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Determination of The Relationship Between Colorectal Cancer Screening Behaviors and Health Literacy Levels of Individuals

Aygül Ata[1,a], Hesna Gürler[2,b,*]

[1]Sivas Numune Hospital, Sivas, Türkiye
[2]Operating Room Services Program, Vocational School of Health Services, Sivas Cumhuriyet University, Sivas, Türkiye
*Corresponding author

Research Article

ABSTRACT

To determine the relationship between colorectal cancer screening behaviors and the health literacy levels of individuals. The study had a descriptive and cross-sectional design. It included 332 individuals. The Descriptive Characteristics Form, Colorectal Cancer Screening Behaviors Form, and Health Literacy Scale were used to collect the study data. It was found that 30.7% had undergone colorectal cancer screening tests and individuals who knew colorectal cancer screening tests were more likely to have a screening test. Health Literacy Scale score of individuals was 81.88±23.64, and there was no significant relationship between having a colorectal cancer screening test and the level of health literacy. The rate of knowing and undergoing colorectal cancer screening test was insufficient, participants had a moderate/limited level of health literacy and there was no significant relationship between having a colorectal cancer screening test and health literacy.

Keywords: Colorectal cancer, Health literacy, Screening tests

[a] aygul_c_@hotmail.com   https://orcid.org/0000-0002-2402-0001   [b] hesnagurler@hotmail.com   https://orcid.org/0000-0001-6641-9689

Introduction

Colorectal Cancer (CRC) is a universal healthcare issue with high cost and mortality (www.iarc.fr; http://hsgm.saglik.gov.tr). According to the World Health Organization (WHO) 2020 data, CRC was the third most common cancer and the second leading cause of death worldwide (www.iarc.fr). According to the 2015 data from the Ministry of Health, CRCs were the third most common cancer in both men and women in Turkey (http://hsgm.saglik.gov.tr). Although its prevalence was 17 per hundred thousand according to 2015 data in our country, it was reported that this rate increased to 37.54 per hundred thousand according to the Global Cancer Observatory (GLOBACAN) 2020 data published by the International Cancer Research Agency (IARC) (www.iarc.fr).

CRCs can be detected at an early stage with screening tests (Murphy et al., 2019). For this reason, WHO accepts early diagnosis and screening tests as the gold standard in combating CRC (Bacconi et al., 2022). To reduce cancer-related mortality rates, screening programs were developed around the world (Helsingen et al., 2019; Bacconi et al., 2021; Engel-Nitz et al., 2023) and the Turkish Ministry of Health included the Fecal Occult Blood Test (FOBT), which is applied every two years for all individuals aged 50-70 years, in the scope of screening in CRCs (https://hsgm.saglik.gov.tr). Although the incidence and mortality rate of CRC is reduced with early diagnosis and screening services, participation rates in screening programs are insufficient worldwide and the chance of treatment decreases as cases are diagnosed later (Sanchez et al., 2013; Almadi et al., 2015; Costea et al., 2018; Davis et al., 2020; Engel-Nitz et al. 2023). In Turkey, it was reported that the majority of individuals who were aged 50 and over did not know the early diagnosis and screening methods of CRC and their participation rates in screening programs were low (8.1%-22%) (Durusu Tanrıöver et al., 2014; Pirinççi et al., 2015; Bulduk et al., 2017; Yalçın Gürsoy & Bulut Ayaz, 2023). In studies evaluating the CRC screening behaviors of society and the factors affecting it, it was found that individuals, who had high education levels (Bulduk et al., 2017), who had bowel cancer in their families (He et al., 2018), who knew screening tests (Sanchez et al., 2013), and who had a high level of health literacy (HL) (Sentell et al., 2013; Kobayashi et al., 2014; Heide et al., 2015; Won Jin et al., 2019; Baccolini et al., 2022) had higher rates of undergoing screening tests.

HL, which is an important determinant of health, is a fundamental factor in helping to reach health and disease-related information and to make health-related decisions and affects the prevention and management of chronic diseases such as cancer (Lin et al., 2019; Baccolini et al., 2022). HL is also an important factor in the understanding of individuals regarding health information on cancer screening and their decision to undergo screening tests (Sentel et al., 2015). In previous studies investigating the relationship between CRC screening behaviors and HL levels, it was reported that high level of HL was one of the the important determinants of participation in CRC screenings, and improving the HL of the population will increase participation rates in CRC screening tests and decrease the morbidity and mortality associated with CRCs (Sentell et al., 2013; Kobayashi et al., 2014; Heide et al., 2015; Won Jin et al., 2019;

Baccolini et al., 2022). For this reason, the present study aimed to determine the relationship between CRC screening behaviors and HL levels in individuals aged 50 and over.

