ORIGINAL ARTICLE

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Identification of Colorectal Cancer Risks of Individuals Aged over Fifty and Their Beliefs towards Having Fecal Occult Blood Test

ABSTRACT

Objective: In Turkey, Colorectal Cancer (CRC) is the sixth among cancer types observed in women and men and the third in deaths resulting from cancer. In protection from CRC, knowing health beliefs about Fecal Occult Blood Test (FOBT) may help change the perceptions of health such as barrier and benefit and increase participation in screenings. This study was carried out in order to identify the CRC risks of individuals aged over fifty and their attitudes towards having fecal occult blood test.

Methods: This study was designed as a descriptive-cross-sectional study. The sample included 590 individuals aged over 50. Data were collected with the question form and the Scale for Assessment of Benefits and Barriers of Colorectal Cancer Screening-FOBT.

Results: The rate of having FOBT in the last five years was found 3.1 times higher for 'doctor or any other health specialist advising having test for CRC' (95% CI=1.863-5.209), 5.7 times higher for 'Being diagnosed with colon polyp before' (95% CI=1.365-23.894).

Conclusions: The results of this study showed that the CRC screening behaviors of individuals aged over 50 in a rural area are quite inadequate. One of the health beliefs, the total perception of benefit in having FOBT was found to be above middle level and the total perception of barrier to be below the middle level.

Keywords: Beliefs, Cancer screening, Colorectal cancer, Culture, Turkey.

Elli Yaş Üstü Bireylerin Kolorektal Kanser Risklerinin ve Dışkıda Gizli Kan Testi Yaptırma Konusundaki Tutumlarının Belirlenmesi

ÖZET

Amaç: Kolorektal Kanser (KRK) Türkiye'de kadın ve erkeklerde görülen kanser türleri içinde altıncı, kanserden kaynaklanan ölümler arasında üçüncü sıradadır. KRK'den korunmada Dışkıda Gizli Kan Testi (DGKT) hakkındaki sağlık inançlarının bilinmesi engel ve yarar gibi sağlık algılarının değişmesine yardım ederek taramalara katılımı arttırılabilir. Bu çalışma, elli yaş üstü bireylerin KRK risklerinin ve dışkıda gizli kan testi yaptırma konusundaki tutumlarının belirlenmesi amacıyla yapılmıştır.

Gereç ve Yöntem: Bu çalışma, tanımlayıcı-kesitsel araştırma türünde yapılmıştır. Örneklem 50 yaş üstü 590 bireyden oluşmuştur. Veriler, soru formu ve Kolorektal Kanser Taraması Yarar ve Engelleri Değerlendirme-DGKT ölçeği ile toplanmıştır.

Bulgular: Son beş yılda FOBT yaptırma oranı "Doktor veya herhangi bir diğer sağlık uzmanı CRC için test yaptırmasını önermesi" 3,1 kat (95% CI=1.863-5.209), "Daha önce kolon polip teşhisi alma" 5.7 kat (95% CI=1.365-23.894) yüksek bulunmuştur.

Sonuç: Bu çalışmanın sonuçları kırsal bir bölgede elli yaş üstü bireylerin KRK tarama davranışlarının oldukça yetersiz olduğunu göstermiştir. Sağlık inançlarından DGKT yaptırmada toplam yarar algısı orta düzeyin üzerinde, toplam engel algısı orta düzeyin altında bulunmuştur.

Anahtar Kelimeler: İnançlar, Kanser tarama, Kolorektal kanser, Kültür, Türkiye.

INTRODUCTION

Colorectal Cancers (CRC) comprise an important health problem particularly in the developed Western countries since it is the third most frequently diagnosed type of cancer among women and men. According to the World Health Organization (WHO), each year 945,000 people develop CRC and 492,000 people lose their lives. 143,000 new cases are diagnosed each year in the USA and 52,000 people die because of CRC (1). In Turkey, on the other hand, it is the third among cancer types observed in women and men and the third in deaths resulting from cancer (2). Colorectal cancer incidence varying among countries is attributed to environmental factors, local carcinogens and diet. In colorectal cancers some important factors such as hereditary (~%5), sporadic (~%95), genetic, environmental factors and precancerous diseases have a role in etiology of these cancers. In the history of patients with colorectal cancer, it is possible to see colorectal cancer history in at least two first-degree relatives, colonic adenomatous polyps, history of breast, ovary or endometrium, history of radiotherapy, inflammatory intestinal disease, familial adenomatous polyposis and Lynch I-II syndrome (3).

