ARAŞTIRMA / RESEARCH

Health Belief Levels of Adult Individuals on Prevention of Colorectal Cancer and Their Status of Participating in Screening Program

Erişkin Bireylerin Kolorektal Kanserden Korunmaya Yönelik Sağlık İnanç Düzeyleri ve Tarama Programına Katılım Durumları

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Abstract

Objective: This study was conducted to determine the health belief levels of the individuals aged 40-70 years for prevention of colorectal cancer and the rates and status of their participating in colorectal cancer screening programs.

Material and Method: This descriptive study was conducted with 237 individuals who admitted to the surgery and internal outpatient clinics of a university hospital. Data were collected with a questionnaire including descriptive characteristics and colorectal cancer knowledge and behaviors of the participants and The Health Belief Model Scale for Protection from Colorectal Cancer was used.

Results: It was determined that 19.8% of the individuals participated in the colorectal cancer screening. Individuals who had knowledge about colorectal cancer screening had 2.5 times more colorectal cancer screening behavior than the other group (Exp (β)/OR=2,246, %95, CI=1,1-4,3).

Conclusion: As a result of this study, the participation in colorectal cancer screening was inadequate, participation in screening, descriptive characteristics and the mean sub scales scores did not change the participation, however the knowledge about colorectal cancer and the age of screening was found to have a positive effect on the participation in the screening.

Keywords: Cancer prevention, colorectal cancer, health belief model, cancer screening.

Öz

Amaç: Bu araştırma, 40-70 yaş arası bireylerin kolorektal kanserden korunmaya yönelik sağlık inanç düzeylerini ve kolorektal kanser tarama programlarına katılım durumlarını belirlemek amacıyla yapıldı.

Gereç ve Yöntem: Tanımlayıcı tipteki bu çalışma, bir üniversite hastanesinin cerrahi ve dahili polikliniklerine başvuran 237 birey ile yürütüldü. Verilerin toplanmasında, katılımcıların tanıtıcı özellikleri ile kolorektal kanser bilgi ve davranışını içeren bir anket formu ve Kolorektal Kanserden Korunmaya Yönelik Sağlık İnanç Modeli Ölçeği kullanıldı.

Bulgular: Bireylerin %19,8'inin kolorektal kanser taramasına katıldığı saptandı. Kolorektal kanser taraması hakkında bilgisi olanların olmayanlara göre yaklaşık 2,5 kat (Exp (β)/OR=2,246, %95, CI=1,1-4,3) daha fazla kolorektal kanser tarama davranışı olduğu belirlendi.

Sonuç: Araştırma bulguları, kolorektal kanser taramalarına katılım oranının düşük olduğunu, tanıtıcı özelliklerin ve ölçek alt boyut puan ortalamalarının kolorektal kanser taramalarına katılımı değiştirmediğini, ancak kolorektal kanser ve tarama yaşını bilmenin taramaya katılımı olumlu yönde etkilediğini gösterdi.

Anahtar Kelimeler: Kanserden korunma, kolorektal kanser, sağlık inanç modeli, tarama programı.

1. Introduction

Cancer is among the most frequent type of diseases causing death in the world (1). Cancer, which has become an important social problem as it has a high incidence and mortality (2,3), is observed at all ages, of which incidence rate increases with increasing age. For this reason, the prevalence of cancer and the cancer mortality rate are high in the countries where population of older adults is dense (4). It is known that cancer, which is the second most common cause of death in the world, caused 10.0 million deaths in 2020 (5,6). In the control of cancer, which can be effectively treated when it is diagnosed early although it becomes irreversible as it progresses, and maintaining health, protection is of major importance (2,3). With early diagnosis, effective, economic, and desired results can be obtained regarding cancer, which causes financial loss and premature death, and thus a significant improvement can be obtained (1,3).

World Health Organization (WHO) recommends community-based screening programs for early diagnosis of the cases in breast, cervical cancer and colorectal cancer (CRC) as early diagnosis in cancer is possible by screening (2). CRC, included in the cancer types with screening program, is one of the most frequent cancer types of the gastrointestinal system (7). As CRC is the third frequent cancer type in the world and Turkey, it is an important community health problem (5,6,8,9). According to the Health Statistics Yearbook data, the last cancer incidence determined in Turkey is 223.1 per 100,000 (10). Although CRC is also observed in the early ages, it is frequently seen in people over the age of 50 (11-13). Lifestyle factors, use of tobacco, nutritional habits, genetic and environmental factors along with age are among the factors affecting the prevalence (11,14-17).

