumption of fiber and vegetables (Umar et al., 2009; Huxley et al., 2009). Meat intake is associated with the risk of colorectal cancer (Kim et al., 2011; Woo et al., 2014; Anderson et al., 2015). It is seen that students in the study group are aware of the fact that long term red meat consumption increases cancer risk, because a total of 75 % of them (n=99) have stated this issue. However, it is observed that there are risk factors less known also by senior students. The least known risk factor among the students were found out to be subclinical hypothyroidism. In a case-control study (Guifang et al., 2014) performed by Guifang and colleagues on 273 colorectal cancer patients, subclinical hypothyroidism was found to be an independent risk factor for colorectal cancer.

In conclusion, nursing education positively affects the students' awareness of the risk for colorectal cancer, but it was shown that some risk factors were not known enough by the students. Nursing students should be informed on the most common risk factors for colorectal cancer in accordance with evidence-based studies and they should be directed to further reading and research on this topic. This study will contribute to new studies on the subject.

Limitation: this study was carried out in a particular university, so it can not be generalized for the whole university students and geographical regions. Similar studies among university students in different cultural groups and different geographical regions can be performed in the future.

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