

**Original Research**

**Statistical Study on Patients with Colorectal Cancer and the Role of Radiological Diagnosis in Tobruk Medical Center during 2018-2022**

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**ABSTRACT**

Colorectal cancer (CRC) is one of the most common cancers in the world, which is the third most common cancer worldwide in men and women, the second largest cause of death related to cancer, and the main cause of death in gastrointestinal cancer. The risk factor of acquiring this cancer is related to high alcohol consumption, smoking, obesity, an unhealthy diet, low physical activity, genetic factors and intestinal inflammatory disease. Ninety percent of patients that diagnosed with colorectal cancer are over 50, with a median age of 64; nevertheless, CRC is more aggressive in patients that are diagnosed at younger ages. The current study aimed to assess the incidence of CRC in Tobruk medical Centre during the five years from 2018 to 2022 and compare them among younger and older adults. In addition, to represent an important role of imaging tests in the diagnosis and the treatment of CRC.



Methods: All the data are collected by the Cancer Registry of Tobruk Medical Centre, Department of Oncology. Results: The number of patients for the period 2018- 2022 was 219, (female = 102 ) (Male =117). This study found that, CRC is more than one- half (53%) of patients were males and less than one- half (47%) of patients were females. In particular, the age group 60 -70 years has the highest patients. While, patients with age group 20-30 years has the lowest. Looking from an overall perspective the size of the 51- 70 age groups increased the most over the period, while the size of the three younger 21- 40 age groups decreased a little bit. The number of patients in the three older age groups was decreasing and in some cases increasing. Conclusions: We confirmed an increased incidence of CRC in adults are over 50, males are most susceptible to infection with CRC. Mortality rates are significantly higher for males than for females in all age groups especially at older ages group. In Tobruk Medical Centre, screening is recommended for CRC for all adults beginning at age 50 years and continuing until age 75 years.

**KEYWORDS:** Colorectal Cancer (CRC), Risk Factor, Imaging Tests , Diagnosis, Department of Oncology, Tobruk Medical Center.

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## INTRODUCTION

The general living standard around the world has increased, and there is greater access to quality healthcare, which has greatly improved the diagnosis and treatment of different diseases (Kuipers et al, 2015). However, despite the fact that these medical advancements have reduced communicable disease mortality rates globally, cancer-related mortality has risen by approximately 40% over the past 40 years (Kuipers et al, 2015).

Colon cancer is one of the most common tumors worldwide and is regarded as a major cause of death, along with lung, prostate, and breast cancer (Labianca et al, 2010). colon cancer is a common preventable cancer. The targeted population's incidence and mortality from colon cancer have decreased as a result of widespread colon cancer screening in developed countries. However, Colorectal

Cancer (CRC) mortality and incidence have unfortunately increased over the past 25 years in young adults under 50 (Ahmed, 2020).

In 1950, colorectal cancer was rare, but nowadays it accounts for approximately 10% of all cancer-related deaths in Western countries (Kuipers et al, 2015). Reasons have increased incidence of colon rectal cancer (CRC) which including smoking, high alcohol consumption, low physical activity, family history, obesity and an unhealthy diet (Siegel et al, 2020).

According to the World Health Organization GLOBOCAN database, CRC is the second and third most commonly diagnosed cancer in females and males, respectively (Bray et al, 2018). In 2020, approximately 147,950 individuals diagnosed with CRC and 53,200 died from the disease, in individuals aged younger than 50 years (Siegel et al, 2020). Expected study in 2030, A further 60%

increase is expected in the next 15 years, with 13 million people estimated to die of cancer (Kuipers et al, 2013).

A diagnosis of CRC either as results of screening, or results from a patient's assessment presenting with symptoms. There are a wide range of symptoms, such as change in bowel habits, blood in stool, and abdominal pain. Additional symptoms include shortness of breath, weakness and fatigue, unintended weight loss, and anaemia-related symptoms such as pale appearance((Kuipers et al, 2015).

There are many tests used for diagnosing CRC, for example Per rectum examination, endoscopy (which includes sigmoidoscopy and colonoscopy) biopsy, biomarker testing of the tumor(CRC), and fecal occult blood test (FOB). Additional to imaging tests of radiology which are helpful in diagnosing of CRC. Imaging tests of CRC including, endorectal ultrasonography (USG), abdominal USG, nuclear magnetic resonance (NMR) and computed tomography (CT) (Swiderska et al, 2014).