Although the mortality rate may be reduced by early diagnosis of the disease by means of screenings, the participation rates of the individuals in screenings are low. Lack of knowledge, inadequate recommendations by healthcare professionals, cost of the tests, limited access to the tests, feeling ashamed during the tests, and being afraid of the test results and complications are regarded as the factors with negative effects on the participation in the screening tests (12,17-19). In addition to these barriers, cultural factors also affect the participation of the individuals in the screenings. The previous studies also revealed that there was a low participation in the screenings (3,15,20-22). Health belief and health behaviors have an important role in the participation in the CRC screenings (3,20,23). In some studies, it has been determined that health beliefs are effective in the participation in the CRC screenings (3,22,24).

The studies examining the participation in the CRC screenings and health beliefs have been conducted in the individuals at the age of 50 and over (12,15,25-27). However, the individuals aged between 40 and 50 years should also be assessed considering the factors such as health problem and genetics. The individuals at the age of 40 and over were included in this study as the health characteristics of the individuals were not known. It was aimed to shed light on diagnosing the barriers by examining the descriptive characteristics, knowledge levels and health beliefs of individuals and to bring forward recommendations on the consultancy of nurses, who have a crucial role in consulting on the screenings, on the characteristics and health beliefs of the individuals.

2. Material and Methods

2.1. Design, location and time of the study

This descriptive study was conducted in nine outpatient clinics, including general surgery and internal medicine, in a university hospital between the dates of 23.11.2017-31.01.2018.

2.2. Sample size and sample selection

The sample size was calculated by taking into account the known score of the study of Yalçınöz-Baysal and Türkoğlu (15) with the G*Power 3.1.9.2 program (benefit perception sub-dimension mean score 42.3852±9.02). Determining the health beliefs and knowledge levels of individuals for protection from CRC, 216 people were determined with a 90% power within a deviation of 2 points. Considering missing data and losses, the number of samples was increased by 10%. Two hundred and thirty seven individuals aged between 40 and 70 years who applied nine outpatient clinics were included in the study. Stratified sampling selection method was used in the study and proportional selection was performed. Individuals between the ages of 40-70 years who were literate and could speak Turkish were included in the study. Individuals diagnosed with CRC and having language and communication problems were not included in the study.

2.3. Data Collection Tools and Data Collection Method

The descriptive information form and the Health Belief Model Scale for Colorectal Cancer (HBMSCC) were used to collect the data. Research data were collected in approximately 10 minutes by interview. After explaining the purpose of the study to the patients who met the inclusion criteria, verbal and written consents were obtained, data were collected in the waiting room of the outpatient clinic by face-to-face interview method.

2.3.1. Introductory Information Form

The questionnaire, which was created by the researcher in line with the literature (3,11,17,20) consisted of two sections and 15 questions. The first section consists of eight questions that include the introductory characteristics of the individuals (age, gender, marital status, educational status, employment status, income status, longest place of residence, presence of an individual diagnosed with CRC in the immediate vicinity).

In the second section, for the characteristics of knowing about CRC and national screening tests (fecal occult blood test (FOBT) and colonoscopy) seven questions (knowledge about CRC, knowing the age of participation in the CRC screening program, having had a CRC screening test, the reason for having a CRC screening test, which CRC screening test is used , how old is the CRC screening test, and whether the CRC screening test is performed regularly) were included to evaluate the status of participation in the screening.

2.3.2. Health Belief Model Scale for Colorectal Cancer Prevention

The Health Belief Model Scale for Protection from Colorectal Cancer (HBMSCC) is used to evaluate individuals' health beliefs about prevention from CRC.