For the early diagnosis of CRC, American Cancer Society (2012) recommends, starting from the age of 50, a) fecal occult blood test (FOBT) or fecal immunochemical test (FIT) carried out every year using a home kit, b) flexible sigmoidoscopy or double-contrast barium enema every three years, and c) colonoscopy every ten years. FOBT is a screening test used to identify the amount of blood in tiny specimens that can be collected at home following three subsequent defecations. The use of this screening method decreases death risk by 33% and it achieves a reduction of 20% in cases of cancer through detection of polyps through colonoscopy and their removal afterwards (4).

When the literature about attitudes towards screening of colorectal cancer is examined, a) lack of access to and use of regular health services, b) lack of knowledge or lack of advice from physicians about cancer, c) negative attitudes and beliefs (i.e. fatalism, shame, discomfort), d) being afraid of screening procedures, and e) health system was determined as factors that affect distrust (5, 6, 7, 8 ,9).

It is seen that health beliefs are focused in studies conducted in recent years on factors that affect attitudes towards screening in colorectal cancers. Health Belief Model (HBM) is one of the oldest models developed through adjustment of the theory of behavioral sciences to healthcare area and it is a model frequently used in practices of health behaviors today. HBM accounts for the relationship between belief and behaviors of a person and the effect of individual motivation on health behaviors at the level of individual decision making. HBM identifies what drives one to perform or not to perform actions related to health and especially the situations that are effective on the display of health behaviors (10,11).

The concepts related to the beliefs and behaviors in HBM are perceptions of sensitivity, seriousness/caring, motivation, benefit and barrier. Among these factors, the concepts of benefit and barrier are particularly important in CRC screenings and great emphasis is placed on them in research studies. The perceived benefit means the benefits of displaying screening behaviors in CRC. This desire to perform action about screening behavior requires to believe that this behavior will effectively prevent CRC. The purpose here is not to persuade people typically that CRC is a significant health hazard. Many people are inclined to regard cancer as some kind of "death sentence". Therefore, the survivors of cancer function as an important role model in overcoming/mitigating the fear of cancer (carcinophobia). Other important focal points include barriers about CRC screenings perceived in cost, fear, transportation, access, lack of advisors, pain, preparations associated with intestines, shame and similar topics. Exhibiting preventive health behaviors depends on the difference between the perceived barrier and perceived benefit (12, 13,14,15).

In protection from CRC, knowing health beliefs about FOBT may help change the perceptions of health such as barrier and benefit and increase participation in screenings. Therefore, this study was carried out in order to identify the CRC risks of individuals aged over fifty and their attitudes towards having fecal occult blood test.

MATERIAL AND METHODS

Research type: This study was designed as a descriptive-cross-sectional study.

Population and Sample: The study population consisted of about 1500 individuals aged over 50 registered at seven Family Health Centers that are centralized in Düzce province. The sample, on the other hand, included 606 individuals aged over 50 who applied to these family health centers between 15.09.2014 and 26.12.2014, when the researchers obtained the data, who had no communicational problems and consented to participate in the study, and who were selected into the sample by random methods. 16 individuals were not taken into the scope of the study since they filled out the data collection forms incompletely and the sample group consisted of 590 persons.

Data Collection Tools: To collect the data to be used in the study, the question form prepared to determine personal characteristics of participants and their health histories and risks about CRC and the Scale for Assessment of Benefits and Barriers of Colorectal Cancer Screening-FOBT were used.