Radiology has an important role in diagnosing and treatment many diseases, especially with colorectal cancer which helps in diagnosing diseases in early stages. Over the past 20 years, the radiology has been developed from barium enema to advanced imaging modalities such as, virtual colonoscopy, computed tomography (CT), positron emission tomography (PET) and phased array magnetic resonance imaging (MRI). While barium enema is still the most used imaging method for colon malignancies, transrectal ultrasonography or MRI is now preferred for

the imaging of primary rectal tumours (Pijl et al, 2002).

CRC is not only preventable but it is also one of the most treatable cancers if it can be diagnosed early. The disease's stage determines the course of treatment. Each stage has different type of treatment (Ahmed, 2020).

Stage I CRC is treated by surgical resection of the tumor and the local lymph nodes. For proper colorectal cancer staging, an adequate number of lymph nodes must be examined during surgery. According to American Joint Commission on Cancer and the National Quality Forum, harvesting of at least 12 lymph nodes is considered as a quality indicator of CRC resection (Orsenigo et al, 2019).

Stage II CRC is treated by surgery alone and routine use of adjuvant chemotherapy is not recommended. Adjuvant chemotherapy was recommended by the European Society of Medical Oncology (ESMO) (Last updated in 2013) when any of the high-risk features were present. These features included poorly differentiated cancer, , perineural invasion, lymphovascular invasion, report of fewer than 12 lymph nodes, , localized perforation, bowel obstruction and positive margins(Labianca et al, 2013).

One of the following chemotherapy regimens should be used for six months as part of the adjuvant chemotherapy: 5-fluorouracil (FU) in combination with leucovorin (LV), capecitabine, or combination of 5-FU with LV and oxaliplatin (FOL- FOX) or capecitabine and oxaliplatin (Capeox) (Ahmed, 2020).

Stage III CRC is treated by curative surgical resection of the tumor followed by adjuvant chemotherapy consisting six cycles of FOL-FOX or Capex (Lee et al, 2012).

Stage IV colon cancer can be managed by monotherapy or a combination of palliative surgery, radiotherapy, biologic targeted therapy, immunotherapy/checkpoint inhibitor therapy, chemotherapy, and radiofrequency ablation (Ahmed, 2020). The treatments of different stages of CRC are outlined in (Table 1).

**Table: (1).** Treatment of Different Stages of CRC Stages (Ahmed, 2020).

<i>Stages of CRC</i>	<i>Treatment modalities</i>	<i>Stages of CRC</i>	<i>Treatment modalities</i>
Stage 1	Endoscopic resection of pedunculated malignant polyps or surgical resection of tumor and local lymph nodes.	Stage 1	Endoscopic resection of pedunculated malignant polyps or surgical resection of tumor and local lymph nodes.
Stage 2	Surgery alone, Adjuvant chemotherapy only in presence high risk features.	Stage 2	Surgery alone, Adjuvant chemotherapy only in presence high risk features.
Stage 3	Surgery plus adjuvant chemotherapy.	Stage 3	Surgery plus adjuvant chemotherapy.

The current study aimed to assess the incidence of CRC in Tobruk medical centre during the five years from 2018 to 2022 and compare them among younger and older adults, In addition, to represent an important role of imaging tests in diagnosing and treating of CRC.

## MATERIALS AND METHODS

### *Data Sources*

All the data are collected by the Cancer Registry Of Tobruk Medical Centre, Department of Oncology. It is collected from 2018 to 2022.

### *Sample Size*

The total number of patients are 219, (female = 102 ) (Male =117). Most patients diagnosed by using barium enema. Additionally, most patients treated in Tobruk Medical Centre by using chemotherapy, and radiotherapy used in Benghazi city.

### *Variable Criteria*

Information on the patient’s demographic profile, personal and family history, and lifestyle factors (which includes, overweight and obesity, smoking habits, alcohol consumption, body mass index-BMI and body surface area-BSA) were also provided.

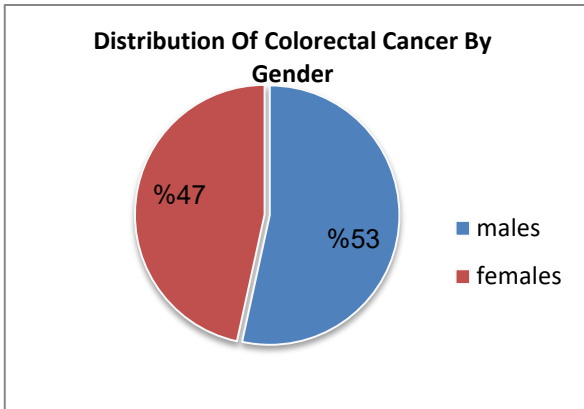
In Tobruk Medical Centre, most of the patients were in the early stages of colorectal cancer, they were treated with appropriate methods and cured from this diseases. Despite of this, some patients were in the late stages of CRC and were exposed to radiotherapy and chemotherapy but they died from this diseases.

