



Original Research / Orijinal Araştırma

## Comparison of Illness Perceptions of Individuals With and Without Colorectal Cancer in Their First-Degree Relatives

### Birinci Derece Yakınlarında Kolorektal Kanser Tanısı Olan ve Olmayan Bireylerin Hastalık Algularının Karşılaştırılması

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#### Abstract

**Aim:** This study aimed to evaluate and compare the knowledge and attitudes of relatives of patients with colorectal cancer and those who do not have colorectal cancer. **Methods:** The study was conducted with the relatives of colorectal cancer patients who applied to the Oncology outpatient clinic and the patients who did not have colorectal cancer in the family who applied to the Family Medicine outpatient clinic. In the data collection, the questionnaire prepared by the researcher to determine the personal characteristics of the individuals participating in the study and the 'Health Belief Model Scale for Colorectal Cancer Prevention' to determine the health beliefs were used. **Results:** The mean age of the 120 participants was 36.59 ± 12.7 years, 55.8% (n = 67), women, 65.8% (n=79) is married and 69.2% (n=83) live in the city. Colorectal cancer screening rate was significantly higher in the case group (p=0.004). The most frequently reported barriers to get colorectal cancer screening tests were not knowing colorectal cancer and screening tests (38.3%). The confidence benefit perception score average of the control group was significantly higher than the average score of the case group (p = 0.018). **Conclusion:** In our study, the level of the perception of trust and benefit was lower in the patients whose first-degree relatives had CRC compared to those who had not in their family. Although the expectation of early diagnosis, using CRC screening, was higher in the patients with CRC in their first-degree relatives, there was no significant difference between the two groups. This fact reveals the necessity of evaluating the risks for the individuals while providing counseling to them for colorectal cancer screening as well as updating the training.

**Key words:** colorectal cancer, early detection of cancer, knowledge, attitude, behavior, health belief model.

#### Özet

**Amaç:** Kolorektal kanser (KRK) tanı hastaların yakınlarının ve yakınında kolorektal kanser tanısı olmayan hastaların kanserden korunmaya yönelik bilgi ve tutumlarının değerlendirilmesi ve karşılaştırılması amaçlanmıştır. **Yöntem:** Çalışma, Mustafa Kemal Üniversitesi Hastanesi Onkoloji Polikliniği'ne başvuran KRK hasta yakınları ile Aile Hekimliği Polikliniği'ne başvuran ailesinde KRK olmayan hastalar ile yapıldı. Veri toplamada, araştırmaya katılan bireylerin kişisel özelliklerini belirlemeye yönelik araştırmacı tarafından hazırlanan anket ve sağlık inançlarını belirlemeye yönelik 'Kolorektal Kanserden Korunmaya Yönelik Sağlık İnanç Modeli Ölçeği' kullanılmıştır. **Bulgular:** 120 katılımcının yaş ortalaması 36,59±12,7 yıl, %55,8'i (n=67) kadın, %65,8'i(n=79) evli olup %69,2'si (n=83) kentte yaşamaktadır. Bilgisizlik (%38,3) en sık bildirilen tarama yaptırmama nedeniydi. Kontrol grubunun güven yarar algısı puan ortalaması vaka grubunun puan ortalamasından anlamlı olarak yüksek saptandı (p=0,018). **Sonuçlar:** Çalışmamızda birinci derece yakınlarında KRK olanların güven yarar algısı ailesinde KRK olmayanlara göre daha düşük bulunmuştur. KRK taraması ile erken tanı konabileceği bilgisi ise birinci derece yakınlarında KRK olanlarda yüksek olması beklenirken gruplar arasında farklılık bulunamamıştır. Bu durum kolorektal kanser taraması için danışmanlık verilirken bireye yönelik risklerin değerlendirilmesi ve eğitimlerin güncellenmesi gerekliliğini ortaya çıkarmaktadır. **Anahtar kelimeler:** kolorektal kanser, kanser erken teşhisi, bilgi, tutum, davranış, sağlık inanç modeli.

