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Original Article

Healthy lifestyle behaviours and attitudes of relatives of patients with colorectal cancer towards protection from colorectal cancer

Kolorektal kanserli hasta yakınlarının kolorektal kanserden korunmaya yönelik tutumları ve sağlıklı yaşam biçimi davranışları

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ABSTRACT

Aim: This study was conducted in order to determine healthy lifestyle behaviours and attitudes of first degree relatives of patients with colorectal cancer (CRC) towards protection from CRC.

Material and Method: The data were collected by the researcher using Colorectal Cancer Screening Attitude Beliefs Scale (CCSAB), and Health Promotion Life-Style Profile II (HPLP).

Results: It was found that more than half (56.3%) of the patient relatives did not have knowledge about CRC and 85.2% did not participate early diagnosis/screening programs of CRC. It was found that CCSAB total mean score of the patient relatives was 53.06±8.91 and HPLP' total mean score was 132.46±20.96. Both HPLP' mean score and CCSAB' mean score was higher in patient' relatives who had knowledge about CRC and participated in early diagnosis/screening programs of CRC and the difference was determined to be highly significant. A positive, weak, and statistically significant correlation was found between CCSAB and HPLP scale of patient relatives in the study.

Conclusion: The present study showed that the rate of patient relatives to participate in CRC screening participation rates was low, healthy lifestyle behaviours and attitudes towards protection from CRC were moderate. Nurses should raise awareness through protection from cancer and early diagnosis/screening programs especially for cancer patients' relatives in all individuals is at risk primarily first degree relatives of patients with protection from and be guiding to acquire healthy lifestyle behaviours.

Keywords: cancer prevention, health lifestyle behaviours, relative, nursing

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ÖZ

Amaç: Araştırma, kolorektal kanserli (KRK) hasta yakınlarının KRK'den korunmaya yönelik tutumlarını ve sağlıklı yaşam biçimi davranışlarını belirlemek amacıyla tanımlayıcı olarak yapılmıştır.

Gereç ve Yöntemler: Çalışma Haziran 2015-Haziran 2016 tarihleri arasında Erciyes Üniversitesi Sağlık Uygulama ve Araştırma Merkezi genel cerrahi servisinde KRK cerrahisi geçiren 86 hastanın 142 yakını ile tamamlanmıştır. Veriler hasta tanıtım formu, kolorektal kanser taraması tutum inanç ölçeği (KKTTİ) ve sağlıklı yaşam biçimi davranışları II ölçeği (SYBD) kullanılarak, araştırmacı tarafından toplanmıştır.

Bulgular: Hasta yakınlarının yarısından fazlasının (%56.3) KRK hakkında bilgi sahibi olmadığı ve %85.2'sinin KRK erken tanı/tarama programlarına katılmadığı belirlenmiştir. Hasta yakınlarının KKTTİ ölçeği toplam puan ortalamasının 53.06±8.91, SYBD ölçeği toplam puan ortalamasının ise 132.46±20.96 olduğu tespit edilmiştir. KRK ile ilgili bilgi sahibi olan ve KRK erken tanı ve tarama programlarına katılan hasta yakınlarının hem KKTTİ ölçeği hem de SYBD ölçeği puan ortalamaları daha yüksek olup, aradaki farkın ileri derecede anlamlı olduğu belirlenmiştir ($p<0.001$). Araştırmada hasta yakınlarının SYBD ölçeği ile KKTTİ ölçeği arasında pozitif yönlü, zayıf düzeyde, istatistiksel olarak anlamlı bir ilişki tespit edilmiştir ($p<0.01$).

Sonuç: Çalışmamızda hasta yakınlarının KRK taramalarına katılma oranlarının düşük, KRK'den korunmaya yönelik tutumlarının ve sağlıklı yaşam biçimi davranışlarının ise orta düzeyde olduğu belirlenmiştir. Hemşireler kanserli hastaların birinci derece yakınları başta olmak üzere risk altındaki tüm bireylerde kanserden korunma ve erken tanı/tarama programları ile ilgili farkındalık geliştirmeli ve sağlıklı yaşam biçimi davranışı kazanmalarında yol gösterici olmalıdır.

Anahtar kelimeler: Hasta yakını, Hemşire, Kanserden korunma, Sağlıklı yaşam biçimi davranışları

Introduction

According to 2016 report of American Cancer Society (ACS), the first three most frequent cancer types in the world are prostate/breast, lung and colorectal cancers (CRC), respectively. It is reported in the report that CRC is the third leading cause of cancer deaths in both women and men and approximately 49.190 people will die due to CRC in 2016 [1].

Environmental and genetic factors play an important role in the pathogenesis of CRCs developing with multifactorial reasons. The lifetime prevalence is approximately 5% in CRCs and this rate increases even more with certain risk factors such as genetic, age and environmental factors [2]. Genetic predisposition among those factors is reported to be the most important factor increasing the CRC risk. In CRCs showing a genetic transition of approximately 35%, the number of first-degree relatives with CRC and the age when they are diagnosed with the disease also increase further the possibility of having CRC [3]. While the risk increases two-four times in individuals having first degree relatives with history of CRC, this rate increases three-five times when the person has two first-degree relatives with history of CRC or when they have an age at diagnosis of below 50 years and incidence of CRC increases up to 20-25% [4].

