Knowledge of the Public towards the Symptoms and Risk Factors of Colorectal Cancer: A Cross-Sectional Study

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A R T I C L E I N F O

Abstract

Background: In Duhok City, colorectal cancer (CRC) is the fourth most prevalent cancer in both genders, and the number of new cases has been rising recently. High public awareness of cancer can positively impact the amount of time people take before seeing medical professionals. Consequently, this study examined the general public's awareness of risk factors and symptoms of colorectal cancer.

Subject and methods: A cross-sectional study used a non-probability purposive sample of 403 people visiting the city center in Duhok City. Between July 3, 2024, and October 2, 2024, information was gathered through in-person interviews and the completion of standardized questionnaires (Bowel Cancer Awareness Measure). The questionnaires covered demographic information as well as knowledge of age-related risk, colorectal symptoms, and risk factors.

Result: The mean age of participants was $26 \pm (10)$ years. out of nine symptoms of CRC, rectal bleeding was the most recalled symptom (46.7%), followed by lower abdominal pain and blood in the stool (45.7%) and (45.2%), respectively. Having bowel disease was the most recalled risk factor (58.3%). The results showed that the majority (41.9%) of participants' overall knowledge was fair and poor. The knowledge level was also higher among the older age group and was significant at a p-value (0.000).

Conclusion: This study shows that Duhok residents are not well-informed on CRC risk factors and symptoms. The symptoms and risk factors that were most frequently mentioned were rectal bleeding and bowel disease.

What is already known about the topic?

• Colorectal cancer (CRC) is one of the leading causes of cancer-related morbidity and mortality worldwide.

• Early detection through screening and awareness of symptoms and risk factors significantly improve prognosis and survival rates.

Introduction

One kind of cancer that affects the colon or large intestine is called colorectal cancer (CRC). It is among the most prevalent kinds of cancer on the globe. It can result in fatalities as well as serious injury. According to the (World Health Organization, 2023, it primarily affects elderly adults, with most occurring in those 50 years of age and beyond. The incidence and mortality rates of colorectal cancer exhibit regional and population-specific variations, with industrialized countries reporting higher rates. Numerous factors, such as dietary practices, genetic predisposition, lifestyle decisions, and access to healthcare services, might be blamed for this discrepancy (Arnold *et al.*, 2017).Globally, (CRC) is a leading cause of illness and mortality. Accounting for approximately 10% of all cancer cases (World Health Organization, 2023). After cardiac disorders, cancer is the second leading cause of death (T.Selim *et al.*, 2021). Colorectal cancer (CRC) is the third most common cancer worldwide in terms of diagnoses. The World Health Organization and the International Agency for Research on Cancer (IARC) estimate that CRC is the second most common cancer in women and the third most common cancer in men (International Agency for Research on Cancer (Iarc), 2020).

With 5.5% of all cases and 5.6% of all deaths, colorectal cancer ranks fifth in terms of frequency in Iraq and has been steadily increasing over the past 20 years (World Health Organization, 2020). Erbil Governorate, Kurdistan Region: With 641 instances (7.3 per 100,000), cancer of the colon (CRC) is the fourth most prevalent cancer in men after lung, blood, kidney, and prostate cancer. Among women, it is the third most common disease after breast and blood cancer (6.4 per 100,000). According to (M. Amen *et al.*, 2022), (CRC) ranks fourth in the Dohuk Governorate among cancers in men after lung, blood, kidney, and skin cancer with 319 cases (4.8 per 100,000), and fourth in females after breast, blood, and skin cancer with 263 instances (4 per 100,000).

Cancer that develops from the colon's or rectum's epithelium is known as colorectal cancer (CRC). The intestine begins to hemorrhage and becomes clogged due to tumor growth (Saeed *et al.*, 2018). Cancer-related deaths occur more frequently in low- and middle-income nations due to a lack of screening programs, restricted access to healthcare facilities, and a lack of knowledge about risk factors and symptoms of the disease, which causes presentations to be delayed. According to (Quaife *et al.*, 2014), each of these variables may be a significant contributing reason to the high death rates.

Numerous authors have evaluated the degree of colorectal screening awareness and understanding among individuals in various nations. A survey measuring public knowledge of CRC in Riyadh was carried out in Saudi Arabia in 2021 with 1612 participants. The findings indicated that there is a lack of information regarding the symptoms and risk factors of colorectal cancer (CRC) (Alghamdi *et al.*, 2021). According to (Nasaif and Al Qallaf, 2018). study, there was insufficient awareness among Bahrainis on the symptoms and risk factors of colorectal cancer.