Question Form: It was prepared by the researchers in line with the related literature. "Fecal

Occult Blood Test", which is expressed in this form, was explained as "an investigation that enables the detection of small amount of blood in faeces", "Sigmoidoscopy" as "the examination of approximately last 60-70 cm of large intestine starting from rectum with a flexible medical device that is one finger-long in average and has a camera and a light source at the end", and "Colonoscopy" as "The examination of all the large intestines with a flexible imaging device with a camera and light source attached at the end that does not damage the tissue it contacts within the body".

The question form includes six questions about age, gender, educational level, marital status, income level and employment status related to personal information. In the health history form about CRC, there are 15 questions that inquire the existence of a test recommendation for CRC by a health specialist, diagnosed colon cancer, the existence of polyp and ulcerative colitis, colon cancer in family, the existence of polyp and ulcerative colitis diagnosis, the status of having FOBT, the status of having FOBT in the last five years, the status of having sigmoidoscopy, the status of having sigmoidoscopy in the last ten years, the status of having colonoscopy, the status of having colonoscopy in the last ten years, the intention to have FOBT and having FOBT at home. On the other hand, ten questions were asked to determine the existence of certain changes the participants experienced within the last three to six months in relation to CRC.

Scales for Assessment of Benefits and Barriers of Colorectal Cancer Screening-FOBT Subscale: It was used in order to determine the attitudes of participants towards having FOBT. The scales were developed by Rawl et al. (2001) in harmony with the structure of HBM as subscales of FOBT, flexible sigmoidoscopy and colonoscopy so as to reveal individuals' perceptions of benefit and barrier that influence their attitudes towards having colorectal cancer screening. Only the FOBT subscale was used in this study. The participants were requested to assess each statement (strongly agree=1; Agree=2; Neutral=3; Disagree=4; Strongly disagree=5). The benefits dimension of the scale consists of five items (reliability coefficient: .65, the declared variance: .34%) and the barriers dimension of eight items (reliability coefficient: .72, the declared variance: .34%) (8). The scale was adapted to Turkish by the researchers. For this study, the reliability coefficient was found .87 and .76 for the benefits dimension and barriers dimension, respectively. Higher scores from the scale show that the perceptions of benefit and barrier develop.

Ethical issues: The aim of the study was explained to the individuals taking part in the study and the data was collected on the basis of voluntariness. Written permission was obtained from Düzce Public Health Directorate to carry out the study.

Assessment of the data: After the data obtained from the study were coded, they were digitalized through SPSS (Statistical Package for the Social Sciences) 21.0 package program and analyzed. Continuous variables were indicated with mean±standard deviation and categorical variables with numbers and percentages. Pearson chi square and Fisher chi square tests were used in statistical comparisons and logistic regression analysis was performed for the identification of determining variables influential on having FOBT. The results were assessed at a confidence interval of 95% and significance at the level of $p<0.05$.

RESULTS

Findings about Socio-Demographic Characteristics: The socio-demographic characteristics of individuals which participating this study is given in Table 1. 56.8% of the participants (n=335) are females, 83.2% (n=491) are married and 62% (n=366) are primary school graduates. 70% of the participants perceived that their income status (n=412) is equal their expenses. Their mean age is 64.41±9.47 (Table 1).

Table 1. Socio-Demographic Characteristics of Participants

Socio-Demographic Characteristics (n:590)		n	%
Gender	Female	335	56.8
	Male	255	43.2
Marital status	Married	491	83.2
	Single	99	16.8
Income status	Income lower than expenses	130	22.0
	Income higher than expenses	48	8.1
	Income equals expenses	412	69.8
Employment status	Unemployed	248	42.0
	Retired	307	52.0
	Employed	35	5.9
Age	50-59	190	32.2
	60-69	215	36.4
	70-79	134	22.7
	80 and over	51	8.6
Mean age	64.41±9.47 (Min-Max:50-95)*		
Education	Illiterate	106	18.0
	Primary school	366	62.0
	Secondary school	56	9.5
	High school and university	62	10.5

