INCIDENCE AND DEMOGRAPHICS MANIFESTATIONS OF COLORECTAL CANCER IN SULAIMANI CITY

Rozhgar Rashid Ali [a], Hazha Abdulla Mohammed Ameen [b], Sara Jamil Nidhamalddin [a], Mohammed Abdalwahab Hassan [a], and Azhin Ali Qadir [a]

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ABSTRACT

Background

Colorectal cancer is the third most common malignancy. However, there is a shifting paradigm and clinical manifestation related to the early presentation.

Objectives

To know the incidence and evaluate the demographic manifestations of colorectal cancers in Sulaimani.

Patients and Methods

A retrospective cross-sectional study was performed on 516 patients admitted to Hiwa Hospital from January 2015 to December 2019. Data of patients were retrieved from the hospital database. Inclusion criteria were patients aged ≥18 years who had colorectal cancers. Demographic features, including ages and gender, clinical manifestations, abdominal pain, bleeding per rectum, constipation, and personal and family history of malignancy, were recorded. Also, the location, stages, and histopathological features of cancer were recorded.

Results

The incidence of colorectal cancers was 40.3 per 100000 persons per year. There was no significant shifting of colorectal cancer incidence toward younger ages (p-value = 0.605). The majority of patients were aged >50 years, and the male: female ratio was (1.1:1). Most patients were presented with abdominal pain, bleeding per rectum, and constipation; 64.5%, 57.2%, and 41.9%, respectively. A significant association was found between grades and presentations. There was a significant association of polyp findings on colonoscopy with their staging.

Conclusion

The incidence of colorectal cancers in Sulaimani did not significantly shift toward younger ages but slightly increased. Colorectal cancer had near-the-same gender distribution, and most patients had abdominal pain and bleeding per rectum.

Keywords: *Colorectal cancer; Colorectal epidemiology; Colorectal incidence; Demographic features.*

[a] Hiwa Hospital, Sulaimani. Ministry of Health Kurdistan Region, Iraq.
Correspondence: rozhgarrashid@yahoo.com
[b] College of Medicine, University of Sulaimani, Kurdistan Region, Iraq.

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INTRODUCTION

Colorectal cancer is the third most commonly diagnosed malignancy of the gastrointestinal tract (GIT) worldwide, according to the Global Burden of Cancer Study (GLOBCAN) [1,2]. Colorectal cancer is the fourth leading cause of death due to cancer worldwide [3]. The highest pooled incidence of colorectal cancer is in Western countries compared to its relatively low rate in the low- and medium-income countries [4]. Regional variations are present across geographical parts for the crude incidence rate of colorectal cancer, e.g., the crude incidence rates in West Africa, East Africa, North Africa, and Southern Africa were (4.5 per 100000 for men and 3.8 per 100000 for women), 6.5 per 100000, 7.1 per 100000, and 10.9 per 100000, respectively [1]. The incidence of colorectal cancer is strongly correlated with the country's socio-economic development [1].

Colorectal cancer has been linked with multiple factors, including increasing longevity and rapid socio-economic changes [5].

Its risk factors include diabetes mellitus, smoking and alcohol consumption, chronic inflammatory diseases of the colon such as Crohn's colitis and ulcerative colitis, hereditary factors like hereditary non-polyposis colorectal cancer (HNPCC) and familial adenomatous polyposis (FAP), poor nutrition like high consuming high glycemic load carbohydrates or processed red meat, or low vegetables and fruits consumptions, low physical activity, prior ovarian and endometrial cancer before ages of 50 [6,7].

The relative contribution and interaction of these risk factors to the increased risks of colorectal cancer are problematic and challenging to explain. However, considerable evidence demonstrated that the epidemiology of colorectal cancer is shifting toward an increment in its prevalence and incidence in people aged <50 years old [7]. For instance, the study of Haggar et al. [7] for ten years showed a significant increase in the incidence of colon cancer in people aged younger than 50 years by 3.1%, two ·9%, 2·9%, and 1·8% per year in Denmark, New Zealand, Australia, and the UK, respectively. The study of Haggar et al. [7] also showed a significant increase in the incidence of rectal cancer in people aged less than 50 years by 3·4%, two ·6%, and 1·4% per year in Canada, Australia, and the UK, respectively. In addition, the early age of onset and aggressive behaviours of the disease was linked with poor prognosis [8].