Material and Methods

Design and Setting

The study had a descriptive and cross-sectional design and it was conducted in the Emergency Observation Room of a state hospital with patients who applied to the outpatient clinic and received short-term outpatient treatment.

Participants

The universe of the study consisted of 633 participants who applied to the Adult Observation Room between 30 December 2019 and 30 March 2020. The sample included 332 individuals, who were aged 50 and over, who met the inclusion criteria of the study, and who agreed to participate in the study. Individuals who were able to communicate, had no cognitive dysfunction, agreed to participate in the study, and were not diagnosed with any cancer were included in the study. The 301 individuals who could not communicate verbally, who had cognitive dysfunctions, who refused to participate in the study, who were diagnosed with cancer, and who were aged 18-49, were not included in the study.

Data Collection

Data were collected using The Descriptive Characteristics Form, CRC Screening Behaviors Form, and Health Literacy Scale (HLS). The forms were applied in the emergency observation room with the face-to-face interview technique. The application of the forms took about 20-25 minutes.

Instruments

Descriptive Characteristics Form

The form was prepared by the researchers by using the current literature data (Pirinççi et al., 2015; Bulduk et al., 2017). It consists of 12 questions on age, gender, marital status, employment, income, and education status, place of residence, diagnosed chronic disease, family history of CRC, family member with CRC, and the presence of a diagnosed bowel disease.

CRC Screening Form

The form that was developed by the researchers based on the literature data consists of eight questions related to tests for the screening tests of CRC, source of information about the tests, status of undergoing the screening tests of CRC, tests undergone, time, and reason for the test, state of considering testing for CRC screening within six months, and the reason for not considering testing (Sanchez et al., 2013; Pirinççi et al., 2015; Almadi et al., 2015; Bulduk et al., 2017; Costea et al., 2018).

Health Literacy Scale (HLS)

To determine the level of HL of individuals, the HLS, which was developed by Sørensen in 2013, later simplified by Toçi et al. (2013), and validated and found reliable for Turkish by Aras & Bayık Temel in 2017, was used. The scale has 25 items in the Likert style and consists of four sub-dimensions; Access to Information (1st-5th items), Understanding Information (6th- 12th items), Assessment/Evaluation (13th-20th items), and Application/Using (21st-25th items). The minimum score for the entire scale is 25 and the maximum score is 125. Low scores show inadequate, problematic, and weak HL status, and high scores show adequate and very good status. As the score obtained from the scale increases, the HL level of the individual also increases. The Cronbach's Alpha Coefficient of the original scale was 0.95. In the present study, the Cronbach Alpha Coefficient of HLS was 0.98, and the Cronbach Alpha Coefficients of the sub-dimensions were 0.99 for Access to Information, 0.98 for Understanding Information, 0.91 for Assessment/Evaluation, and 0.94 for Application/Using.

Ethical Considerations

The study protocol was approved by the ethics committee of the university (no:2019-12/23). The study was conducted following the Declaration of Helsinki, after obtaining written and verbal consent from the individuals who agreed to participate.

Data Analyses

The SPSS 23.0 program was used to evaluate the study data. Mean, standard deviation, number, percentage, and Logistic Regression analysis were used as descriptive statistical methods in the evaluation of the data. The level of significance was accepted as $p < 0.05$ in the evaluation of the data.

Results

The mean age of the participants was found to be 61.36±8.16, 64.8% were women, 82.5% were married, 89.2% were unemployed, 75.3% had low income, 49.4% were primary school graduates, and 88.3% lived in the city center. It was also found that 69% of the individuals had chronic diseases, 15.4% had a family history of CRC, and 19.9% had a diagnosed bowel disease (Table 1).

It was found that 45.5% of the individuals knew CRC screening tests, the most known test was FOBT. It was also determined that 30.7% of participants had undergone a CRC screening test and the most common test was FOBT (76.4%), and 31.3% did not consider undergoing a CRC screening test. The reasons for not considering undergoing a CRC screening test were as follows; 63.2% saw themselves as healthy, 25.5% had no reason, and 7.5% had a fear of being diagnosed with CRC (Table 2).

In the present study, no significant relationship was detected between the chronic disease status of participants, having a family history of CRC, presence of diagnosed bowel disease, and undergoing a CRC screening test; and the rate of undergoing a CRC screening test was 12.962 times higher in participants who knew about CRC screening tests ($p < 0.05$). There was no significant relationship between having a colorectal cancer screening test and the level of health literacy (Table 3).

The mean HLS score of the participants was moderate/limited (81.88±23.64), participants' Access to Information subscale score was 16.60±5.22, Information Understanding subscale score was 20.96±8.38, Assessment/Evaluation subscale score was 26.48±7.73, Application/Using subscale score was 17.81±4.04 (Table 4).