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## Introduction

The incidence and mortality rates of colorectal cancer (CRC) vary significantly throughout the world. According to the World Health Organisation (WHO) GLOBOCAN database, CRC has been reported to be the third most common cancer in males and the second most common cancer in females.<sup>1</sup> Screening participation rates in various countries of the world; Netherlands 68.2%, UK 52%, France 34.3%, USA (California) 48.2%, South Korea 21%, USA (Canada) 16.1%, Thailand 62.9%, Japan 41.4% is below the target rate.<sup>2</sup> In studies conducted in İzmir for awareness of cancer screening tests, the rate of CRC screening was found to be 33.8%.<sup>3</sup> In another study conducted in our country, when the status of having a CRC screening test was questioned, it was found that 71.3% of them did not.<sup>4</sup>

The most significant risk factor for CRC is family history.<sup>5</sup> The presence of two first-degree relatives or one first-degree and one first or second-degree relative with CRC and diagnosed below the age of 50 years further increases the risk.<sup>6,7</sup>

Colon tumors grow slowly and become symptomatic when they reach an advanced stage. Early-stage diagnosis can only be made in 40% of patients. The prognosis of CRC is dependent on the stage at diagnosis.<sup>8</sup> As it is a frequently seen cancer and there is a chance of successful treatment when determined at an early stage with screening programs, CRC is a basic public health problem for which screening is recommended. The probability of determination of precancerous lesions or early-stage tumors is high with screening. Therefore, it is possible to establish cancer knowledge and awareness with detailed information about the importance of early diagnosis and CRC screening methods.<sup>9,10</sup>

CRC diagnosis can be made from the evaluation of history, physical examination, and diagnostic tests together. Detailed family history must be taken in the anamnesis, and complaints must be questioned such as changes in bowel habits, bleeding, listlessness, and weight loss.<sup>11</sup> Although there is no specific laboratory test, occult blood in the feces can be used for diagnosis and screening purposes. The serum level of carcino-embryogenic antigen has prognostic importance.<sup>12</sup>

In Turkey, CRC screening is applied with the Fecal Occult Blood Test (FOBT) once every 2 years and colonoscopy screening is applied every 10 years.<sup>13</sup> Population-based screening aims to reach all males and females starting at age 50 years and finishing at age 70 years. The screening should be terminated for males and females aged 70 years with two negative FOBT results. For individuals with a first-degree relative family history of colorectal cancer or adenomatous polyp, ulcerative colitis, Crohn's disease or inherited polyposis, or a syndrome other than polyposis, screening should start from the age of 40 years.<sup>13</sup>

It is observed that the rates of colorectal cancer screenings are low in our country.<sup>14,15,16</sup> After diagnosis, families of the individuals with CRC are informed about the high familial transmission rate and the importance and necessity of screening for family members. At the same time, compared to people with no relatives who have CRC, first-degree relatives of patients diagnosed with CRC may have a greater chance to follow up on the diagnosis and treatment processes and obtain more information about it. Nevertheless, it is seen that the relatives of CRC patients do not get CRC screenings.<sup>15,16</sup> Even though there are studies in the literature about CRC screening rates of the relatives of CRC patients, there aren't any the reasons for said issue. It is important to know these reasons when providing person-oriented preventive health services. Thus, we aim to determine which factors are effective in the CRC screening decisions of the relatives of CRC patients compared to those who aren't.

This study aimed to evaluate and compare the knowledge and attitudes towards cancer prevention of close relatives of patients with CRC and patients with no close relative diagnosed with CRC.

## Methods

The study included the relatives of patients with a diagnosis of CRC who presented at the Oncology Polyclinic of Mustafa Kemal University and patients who presented at the Family Medicine Polyclinic with no diagnosis of CRC in the family. This descriptive, cross-sectional study was conducted between May 2019 and August 2019. When calculating the sample size, the 'Health Beliefs Model Scale for Preventing Colorectal Cancer',

which has been used in other studies, showed that with a mean of 53 in the study group,  $SS=5$  and with mean of 58 in the control group,  $SS=9$ . Therefore when 5% difference was accepted as significant, and  $\alpha=0.05$  and  $\beta=0.8$ , the sample size was calculated as 40 in the study group and 40 in the control group. With the consideration that there could be missing responses on the questionnaires or conflicting statements, it was aimed to form a study group of 60 and a control group of 60 subjects.

In the data collection, a questionnaire prepared by the researchers to determine personal characteristics was used together with the Health Beliefs Model Scale for Preventing Colorectal Cancer, in respect of health beliefs.