The Health Belief Model (HBM) scale developed by Victoria Champion (1984) was developed for breast cancer. It was adapted to CRC by Jacobs by changing a few questions of the scale and using the expression "colon cancer" instead of "breast cancer" (23). In the scale, there are 33 items in total that evaluate the individual's susceptibility to the disease, his/her knowledge of the causes and prevention of the disease, and the importance, interest and perception of the disease. The scale includes the perception of trust-benefit, the perception of sensitivity, the perception of disability and the perception of health .It has five sub-dimensions, which are the perception of motivation and the perception of seriousness, which are evaluated independently from each other. In the five-point Likert-type scale, there are options for each item: I completely agree (5 points), agree (4 points), undecided (3 points), disagree (2 points), completely disagree (1 point) (22). The Turkish validity and reliability study of the scale was performed by Özsoy et al. (20). In order to evaluate the internal consistency in the reliability analysis, Cronbach's Alpha coefficient and item-total score correlations of the subscales were evaluated. Item-total score correlations of subscales was determined as 0.41-0.79 and the internal consistency value varied between 0.54 and 0.88 (20). In this study, the Cronbach's alpha coefficients of the scale were found to be between 0.24 and 0.91. Scale sub-dimension scores are obtained by summing the scores given to the items. Higher scores indicate that sensitivity and caring increase, benefits are perceived to be high for the perception of benefit, and obstacles are perceived to be high for the perception of obstacles (20). When the reliability coefficients of the subscales of HBMSCC were assessed in our study, it was found to be 0.839 in confidence-benefit perception, 0.905 in perceived susceptibility, 0.346 in perceived barrier, 0.235 in health motivation perception, and 0.567 in perceived severity. The perceived barrier and health motivation subscales were not included in the analyses as the answers given to the items were not reliable.

In our study, stratified sampling method was used. In this method, proportional selection was made. In this way, homogeneity of the sample group within itself was ensured.

2.3. Data analysis

The data collected in the study were analyzed by entering the data in the licensed SPSS 22.0 packaged software. The data were summarized as number, percentage, and mean±standard deviation (SD). Kolmogorov-Smirnov test was used to assess whether or not the data had a normal distribution. T test, ANOVA test and Pearson Correlation were used in the comparison of the normally distributed data and Chi Square test was used in the comparison of the data not showing normal distribution. Logistic regression analysis was used in the study using possible factors. The significance was assessed at the level of $p < 0.05$.

3. Results

It was determined that 57.8% of 237 participants were female, a great majority of them were married,

57.0% were older than 50 years, 49.8% were primary school graduates, 68.4% were unemployed, 70.9% perceived their monthly income status as moderate, 38.8% lived in the city center, and 76.8% did not have any individual with CRC in their family and/or immediate circle. The mean age of the participants was 52.48±8.60 years (minimum=40 y, maximum=70 y)(Table 1).

It was determined that half of the participants knew CRC and 57.8% knew the age to have CRC screening tests done. 19.8% participated in a CRC screening and only 27.7% of those had this screening regularly. The reason why the participants had CRC screening test was mostly for control purpose (48.9%). It was determined that tests applied for the patients were mostly FOBT (55.3%) and colonoscopy (55.3%). The mean age of the participants to have screening test was 48.68±8.63 years (minimum=25 y, maximum=66 y) (Table 1).

It was determined that the rate of participating in CRC screening program did not change based on age, gender, marital status, educational status, working status, perceived monthly income status, and residing place of the participants ($p > 0.05$). However, the individuals who had CRC in their family and/or immediate circle, the participants who knew CRC and the participants who knew the age to have CRC examination had higher participation rates in CRC screening program ($p < 0.05$) (Table 1).

Table 2 shows HBMSCC subscale scores of the individuals participating in the study. It was determined that mean score of confidence-benefit subscale was 49.48±5.89, susceptibility subscale mean score was 10.46±5.43, and mean score of severity subscale was 17.11±4.15 (Table 2).

When the participation rates in CRC screening program were examined based on HBMSCC subscale mean scores, it was determined that the participation rates for CRC screening program did not change based on the confidence-benefit perception, perceived susceptibility and perceived severity mean scores from the scale subscales ($p > 0.05$) (Table 2).

Logistics regression analysis was used in the examination of the factors related to the participation status for CRC screening program. Gender, working status, and the status of knowing the age for CRC examination were excluded from the model. In the model results of this study, it was determined that -2Log-Likelihood value was 230.177, Cox and Snell R^2 value was 0.025, Nagelkerke R^2 value was 0.039. This model accounted for approximately 4% of the dependent variable (Nagelkerke R^2 value=0.039). Based on this model, it was determined that there was a significant correlation between the status of knowing CRC and the status of participating in CRC screening (Wald=5.646, p=0.017). Those who had knowledge about CRC screening had approximately 2.5 times (Exp (β)/OR=2.246, 95%, CI=1,1-4,3) more CRC screening program participation behavior compared to those who did not have knowledge about CRC screening program (Table 3).