Kurdistan has shown an increase in incidence throughout time. According to analysis, the number of individuals expected to get colorectal cancer is expected to rise by more than twice as much in the coming ten years (Karwan *et al.*, 2022).

The increase in incidence emphasizes how urgently screening and education programs are needed to guarantee early detection and efficient treatment. We may endeavor to lessen the impact of colorectal cancer in our community by raising awareness. Improving patient outcomes requires early detection and prompt action. This ignorance could be a factor in delayed diagnosis and treatment, which would result in a worse prognosis and higher death rates.

To the best of our knowledge, no published article has been written about Kurdish public knowledge and awareness of CRC. Thus, a thorough cross-sectional study is required to assess the public's awareness of the signs, symptoms, and risk factors associated with colorectal cancer. Healthcare practitioners and legislators can create focused educational campaigns and initiatives to raise awareness, encourage early diagnosis, and eventually lessen the burden of colorectal cancer by identifying knowledge gaps in the public. Thus, this study aimed to determine the level of knowledge among the people regarding the Symptoms and risk factors of CRC.

Methodology

Design of the study: A descriptive cross-sectional study was directed to assess the level of knowledge towards the symptoms and risk factors of Colorectal Cancer among the public in Duhok city. The study involved volunteers from various public areas in Duhok City, including the city center, marketplaces, plazas, parks, restaurants, cafes, shopping centers, and auto dealerships. The period of data collection was from July 3rd to October 2nd, 2024.The general directorate of health / Duhok governorate approved the research,

ethics committee request for approval to conduct the study. The participants were provided with the information about the aim purpose and procedure of the study.

The study did not gather any information that could lead to identifying the participants. The study's participants were informed that their involvement was entirely voluntary and that they might end the study at any time. Non-probability sample of (403) participants who were visiting city center in Duhok city. Purposive sampling was done and included participants who had informed consent and inclusion criteria. The inclusion criteria of the participants were age 18 years and over; agreed to participate in the study. The exclusion criteria were Participants belonging to the medical sector, such as health care providers and also who had cognitive deficits that would interfere with questionnaire completion

Method of data collection: The researchers explained the purpose and design of the investigation. The participant's freedom to accept or reject study participation was also stressed by the researchers. The researchers interviewed 3 day a week and for the next week interviewed the participants in a different day and different times in city centre. The researchers did an individual interview in 20-30 minutes. Among the 25 specific questions in original Bowel/Colorectal CAM, researchers included the prompted (close ended) questions on warning signs (Question 4) and risk factors of CRC (Question 5), opinion on age related bowel cancer incidence (Question 6) and demographic questions.

Measures and Diagnostic Criteria of the study

 A modified version of the Bowel Cancer Awareness Measure (BoCAM) was used to collect data for this study which consists of:

Part I. Demographic data: It is concerned with demographic characteristics information such as; age, gender, level of education, marital state, occupation, History of colorectal cancer ...etc.

Part II. Bowel Cancer Awareness Measure (Bowel/Colorectal CAM)

The bowel Cancer Awareness Measure (Bowel/Colorectal CAM), which was designed to assess awareness of cancer reliably among the general population. This validated questionnaire was developed by University College London and Cancer Research UK based on a generic CAM developed by Cancer Research UK, University College London, Kings College London and Oxford University in 2007. The Bowel/Colorectal CAM meets accepted psychometric criteria for reliability (Cronbach's alpha = 0.84; r = 0.7). Due to

the broad range of responses provided for the open-ended items, in combination with the large number of respondents, only data from the prompted (close-ended) items were analyzed.

Knowledge of warning signs and symptoms of colorectal cancer

There are 1 unprompted item (open-ended question) and 9 prompted (close-ended questions) on warning signs and symptoms of colorectal cancer. The "open-ended" question is designed to measure how many colorectal cancer warning signs a respondent can recall unaided. The knowledge scale of warning sign was assessed by the "close ended" questions. The stem question for the knowledge scale of warning signs is phrased as; "The following may or may not be warning signs for bowel cancer," reads the first question on the knowledge scale for warning signals. We would like to hear what you think. The list of nine warning indicators is shown after this (bleeding from the back passage, abdominal pain, altered bowel habits, sensation of incomplete emptiness in the intestine, blood in the stool, pain in back passage, lump in abdomen, tiredness/anemia and unexplained weight loss) each of which can be identified as a warning sign for bowel cancer or not. A scoring system for the warning signs was used where each appropriate answer (Yes) is given a point according to the previous study conducted in UK (Power *et al.*, 2011).