### **Colorectal Cancer Health Beliefs Model Scale (CCHBM)**

One of the psychosocial models explaining the beliefs and attitudes that affect a person's behavior is the Health Beliefs Model. Jacobs developed the Colorectal Cancer Health Beliefs Model with authorized modifications to the scale prepared by Champion in respect of breast cancer.<sup>17,18</sup> This scale developed by Jacobs was tested for reliability and validity in Turkish by Özsoy et al.<sup>19</sup> It consists of 33 items that measure the sensitivity of a person to the disease, knowledge of the causes and what can be done to prevent it, and the perception of the importance of the disease. There are 5 dimensions to the scale (sensitivity, severity, barriers, health motivation, trust-benefit), and each item is answered on a 5-point Likert type scale: 5: completely agree, 4:agree, 3:agree to a moderate degree, 2:disagree, 1:completely disagree. There are no reverse scorings in the scale. The Cronbach alpha values of the scale were between 0.54 and 0.88.

### **Survey Form**

The survey is prepared by a researcher to determine the sociodemographic attributes of people and it consists of 63 questions. The first section of the survey includes questions about sociodemographic attributes such as age, sex, height, weight, education, financial status, occupation, place of residence, consumption of alcohol, or smoking habits. Body mass index (BMI) =  $\text{kg/m}^2$  calculated by dividing body weight in kg by square meters of height. According to the World Health Organization BMI classification, below 18.5 were considered underweight, those 18.5-24.9 as normal weight, 25-29.9 overweight, and 30 and over obese.<sup>20</sup> Second section of the survey includes questions that assess the behaviors related to cancer screenings and protection from it such as eating habits, regular exercise, aspirin usage, vitamin and mineral drug usage, stool sample test, and colonoscopy.

### **Ethical Considerations**

This study is inspired by the Family Medicine thesis of 'Comparison and Evaluation of the knowledge, behavior, and attitudes about cancer prevention of people with and without CRC patient relatives' which is approved on 2.5.2019 by Hatay Mustafa Kemal University Ethics Committee of Non-Interventional Clinical Research. Written consent of patients who are invited to the study is taken after verbal knowledge is provided to them.

### **Statistical Analysis**

Data obtained in the study were analyzed statistically using SPSS Windows vn. 22.0 software. The distribution of the variables was assessed with the Kolmogorov Smirnov test. Descriptive statistics were stated as mean  $\pm$ standard deviation values, frequency, and percentage. The Mann-Whitney U-test was used in the analyses for non-parametric data and the comparison of quantitative data, and Pearson correlation analysis was applied. The Chi-square test was used in the analysis of qualitative data. A value of  $p<0.05$  was accepted as statistically significant.

### **Results**

An evaluation was made of a total of 120 individuals with a mean age of  $36.59\pm 12.7$  (min=18, max=70) years. The case group comprised 31 (51.7%) males and 29 (48.3%) females with a mean BMI of  $24.7\pm 3.4$  (min=18.22, max=35.08). The control group comprised 22 (36.7%) males and 38 (63.3%) females with mean BMI of  $24.1\pm 5.2$  (min=15.99, max=44.14). The groups were determined to be similar in respect of gender, height, weight, BMI, occupation, and place of residence (Table 1).

The mean age of the case group was determined to be statistically significantly higher than that of the control

group (39.5±12 years vs. 33.6±12.9 years) (p=0.01). When the level of education was examined, 43.3% (n=26) of the case group had a level of primary school, and 23.3% (n=14) a level of high school, and in the control group, 51.7% (n=31) were university graduates. The educational level of the control group was determined to be statistically significantly higher (p=0.01). A greater number of control group subjects stated satisfaction with their level of income, and in the case group, the number reporting a lower level of income was greater (p=0.008). In the case group, 73.3% (n=44) were found to have health insurance and in the control group, 90% (n=54) (p=0.018) (Table 1).