There are limited studies in our population to assess the incidence of colorectal cancer. Therefore, the current study aimed to determine colorectal cancer incidence and demographic manifestations of colorectal cancer in a single oncologic center.

PATIENTS AND METHODS

A retrospective cross-sectional study was performed on 516 patients admitted to the Oncology Department of Hiwa Hospital in Sulaimani city, Kurdistan Region, Iraq. The patients were collected during the period from January 2015 to December 2019. The Kurdistan Board of Medical Specialties (KBMS) approved the study proposal, and a formal acceptance letter was obtained from Hiwa Hospital before starting the study.

All the patients admitted to the hospital had complete clinical information in the hospital database have been collected. Missed information was collected by direct interview or phone calls.

The inclusion criteria were patients aged ≥18 years old and had colon or rectal cancers. However, the exclusion criterion was patients who lost their medical documents.

The demographic features include age, gender, body mass index (BMI), and smoking habits. Clinical manifestations include abdominal pain, bleeding per rectum, constipation, comorbidities such as hypertension (HTN), diabetes mellitus (DM), ischemic heart disease (IHD), personal history of a polyp and its types, and family history of cancers was recorded. In addition, the stages and grades of the cancer were recorded from the database of the hospital.

The "IBM SPSS Statistics version 25" program was used to analyze the data, and both descriptive and inferential statistics were conducted based on the nature of the variables. Further, means and standard deviation (SD) were used for continuous variables and frequencies and percentages for categorical variables. Besides, a p-value of (≤0.05) was a statistically significant association. Also, Pearson Chi-Square was used to determine the significance of the association between categorical independent and dependent variable pairs.

RESULTS

The majority of the patients were aged >50 years, and both sexes were equally affected in a male: female ratio of (1.1:1). In addition, more than half of the patients (56.8%) had an abnormal BMI, and 26.3% of the patients had a family history

of colorectal and other related cancers (Table 1). The association of the ages of the patients with the years of diagnosis was statistically non-significant (p-value = 0.605). However, the total incidence of colorectal cancer yearly from 2015 to 2019 slightly increased, except for 2016, which showed a decrease, Table 2. The location of the tumours had the same distribution among both genders across the years of the study (p-value = 0.728), Figure 1. The majority of the patients presented with abdominal pain, bleeding per rectum, and constipation (64.5%, 57.2%, and 41.9%, respectively), Table 3. Among the patients presented with poorly differentiated carcinoma, 90% were without a polyp history. Statistically, there was a significant association between being presented with a poorly differentiated and absent polyp history. Further, for patients with poorly differentiated carcinoma, approximately 78.3% of them had a history of abdominal pain, and the association between being presented with poorly differentiated and having a history of abdominal pain was statistically significant. Besides, among patients with moderately differentiated carcinoma, approximately 65.7% had a history of bleeding per rectum, and the association between being presented with moderately differentiated carcinoma and having a history of bleeding per rectum was statistically significant. Also, among patients with poorly differentiated carcinoma, approximately 59% of them did not have an account of bleeding per rectum, and the association between being presented with poorly differentiated carcinoma and not having a history of bleeding per rectum was statistically significant, (Table 4. For the patients afflicted with stage I, approximately 60% had no history of a polyp, and the association between being presented in stage I and absent history of the polyp was statistically significant. For the patients with stage II, approximately 71.4% were diagnosed with colon cancer, and the association between being presented with stage II and colon cancer was statistically significant. However, for patients with stage III, approximately 54% of them were diagnosed with rectal cancer, and the association between being presented with stage III and rectal cancer was statistically significant (Table 5).

Table 1. Distribution of demographic features and past history of the patients.