Table 1. Participants' characteristics

Characteristics	n	%
Age		
50-65 age	249	75.0
65-79 age	73	22.0
≥80 age	10	3.0
Gender		
Female	215	64.8
Male	117	35.2
Marital status		
Married	274	82.5
Unmarried	58	17.5
Employment status		
Unemployed	296	89.2
Employed	36	10.8
Household income		
Low	250	75.3
Medium	80	24.1
High	2	0.6
Educational level		
Literate/nonliterate	94	28.3
Primary school	164	49.4
Secondary school	50	15.1
University	24	7.2
Place of residence		
City	293	88.3
Village	32	9.6
District	7	2.1
Chronic disease		
Yes	229	69.0
No	103	31.0
Family history of CRC		
Yes	51	15.4
No	281	84.6
Family member of CRC (n=51)		
1st degree relative	35	68.6
2nd and 3rd degree relative	16	31.4
A bowel disease		
Yes	66	19.9
No	266	80.1
Bowel disease type (n=66)		
Chronic constipation	43	65.1
Polyp	10	15.1
Ulcerative colitis	10	15.1
Chronic diarrhoea	2	3.3
Crohn's disease	1	1.4

Table 2. CRC screening behaviors of participants

Characteristics	n	%
Have knowledge about screening tests for CRC		
Yes	151	45.5
No	181	54.5
Known screening tests for CRC (n=151)		
FOBT	123	81.4
Colonoscopy	47	31.1
Barium graphy	2	1.3
Information source for CRC screening tests		
Health professionals	146	96.6
Neigbour/Relative	7	4.6
Television/Internet	7	4.6
Have undergone CRC screening tests		
Yes	102	30.7
No	230	69.3
CRC screening tests		
FOBT	78	76.4
Colonoscopy	32	31.4
Time to have a CRC screening test		
6 monts ago	16	15.7
1 year ago	25	24.5
2 years and more ago	61	59.8
The reasons for CRC screening tests		
Doctor advice	58	56.9
İntestinal complaints	24	23.5
General check-up	17	16.7
Family member with CRC	3	2.9
Consideration of having CRC screening test within 6 months		
Yes	228	68.7
No	104	31.3
Reasons for not considering CRC screening test (n=104)		
See yourself as healthy	67	63.2
There is no reason	26	25.5
Fear of being diagnosed with CRC	7	7.5
Not knowing where to apply	2	1.9
Having a transporting problem	1	0.9
Lack of time	1	0.9

Table 3 Logistic regression of factors affecting the status of undergoing CRC screening test of participants

Variables in the model	B	S.H.	Wald	SD	p	Exp(B)	95% CI Exp(B) Lower	Upper
Chronic disease	0.531	0.272	3.820	1	0.051	1.700	0.998	2.895
Constant	1.709	0.487	12.319	1	0.000	0.181		
Family history of CRC	0.448	0.315	2.021	1	0.155	1.566	0.844	2.905
Constant	0.963	0.535	3.240	1	0.072	2.619		
Intestinal disease	0.729	0.284	6.604	1	0.070	2.072	1.189	3.612
Constant	0.195	0.474	0.168	1	0.682	1.215		
Have knowledge about screening tests for CRC	4.727	0.607	6.673	1	**0.000**	**12.962**	34.385	371.102
Constant	8.224	1.183	48.354	1	0.000	0.000		
HLS score	0.252	0.241	1.091	1	0.296	0.777	0.485	1.247
Constant	0.721	0.166	5.358	1	0.121	2.719		

Table 4. HLS and subdimensions scores of participants

HLS and Subdimensions	Mean±SD	Median	Min.-Maks.
Access to Information	16.60±5.22	15	5-25
Understanding of Information	20.96±8.38	21	7-35
Assessment/ Evaluation	26.48±7.73	24	8-40
Application/Using	17.81±4.04	19	5-25
HLS Total	**81.88±23.64**	**81**	**32-125**

Discussion

In the present study, it was found that 30.7% of the participants had undergone CRC screening tests, and the most common screening test was FOBT with a rate of 76.4%. The rate of undergoing CRC screening tests determined in the study was not at the desired level, similar to the literature data. In previous studies evaluating the CRC screening testing rates in different countries, it was reported that the rates of undergoing the test were 28-61% in the USA (Peterson et al., 2007; Moor et al. 2018; Davis et al., 2020), 51% in Australia (He et al., 2018), 13.1% in Saudi Arabia, (Almadi et al., 2015) and 12% in China (So et al., 2012). In a previous study that was conducted in Turkey by Durusu Tanrıöver et al. (2012), the rate of undergoing CRC screening tests was found to be 8.1% in individuals over 50 years of age. In the study of Pirinçci et al. (2015), it was found that 20.5% of the individuals had undergone CRC screening test, and the most common test was FOBT with a rate of 77%.