## RESULTS AND DISCUSSION

Among this study, colorectal cancer is more than one- half (53%) of patients were males and less than one- half (47%) of patients were females.

Male patients diagnosed with colorectal cancer outnumber female patients, as seen by the pie chart (Figure 1).

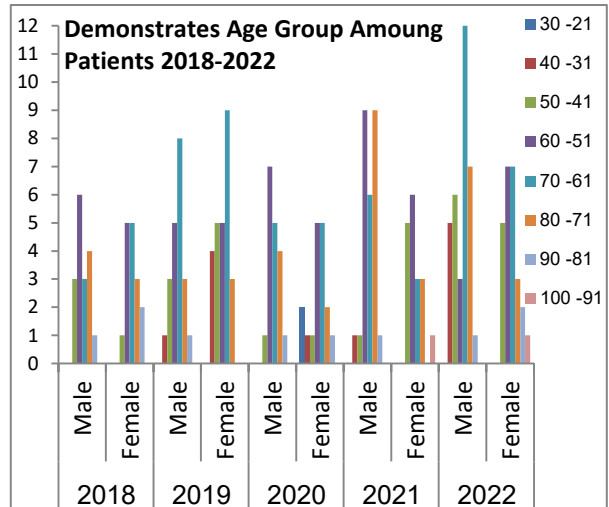
According to our findings, men are more likely than women to develop colorectal cancer. The main reason of that, it could be unbalanced of lifestyle between men and women.



**Figure: (1).** Distribution of Colorectal Cancer Cases by Gender at Tobruk Medical Center (2018-2022).

The study sample amounted to 219 patients. Data were collected from 2018 to 2022 at Tobruk Medical Centre. Table (2) explains the distribution of the study sample by the age group among number of patients during the five years.

CRC is mostly presented at an advanced age. As is evident from the bar chart (figure 2), the number of patients diagnosed with CRC is increasing with age, reaching a high in the age group 61 -70 years and eventually decline.



**Figure: (2).** Demonstrates Age Group among Number of Patients from 2018 to 2022.

The bar chart compares the different ages of males and females living in different places in Libya which treated at Tobruk Medical Center between 2018 and 2022 as shown in figure (2).

Each year is represented by eight bars for different age groups in males and females. While, in some years have less than eight bars, because some period were not record cases.

In particular, the age group 60 -70 years has the highest value in the year of 2022 in males. While, patients with age group 20-30 years has the lowest, which was not affected, except in the year of 2020, and the incidence was among two women.

**Table: (2).**

Distribution of the Study Samples by the Age Group .

<i>Age</i>	<i>2018</i>		<i>2019</i>		<i>2020</i>		<i>2021</i>		<i>2022</i>	
<i>Gender</i>	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<i>21- 30</i>	0	0	0	0	0	2	0	0	0	0
<i>31- 40</i>	0	0	1	4	0	1	1	0	5	0
<i>41- 50</i>	3	1	3	5	1	1	1	5	6	5
<i>51- 60</i>	6	5	5	5	7	5	9	6	3	7
<i>61- 70</i>	3	5	8	9	5	5	6	3	12	7
<i>71- 80</i>	4	3	3	3	4	2	9	3	7	3
<i>81- 90</i>	1	2	1	0	1	1	1	0	1	2
<i>91- 100</i>	0	0	0	0	0	0	0	1	0	1

Looking from an overall perspective the size of the 51- 70 age groups increased the most over the period, while the size of the three younger 21- 40 age groups decreased a little bit. The number of patients in the three older age groups was decreasing and in some cases increasing.

In the 30- to 40-year-old age group, it was greater in women in 2018 and it was the highest in males in 2022. Additionally, in the age group of 40-50 years, it was found that the results are different, and the highest value was recorded for women in the year of 2021-2022 at (6 -5) patients respectively. Moreover, in the age group of 50-60 years, the results were almost similar for most patients in both sexes, with the highest throughout the period reaching 9 patients in males in 2021.

It is noted that, in the age group 60-70 years, the results were different and recorded the highest value at 12 patients in males in 2022. By contrast, there were nearly equal proportions of males and females patients in 2020 and in females in 2018 which reached to 5 patients in both genders.

During the study in Tobruk, it was found that, males were most susceptible to infection with colorectal cancer. This indicates that elderly men were at high risk than younger ages to develop colorectal cancer. In comparison, young males with colorectal cancer show slow progression than older males. This is may be because most older patients diagnosed at later stages. Another study in the UK showed that, this increased of men to developing CRC may be due to a number of biological and gender factors. Men are more likely to have a diet high

in red and processed meat, be heavier consumers of alcohol, and more likely to smoke (Chang et al, 2014).