**Mean±Standard Deviation*

Findings Related to Health History of Colorectal Cancer: The distribution of the characteristics of individuals participating in the study related to their health histories about CRC is presented in Table 2. 20.8% of the participants (n=123) were advised by their doctors or a health specialist to have a test for CRC. The rate of CRC diagnosis is 1.7% (n=10), the rate of colon polyp is 2.2% (n=13) and the rate of inflammatory bowel disease is 2.4% (n=14). Family history findings reveal that 6.4% (n=38) of families have CRC, 5.3% (n=31) which means their families have colon polyp. Also in this findings it is seen that 3.7% (n=22) participants' families have inflammatory bowel disease. And 22.5% of the participants (n=133) have FOBT before. 16.4% (n=97) had FOBT in the last five years. The rate of having sigmoidoscopy before is 3.9% (n=23), and the rate of having sigmoidoscopy in the last ten years is 3.2% (n=19). Participants' rate of having colonoscopy is 8.0% (n=47) and their rate of having colonoscopy in the last ten years is 6.9% (n=40). 38.5% of the participants (n=227) stated that they had an intention to have FOBT. When asked whether if they have any information on home use of this test, we took "yes" answer with the rate 23.5% (n=139) (Table 2).

Table 2. Participants' Health History of Colorectal Cancer

Characteristics (n:590)		**n**	**%**
Has your doctor or any other health specialist advised you to have a test for colon cancer?	Yes	123	20.8
	No	467	79.2
Have you been diagnosed with CRC before?	Yes	10	1.7
	No	580	98.3
Have you been diagnosed with colon polyp before?	Yes	13	2.2
	No	577	97.8
Have you been diagnosed with inflammatory bowel disease before?	Yes	14	2.4
	No	576	97.6
Does anyone in your family (your grandmother, grandfather, mother, father, sibling or children) have CRC?	Yes	38	6.4
	No	552	93.6
Does anyone in your family (your grandmother, grandfather, mother, father, sibling or children) have colon polyp?	Yes	31	5.3
	No	559	94.7
Does anyone in your family (your grandmother, grandfather, mother, father, sibling or children) have inflammatory bowel disease?	Yes	22	3.7
	No	568	96.3
Have you had FOBT before?	Yes	133	22.5
	No	457	77.5
Have you had fecal blood test in the last five years?	Yes	97	16.4
	No	493	83.6
Have you had sigmoidoscopy before?	Yes	23	3.9
	No	567	96.1
Have you had sigmoidoscopy in the last ten years?	Yes	19	3.2
	No	571	96.8
Have you had colonoscopy before?	Yes	47	8.0
	No	543	92.0
Have you had colonoscopy in the last ten years?	Yes	40	6.8
	No	550	93.2
Do you have an intention to have FOBT?	Yes	227	38.5
	Not sure	76	12.9
	No	287	48.6
Do you think FOBT can be carried out at home?	Yes	139	23.5
	Not sure	210	35.6
	No	241	40.8

**Mean±Standard Deviation*

Findings about the Changes Experienced within the last Three to Six Months in Relation to the Symptoms and Risks of Colorectal Cancer: The distribution of the changes that individuals participating in the study have experienced within the last three to six months in relation to the symptoms of CRC is given in Table 3. The first three symptoms that the participants

stated the most are weakness/fatigue (53.1%), change in bowel movements (diarrhea, constipation) (37.8%), persistent/chronic stomach ache and bloating (33.2%), respectively. 46.9% of the participants said they did exercise less than 30 minutes a day, 20% they had a high-fat diet and 15.8% they smoked (Table 3).

Table 3. Changes that Participants Have Experienced within the Last Three to Six Months in Relation to the Symptoms and Risks of Colorectal Cancer

Changes (n:590)		n	%
Changes in Bowel Movements (diarrhea, constipation)	Yes	223	37.8
	No	367	62.2
Blood in faeces or rectal bleeding	Yes	39	6.6
	No	551	93.4
Change in size or shape of faeces	Yes	56	9.5
	No	534	90.5
Persistent/chronic stomach ache and bloating	Yes	196	33.2
	No	394	66.8
Unexplained weight loss	Yes	49	8.3
	No	541	91.7
A feeling that bowels have not been emptied completely	Yes	125	21.2
	No	465	78.8
Weakness or fatigue	Yes	313	53.1
	No	277	46.9
Do you smoke or drink alcohol?	Yes	93	15.8
	No	497	84.2
Does your diet have a high fat rate?	Yes	118	20.0
	No	472	80.0
Do you do exercise less than 30 minutes a day?	Yes	277	46.9
	No	313	53.1