Knowledge of risk factors of colorectal cancer

There are 1 open-ended question and 9 close-ended questions on risk factors of bowel cancer. The knowledge scale of risk factors was assessed by the "close-ended" questions. The stem question for the knowledge scale of risk factors is phrased as; "The following may or may not increase the chance of developing bowel cancer. To what extent do you agree that each of these can raise the risk of colon cancer?" This is followed by the list of ten risk factors ('Drinking more than 1 unit of alcohol a day, Eating less than 5 portions of fruit and vegetables a day, 'Eating red or processed meat once a day or more, 'Having a diet low in fiber, 'Being overweight or obese, 'Being over 70 years old, 'Having a close relative with bowel cancer, 'Having a bowel disease, 'Having diabetes) with response options of "strongly disagree, disagree, not sure, agree and strongly agree". Similar to the previous scoring scheme, each appropriate response (strongly agree or agree) is worth one point.

 Statistical analysis:

The IBM Statistical Package for Social Science (SPSS) Statistics 25 software was used to analyze the data. Frequency, percentage, mean, and standard deviation are examples of descriptive statistics that were used to characterize the sample's properties and knowledge level. ANOVA was used to compare subgroups and detect if there was any statistically significant difference in the mean total score of knowledge.

RESULTS

Table 1 describes the sociodemographic characteristics of participants. The mean age of the participants was 26 ± (10) ranging from 18-83. The predominant age group was between 20-29 years (68.5%) and the lowest proportion (1.7%) age group was 60 and above. Regarding gender, majority (65.5%) of them were Female. Concerning to marital status, employment and education, majority of them were married, unemployed, college and above which were (49.9), (69) and (65%) respectively. regarding to the smoking the highest percentage (86.8%) of samples were not smoking. Regarding to history of CRC highest percentage (81.1%) of samples had no history of CRC. Also, majority (66.3%) of the participants had heard about CRC.

Table 1: Distribution of sociodemographic characteristics among participants

Characteristics (n=403)	No	Percentage %	Mean (SD)
Age (Range:18-83)			
19 and below	43	10.7	
20-29	276	68.5	
30-39	37	9.2	26 ± (10)
40-49	25	6.2	
50-59	15	3.7	
60 and above	7	1.7	
Gender			
Male	139	34.5	
Female	264	65.5	
Marital status			
Single	201		
Married	199	49.9	
Divorced	3	49.4	
Widowed		7	
Occupation			
Employed	66	16.4	
Unemployed	278	69.0	
Self-employed	59	14.6	
Education			
Illiterate	12	3.0	
Primary school	28	6.9	
Secondary school	24	6.0	
High school	77	19.1	
College and above	262	65.0	
Smoking			
Nil/ex-smoker	350	86.8	
Current Smoker	53	13.2	
History of CRC			
Yes	30	7.4	
No	327	81.1	
Don't know	44	10.9	
Prefer not to say	2	5	
Heard about CRC			
Yes	267	66.3	
No	110	27.3	
Don't know	26	6.5	

Table 2 describes the percentages of respondents' identifying (recalling) early symptoms, out of nine symptoms of CRC, rectal bleeding was the most commonly recalled symptoms (46.7%) followed by lower abdominal pain and blood in stool (45.7%) and (45.2%) respectively. Concerning to fatigue only one quarter (25.1%) of participants identified fatigue as a symptom of CRC.

Table 2 Frequency distribution of the studied participants regarding CRC symptoms awareness

CRC Symptoms	Yes (Correct)		No (Incorrect)	
	N.	**%**	**N.**	**%**
Rectal bleeding	188	46.7	215	53.3
Lower abdominal pain	184	45.7	219	54.3
Change in bowel habit	175	43.4	228	56.6
Delay bowel emptying	124	30.8	279	69.2
Blood in stool	182	45.2	221	54.8
Anal pain	130	32.3	273	54.8
Lump in the abdomen	155	38.5	248	61.5
Fatigue	101	25.1	302	74.9
Loss of weight	161	40	242	60

Table 3 describes the percentages of respondents' identifying (recalling) risk factors, out of nine risk factors of CRC, having a bowel disease was the most commonly recalled risk factor (58.3%) followed by Consumption of meat, Consumption of alcohol and eating less vegetables (51.6%), (50.4%) and (50.1%) respectively. Concerning to DM, was the lowest reported risk factor among participants (24%.8). Regarding to incorrect answers among participants have the highest percentage (75.2%).