Table 1. Sociodemographic data of the study participants

	Groups		p
	Case (n=60)	Control (n=60)	
Age (years) (mean±SD)	39.5±12	33.6±12.9	<b>0.010*</b>
Gender n(%)			0.098**
Female	29 (48.3)	38 (63.3)	
Male	31 (51.7)	22 (36.7)	
BMI (mean±SD)	24.7±3.4	24.1±5.2	0.126*
Level of education n(%)			<b>0.011**</b>
Literate	1 (1.7)	1 (1.7)	
Illiterate	6 (10)	4 (6.7)	
Primaryschool	26 (43.3)	12 (20)	
High school	14 (23.3)	12 (20)	
University	13 (21.7)	31 (51.7)	
Occupation n(%)			0.091**
Retired	4 (6.7)	2 (3.3)	
Housewife	17 (28.3)	10 (16.7)	
Self-employed	8 (13.3)	7 (11.7)	
Clerical worker	3 (5)	10 (16.7)	
Manual worker	8 (13.3)	4 (6.7)	
Healthcare worker	4 (6.7)	11 (18.3)	
Other	16 (26.7)	16 (26.7)	
Financial status n(%)			<b>0.008**</b>
Equal income and expenditure	17 (28.3)	30 (50)	
Income less than expenditure	40 (66.7)	23 (38.3)	
Income more than expenditure	3 (5)	7 (11.7)	
Marital status n(%)			<b>0.005**</b>
Married	48 (80)	31 (51.7)	
Single	11 (18.3)	27 (45)	
Other	1 (1.7)	2 (3.3)	
Place of residence n(%)			0.843**
Urban	42 (70)	41 (68.3)	
Rural	18 (30)	19 (31.7)	
Health insurance n(%)			<b>0.018**</b>
Yes	44 (73.3)	54 (90)	
No	16 (26.7)	6 (10)	

\*Mann Whitney U-test \*\*Chi-square test

The view that early diagnosis of prostate and lung cancer can be made with screening was statistically significantly higher in the control group (p=0.004, p=0.36). The knowledge that early treatment of CRC is possible with screening was reported by 45% (n=27) of the case group and by 48.3% (n=29) of the control group. (p=0,039)

When the first-degree relative with CRC was examined in the case group, it was determined to be the father in 38.3% (n=23) of cases, a sibling in 38.3% (n=23), and the mother in 23.3% (n=14). The groups were seen to be similar in respect of FOBT in the last year, sigmoidoscopy examination within the last 5 years, colonoscopy within the last 10 years, and other screening methods. The screenings in the case group were reported as FOBT within the last year by 46.7% (n=7), colonoscopy within the last 10 years by 33.3% (n=5), and sigmoidoscopy within the last 5 years by 13.3% (n=2).

The reason for not having had to screen was reported as Fear of the result of screening at a higher rate in the case group than in the control group (p=0.04). In both groups similar rates were reported for the reasons of not having a screening not knowing the place where it is applied, the discomfort of the application, not wanting to see themselves as at risk, lack of time, difficulty in reaching the healthcare services, not trusting the screening tests, lack of money, and other reasons (Table 2).

Table 2. Reasons for Participants Not Screening

		Groups		*p
		Case (n=60) n(%)	Control (n=60) n(%)	
Ignorance				
	Yes	21 (46.7)	25 (43.9)	0.777
	No	24 (53.3)	32 (56.1)	
Fear of the result of screening				
	Yes	6 (13.3)	1 (1.8)	<b>0.042</b>
	No	39 (86.7)	56 (98.2)	
Discomfort with the application				
	Yes	6 (13.3)	8 (14)	0.919
	No	39 (86.7)	49 (86)	
Not wanting to see themselves as at risk				
	Yes	15 (33.3)	30 (52.6)	>0.051
	No	30 (66.7)	27 (47.4)	
Lack of time				
	Yes	8 (17.8)	16 (28.1)	0.224
	No	37 (82.2)	41 (71.9)	
Difficulty in reaching the healthcare services				
	Yes	3 (6.7)	2 (3.5)	0.652
	No	42 (93.3)	55 (96.5)	
Not trusting the screening tests				
	Yes	0	0	N/a
	No	45 (100)	57 (100)	
Lack of money				
	Yes	3 (6.7)	2 (3.5)	0.652
	No	42 (93.3)	55 (96.5)	
Other				
	Yes	1 (2.2)	2 (3.5)	>0.999
	No	44 (97.8)	55 (96.5)	

\*Chi-square test

### Results of the Colorectal Cancer Health Beliefs Model Scale

The points obtained in the subdimensions of the Colorectal Cancer Health Beliefs Model Scale for the case group were 45.4±6.9 (min=22, max=55 ) in the trust-benefit dimension, 14.7±4.9 (min=6 ,max=30 ) for sensitivity, 18±4.2 (min=6, max=29) for barrier, 17.4±3.1 (min=10, max=23 ) for health motivation, and

17.4±3.1 (min=11 ,max=25) for severity. The mean points obtained in the control group were 48.2±5.8(min=33, max=55) in the trust-benefit dimension, 13.3±5.4 (min=6, max=30) for sensitivity, 16.6±5.3 (min=6 ,max=30 ) for barrier, 17.2±3.3 (min=10, max=25 ) for health motivation, and 16.8±4.4 (min=6 ,max=25 ) for severity (Figure 1). The perception of trust-benefit was determined to be statistically significantly higher in the control group (48.2±5.8 vs. 45.4±6.9) (p=0.018).