Table 1. Comparison of the Rates of Participation in CRC Screening Program Based on the Descriptive Characteristics of the Individuals

Characteristics	n	%	Participant (n=47)		Nonparticipant (n=190)		Test and p value
			Number	Percentage	Number	Percentage	
Age (year)							
Age of 40-49	102	43.0	19	40.4	83	43.7	χ^2=.163
50 years of age and over	135	57.0	28	59.6	107	56.3	p=0.686
Gender							
Female	137	57.8	26	55.3	111	58.4	χ^2=.149
Male	100	42.2	21	44.7	79	41.6	p=0.743
Marital status							
Married	227	95.8	44	93.6	183	96.3	χ^2=.679
Single	10	4.2	3	6.4	7	3.7	p=0.420
Educational Status							
Illiterate-literate	30	12.6	7	14.9	23	12.1	χ^2=.443
Primary education	118	49.8	24	51.1	94	49.5	p=0.801
High school and higher	89	37.6	16	34.0	73	38.4	
Working status							
Employed	75	31.6	14	29.8	61	32.1	χ^2=.094
Unemployed	162	68.4	33	70.2	129	67.9	p=0.862
Perceived monthly income status							
Income lower than expenses	40	16.9	8	17.0	32	16.8	χ^2=1.912
Income equal to expenses	168	70.9	36	76.6	132	69.5	p=0.384
Income higher than expenses	29	12.2	3	6.4	26	13.7	
Residence							
Village	35	14.8	4	8.5	31	16.3	χ^2=3.713
District	64	27.0	10	21.3	54	28.4	p=0.156
City center	138	58.2	33	70.2	105	55.3	
The presence of individual with CRC history in family and/or immediate circle							
No	182	76.8	28	15.4	154	84.6	χ^2=9.753
Yes	55	23.2	19	34.5	36	65.5	p=0.002
Knowing about CRC							
Yes	119	50.2	16	13.6	102	86.4	χ^2=5.815
No	118	49.8	31	26.1	88	73.9	p=0.022
Knowing about the age of CRC diagnosis and examination							
Knowing	100	42.2	13	13	87	87	χ^2=5.078
Not knowing	137	57.8	34	24.8	103	75.2	p=0.031

Abbreviations: CRC, Colorectal Cancer.

Table 2. Comparison of the Participation Status for CRC Screening Program Based on HBMSCC Subscale Mean Scores

Subscales	Mean±SD (min-max)	Participation Status for CRC screening program			
		Participant (n=47)	Non-participant (n=190)	t	p
Confidence-benefit perception	49.48±5.89 (29-55)	50.43±4,74	49.25±6.12	1.230	0.220
Perceived susceptibility	10.46±5.43 (6-30)	11.57±5.94	10.19±5.28	1.569	0.118
Perceived severity	17.11±4.15 (5-25)	17.34±3.50	17.06±4.30	.417	0.677

Abbreviations: CRC, Colorectal Cancer.

HBMSCC, Health Belief Model Scale for Protection from Colorectal Cancer

Table 3. Factors Related to Participation in CRC Screening Program According to Results of the Logistics Regression Analysis

Dependent Variable	Independent Variables	B	S.E.	Wald	Exp (β)/OR	p	95% Confidence Interval(CI)
Status of participation in CRC screening program	Fixed	0.234	0.497	0.222	1.264	0.000	
	CRC knowledge	0.809	0.340	5.646	2.246	0.017	1.152-4.377

Abbreviations: CRC, Colorectal Cancer.

4. Discussion

Only 19.8% of the participants stated that they participated in screening program and 27.7% of them participated in the screening regularly. The rate of participation in the screening programs related to CRC has been determined to be 11.9-50% in the studies conducted in Turkey and abroad (2,8,12,22,28-32). In similar studies (8,22,28,29,32-34), it has been observed that the rates of participation in the determined national/international CRC screening programs are inadequate. However, the participation in the determined cancer screening programs has a great importance in the early diagnosis of the disease and by this means, it increases success of therapy and contributes to increasing survival rates. In order to obtain positive results in screening programs in this way, the screening rate should reach up to 70% (32,33).