Table 3 Frequency distribution of the studied participants regarding CRC risk factors' awareness

CRC Risk factors	Strongly agree, Agree		Not sure, Disagree, strongly disagree	
	F.	**%**	**F.**	**%**
Consumption of alcohol	203	50.4	200	49.6
Eating less vegetables	202	50.1	201	49.9
Consumption of meat	208	51.6	195	48.4
Diet low in fiber	167	41.4	236	58.6
Being over weight	182	45.2	221	54.8
Older age	168	41.7	235	58.3
Family history	174	43.2	229	56.8
Bowel disease	235	58.3	168	41.7
Having DM	100	24.8	303	75.2

Information about Knowledge of age-related incidence of is provided in Table 4. The results of the present research demonstrated that the highest percentage (90.8%) of participants provided the wrong answer regarding aging and CRC, only 9.2% recalled the correct answer which was 60 years old.

Table 4 Knowledge of age-related incidence of CRC

Age	Percentage%
20 years old ,40 years old, not related to age	90.8%
60 years old	9.2%
Total	100

Table 5 outlines the data concerning the level of knowledge of signs and risk factors of CRC. majority of participants have poor knowledge regarding signs and risk factors (48.6%), (40.9%) respectively. In contrast, good knowledge was the lowest reported percentage (19.9%) and (19.4%) among respondents regarding signs and risk factors.

Table 5 Frequency distribution of the studied participant's level of knowledge

Level of knowledge	Warning signs		Risk factors	
	F	**%**	**F**	**%**
Poor	196	48.6	165	40.9
Fair	127	31.5	160	39.7
Good	80	19.9	78	19.4

Table 6 describes the percentages of respondents 'overall knowledge level of CRC. The results of the present study showed that the majority of participant's overall knowledge was fair and poor (41.9%) while a good level of knowledge was the lowest proportion (16.1%).

Table 6 Overall knowledge level of CRC

Level of knowledge	Overall level of knowledge	
	F	**%**
Poor	169	41.9
Fair	169	41.9
Good	65	16.1
Total	403	100

Table 7 shows the relationship between demographic characteristics of participants and signs and risk factors knowledge of CRC. The knowledge differences between the various groups were evaluated using an ANOVA and an independent t-test. From the descriptive analysis, the age group 50-59 and 60 years and above had a higher score of knowledge regarding signs and risk factors respectively and it was a significant at a p value (0.000). The female participants with primary school education had a higher score of knowledge regarding signs and risk factors. However, the differences were not statistically significant. Regarding the family history, participants had a higher signs and risk factors knowledge who had a positive family history, according signs the differences were statistically significant but according risk factors the differences were not statistically significant.

Table 7 comparison between demographic characteristics of participants and knowledge of CRC signs and risk factors

Characteristics	Signs knowledge		Risk factors knowledge	
Age group	**Mean +SD**	**P value**	**Mean +SD**	**P value**
19 and below	2.14 ± 2.82		4.14±2.55	
20-29	3.28 ±2.93		3.73±2.45	
30-39	3.84 ±2.97	<0.0001	4.27±2.42	<0.0001
40-49	5.24 ±3.18		5.64±2.25	
50-59	6.27 ± 2.89		6.00±2.07	
60 and above	5.14 ± 3.49		6.14±1.86	
Gender (b)	Mean +SD	P value	Mean +SD	P value
Male	3.39 ± 2.96	0.684	4.01 (2.54	0.684
Female	3.52 ± 3.11		4.09 (2.48	
Occupation	Mean +SD	P value	Mean +SD	P value
Employed	3.67 ±3.06		4.39±2.44	
Unemployed	3.36 ±3.07	0.947	3.99±2.46	0.504
Self-employed	3.81 ±3.01		4.05±2.74	
Educational Level	Mean +SD	P value	Mean +SD	P value
	4.17 ±3.90		5.08±2.81	
Illiterate	4.68±3.40	0.112	4.82±2.26	0.221
Primary school	4.13±3.47		4.29±2.44	