Demographic features		Frequency(%)
Age groups (year)	≤50	208 (40.3)
	>50	308 (59.7)
Gender	Male	269 (52.1)
	Female	247 (47.9)
BMI groups (kg/m2)	Underweight (<18.5)	16 (3.1)
	Normal (18.5-24.9)	196 (38)
	Overweight (25-29.9)	187 (36.2)
	Obese (30-40)	100 (19.4)
	Morbid obesity (>40)	6 (1.2)
	Unknown	11 (2.1)
Smoking history	Yes	95 (18.4)
	No	308 (59.7)
	Ex-smoker	113 (21.9)
Hypertension	Yes	146 (28.3)
	No	370 (71.7)
Diabetes mellitus	Yes	68 (13.2)
	No	448 (86.8)
Ischemic heart disease	Yes	38 (7.4)
	No	478 (92.6)
Family history of cancer	1st-degree relative	57 (11.1)
	2nd-degree relative	39 (7.6)
	Other	39 (7.6)
	No	379 (73.7)
Total		**516 (100)**

BMI = body mass index

Table 2. Distribution of ages over a year of diagnosis and incidence rate of the colon and rectal cancers.

Age (year)							
Year	**Age (year)**	**Mean±SD**	**Range**	**no.**	**Population no. (≥18 years)**	**Incidence per 100000 people per year**	**p-value**
2015	≤50	38.40±7.824	25 to 50	40	1007542	4	
	>50	68.06±9.770	51 to 95	50	272340	18.4	
	Total	54.88±17.292	25 to 95	90	1279882	7	
2016	≤50	41.07±7.201	25 to 50	29	1131275	2.6	
	>50	64.84±9.616	51 to 91	55	278762	19.7	
	Total	56.63±14.384	25 to 91	84	1410037	6	
2017	≤50	36.16±7.046	23 to 50	38	1055589	3.6	
	>50	65.15±9.476	51 to 90	60	285254	21	
	Total	53.91±16.588	23 to 90	98	1340843	7.3	**0.605**
2018	≤50	40.04±7.360	27 to 50	47	1307743	3.6	
	>50	67.37±10.348	51 to 90	79	291809	27.1	
	Total	57.17±16.210	27 to 90	126	1599552	7.9	
2019	≤50	38.72±7.515	23 to 49	54	1104551	4.9	
	>50	65.48±9.970	51 to 91	64	298415	21.5	
	Total	53.24±16.074	23 to 91	118	1402966	8.4	
Total	≤50	38.82±7.504	23 to 50	208	1007542*	20.6	
	>50	66.20±9.896	51 to 95	308	272340*	113.1	
	Total	55.16±16.181	23 to 95	516	1279882*	40.3	