It is reported that the genetic risk factor playing an important role in cancer development can be controlled with some changes in lifestyle [2,4]. It is stated in previous studies that consuming frequently animal fat, red meat and foods meat with high fat content increases the risk of CRC, while nutritional behaviours like consuming foods with high amount of fibre, milk and calcium regularly decrease the formation of CRC and the development of many cancer types including CRC can be controlled in people doing regular exercise. All of these studies indicate that the individuals having genetic predisposition can reduce the risk of CRC if they have healthy lifestyle behaviours [2,5].

In addition to the management of environmental factors, early diagnosis of CRC especially in individuals with genetic predisposition is another important issue. Early diagnosis has resulted in decreased morbidity and mortality rates of CRC and in increased five-year survival chance by 90% [6]. It is stated in the studies that rates of the CRC patients' first degree relatives to participate in recommended screening programs vary between 16-40% and remain below the expected level [7].

Nurses who have an important role to protect and maintain the health should consider the patients' first degree relatives which are in the risk group as well as the patients admitted to the clinic because of surgical intervention that is the first treatment method in almost all cancer types. Nurses should plan and apply appropriate interventions about risky patients to know the disease, to be aware of the false beliefs about the disease and gain positive health behaviours related with the protection from the disease within the scope of primary prevention measures and provide the necessary support by evaluating the results [8].

This descriptive study was conducted to investigate the attitudes of CRC patients' relatives towards protection against CRC and their healthy lifestyle behaviours.

Preventive Health Model

A person's health is affected by his beliefs and attitudes at a significant level. Healthcare professionals benefit from various models to describe the person's attitudes and beliefs affecting his health-related behaviours. Models provide significant information related to the factors that are effective in exhibiting a preventive behaviour. Preventive health model (PHM), one of these models, is a psychosocial model developed in order to determine the factors directing the individuals' behaviours and to guide the individuals for displaying positive health behaviours by creating behavioural changes in those individuals [9]. This model which is used in the studies related to mostly cancer screening and particularly CRC screening was developed by Myers et al. in 1994 to determine the factors affecting the individual's CRC screening behaviour and intention [10].

Factors such as health beliefs, attitudes, the effect of the social environment (family, friends, healthcare personnel, etc.), knowledge about the disease, risk perception and screening recommendation of healthcare professionals are involved among the factors affecting the individuals' prevention and early diagnosis/screening behaviours of colorectal cancer [7,11]. In terms of investigating these factors affecting the screening behaviours, PHM is a commonly used model in the studies. One of the scales developed on the basis of PHM is "Colorectal Cancer Screening Attitude and Belief Scale" (CCSABS) determining psychosocial effects including the individual's perceptions and barriers related to CRC screening [9,10].

Healthy Lifestyle Behaviours

Healthy lifestyle is for an individual to control all behaviours affecting his health, select and apply the appropriate behaviours for promoting his health during daily activities. Healthy lifestyle behaviours are expressed as an individual's promoting health and increasing his control over his health. Healthy lifestyle behaviours cover all activities performed for increasing the health potential and well-being status (such as adequate and balanced nutrition, stress management, regular exercise, spiritual growth, interpersonal relationships and taking responsibility for preventing and promoting the individual's health). The individual who transforms these behaviours into an attitude can not only maintain a healthy state but also bring his health status to a higher level [12,13].

Current evidences demonstrate that chronic diseases like cardiovascular diseases, diabetes and cancer are related with healthy lifestyle behaviour. While it is reported in Cancer Prevention guideline of World Cancer Research Fund that there is a relationship between lifestyle behaviours and cancer, it is stated in European Prospective Investigation into Cancer and Nutrition that healthy lifestyle behaviours are effective in the prevention of cancer [14,15].

In the previous studies, healthy lifestyle behaviours were revealed to reduce cancer-related morbidity and mortality rates [14]. It is reported that a simple behavioural change would have a strong influence on the incidence of cancer which is a complex multifactorial disease. Cancer prevention policies are emphasized to be built on providing healthy diet and healthy lifestyle habits [16].

It is known that there is a negative correlation between the incidence rate of colorectal cancer and healthy lifestyle behaviours. It was found from a study examining approximately 50.000 individuals that the risk of colon cancer development decreased with the increased healthy lifestyle scores [14].

Material and Method

Sample

The population of the study consisted of first-degree relatives of the patients who underwent surgery in general surgery services of X University Application and Research Centre due to CRC. The study was completed with 142 relatives of 86 patients who underwent CRC surgery between June 2015 and June 2016. Individuals who were first degree relatives (parents, brothers, sisters and children) of the patients undergoing CRC surgery, had no psychiatric disorders, no communication problem, and can speak and understand Turkish are included in the study.

Measurement

The data were collected by using Personal Description Form, Colorectal Cancer Screening Attitude and Belief Scale and Health-Promoting Lifestyle Profile II in the study.

Personal Description Form

There are a total of 25 questions in the form containing socio-demographic characteristics of the patient relatives, and information about the disease and early diagnosis. The questions of the form were prepared by the researcher by reviewing the literature [7,11].

Colorectal Cancer Screening Attitude and Belief Scale

The scale developed by Vernon et al., in 1997 was restructured by Tiro et al., in 2005 [17]. Turkish validity and reliability of the scale was conducted by Koc in 2010. The scale has 16 items and five subscales containing salience and coherence (4 items), perceived susceptibility (4 items), response efficacy (2 items), cancer worries (2 items), and social influence (2 items). Participation in screening is expected to increase when the scale score increases [17].