	Mean +SD	P value	Mean +SD	P value
Secondary school	3.12±3.08		3.82±2.54	
High school	3.36±2.91		3.99±2.50	
College and above				
Family history of CRC	Mean +SD	P value	Mean +SD	P value
Yes	5.17±2.45		4.43±2.34	
No	3.52±3.08	<0.0001	4.13±2.53	0.236
Don't know	2.16±2.68		3.45±2.36	
Prefer not to say	.00±.000		2.50±2.12	

(a)ANOVA one-way, (b) T-test was performed for statistical analyse

Discussion

Only a few research have minimized the potential for information bias associated with self-administered questionnaires by using semi structured face-to-face interviews, like this one. The current study's findings suggest that the general Duhok city population is not well-informed about the symptoms and risk factors of colorectal cancer. The results of research carried out both locally and globally, in both developed and developing nations, were in line with this study.

According to this survey, Duhok City residents' knowledge of cancer risk factors and symptoms varied from fair to poor (41.9%). The results of (Mansour-Ghanaei *et al.*, 2015) who assessed the Knowledge about Colorectal Cancer among 1557 participants in Northern Iran reported that the public knowledge score about CRC was poor. The literature reported varying knowledge scores of colorectal cancer using different questionnaire tools. Additionally, Nasaif and Al Qallaf (2018) , who evaluated 505 participants in the Kingdom of Bahrain for their knowledge of colorectal cancer symptoms and risk factors, came to the same conclusion. Furthermore, prior research revealed that most other Asian nations, such as Jordan (34.5%), Lebanon (33%), %), Qatar (40.2%), and United Arab Emirates (<50.0%), also found minimal knowledge of CRC, including awareness of its symptoms and risk factors.

The reason for obtaining the low knowledge level in the present study was due to majority of the study participants have negative family history. moreover, although majority of

them have college qualification but this low knowledge may be due to exclusion criteria in which the researcher excluded medical sector, such as medical students, nurses, and pharmacists etc. Additionally, in our opinion, the low quality of responses provided by the survey participants might be the result of a lack of community awareness campaigns and a lack of emphasis on the seriousness of the colorectal cancer problem in Duhok City. In contrast, research from most western nations and a few Asian nations indicated higher CRC knowledge: the United States of America (91.0% showed good awareness), the United Kingdom (88.0%) Malaysia (70.9%), Turkey (69.0%), and Norway (60.0%)(Anderson *et al.*, 2015; Vega *et al.*, 2015). This highlights the necessity for ongoing educational initiatives and may be a reflection of low health education regarding CRC symptoms and indicators in Asian nations. The common, false cultural assumptions that exist in these nations could also be a contributing factor. Alternatively, the increased public knowledge of colorectal cancer (CRC) cases and the prevalence of fast food and a western lifestyle could be the reason.

In contrast, a study by (Saeed *et al.*, 2018) showed that Kuwaiti citizens have good understanding and awareness about CRC. In addition, a survey done in (Lee *et al.*, 2022) on Australians showed a high degree of knowledge.

Rectal bleeding was the most often reported symptom of colorectal cancer (46.7%) in the current study, followed by lower abdominal pain and blood in the stool.

According to this study, "abdominal pain" was the second most often recalled symptom among participants, which is consistent with findings from earlier investigations (Su *et al.*, 2013; Tfaily *et al.*, 2019a). Because of its anatomical location, this people may have believed that abdominal pain was associated with colorectal cancer.

Small group of participants in this study recalled that fatigue is a symptom of colorectal cancer (CRC). The reason it is plausible is that fatigue is not a distinct sign of cancer, but rather a symptom of many different illnesses.

Regarding to CRC risk factors, the majority of study participants identified bowel disease as the most common risk factor. This finding is consistent with the findings of (Pan *et al.*, 2017) who investigated the public's knowledge of colorectal cancer at outpatient clinics in Malasia.

Less than one-third of the participants in the current study recognized diabetes as the least common risk factor for colorectal cancer (CRC). This highlights the need for public

awareness regarding diabetes as a significant risk factor for CRC. (Al-Thafar *et al.*, 2017), and (Saeed *et al.*, 2018) supported this finding by reporting that participants agreed that diabetes was the least risk factor. Numerous researches have indicated a link between diabetes mellitus and a higher risk of colorectal cancer.