SD = standard deviation; * Measured at the start of the study, i.e., 2015

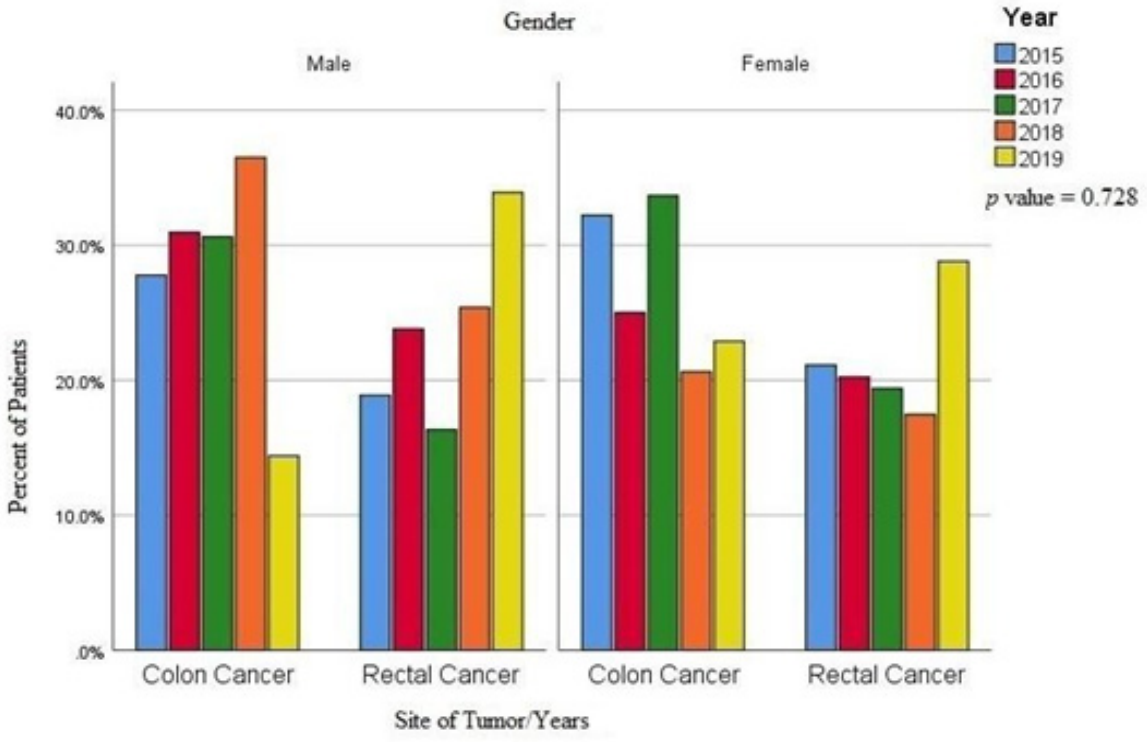

Figure 1. Distribution of the Cancer Types According to the Gender of the Patients over the years of Cancer Diagnosis.

Table 3 . Clinical presentations of the patients.

Presentations		Frequency (%)
Abdominal pain	Yes	333 (64.5)
	No	183 (35.5)
Bleeding per rectum	Yes	295 (57.2)
	No	221 (42.8)
Constipation	Yes	216 (41.9)
	No	300 (58.1)
Other symptoms	Yes	112 (21.7)
	No	404 (78.3)

Table 4. Association of presentations and findings with the grades of the colon and rectal cancers.

Variables		Grade (%)			Total (%)	p values
		Well-differentiated	Moderately differentiated	Poorly differentiated		
Polyp	Yes	24 (4.7)	94 (18.2)	7 (1.4)	125 (24.2)	0.010
	No	57 (11)	272 (52.7)	62 (12)	391 (75.8)	
Abdominal pain	Yes	48 (9.3)	231 (44.8)	54 (10.5)	333 (64.5)	0.030
	No	33 (6.4)	135 (26.2)	15 (2.9)	183 (35.5)	
Side of cancer	Right side	18 (3.5)	43 (8.3)	18 (3.5)	79 (15.3)	0.072
	Left side	28 (5.4)	123 (23.8)	22 (4.3)	173 (33.5)	
	Transverse	3 (0.6)	21 (4.1)	4 (0.8)	28 (5.4)	
	Rectal Cancer	32 (6.2)	179 (34.7)	25 (4.8)	236 (45.7)	
Bleeding per rectum	Yes	46 (8.9)	221 (42.8)	28 (5.4)	295 (57.2)	0.010
	No	35 (6.8)	145 (28.1)	41 (7.9)	221 (42.8)	
Total		**81 (15.7)**	**366 (70.9)**	**69 (13.4)**	**516 (100)**	—

Table 5. Association of polyp and side of cancer with the stages of colon and rectal cancers.

Variables		Stage (%)				Total (%)	p values
		I	II	III	IV		
Polyp	Yes	26 (5)	23 (4.5)	52 (10.1)	24 (4.7)	125 (24.2)	0.016
	No	40 (7.8)	68 (13.2)	185 (35.9)	98 (19)	391 (75.8)	
Diagnosis	Colon Cancer	37 (7.2)	65 (12.6)	109 (21.1)	69 (13.4)	280 (54.3)	0.001
	Rectal Cancer	29 (5.6)	26 (5)	128 (24.8)	53 (10.3)	236 (45.7)	
Total		66 (12.8)	91 ()17.6	237 (45.9)	122 (23.6)	516 (100)	—
Side of colon cancer	Right side	14 (5)	21 (7.5)	24 (8.6)	20 (7.1)	79 (28.2)	0.530
	Left side	19 (6.8)	38 (13.6)	75 (26.8)	41 (14.6)	173 (61.8)	
	Transverse	4 (1.4)	6 (2.1)	10 (3.6)	8 (2.9)	28 (10)	
	Total	37 (13.2)	65 (23.2)	109 (38.9)	69 (24.6)	280 (100)	

DISCUSSION

The incidence of colorectal cancers and associated mortality rates are growing due to complex relationships of multiple risk factors associated with rapid growth in the socio-economic status of the society [3,11,12]. Further, personal habits, including dietary consumption, physical activities, drinking alcohols, and smoking, due to changes in socio-economic status are environmental risk factors and ethnic groups associated with the disparity in the incidence of colon and rectal cancers [9,10]. Therefore, colon and rectal cancers are an important issue of public health that should be considered in the Kurdistan Region of Iraq.