Items 5, 6, 8, and 12 in the scale are reversed and thus analysed. Minimum-maximum scores to be taken from the scale vary between 4-16 for salience and coherence, 4-16 for perceived susceptibility, 2-10 for response efficacy, 4-16 for social influence, 2-10 for cancer worries and 16-80 in overall scale [17]. While the Cronbach alpha of the scale was 0.80 in the present study, Cronbach alpha values of the subscales were found as 0.79 for salience and coherence, 0.75 for perceived susceptibility, 0.63 for response efficacy, 0.61 for social influence, and 0.77 for cancer worries, respectively.

Health-Promoting Lifestyle Profile II

The scale developed by Walker et al. in 1987 was revised in 1996 and named as "Health-Promoting Lifestyle Profile II" [18]. The scale whose Turkish validity and reliability were conducted by Bahar et al. in 2008 consists of 52 items [13]. There are 6 subscales in the scale containing health responsibility, physical activity, nutrition, spiritual growth , interpersonal relationship, and stress management. The scale was developed in four-point likert-type as never (1 point), sometimes (2 points), often (3 points), and regularly (4 points). The lowest score to be taken from the overall scale is 52 and the highest score is 208 [13]. While the cronbach alpha coefficient is .92 in the present study, the cronbach values of the subscales are determined as .64 for stress management, 0.85 for health responsibility, .82 for physical activity, .65 for nutrition, .78 for spiritual growth, and .76 for interpersonal relations.

Ethical Procedure

Attention has been given to comply with ethical principles at every stage of the study. Before starting the application, approval from X University Clinical Trials Ethics Committee and a written permission from the department of General Surgery in X University Medical Application and Research Centre were obtained. Primarily, the patient relatives were informed about the purpose of the study and that their identities would not be disclosed in any way and their informed consents were obtained in written.

Data Analysis

In the evaluation of the data obtained from the research, independent samples t-test was used for the comparison of two groups and analysis of variance was used for comparing more than two groups. Pearson correlation analysis was performed in order to determine the direction and strength of the correlation between scales.

Results

The average age of the patient relatives was 40.3±12.7; 66.2% of them were the patients' children, 54.9% were male, 30.3% were primary school graduates, 68.3% were married, and 49.3% had moderate level of income.

It was determined that 56.3% of the patient relatives did not have any knowledge about CRC, 85.2% did not participate in diagnosis/screening program for CRC, 62.0% of those participating in CRC early diagnosis/screening program had colonoscopy, and 51.4% of them wanted to participate in CRC early diagnosis/screening programs.

While CCSABS total mean score of the patient relatives was 53.06±8.91, the subscale mean scores were found as 14.33±3.54 for salience and coherence, 12.00±3.29 for perceived susceptibility, 8.11±1.55 for response efficiency, 12.82±3.13 for social influence, and 5.80±2.27 for cancer worries, respectively (Table 1).

Table 1. Total and Sub-scales Scores of Colorectal Cancer Screening Attitude and Belief Scale

Colorectal Cancer Screening Attitude Belief Scale	Mean ± SD	Min-max
Salience and coherence	14.33±3.54	4-20
Perceived susceptibility	12.00±3.29	4-20
Response efficacy	8.11±1.55	2-10
Social influence	12.82±3.13	5-20
Cancer worries	5.80±2.27	2-10
Total score	53.06±8.91	26-76

Total mean score of HPLP of the patient relatives was 132.46±20.96 and the mean scores of the subscales were determined respectively as 19.50±3.96 for stress management, 21.56±5.81 for health responsibility, 16.13±5.25 physical activity, 21.90±4.50 for nutrition, 26.46±4.85 for spiritual growth, and 26.90±4.46 for interpersonal relationship (Table 2).

Table 2. Total and Sub-scales Scores of Health-Promoting Lifestyle Profile II

Health-Promoting Lifestyle Profile II	Mean ± SD	Min-max
Stress management	19.50±3.96	12-32
Health self-responsibility	21.56±5.81	9-35
Physical activity	16.13±5.25	8-30
Nutrition	21.90±4.50	13-32
Spiritual growth	26.46±4.85	15-35
Interpersonal relationships	26.90±4.46	17-36
Total score	132.46±20.96	83-179

A significant difference was found between CCSABS total mean scores of the patient relatives and gender, educational status, income, and smoking ($p<.05$). According to the table, CCSABS total mean scores of those who were female, had BS and MS degree, had a good income and non-smokers were determined to be higher (Table 3).

Table 3. Distribution of Scores of Colorectal Cancer Screening Attitude and Belief Scale according to Descriptive Characteristics of Participants