Findings as to Participants' Status of Having FOBT: As you see in the Table 4 we gave the distribution of FOBT which the participants have. According to these findings only 19.7% of the participants (n=116) accepted to have a home-kit for FOBT. The test result Show that 19% (n=22) of participants have FOBT (n=116) positive. The results of the 84.6% of the participants get positive (n=19) when they took this test in higher institution (such as a state hospital or university health and research center) (Table 4).

Table 4. Participants' status of having FOBT

The Status of Having FOBT Test		n	%
FOBT (n:590)	Taken	116	19.7
	Not taken	474	80.3
FOBT Result (n:116)	Negative	94	81.0
	Positive	22	19.0
Those who Applied to Higher Institution (n:22)	Yes	19	86.4
	No	3	13.6

Findings as to the Distribution of Scores Participants Obtained from the FOBT Scale: The distributions of scores of participants obtained from the FOBT scale are given in Table 5. Among the perceived benefits, the first three are the items" Determination of CRC early will save your life"(3.83+0.80). "A FOBT determination of CRC early" (3.80+0.77) and "The treatment for CRC may not be as bad if the cancer is found early"(3.61+0.84), respectively.

On the other hand, in the first three orders among the perceived barriers are "You do not know how to do a FOBT" (3.19+0.99), "You do not need to do a FOBT because you have no problems" (3.09+1.07) and "Collecting a stool sample to do a FOBT is unpleasant for you" (2.61+1.01) (Table 5).

Table 5. Scores Participants Obtained from the FOBT Scale

Scale Item	Item Mean (SD)
Benefits of FOBT	
Save life	3.83 (0.80)
Treatment not as bad	3.61 (0.84)
Find colorectal cancer early	3.80 (0.77)
Decrease chances of dying	3.58 (0.81)
Not worry as much	3.39 (0.87)
Total	18.20 (3.32) (min-max: 5-25)
Barriers to FOBT	
Unpleasant	2.61 (1.01)
Don't know how	3.19 (0.99)
Embarrassing	2.40 (0.92)
No problems	3.09 (1.07)
Afraid of results	2.53 (0.88)
Cost	2.20 (0.68)
Time	2.50 (1.01)
Privacy	2.38 (0.80)
Total	20.89 (4.40) (min-max: 5-40)

Findings as to the Factors Determining Participants' Status of Having FOBT in the Last Five Years: When the relation of participants' socio-demographic characteristics, health history, and perceptions of benefit and barrier with the status of having FOBT in the last five years is examined, it is seen that the rate of having FOBT in the last five years is significantly higher among those whose educational level is high school and above than those who are illiterate, primary and secondary school graduates (p=0.014). The rate of having FOBT is significantly much higher for those who have been advised to have a CRC screening by their doctors or any other health specialist (p=0.000), those who have been diagnosed with CRC before (p=0.000) and those who have been diagnosed with colon polyp before (p=0.000). The rate of having FOBT is extremely significantly high

Table 6. The Characteristics of Participants and the Factors That Affect the Status of Having FOBT in the Last Five Years (a)

Affecting Factors		The rate of having FOBT in the last five years	Statistics
Socio-Demographic Characteristics			
Gender	Female (n=56) Male (n=41)	16.7 16.1	.836
Educational status	**Primary education and below (n= 80)** **Primary education and above (n=17)**	**15.2** **27.4**	**.014***
Marital status	Married (n=85) Single (n=12)	17.3 12.1	.204
Income status	Income lower than expenses(n=16) Income higher than expenses(n=11) Income equals expenses (n=70)	12.3 22.9 17.0	.205
Employment status	Unemployed (n=40) Retired (n=49) Employed (n=8)	16.1 16.0 22.9	.572
Health History			
Has your doctor or any other health specialist advised you to have a test for colon cancer?	**Yes (n=45)** **No (n=52)**	**36.6** **11.0**	**.000*****
Have you been diagnosed with CRC before?	**Yes (n=7)** **No (n=90)**	**70.0** **15.5**	**.000*****
Have you been diagnosed with colon polyp before?	**Yes (n=10)** **No (n=87)**	**76.9** **15.1**	**.000*****
Have you been diagnosed with inflammatory bowel disease before?	Yes (n=3) No (n=94)	21.4 16.3	.610
Does anyone in your family have colon cancer?	Yes (n=7) No (n=90)	18.4 16.3	.733
Does anyone in your family have colon?	Yes (n=6) No (n=91)	19.4 16.3	.653
Does anyone in your family have inflammatory bowel disease?	Yes (n=5) No (n=92)	22.7 16.2	.417