White et al, (2018) conducted studies assessed sex-related differences in colorectal cancer (CRC) incidence. Additionally, the overall incidence of CRC was higher in males than females, with an earlier age distribution, however, important sex differences exist in anatomical site. This agree with this study, which showed that the incidence of CRC was higher in males than females, that it could be for some reasons as mentioned earlier. Mortality rates are significantly higher for males than for females in all age groups especially at older ages group.

## **CONCLUSION**

Colorectal cancer is one of the most common cancers worldwide, the aim of this study was to compare the incidence of CRC in younger and older adults in males and females at different ages group for five years from (2018 to 2022). It was found that males are most susceptible to infection with CRC. The highest prevalence of CRC infection was at the age group (60-70) where males affected more than females. this increased of men to developing CRC may be due to a number of biological and gender factors. Men are more likely to have a diet high in red and processed meat, be heavier consumers of alcohol, and more likely to smoke. Mortality rates are significantly higher for males than for females in all age groups especially at older ages group. In Tobruk Medical Centre, screening is recommended for CRC for all adults beginning at age 50 years and continuing until age 75 years.

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وخاصةً في الفئات العمرية الأكبر. في مركز طبيرق الطبي، يُوصى بإجراء فحص سرطان القولون والمستقيم لجميع البالغين بدءًا من سن الخمسين وحتى سن الخامسة والسبعين.

**الكلمات المفتاحية:** سرطان القولون والمستقيم، عوامل الخطر، الفحوصات التصويرية، التشخيص، قسم الأورام، مركز طبيرق الطبي.

## الملخص

يُعد سرطان القولون والمستقيم من أكثر أنواع السرطان شيوعًا في العالم، فهو ثالث أكثر أنواع السرطان شيوعًا بين الرجال والنساء، وثاني أكبر سبب للوفاة المرتبطة بالسرطان، والسبب الرئيسي للوفاة بين سرطانات الجهاز الهضمي. وتشمل عوامل الخطر للإصابة بهذا السرطان: الإفراط في تناول الكحول، والتدخين، والسمنة، واتباع نظام غذائي غير صحي، وقلة النشاط البدني، والعوامل الوراثية، وأمراض الأمعاء الالتهابية. 90% من المرضى الذين تم تشخيص إصابتهم بسرطان القولون والمستقيم تزيد أعمارهم عن 50 عامًا، بمتوسط عمر 64 عامًا؛ ومع ذلك، يكون سرطان القولون والمستقيم أكثر شراسة لدى المرضى الذين يتم تشخيصهم في سن مبكرة. هدفت هذه الدراسة إلى تقييم معدل الإصابة بسرطان القولون والمستقيم في مركز طبيرق الطبي خلال السنوات الخمس من 2018 إلى 2022، ومقارنته بين البالغين الأصغر سنًا والأكبر سنًا. بالإضافة إلى ذلك، هدفت الدراسة إلى إبراز الدور المهم للفحوصات التصويرية في تشخيص وعلاج سرطان القولون والمستقيم. (2) المنهجية: تم جمع جميع البيانات من سجل السرطان في مركز طبيرق الطبي، قسم الأورام. (3) النتائج: بلغ عدد المرضى خلال الفترة 2018-2022، 219 مريضًا (102 أنثى و117 ذكرًا). أظهرت هذه الدراسة أن أكثر من نصف مرضى سرطان القولون والمستقيم (53%) كانوا من الذكور، بينما كان أقل من النصف (47%) من الإناث. وبشكل خاص، سجلت الفئة العمرية 60-70 عامًا أعلى نسبة إصابة، في حين سجلت الفئة العمرية 20-30 عامًا أدنى نسبة. وبالنظر إلى الصورة العامة، لوحظ أن الفئة العمرية 51-70 عامًا شهدت أكبر زيادة في عدد المرضى خلال هذه الفترة، بينما انخفض عدد المرضى في الفئات العمرية الثلاث الأصغر (21-40 عامًا) انخفاضًا طفيفًا. في المقابل، شهد عدد المرضى في الفئات العمرية الثلاث الأكبر انخفاضًا، وفي بعض الحالات ارتفاعًا. (4) الاستنتاجات: أكدت الدراسة ارتفاع معدل الإصابة بسرطان القولون والمستقيم لدى البالغين فوق سن الخمسين، وأن الذكور هم الأكثر عرضة للإصابة به. كما أن معدلات الوفيات أعلى بكثير لدى الذكور مقارنةً بالإناث في جميع الفئات العمرية،