Therefore, we collected all the patients who were aged ≥18 years old and afflicted with colorectal cancers from January 2015 to December 2019 to know the incidence of it. According to the Kurdistan Region Statistics Office (KRSO; www.krso.net, accessed April 21, 2021), the population in Sulaimani Governorate who was aged ≥18 years old in 2015 was (1279882). Thus, the incidence was 40.3 per 100000 persons at risk per year from January 2015 to December 2019. Compared to findings found in the literature [6,13], the result in the current study was slightly higher. The incidence of colon and rectal cancers ranged from 4-to 30.2 per 100000 persons in previous literature [6,13]. This increased incidence of colon and rectal cancer in the locality of the current study may be due to our region's genetic and environmental differences from the other areas of the world, including rapid development in socio-economic status. On the contrary, the study performed by Khil et al. [12] in Korea in 2021 showed a higher incidence of colorectal cancer in their country than the current study's findings; they showed an incidence of 44.5 per 100000 persons per year. They considered their country to have the second-highest incidence rate of colorectal cancer in 2018, and they proposed lifestyle and dietary habits as risk factors [10].

There are trends of changing patterns of colon and rectal cancers toward younger ages of ≤50 years old due to transitions in the socio-economic habits of the societies [12–14]. However, the current study showed no significant difference between ages ≤50 years old to ages >50 years old (p-value = 0.605). Therefore, there was no significant shift of afflicting colon and rectal cancers in our region from ancient ages to younger ages, and older generations had more risk of getting them. The differences may be because both the young and old ages were prone to the same socio-economic changes at about the exact times.

The current study's findings were the same as the study of Medhin et al. [9] in Eritrea, in which they did not find a significant shift toward younger ages; this is may be due to the same rapid exposure to the socio-economic changes in their country as compared to ours.

In the current study, the gender distribution of the patients was about the same with slight male predilection; the male: female ratio was (1.1:1). Moreover, the distributions of colorectal cancer according to the gender of the patients were about the same during the years of their diagnosis (p-value = 0.728). Our finding was comparable to previous studies, and gender did not predispose us to cancer significantly [10,14,15]. However, this ratio favored the male gender slightly more in the study performed by Medhin et al. [9] in Eritrea; in their study, the male: female ratio was (1.61:1). Furthermore, although there are hormonal differences among both genders, both males and females are exposed to the same environmental and socio-economic changes in society.

The current study showed that most patients had symptoms of abdominal pain, bleeding per rectum, constipation, and polyp finding on colonoscopy. These findings were comparable to previous literature; most patients with colorectal carcinoma presented with abdominal pain and bleeding per rectum [3,11,12]. When the tumour gets a sizeable amount, invades the guts, and sometimes blocks the gut, abdominal pain, bleeding per rectum, and constipation can manifest. Therefore, our patients had about the same presentations as in previous studies [3,11,12].

Polyp findings on colonoscopy in the current study were significantly; however, inversely associated with the grades and stages of colorectal cancer, i.e., the colorectal polyp was more diminutive when the grades and stages of the tumour became higher. On the contrary, the current study's findings were not compatible with the analysis performed in Sweden by Song et al. [16]; it showed an increased risk of colorectal cancer when the patients had polyps of any type. These differences may be because the study performed by Song et al. [16] used reference individuals as a control group for their case-control study design. However, we used a cross-sectional study design, and all the patients had already been diagnosed with colorectal cancer, and the current study design did not necessitate a control group. Therefore, the polyp can be a sign of colorectal cancer; however, current study findings showed a less invasive tumour when it presents.

In conclusion, the incidence rate of colorectal cancer slightly increased; however, it did not reveal any significant shift toward younger age over the study period. In addition, the incidence ratio among both genders was comparable.

Abdominal pain and bleeding per rectum had been the most frequent presentation when diagnosed with colorectal cancer. Therefore, it is highly suggested to screen all patients who present with the above and other suspicious signs for CRC.

Conflict of interest

The authors declare no conflict of interest.

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