Descriptive Characteristics	Sub-scales Scores					
	Salience and Coherence	Perceived susceptibility	Response efficacy	Social influence	Cancer worries	CCSABS total scores
	$\overline{x}$ ± SS	$\overline{x}$ ± SS	$\overline{x}$ ± SS	$\overline{x}$ ± SS	$\overline{x}$ ± SS	$\overline{x}$ ± SS
Relationship to patient						
Parent	12.62±3.25	10.54±1.51	7.38±1.50	12.31±3.40	5.85±2.08	48.69±4.84
Sibling	14.09±3.32	12.23±2.34	7.66±1.76	13.06±2.86	5.51±2.27	52.54±8.30
Child	14.66±3.61	12.12±3.72	8.38±1.41	12.80±3.21	5.89±2.30	53.85±9.43
P	0.133	0.242	0.012*	0.761	0.700	0.137
Gender						
Female	14.91±3.21	1.22±3.55	8.38±1.34	13.19±3.23	5.79±2.29	54.49±8.74
Male	13.58±3.82	11.71±2.93	7.77±1.73	12.34±2.96	5.81±2.25	51.21±8.87
P	0.026*	0.357	0.021*	0.109	0.961	0.029*
Age						
18-39	14.75±3.27	12.10±3.58	8.16±1.48	12.42±2.93	5.65±2.27	53.09±8.89
40-59	14.12±3.80	11.90±3.20	8.25±1.61	13.25±3.24	5.95±2.32	53.48±9.25
60 and above	13.14±3.57	11.93±2.16	7.29±1.44	12.93±3.60	5.86±2.07	51.14±7.85
P	0.252	0.939	0.102	0.322	0.759	0.681
Educational level						
Primary school	13.51±3.85	11.09±2.82	7.58±1.74	12.79±3.46	5.93±2.26	50.91±9.66
Secondary school	13.55±3.78	13.10±3.82	8.21±1.61	12.52±3.16	5.28±2.27	52.66±8.17
High school	14.69±2.89	11.64±3.04	8.11±1.35	12.75±2.77	5.39±2.17	52.58±8.42
University	15.65±3.23	12.59±3.38	8.71±1.24	13.18±3.13	6.50±2.26	56.62±8.33
P	0.031*	0.044*	0.016*	0.868	0.104	0.042*
Marital status						
Married	14.53±3.50	12.29±3.04	8.15±1.47	13.07±3.17	6.00±2.30	54.04±8.29
Single	13.91±3.62	11.38±3.75	8.02±1.73	12.27±3.01	5.36±2.13	50.93±9.90
P	0.338	0.126	0.637	0.154	0.115	0.053
Income level						
Good	15.04±3.26	12.41±3.29	8.43±1.45	13.17±2.45	5.87±2.30	54.92±7.93
Moderate	13.93±3.77	12.16±3.29	7.99±1.56	12.86±3.63	5.93±2.18	52.86±9.30
Bad	13.84±3.29	10.26±2.92	7.68±1.67	11.68±2.69	5.11±2.45	48.58±8.80
P	0.185	0.042*	0.122	0.206	0.359	0.027*

Note. . * p < .05.

Although CCSABS total mean scores of the patient relatives who had knowledge about CRC and the mean scores of all subscales of the scale were higher, the difference between them was determined to be statistically significant in total mean scores of the scale and all subscales except for the subscale of cancer worries (p<.05). CCSABS total mean scores of the patient relatives who participated in early diagnosis/screening programs of colorectal cancer and the mean scores of salience and coherence, perceived susceptibility, and response efficacy among subscales were found to be higher and the difference between them was statistically significant at advanced level (p<.001). It was determined that the CCSABS total mean scores of the patient relatives who were willing to participate in the early diagnosis/screening programs of colorectal cancer, mean scores of salience and coherence, perceived susceptibility, and social influence subscale were higher and the difference between them was statistically significant at advanced level (p<.001)(Table 4).

Table 4. Distribution of Colorectal Cancer Screening Attitude and Belief Scale according to Knowledge and Attitudes associated Colorectal Cancer of Participants

Knowledge and Attitudes associated Colorectal Cancer	Sub-scales Scores					
	Salience and Coherence	Perceived susceptibility	Response efficacy	Social influence	Cancer worries	CCSABS Total Score
	$\bar{x}$ ± SS	$\bar{x}$ ± SS	$\bar{x}$ ± SS	$\bar{x}$ ± SS	$\bar{x}$ ± SS	$\bar{x}$ ± SS
Knowledge about CRC						
Yes	15.39±3.05	12.77±3.33	8.87±1.08	13.53±2.93	5.92±2.33	56.48±8.56
No	13.51±3.69	11.40±3.16	7.53±1.61	12.26±3.18	5.70±2.22	50.40±8.30
P	0.002**	0.013*	<0.001**	0.016*	0.569	<0.001**
Participation in the CRC early diagnosis/screening programs						
Yes	16.90±2.53	14.67±2.78	9.10±0.89	13.95±3.50	5.76±2.61	60.38±5.32
No	13.88±3.51	11.54±3.16	7.94±1.58	12.62±3.03	5.80±2.21	51.79±8.81
P	<0.001**	<0.001**	0.001**	0.072	0.941	<0.001**
Willingness to participation in the CRC early diagnosis/screening programs						
Yes	15.41±3.50	12.95±3.11	8.34±1.38	13.62±3.32	5.96±2.32	56.27±8.28
No	13.19±3.23	11.00±3.21	7.87±1.69	11.97±2.70	5.62±2.21	49.65±8.33
P	<0.001**	<0.001**	0.069	<0.001**	0.379	<0.001**

Note. * p < .05. ** p < .01.

HPLP total mean scores of the patient relatives were found to be higher in those who were female (p<.05), had good income level (p<.001), expressed their current health status as good (p<.001), went health control regularly (p<.05), had history of cancer diagnosis in their family except for CRC (p<.001) and had relatives that died because of cancer (p<.05) and the difference between them was statistically significant (Table 5).