It was found in the study that 31.8% of the participants did not consider undergoing a CRC screening test within six months and seeing themselves healthy, fear of cancer, and not knowing where to apply were the main reasons for not considering undergoing a CRC screening test. In similar studies, more than half of the individuals did not consider undergoing a CRC screening test, and the most important obstacles to CRC screening test were that CRC screening tests were considered an unpleasant experience (Bulduk et al., 2017), not knowing the screening tests and where to apply (Bulduk et al., 2017; Taş et al., 2019), a sense of embarrassment (Taştan et al., 2013), fear of experiencing pain (Taştan et al., 2013), and seeing themselves healthy (Şahin et al., 2015; Bulduk et al., 2017; Taş et al., 2019). It is considered that determining and reducing the reasons that prevent individuals from undergoing tests and informing them about CRC screening tests, and where to apply will increase the rate of CRC screening tests.

In the present study, it was found that 45.5% of the participants knew about CRC screening tests, the most known screening test was FOBT, and the rate of undergoing CRC screening tests was 12.9 times higher in participants who knew about CRC screening tests. In literature, it was reported that the majority of the population did not know the screening tests for CRCs and the participation rates were lower in screening programs for those who did not know the CRC screening tests (Baysal & Türkoğlu, 2013; Taştan et al., 2013; Şahin et al., 2015; Bulduk et al., 2017). Almadi et al. (2015) investigated the CRC knowledge, attitudes, and behaviors of the society in Saudi Arabia, and reported that 50.6% of individuals knew about colonoscopy and 24.7% knew FOBT. In a study conducted by Baysal & Türkoğlu (2013), it was found that only 10.3% of individuals knew CRC screening tests. Sanchez et al. (2013) and Taş et al. (2019) reported that the rate of individuals who knew screening tests to undergo CRC screening tests was higher.

In the present study, it was determined that the HL total scale score of the participants was found to be 81.88±23.64, and the mean score of the HL general and scale subgroups was moderate/limited. In previous studies that evaluated the HL levels in society, it was reported that the levels of HL were universally inadequate/problematic (Sørensen et al., 2015; Çelikyürek et al., 2020; Davis et al. 2020; Deniz & Oğuzöncül, 2020). In a study conducted by Sørensen et al. (2015) with 8000 people in eight European countries, it was reported that 47% of individuals had insufficient or limited HL levels. Durusu Tanrıöver et al. (2012) conducted a study throughout Turkey and reported that 24.5% of the population had inadequate and 40.1% had a limited level of HL.

HL is an independent determinant of cancer-related information and cancer screening tests because it enables individuals to access health-related information resources effectively and to make informed decisions about cancer prevention and screening methods (Morris et al., 2014; Sentel et al., 2015; Aras & Bayık, 2017; Kendir & Kartal, 2019; Won Jin et al., 2019). Previous studies report that individuals who have high HL levels also have higher rates of knowing CRC screening tests (Peterson et al., 2007) and participating in screening tests (Sentell et al., 2013; Kobayashi et al., 2014; Heide et al., 2015; Won Jin et al., 2019; Davis et al., 2020). However, there are also studies in the literature reporting that HL does not affect the rate of CRC screening tests (Guerra et al., 2005; Peterson et al., 2007; Morris et al., 2014; Horshauge et al., 2020). In the present study, although the rate of knowing the CRC screening tests was 0.98 times higher in individuals who had high HL levels, it was found that there were no significant relationships between having CRC screening tests and the level of HL. It can be thought that this finding obtained from the study occurred because of the moderate/limited HL levels of the participants and that as the HL level of society increases, the rate of participation in CRC screening behaviors will also increase.

The main limitation of this study is that participants were recruited from one clinic. This may limit the generalisability of our findings.

Conclusions

The rate of knowing and undergoing CRC screening tests was insufficient, participants had a moderate/limited level of health literacy, knowing CRC screening test was an important determinant of participation in CRC screening and there was no significant relationship between

undergoing a colorectal cancer screening test and health literacy. We recommend that clinics where patients are treated and community health centers should have clear and simple educational materials related to CRC and screening tests, that these materials should be given to patients, and that nurses should inform patients over the age of 50 about CRC screening tests. Consequently, providing information about CRC and screening tests in accordance with the health literacy level of individuals and improving the HL level of the population can be effective to reduce morbidity and mortality related to CRC.

Conflict of Interest

The authors report no actual or potential conflicts of interest.

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