**p<0.05, **p<0.01, ***p<0.001*

for those who disagreed with the barriers "Do not know how to do a stool blood test" (p=0.001) and "Do not have privacy to do a stool blood test" among the perceived barriers. For those who disagreed with the barriers "Stool blood test is embarrassing" (p=0.020) and "Do not need stool blood test because you have no problems" (p=0.010), the rate of having FOBT is significantly higher (Table 6 a-b).

Logistic regression model used to identify the determining variable/variables within eight variables among socio-demographic characteristics. And results revealed that there is a relation between "health history and perceptions of benefit and barrier of the participants" and the status of having FOBT in the last five years (p<.05). Among these variables, the rate of having FOBT in the last five years is 3.1 times higher than the 'doctor or any other health specialist advising having test for CRC' (95% CI=1.863-5.209), 5.7 times higher for 'Being diagnosed with colon polyp before' (95% CI=1.365-23.894), and 1.1 times higher for "Do not know how to do a stool blood test" (95% CI=1.002-1.283) (Table 7).

Table 6. The Characteristics of Participants and the Factors That Affect the Status of Having FOBT in the Last Five Years (b)

Affecting Factors		The rate of having FOBT in the last five years	Stat.
Perceived Benefits			
Save life	Agree (n=20) Disagree (n=77)	15.4 16.7	.713
Treatment not as bad	Agree (n=29) Disagree (n=68)	14.4 17.5	.324
Find colorectal cancer early	Agree (n=20) Disagree (n=77)	15.4 16.7	.713
Decrease chances of dying	Agree (n=29) Disagree (n=68)	14.4 17.5	.324
Not worry as much	Agree (n=47) Disagree (n=50)	17.9 15.2	.380
Perceived Barriers			
Unpleasant	Agree (n=33) Disagree (n=64)	18.0 14.1	.214
Don't know how	**Agree (n=52)** **Disagree (n=45)**	**12.9** **24.1**	**.001****
Embarrassing	**Agree (n=21)** **Disagree (n=76)**	**11.2** **18.9**	**.020***
No problems	**Agree (n=48)** **Disagree (n=49)**	**13.3** **21.4**	**.010***
Afraid of results	Agree (n=35) Disagree (n=62)	14.8 17.6	.369
Cost	Agree (n=17) Disagree (n=80)	12.1 17.8	.107
Time	Agree (n=27) Disagree (n=70)	13.2 18.1	.127
Privacy	**Agree (n=20)** **Disagree (n=77)**	**10.5** **19.2**	**.008****

**p<0.05, **p<0.01, ***p<0.001*

Table 7. Selected Explanatory Variables for Having FOBT in the last five years

Explanatory Variable	Estimated Coefficient	Standard Error	X^2	P	Odds Ratio	95% CI
Doctor or any other health specialist advising having test for CRC	1.136	0.262	18.773	.000	3.115	1.863-5.209
Being diagnosed with colon polyp before	1.742	0.730	5.691	.017	5.710	1.365-23.894
Do not know how to do a stool blood test	0.126	0.063	3.958	.047	1.134	1.002-1.283