HPLP total score and all subscale mean scores of the patient relatives who had knowledge about colorectal cancer were found to be higher and the difference between them was statistically significant (p<.05), (p<.001). HPLP total mean score (p<.001) of the patient relatives who participated in early diagnosis/screening programs of colorectal cancer and mean scores of health responsibility (p<.001), nutrition (p<.05), Spiritual growth (p<.05), and stress management (p<.05) among the scale subscales were high and the difference between them was statistically significant. It was found that HPLP total and subscale mean scores of the patient relatives who were willing to participate in early diagnose /screening programs of colorectal cancer were slightly higher but this variable did not cause a significant difference (p>.05)(Table 6).

Table 5. Distribution of Healthy-Promotion Lifestyle Profile Scores according to Participants' Descriptive Characteristics

Descriptive Characteristics	Sub-scales Scores						
	Health Responsibility $\bar{x}$ ± SS	Physical Activity $\bar{x}$ ± SS	Nutrition $\bar{x}$ ± SS	Spiritual Growth $\bar{x}$ ± SS	Interpersonal Relationships $\bar{x}$ ± SS	Stress Management $\bar{x}$ ± SS	HPLP Total Score $\bar{x}$ ± SS
Relationship to patient							
Parent	22.08±3.09	19.00±5.23	21.69±3.77	25.15±5.47	26.15±3.83	20.08±3.86	134.15±16.51
Sibling	20.46±6.32	15.17±5.10	23.03±4.29	24.83±3.99	25.51±3.57	18.74±3.51	127.74±18.93
Child	21.90±5.90	16.09±5.21	21.51±4.63	27.26±4.91	27.52±4.73	19.70±4.13	133.98±22.11
P	0.433	0.079	0.231	0.023*	0.061	0.410	0.311
Gender							
Female	22.74±5.89	15.98±5.00	22.74±4.37	27.16±4.87	28.25±4.37	19.89±4.35	136.75±21.46
Male	20.05±5.41	16.32±5.57	20.82±4.46	25.56±4.71	25.16±3.97	19.00±3.36	126.92±19.07
P	0.006**	0.697	0.011*	0.051	<0.001**	0.187	0.005**
Age							
18-39	20.54±5.95	16.84±5.77	21.04±4.25	27.01±4.85	26.99±4.76	19.36±4.05	131.78±22.25
40-59	22.64±5.64	15.10±4.51	22.71±4.41	26.41±5.10	26.96±4.43	19.73±4.12	133.56±20.98
60 and above	22.07±5.36	16.93±5.01	22.71±5.26	24.00±2.83	26.21±2.97	19.21±2.89	131.14±14.22
P	0.117	0.145	0.086	0.105	0.833	0.840	0.867
Educational level							
Primary school	21.86±5.99	15.44±5.12	21.95±4.41	25.42±4.85	27.44±4.15	19.91±3.85	132.02±20.14
Secondary school	22.35±6.09	15.45±4.81	22.93±5.34	25.24±5.12	25.69±4.93	18.59±3.96	130.24±23.15
High school	20.14±5.40	16.89±6.00	21.33±3.76	26.78±4.67	26.06±4.09	19.81±4.51	131.00±21.16
University	22.03±5.78	16.77±5.41	21.56±4.58	28.50±4.27	28.15±4.53	19.44±3.51	136.44±20.18
P	0.393	0.483	0.517	0.017*	0.080	0.533	0.631
Marital status							
Married	22.05±5.79	15.46±4.89	22.80±4.48	26.41±4.79	26.87±4.56	19.52±4.00	133.11±21.35
Single	20.51±5.79	17.56±5.74	19.96±3.91	26.58±5.05	26.98±4.28	19.47±3.92	131.04±20.25
Income level							
Good	23.19±5.91	17.38±5.02	23.23±4.36	28.15±4.81	28.17±4.44	21.02±3.84	141.13±20.70
Moderate	20.83±5.52	15.51±4.76	21.39±4.39	26.14±4.55	26.57±4.22	19.01±3.82	129.46±18.48
Bad	19.74±5.84	14.89±6.95	20.11±4.45	22.95±4.03	24.58±4.44	17.05±3.27	119.32±21.32
P	0.027*	0.081	0.013*	<0.001**	0.007**	<0.001**	<0.001**

Note. * p < .05. ** p < .01.

Table 6. Distribution of Health-Promotion Lifestyle Profile Scores according to Participants' Knowledge, Attitude and Behavior Related to Colorectal Cancer

Descriptive Characteristics	Sub-scales Scores						
	Health Responsibility $\bar{x}$ ± SS	Physical Activity $\bar{x}$ ± SS	Nutrition $\bar{x}$ ± SS	Spiritual Growth $\bar{x}$ ± SS	Interpersonal Relationships $\bar{x}$ ± SS	Stress Management $\bar{x}$ ± SS	HPLP Total Score $\bar{x}$ ± SS
Knowledge about CRC							
Yes	23.84±5.76	17.76±5.22	23.24±4.36	28.84±4.09	28.65±4.45	20.68±3.96	143.00±20.42
No	19.80±5.25	14.86±4.94	20.86±4.35	24.63±4.61	25.55±3.99	18.59±3.74	124.29±17.53
P	<0.001**	0.001**	0.002**	<0.001**	<0.001**	0.002**	<0.001**
Participation in the CRC early diagnosis/screening programs							
Yes	26.76±3.79	17.19±5.09	24.57±5.33	28.76±4.82	28.57±5.46	21.62±5.36	147.48
No	20.66±5.64	15.94±5.27	21.44±4.19	26.07±4.82	26.61±4.22	19.13±3.57	129.85
P	<0.001**	0.316	0.003**	0.018*	0.063	0.008**	<0.001**
Willingness to Participation in the CRC early diagnosis/screening programs							
Yes	22.48±5.89	15.40±4.94	22.27±4.59	26.74±4.37	27.21±4.76	19.63±4.25	133.73±20.85
No	20.59±5.63	16.90±5.48	21.50±4.39	26.17±5.33	26.58±4.12	19.36±3.67	131.12±21.14
P	0.053	0.088	0.312	0.489	0.405	0.689	0.460