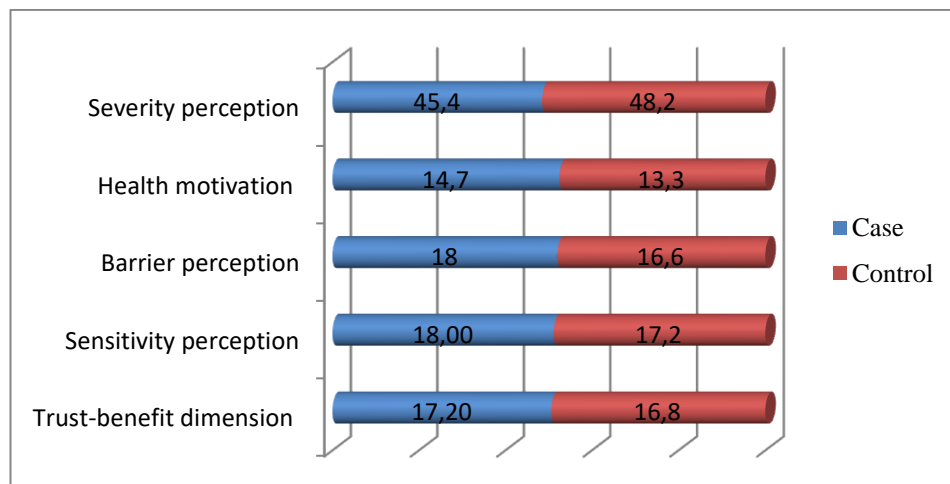


Figure 1. Averages of Participants for the Colorectal Cancer Health Beliefs Model Scale

In the case group, a significant positive correlation was determined between the age at which a relative was diagnosed with cancer and the perception of trust (p=0.009). A significant negative correlation was determined between BMI and the perception of severity (p=0.018). No correlation was determined between age, height, weight, BMI, and the perception of trust. No correlation was determined between age, height, weight, BMI, the age at which a relative was diagnosed, and the perceptions of sensitivity, barrier, health motivation, and severity (Table 3).

Table 3. Correlation of Demographic Data with Scores in the Case Group

		Age	Height	Weight	BMI	The age at which the relative was diagnosed
Trust-benefit dimension	r	-0.136	-0.245	-0.237	-0.150	0.333
	p	0.301	0.059	0.068	0.253	0.009
Sensitivity perception	r	0.130	-0.092	-0.051	-0.001	-0.072
	p	0.324	0.486	0.698	0.993	0.586
Barrier perception	r	-0.174	-0.088	-0.161	-0.153	-0.154
	p	0.183	0.504	0.219	0.242	0.239
Health motivation	r	-0.153	-0.157	-0.116	-0.076	0.072
	p	0.242	0.230	0.379	0.566	0.582
Severity perception	r	-0.043	0.028	-0.198	-0.303*	-0.122
	p	0.743	0.834	0.129	0.018	0.354

\*Pearson correlation

## Discussion

CRC is a cancer for which morbidity and mortality can be reduced with screening programs and early diagnosis. Preventative risk factors and necessary lifestyle changes have been shown to affect the prevention of CRC. This study can be considered of importance as the aim was to evaluate and compare the knowledge and attitudes towards cancer prevention of the relatives of patients with CRC and patients without a familial diagnosis of CRC. To the best of our knowledge, there is no case-control study on this subject in literature. Although the levels of knowledge of screening methods were similar for all the subjects, the study is important in respect of shedding light on the reasons for having or not having a screening examination.