DISCUSSION

Screening behaviors of participants: Colorectal cancer is a disease that can be prevented through alterations in lifestyle, diagnosed earlier and successfully cured by means of diagnostic tests and training. This study was carried out in order to identify the CRC risks of individuals aged over fifty and their attitudes towards having FOBT. Annual FOBT is no longer considered necessary or recommended in cases when endoscopic screening techniques such as sigmoidoscopy and colonoscopy are regularly used. However, the level of information on CRC screening and the rates of screening through colonoscopy or flexible sigmoidoscopy are still low in the overall population in Turkey. Moreover, individuals' resistance is high due to privacy issues. Still, performing screening procedures at least like FOBT stands out as a more attainable goal in Turkey in terms of screening behaviors. Furthermore, having FOBT cannot be ignored with its economic

advantages for a developing country as it is a practical and cost-efficient approach. In a study conducted in Turkey, it was revealed that 90% of the participants did not know early diagnosis methods in CRC, 91% did not have screening and 94% did not know the age to begin screening (16). In this study, though their overall knowledge on CRC screening was not questioned, only 24% of the participants knew that there were home-kits prepared for FOBT. The rates of the participants for FOBT, colonoscopy and sigmoidoscopy are 23%, 8% and 4%, respectively. Wilkins et al. (2012) found out the rates of FOBT, colonoscopy and sigmoidoscopy to be 27%, 47% and 25% in their studies (6). Moreover, Rawl et al. (2005) found the rates of FOBT, sigmoidoscopy and colonoscopy as 21%, 30% and 21% (14). In Menon et al. (2003), the rate of having colonoscopy is 52% (7). Among the CRC screening behaviors of the participants, rates of having FOBT are close to the previous studies, but the rates of sigmoidoscopy and colonoscopy are dramatically lower than the other studies. This situation is consistent with the inadequacy of the Turkish society in terms of general screening behaviors.

In explaining CRC screening behaviors of individuals, phases of change are important. Individuals thinking of modifying their behaviors are more open to obtaining feedback and information on their problematic behaviors. Individuals who have decided to modify behaviors, on the other hand, are determined to modify their problematic behaviors in a short time. In this respect, it can be said that 39% of individuals in this study have decided to have FOBT and 47% are in the pre-thinking stage. Rawl et al. (2005) state in their study that 66% of the participants are in the pre-contemplation phase in terms of attitudes of having FOBT while 20% are in the thinking phase (14).

CRC Symptoms and Risks of Participants: Raising individuals' awareness of CRC symptoms and risks is important in the process of behavior modification so that individuals are directed for the early diagnosis and treatment of CRC. However, these symptoms are seen not only in CRC but can frequently be observed in other health problems as well. Change in bowel movements is particularly one of the most important indications. Change in bowel movements (diarrhea, constipation) (38%), persistent/chronic stomach ache and bloating (33%) and a feeling that bowels have not been emptied completely (21%) are remarkable among the changes the participants experienced related to the symptoms of CRC. Moreover, 47% of the participants stated that they did not do exercise, 16% that they smoked and 20% that they had a high-fat diet. Baysal and Türkoğlu (2003) found out that 16% of the participants smoked, 70% predominantly consumed animal fat and meat and 65% did not do exercise (16).

In addition to the lifestyle risks in CRC, the histories of CRC, colon polyp and inflammatory bowel disease in the family are other significant factors. Different from the previous studies, genetic risks were not influential on the rates of having FOBT in the last five years in this study. On the other hand, in another study the CRC screening rate was found to be extremely high among individuals with a family history of CRC (6). In Nar (2010), the screening behaviors of individuals who have genetic risks of CRC and the levels of health beliefs that support them to display such behaviors were found insufficient (17). The rate of having FOBT in the last five years is extremely significantly high among those participants who have been diagnosed with CRC and colon polyp before. Particularly being diagnosed with colon polyp is the strongest determinant on having FOBT in the last five years (OR=5.7). This finding should be one of the focal points in order to raise awareness at least about this important risk factor.

Socio-demographic characteristics that affect participants' attitudes towards having FOBT: In this study, the educational backgrounds of the participants are generally low. The rate of having FOBT in the last five years is significantly higher among those with educational levels of high school and above than those with lower educational levels. This result is consistent with the results of studies in which educational status is shown to be a factor that affects CRC screening behaviors and health beliefs (6,13). In contrast to Menon et al. (2003), marital status was not effective at having FOBT in the last five years (7).