Note. * p < .05. ** p < .01

A positive, weak statistically significant correlation was found between HPLP total scores and CCSABS total score, salience and coherence, response efficacy and social influence subscales of patient relatives (p<.01). A positive, weak statistically significant correlation was determined between CCSABS total score and health responsibility, Spiritual growth , interpersonal communication and stress management among the subscales of HPLP scale (p<.01)(Table 7).

Tablo 7. Correlation of Colorectal Cancer Screening Attitude and Belief Scale and Health-Promotion Lifestyle Profile Total and Sub-Scales Scores

Health-Promotion Lifestyle Profile	Colorectal Cancer Screening Attitude and Belief Scale						
	Salience and Coherence	Perceived Susceptibility	Response Efficacy	Social Influence	Cancer worries	Total Score	Age
Total Score	0.283**	-0.006	0.351**	0.304**	-0.010	0.279**	0.031
Health Responsibility	0.375**	0.177*	0.272**	0.353**	-0.104	0.351**	0.149
Physical Activity	0.052	-0.168*	0.073	-0.067	-0.047	-0.052	-0.013
Nutrition	0.098	0.070	0.305**	0.251**	-0.108	0.151	0.229**
Spiritual Growth	0.279**	0.013	0.427**	0.228**	0.100	0.281**	-0.146
Interpersonal Relationships	0.246**	-0.083	0.325**	0.337**	0.095	0.256**	-0.006
Stress Management	0.298**	-0.034	0.233**	0.250**	0.024	0.235**	-0.010
Age	-0.098	0.041	-0.121	0.127	0.087	-0.013	1

Note. * p < .05. ** p < .01.

Discussion

Associations Between Descriptive Characteristics and Colorectal Cancer Screening Attitude and Belief Scale

In Almadi et al's study where they defined many factors affecting the individual's participation in CRC early diagnosis/screening programs, it was reported that having a CRC history in the family was determined as one of the factors affecting the participation in CRC screening programs and the willingness to participate in CRC screening programs; whereas, rate of the willingness to participate in CRC screening tests in people participating in the study was 70% and this rate increased to 83% in those who had CRC history in their family [19]. In the present study, 51.4% of the patient relatives stated that they wanted to participate in early detection/screening programs of CRC. The rate of participation of the society in CRC screening in Turkey varies from 11.9-22.2% [7,20]. It was also determined in the present study similar to the literature that only 14.8% of the individuals stated to participate in CRC screening programs. It was reported in the previous studies that there was a significant difference between the knowledge level about the disease and prevention from disease and participating in CRC screenings [21]. When the result that more than half of the individuals who participated in the present study had no knowledge about CRC was considered, the rate of participation in screenings for the individuals in the present study can be thought to be associated with not having adequate knowledge about the subject.

Gender is evaluated as one of the factors affecting the participation in CRC screening programs [22-24]. In the studies of Larkey et al. and McQueen et al., women were found to have higher rate of participation in CRC screening tests than men [22,23]. Compared to these studies, in a review examining 37 studies conducted in USA, rate of men to participate in screenings was stated to be higher [24]; In the studies of Almadi, Koc and Ait Ouakrim it was found that there was no significant difference between the gender and participation in screenings and willingness to participate in screenings [7,11,19]. In the present study, CCSABS total mean score of the women and the mean scores of the subscales salience and coherence and response efficacy were found significantly high. It was reported that women's level of taking health responsibility was higher and they used health services more [25]. Additionally, it was stated that women benefited more from preventive health services and had more tendency to ask for help in case of illness [26].

It is reported in the literature that there is a significant difference between educational level and the perception that the cancer is a preventable disease. In the present study, CCSABS total mean score and mean score of its subscales in individuals with high educational level were found to be higher. In the studies conducted with first degree relatives of the patients with CRC, no correlation was found between the educational level and the participation in CRC screening programs [7], it was determined in a study conducted by Pollack to investigate the status of the individuals to participate in CRC screening tests that as the educational levels of the participants increased, the rate of participating in the screening programs increased [27]. In their study, McQueen et al., stated that those with higher educational level used screening tests more [23]. When educational level increased, awareness develops in individuals and the individuals with high educational level are thought to consider the behaviours to protect the health more.

In the previous studies, having a high income level was evaluated as one of the factors affecting CRC screening behaviour [23,24]. In the present study, CCSABS total mean score and the mean scores of its subscales were found higher in those who stated their income status as high. Based on the result of the present study, having regular and sufficient income level can be asserted to be important in adoption of behaviours towards health protection.