(Yu *et al.*, 2022b) stated that patients with type 2 diabetes have a higher risk of colorectal cancer (CRC) in comparison to those with normal blood glucose levels. Numerous epidemiological studies have revealed hyperglycaemia to be a risk factor for colorectal cancer (CRC). Among the most notable are two representative large-scale prospective cohort experiments. After a 10-year follow-up, the first epidemiological study carried out by China Kadoorie Biobank examined over half a million middle-aged and elderly Chinese people from ten unique urban and rural locations. Diabetic patients had an elevated risk of colorectal cancer (Yu *et al.*, 2022a).

Regarding the relation between participants' awareness about colorectal cancer and their demographic characteristics, the current study revealed that there is a positive statistically significant relationship between CRC symptoms and risk factors knowledge and the participants' age implying that with increased age there is better knowledge of CRC symptoms and risk factors. This is not unexpected because exposure to public education programs and life experiences both contribute to informal learning, which rises with age. This is consistent with other research studies that evaluated the degree of knowledge in CRC (Power *et al.*, 2011; Mansour-Ghanaei *et al.*, 2015; Whitaker *et al.*, 2015). However (Khayyat and Ibrahim, 2014) reported a contrast result who assessed Public awareness of colon cancer screening among the general population in Saudi Arabia.

Furthermore, there was a difference between gender with CRC knowledge regarding signs and risk factors in the current study, revealing that female participants had better knowledge than male It could be that females are more frequently exposed to healthcare professionals than males, due to their maternity care experiences. The discovery that hospital visits were linked to a higher chance of having a thorough understanding of CRC symptoms and indicators provides support to this. In addition, women tend to take on the role of caregiver for ill family members more often, which increases their familiarity with medical matters. However, the difference was not statistically significant. In the same line, this study results were congruent with (Nasaif and Al Qallaf, 2018)who

studied" Knowledge of colorectal cancer symptoms and risk factors in the Kingdom of Bahrain.

The findings from this study revealed that there was a significant association between family history of CRC with CRC symptoms and risk factor knowledge. However, concerning to risk factors the association was not significant. Implying that participants who had family history of CRC had better knowledge They may have learned about the illness from friends or family, increasing their awareness, which could explain why they may know more about it. This results in agreement with previous studies (Taha *et al.*, 2015; Tfaily *et al.*, 2019b) Concerning to occupation and educational level, in the current study there were no statistically significant differences between the mentioned variables with CRC knowledge.

Limitation of the study

The major strength of this study included the face-to-face inter views for data collection minimized the possibility that a participant could use the internet to answer questions correctly. On the other hand, limitations of this study included the use of stratified convenience sampling, which does not guarantee creating a representative sample of the public. However, the high response rate and the data collection from different geographical areas across Dohuk City and from various locations may mitigate this. Another limitation is the exclusion of participants with medical backgrounds, which could possibly reduce the number of participants with a presumably good awareness of CRC signs and symptoms. However, the exclusion of these participants was intended to increase the relevancy of this study as a measure of public awareness.

Conclusions and Recommendations

Based on the results from the current study, the following conclusions have been obtained; The mean age of the participants was 26 ± (10) ranging from 18-83. The predominant age group was between 20-29 years (68.5%) and the lowest proportion (1.7%) age group was 60 and above; The study participants showed a big knowledge gap in the recall and recognition of cancer symptoms and risk factors; Rectal bleeding and having a bowel disease were the most commonly recalled symptoms and risk factors; The knowledge of symptoms and risk factor were higher among older age group. The results of the present study led to the following recommendations: 1. Conduct Educational Campaigns: Organize public awareness campaigns for non-medical college students

through various platforms such as social media, community events, and healthcare facilities to educate them about the symptoms and risk factors of colorectal cancer, 2. Provide Screening Programs: Encourage regular screening for colorectal cancer among the at-risk population by providing information about the importance of early detection and screening tests, 3. Distribute Educational Materials: Distribute brochures, flyers, and posters in public places, clinics, and hospitals that highlight the symptoms, risk factors, and preventive measures for colorectal cancer. It is vital to further explore through additional research the barriers, facilitators, and the willingness to participate in CRC screening among the general public.

Ethical Considerations

The University of Duhok Scientific Committee of Nursing College accepted this study. Finally, approval has been acquired from the Director of Health's Research Ethical Committee in the Duhok Governorate, as reference number (31012024-1-20). Each participant in the current study gave their verbal and written agreement. The research goal was explained to the participants, and they were assured of the privacy and confidentiality of the data.

DECLARATION SECTION

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　　　Knowledge and Awareness of Risk Factors and Symptoms of Colorectal Cancer

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