The results of the study showed that the individuals with a first-degree relative with CRC underwent screening at a higher rate than those with no familial history of CRC. In a study by Yilmaz et al, a lower rate of screening was reported than that of those in the current study with a first-degree relative with CRC, despite the presence of similar risk factors.<sup>21</sup> Öztaş et al reported a lower screening rate of 22% of the study participants despite the presence of CRC and a CRC diagnosis of a first-degree relative.<sup>15</sup>

In a study by Baysal and Turkoğlu, although 30.9% of the study subjects had a family member diagnosed with CRC, only 8.8% had undergone screening, which was a lower rate than that of the current study.<sup>16</sup> The reason for this low screening rate could be due to the study having been conducted in 2013 when CRC screening was not widespread in Turkey, and the vast majority of the study participants did not know about CRC screening. Although the current study was conducted in a tertiary level healthcare institution and included patients with a family member with CRC, the screening rate was determined to be low. This finding could be attributed to the low number of participants in the age range recommended for the screening program.

Previous studies have reported that screening was not taken because of a lack of information, as in the current study.<sup>15,22,23</sup> The reason for the lack of information despite having a first-degree relative with CRC could be due to the low level of education at the primary school level.

The perception of trust-benefit is the level of belief that the implementation of protective health behavior will protect the individual from the disease or reduce the severity. The current study subjects with a first-degree relative with CRC had a relatively low level of knowledge that early CRC diagnosis could be made with screening, and the mean trust-benefit perception points were low because of the low level of education. Other studies in the literature have reported similar mean points.<sup>15,16</sup> In a study by Yilmaz et al, the mean points were found to be lower than those of the current study.<sup>21</sup>

The sensitivity perception is the perception of the risk of the individual catching the disease. The mean sensitivity perception points of those in the current study with a close relative with CRC were found to be higher than those of the patients with no familial history of CRC. In the study by Öztaş et al, the perception of sensitivity was found to be similar despite a positive family history.<sup>15</sup> Baysal and Türkoğlu reported sensitivity perception points of  $12.70 \pm 4.35$ , which were lower than the points in the current study.<sup>16</sup>

The barrier perception is the perception by the individual of factors such as psychosocial, physical, or economic status that could make it more difficult to implement protective health behavior. The mean barrier perception points of those in the current study with a close relative with CRC were found to be higher than those of the patients with no familial history of CRC. When the subscale points decreased in this subdimension of the scale, the barrier perception of the first-degree relatives increased. The results of the studies by Öztaş et al and Baysal and Turkoğlu were similar whereas the barrier perception points in the study by Yilmaz et al were seen to be higher.<sup>15,16,21</sup> The differences between these studies can be attributed to the features of the regions where they were conducted, the sample size, and the sample characteristics. In the current study, there was seen to be a moderate level of barrier perception.

Health motivation refers to how willing the individual is to live a healthy life, undergo screening, and have regular check-ups. The mean health motivation points of those in the current study with a close relative with CRC were found to be similar to those of the patients with no familial history of CRC, whereas they had been expected to be higher because of the higher rate of undergoing screening. When these results were compared

with the findings in the literature, they were seen to be similar to those of the studies by Öztaş et al and Baysal and Türkoğlu, Yılmaz et al reported low health motivation points of  $9.19 \pm 2.00$ , which was expected as the screening rate was low.<sup>15,16,21</sup>

The perception of severity is related to the importance given by an individual to the anxiety and harmful outcomes created by a problem that threatens their health. The mean severity perception points of those in the current study with a close relative with CRC were found to be higher than those of the patients with no familial history of CRC. This was an expected result as those with a first-degree relative with CRC are expected to have a greater awareness of the harmful outcomes of the disease and the type of changes that there will be to the quality of life. When these results were compared with the findings in the literature, they were seen to be similar to those of the studies by Öztaş et al and Baysal and Türkoğlu, while the results reported by Yılmaz et al were partially lower.<sup>15,16,21</sup>

There are some shortcomings of our study. Firstly, the study group is limited to patients who applied to Mustafa Kemal University Hospital in Hatay. Because of it, our results do not reflect the status of the entire nation.

## Conclusions

In our study, the level of the perception of trust and benefit was lower in the patients whose first-degree relatives had CRC compared to those who had not in their family. Although the expectation of early diagnosis, using CRC screening, was higher in the patients with CRC in their first-degree relatives, there was no significant difference between the two groups. This fact reveals the necessity of evaluating the risks for the individuals while providing counseling to them for colorectal cancer screening as well as updating the training. In this context, emphasizing the higher success rate of colorectal screening programs for both the early diagnosis and treatment of the disease may lead to increase the perception of trust and benefit significantly for each group.

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