While having knowledge about the subject is stated to be one of the factors affecting the participation in CRC screening programs [28], a statistically significant difference was found in the present study between the status of having knowledge about CRC and CCSABS total mean score and the mean scores of almost all subscales, which was compatible with the literature. In McCaffery et al.'s study, they report that there was a significant difference between knowledge and participation in CRC screenings and being willing to the participation; whereas, the individuals with low level of knowledge were not willing to participate in screenings and displayed negative attitudes [21]. In another study, the most important factor affecting the participation in CRC screening tests was reported to be the information given by the doctor to the individuals [29]. It could be asserted that having knowledge about the disease creates awareness among individuals and the individuals having knowledge approached more positively to the behaviours towards protecting the health.

It was reported previously that the rate of participation in CRC screening programs in individuals who participated in CRC screening programs [30] and the other cancer screening tests was higher [31]. In the present study, CCSABS total mean score and of

mean scores all subscales except for social influence and cancer worries of the individuals participating in early diagnosis and screening programs of CRC were higher. In a study conducted by Lemon et al., the rates of women, who had mammography, and men, who had prostate specific antigen measurement, to participate in CRC screening programs were higher than those who did not participate in screening programs before [32]. In addition, it was determined that the individuals who participated in CRC screening complied with the doctor's recommendations more, emotional support mean scores of these individuals were higher, and they felt less perceived barrier [29]. It could be asserted that participating in the screening programs affected the individuals' attitudes positively and thus it is important to encourage all individuals in the society starting with the first degree relatives of cancer patients.

According to the preventive health model, one of the most important factors affecting the individual to perform a behaviour is his/her intention to that behaviour. It was found in the present study that CCSABS total mean score and the mean score of most subscales of the scale in individuals expressing that they are willing to participate in screening programs in a way to support the intention understanding of preventive health model were significantly higher.

Associations Between Descriptive Characteristics and Health Promotion Life-Style Profile

It was determined that HPLP total mean scores of the individuals participating in the study were 132.46±20.96, mean scores of the subscales Spiritual growth and interpersonal relationships were at moderate level, the mean scores of nutrition, physical activity, heath responsibility, and stress management were below the moderate level. HPLP total mean score was at moderate level in the previous studies similar to the present study; it was determined in a study [33] conducted with the patients diagnosed with cancer that the mean score was 125.43; whereas, it was found as 124.54 in another study conducted with patients with prostate cancer patients [34].

It was determined in the present study that the subscale having the highest score was interpersonal relations (26.90±4.46), the subscale having the lowest score was physical activity (16.13±5.25). Similar to the present study, it was also determined in other studies that the highest score was generally obtained from interpersonal relations and the lowest one was obtained from physical activity [33,34].

There is a reversed correlation between physical activity and colon cancer risk; physical activity reduces the contact time with colon by increasing the passing rate of faeces and carcinogens through large intestine [35]. Therefore, in "Guidelines for Nutrition and Physical Activity" published by ACS in 2003 and updated in 2012, ACS emphasised that physical activity is effective at Evidence I level for the prevention of colon cancer; and suggested at least 150 minutes (2.5 hours) moderate activity or 75 minutes intense activity every week for adults [36]. However, low mean scores of physical activity subscale in individuals in both the present study and in the other related studies revealed that the physical activity habit of the societies is not at sufficient level.

While it was determined in the present study that the women's HPLP total mean score and the mean scores of all subscales were higher compared to men; total mean score of the scale and mean scores of the subscales health responsibility, nutrition, and interpersonal relations were higher in women at a statistically significant level compared to men. Health responsibility mean scores in Karalar's study, health responsibility, interpersonal relations and nutrition mean scores in Johnson's study were found higher among women [33,37]. The results of the present study are in parallel with results of the other study and it is thought that this results is associated with the fact that women can spare more time for interpersonal relations due to the reason that they are generally unemployed, they have more opportunity to participate in health promotion behaviours and to watch health programs, women have more knowledge about nutrition since they mostly take the cooking role in our society.

Being educated is one of the important determinants in making decisions in health subject and turning to positive health behaviours [38]. According to the health development model, a person's tendency in developing health increases when his educational level increases [39]. In the present study, mean score of Spiritual growth from subscales of HPLP was higher and the difference between them was significant.

Previous studies revealed that there was a statistically significant difference between people's marital status and the physical activity and nutrition subscales [37]. Physical activity mean scores of the single individuals and nutrition subscale mean scores of married ones were higher in the present study. Having less responsibilities, opportunities to spare more time for physical activity, being able to afford sports activities may be effective on high physical activity scores for single individuals. On the other hand, as a result of being a family, always having dinner at home may provide contribution for the formation of a regular dietary habits and thus to nutrition mean scores of the married individuals.

In the present study, patient relatives who stated their income level as high had higher score from HPLP total score and from all subscales of the scale and the obtained result was statistically significant in all subscales except for physical activity. In the study conducted by Gök Ugur, it was determined that interpersonal relations, nutrition and HPLP total mean scores were higher in those having equal income and expense than those who had an income less than expense; in Al-Qahtani's study, nutrition subscale mean score was higher in those with high income; and in the study of Topcu, self-realisation, stress coping, interpersonal support mean scores and HPLP total mean scores were higher in those with good income [40,41]. It is also reported that those with a high income have better health promotion behaviours and the economic level is an important factor affecting HPLP [42]. As in other studies, it is also seen from the present study that economic level was effective on people's health promotion behaviours and their healthy lifestyle behaviours increased with increased economic level.