In the study, it was determined that the rates of participation in CRC screening program did not change based on gender, marital status, age group, education, occupation and perceived income status and the longest residence place. In the other studies conducted in a metod, it has been determined that there is no correlation between having a screening test and the descriptive characteristics such as age (3,35,36), gender (35,36), educational status (3), marital status, occupation, perceived income, and having a health insurance (36). However, some studies have reported that there is a correlation between age (12,30,37), gender (17,30,32,38,39), marital status (17,30), working status (3), the longest residence place (40,41) smoking (40) and the status of participation in CRC screening. Unlike this study, it has been stated in studies that those living in urban region had higher rates of participation in the screening programs compared to those living in rural areas (12,41). When the correlation of the descriptive characteristics with the participation in CRC screening was examined, it is considered that different results may be due to the characteristics of the regions where the studies have been conducted, sample number, and characteristics of the participants.

In the study, it was determined that the rates of participation in CRC screening program of the participants who had someone in their family and/or immediate circle who were diagnosed with CRC were higher compared to the other individuals. Similar to this study, the rates of participating in screening program of the participants with an individual diagnosed with CRC in their family and/or immediate circle have also been found to be high in other studies (12,34) and it has been determined that the desire and awareness of participating in screening were also high (17,32,42). However, it was determined in a study that being an individual who family history did not affect the status of participation in CRC screening program (8).

It has been stated that the participation of the individuals who knew about CRC and desired to participate was higher compared to those who did not know about CRC in similar studies (8,26,27,38,43). On the other hand, in some studies, it has been stated that the status of knowing about CRC did not affect the participation in screening program (12,22) and the willingness to participate in screenings (34). It is expected that the increase in knowing about a subject increases awareness and caring about the subject and makes a positive contribution to the increase in participating in the applications that should be performed on the subject.

In this study, individuals' HBMSCC confidence-benefit perception subscale mean score was high. As the confidence-benefit perception subscale score increases, individuals are expected to perceive the benefit of screening, and this affects participation in the screening program. In some studies conducted in Turkey, trust-benefit subscale scores were found to be similarly high (3,15,36,44). The result obtained in the study had similarity with other studies (15,36,44), but it was different from the study of Yılmaz et al. (3). Confidence-benefit perception score expresses that the individual shows protective behavior and there is his/her belief in the benefit that will be provided by the screening in prevention of the disease. For this reason, it is expected that the increase of confidence-benefit perception score will have a positive effect on displaying and maintaining participation behavior in screening. Since confidence-benefit perception of individuals was high and the rate of participating in screening program was low in the study, it is required to inform individuals about the necessity of the tests applied in CRC screening program and to increase their awareness.

In this study, the mean score of the HBMSCC sensitivity subscale was found to be low. The perceived sensitivity score was found to be similarly low in studies conducted in Turkey. (3,15,36,44). The perceived susceptibility score was quite low in the other studies conducted in Turkey (15,36,44), other than the study by Yılmaz et al., (3); however, the perceived susceptibility score of the participants in this study was lower. The perceived susceptibility of the scale expresses the individuals' perception of the hazards threatening their health status. Within this context, it was considered that low perceived susceptibility of the individuals in the study will cause disregarding the subject and may affect the participation in screening program. However, as the perceived susceptibility score increased, positive results were expected on the individuals' participation in the screening in the direction of reducing the risk. Therefore, it is considered that the rate of participating in the screening program may be increased by the applications to be performed to increase the perceived susceptibility.

In this study, it was determined that the mean score of the HBMSCC perceived violence subscale was moderate. Perceived violence score averages are similar in studies conducted in Turkey(15). It is similar to the mean scores of perceived violence obtained in other studies except for Yılmaz et al. (3).