There is a study which shows that the cost of CRC screening is a significant barrier in the delivery of health service and that the rate of having CRC screening is extremely significantly low among people without health insurance (6). In this study, income status was not influential on the rate of having FOBT in the last five years. The reason for this is that all the participants had social security. The costs of screening are met in this way for people who have access to social security.

It is highly important that health care providers follow and recommend the CRC symptoms of individuals, their risk factors and screening behaviors such as FOBT, sigmoidoscopy and colonoscopy. Moreover, this information should be integrated so that they can be used by other health service workers or personnel. Unfortunately, in this study only 21% of the participants received recommendation from health professionals as to having screening. In another study, this rate was expressed as 31% (7). The rates of having FOBT in the last five years were extremely high among the participants who have been advised to have a test for CRC by a health specialist before and this was one of the strong determinants of having FOBT in the last five years.

This result is similar to the previous study results (5,7,12).

Benefits of FOBT: As anticipated theoretically, among variables of belief the perception of benefit is one of the most significant determinants in CRC screenings. Previous screening results indicate that individuals who perceive the benefits of screening behaviors on their health had screenings such as FOBT or colonoscopy at a higher rate (7,14,16) and the perception of benefit could be enhanced through intervention attempts (12). However, although the total perception of benefit was found to be above middle level in this study, it was not effective on having FOBT in the last five years. The first three benefits perceived at the highest level are "Finding CRC early will save your life", "A FOBT help find CRC early" and "The treatment for CRC may not be as bad if the cancer is found early". The attitude towards CRC screening is related to the internal control (willpower to stay healthy) and external control (fatalism) that the individuals display (9). In Turkey, where the majority of the society is Muslim, it is not a wide-spread belief that "people can change their fate through their efforts". This situation prevents individuals from displaying a more active attitude towards using screening techniques like CRC for their general health. Fatalism has an important function in our culture as a coping strategy for accepting uncontrolled events. It is conceived that it should be investigated in detail so that the socio-cultural variables behind the result of this study are revealed.

Barriers of FOBT: It has been shown that individuals capable of coping with barriers are successful at the implementation of such screenings as FOBT or colonoscopy (8). The total perception of benefit was found to be above middle level in this study. The first three benefits perceived at the highest level, on the other hand, are "Finding CRC early will save your life", "A FOBT help find CRC early" and "The treatment for CRC may not be as bad if the cancer is found early". These barriers, which are at the top, point out a lack of knowledge on FOBT. The fact that the perception of "You do not know how to do a FOBT", one of the perceptions of barrier, has a determining influence on having FOBT in the last five years also supports this notion. In Rawl et al. (2005), having FOBT once was found to be related to "Collecting a stool sample is unpleasant", "A stool blood test is embarrassing" and "Health care provider never recommended one" (14). These findings show that the participants had a limited understanding as to the importance of existing symptoms that FOBT detect and how the test is implemented. In removing these barriers, it is thought that it might be beneficial to motivate individuals especially about overcoming the lack of knowledge on why this test is important in CRC screenings, what it is, polyps proceeding to cancer and early diagnosis of the disease and about its cost.

It is thought that it might be beneficial to overcome the lack of knowledge on why FOBT is important in CRC screenings, what it is and its cost and to motivate individuals in removing these barriers. In the light of all the other findings, health practitioners are at a key point for individuals having FOBT (18).

Conclusion and Recommendations

The results of this study showed that the CRC screening behaviors of individuals aged over 50 in a rural area are quite inadequate. The rate of having FOBT, one of the screening behaviors, is relatively higher compared to the rates of sigmoidoscopy and colonoscopy. One of the health beliefs, the total perception of benefit in having FOBT was found to be above middle level and the total perception of barrier to be below the middle level. In terms of the behavior of having FOBT in the last five years, "getting advise from doctor", "being diagnosed with colon polyp" and among the perceptions of barrier, "Don't know how to do a stool blood test" were shown as determining variables. The findings could be used to enhance the interventions designed to improve CRC screening rates.

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