Having knowledge and participation in trainings towards health promotion are one of the factors affecting HPLP. In a study conducted with women in cancer screening centre; healthy lifestyle behaviours of people who were aware of early diagnosis methods of breast and cervical cancer were higher [40]. With effective training techniques, individual's knowledge about healthy life style increases and enables them to take action to apply these behaviours. The result of the present study support the literature, HPLP total mean score and mean scores of all subscales were high at a statistically significant level in those who had knowledge about CRC.

While a significant difference was found between dietary habits and exercise and participation in colonoscopy in one of two studies conducted with first degree relatives of CRC patients [7]. In the present study, HPLP total mean scores and mean scores of all subscales were high in individuals participating in early diagnosis/screening programs of colorectal cancer, this difference was statistically significant in the subscales except for physical activity and interpersonal relations.

Correlation Between Colorectal Cancer Screening Attitude and Belief Scale and Health Promotion Life-Style Profile

In the present study, a positive, weak statistically significant correlation was determined between HPLP total mean score and CCSABS total mean score and the mean scores of salience and coherence, response efficacy, and social influence the subscales of CCSABS. Level of the individuals displaying healthy life style behaviours to participate in CRC screening programs was higher in previous studies [7,43]. Compatible with the literature, the results of the present study showed that these two behaviours towards health promotion and prevention are factors affecting each other.

In the study conducted by Koc et al.'s with first degree relatives of CRC patients, it was found that the rate of participation in colonoscopy was higher in individuals in regular physical activity [7]. It was determined in Shapiro et al.'s study that people making regular physical activity participated in CRC screening tests 1.5 times more than the ones with no physical activity [43]. In contrast to the studies in literature, no significant correlation was found between physical activity subscale from HPLP and the total score of CCSABS in the present study. It is reported that 87% of women and 77% of men do not do enough physical activity in Turkey. This result of the present study is in parallel with the country-wide and showed that the physical activity, an important prevention behaviour, was not regarded by sample group of the present study.

In the present study, a positive, weak and statistically significant correlation was found between nutrition a subscale of HPLP and the subscales response efficacy and social influence of CCSABS and age. While no significant difference was found between nutrition and willingness to participate in CRC screening in Almadi et al.'s study; in the study conducted by Koc et al. with first degree relatives of CRC patients, they found a statistically significant difference between nutrition and participation in colonoscopy and they found higher participation rate to the colonoscopy among those with a good and balanced diet [7,19].

Taking responsibility for an individual's own well-being, diligence to his/her health, and benefiting from health services are included in the scope of health responsibility [13]. It was determined in previous studies that the individuals benefiting from health prevention services participated in screening programs more and participation rates of the individuals who have participated in CRC and different cancer screening programs before were higher for CRC screening programs [43,44]. As expected, in the present study a positive statistically significant correlation was found between health responsibility and CCSABS and almost all subscales of the scale. It could be asserted that the individuals participating in the present study undervalued health responsibility subscale from HPLP and they reflected this responsibility to their behaviours.

"Interpersonal relations" subscale of healthy lifestyle behaviour scale is also expressed as an interpersonal support and it is an

important phenomenon that can be obtained as a result of bilateral or group relationships of individuals and effective on improving health [45]. In the present study, a positive statistically significant correlation was determined between interpersonal relations and CCSABS total mean score, and mean scores of salience and coherence, response efficacy, social influence among the subscales of CCSABS scale. In a study conducted by Allen et al. a positive correlation was found between having social support and mammography and participating in clinical breast examination, the individuals feeling more social support were reported to have higher participation rates for screenings [46]. In a socio-ecological study examining the factors affecting the participation to CRC screenings, the relatives of the patients with CRC talking about CRC screenings with people living in social environment (family members, friends, colleagues) were stated to have higher rates of participation in CRC screenings [47].

It is also stated in studies that parameters related to mood are also one of the factors affecting the participation in cancer screenings. Andersen et al. reported that individuals feeling themselves at risk in terms of cancer had better healthy lifestyle behaviours compared to the general population [48]. In Watts et al.'s study, rates of willingness and participation in screening programs were found to be higher among people with high cancer risk perception [49]. However, in Greiner et al.'s study, disease and screening fear were considered as a barrier by the individuals and determined to affect the participation in screening negatively [50]. As seen in the studies, anxiety affects the participation of the individuals in screening differently. Anxiety felt in moderate level increases women's rate of participation to mammography screening but high level of anxiety are reported to decrease rate of participation in screenings [48,50]. In the present study, a positive statistically significant relationship was determined between stress management and salience and coherence, response efficacy and social influence mean scores. This result leads to think that when stress level of the relatives of the patients diagnosed with cancer decreases, their point of view to cancer screening and their rate of participation in these screenings will develop.

Conclusion

It was found that CCSABS and HPLP of first degree relatives of the patients with colorectal cancer were at moderate level and their rate of participation in CRC screening was at low level. In addition, there was a positive weak correlation between CCSABS and HPLP.

In this study, we wanted to emphasize that it is important to raise awareness about that both cancer patients and their relatives require consultancy among the nurses working in surgical clinics which are clinics where almost all of the cancer patients are treated firstly. Therefore, nurses working in surgical clinics that are the clinics where cancer patients are admitted due to operation should plan and apply trainings about prevention from cancer and early diagnosis/screening programs of cancer to the patients and their relatives and should evaluate their results.

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