It was determined that there was no correlation between mean scores of HBMSCC confidence-benefit perception, perceived susceptibility and perceived severity and the rates of participating in CRC screening program. Similar to the results of this study, it has been stated in the literature that there is no significant correlation between confidence-benefit, susceptibility and severity scores and the rates of participating in CRC screening (44). However, it was stated in some of the studies that there was a correlation between perceived severity (45) and perceived susceptibility (25) and the participation in CRC screening . The individuals with higher scores are more likely to participate in screening and those with high barrier perception are less likely to participate (25,41). Also, it was stated in the studies that individuals with high perceived susceptibility had colonoscopy behavior more compared to those with low perceived susceptibility (3,25) but having FOBT behavior did not change (3). Confidence-benefit perception expresses that the individuals perform protective behavior regarding early diagnosis of CRC and they believe in the effect of participation in screening on prevention of the disease. In this case, it is an expected result within the structure of the scale that the individuals with high confidence-benefit perception have high participation in screening. Perceived susceptibility signifies the perception of CRC threats by the individuals. In this case, it is an expected situation within the structure of the scale that as the perceived susceptibility of an individual increases, the participation in the screening would increase. Perceived severity expresses that the individuals perceive CRC as a serious disease. In this case, as the perceived severity increases, it is an expected result within the structure of the scale that the individuals have a high participation in screening for the early diagnosis of CRC. However, no difference was observed in the participation rate based on the subscales. It is considered that this was affected by factors such as sample size and conducting the study in a single center.

Some factors may affect the participation status of the individuals in CRC screening program. In the study, it was determined that there was a significant correlation between the status of knowing CRC and CRC screening behavior and those having knowledge about CRC screening had approximately 2.5 times more CRC screening behavior compared to those having no knowledge about CRC screening. In a previous study, it was determined that the individuals who had heard about CRC screening have had more CRC screening compared to those who had not heard about CRC screening (13). In another study, it was found that those having knowledge about CRC participated in screening more than 2 times compared to those who did not have knowledge on CRC (46). In a study assessing CRC scores in three groups, it was stated that the individuals with moderate CRC knowledge scores thought about participating in screening 8.5 times more compared to those with low knowledge score on CRC, and the individuals with high knowledge score thought about participating in screening 10 times more

compared to the ones with moderate knowledge scores (28). In the study conducted by Taheri Kharameh et al., (25) in Iran, it was stated that the participants with high CRC knowledge score participated in the screen 1.29 times more than the other participants. Also in this study, the individuals knowing CRC had high participation in screening programs.

5. Conclusion and Recommendations

As a result of this study, it was determined that the individuals' CRC knowledge status and participation in screening program were inadequate and having knowledge affected the participation in screening. Within this context, the fact that nurses, who have an important role in consulting, especially public health and clinic nurses, need to plan and implement health education in the light of the literature, including at risk group in the society. Making suggestions that will positively affect health beliefs and provide motivation will positively affect participation in screening. In addition to the information provided by public health institutions in the centers where the screening is carried out, the planning and implementation of interventional activities will increase participation in screening. It was determined that there was no correlation between mean scores of HBMSCC confidence-benefit, susceptibility and perceived severity and participation in screening and it was considered that this was affected by the factors such as sample size and conducting the study in a single center. Therefore it is recommended to conduct further studies with higher sample size as well as other variables that may affect participation in CRC screening program.

6. Contributions

It was determined that having knowledge about CRC affects participation in screening program and those who know CRC have 2.5 times more participation behavior in screening than those who do not know about CRC. In the centers where screening is performed, it may be recommended to determine the false beliefs of individuals about CRC and the screening program and to inform them in accordance with their socio-demographic characteristics.

Ethical Aspect of the Research

For the collection of data, the ethics committee permission dated 27.09.2017 and numbered 1606 was received from Selcuk University Noninvasive Clinical Trials Ethics Committee of Faculty of Health Sciences. Institutional permission dated 23.10.2017 and numbered E.107467 and E.107469 was obtained. After being informed about the study, written consent was obtained from the participants.

Conflict of Interest

This article did not receive any financial fund. There is no conflict of interest regarding any person and/or institution.

Authorship Contribution

Concept: HK, ŞK; **Design:** HK, ŞK; **Supervision:** HK, ŞK; **Funding:** None; **Materials:** None; **Data Collection/ Processing:** HK; **Analysis/Interpretation:** HK, ŞK; **Literature Review:** HK, ŞK; **Manuscript Writing:** HK, ŞK; **Critical Review:** ŞK.

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