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Studying the demographic profile of colorectal cancer at Sabratha National Cancer Institute during the three-year period of 2021–2023.

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Abstract

One of the leading causes of death and illness worldwide is colorectal cancer, which is becoming more common in developing nations like Libya. Colorectal cancer is among the most prevalent malignancies globally, with its incidence reportedly rising. The most prevalent cancer of the gastrointestinal system is colorectal carcinoma (CRC). It ranks fourth among cancers in women and second among cancers in men. The aim of our research is to study the basic demography age group, gender, place of resident**,** site of tumor, treatments of the tumor in patients with CRC in National Cancer Center Institute. The descriptive study of data of colorectal cancer patients that were collected at the National Cancer Institute of Sabratha from 2021 to 2023 was determined by the mean (M), numbers (n), and percentage (%). 360 cases of colorectal were identified and the demographic characteristics of the patients are shown that majority of the cases were in the age group 50-59 years (26.9%), followed by 60-69 years (28%). The data in the table and a comparison of the number of male and female patients throughout the three years show that in 2021 and 2023, the number of men and women was almost equal. In 2022, however, the percentage of males who were ill was greater than that of women. Almost of cases (17.2%) came from Tripoli followed closely by Zawiya with approximately 11.3%. while only 7.5% came from Sabratha which is the place of cancer institute. The analysis of study results by site

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cancer cells of colorectal cancer revealed that around 65.5% of cases had colorectal cancer. the most often used protocol, FOLFOX, by 18.6%. It is clear from the results of this three-year data analysis on the epidemiology of colorectal cancer that there are important insights into the patterns and trends of this illness. In the end, the results of this study could be used as a starting point for further investigations. Furthermore, adopting screening programs widely and raising health education and knowledge about colorectal cancers can lead to early detection and significantly improve the outcome.

Keyword:- Colorectal Cancer, Sabratha National Cancer Institute, Demography, Chemotherapy, Libya.

دراسة الملف الديموغرافي لسرطان القولون والمستقيم في المعهد القومي للأورام صبراتة خلال فترة الثلاث سنوات 2021-2023.

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الملخص

يعتبر السرطان الأكثر شيوعًا في الجهاز الهضمي هو سرطان القولون والمستقيم (CRC)، الذي يحتل المرتبة الرابعة بين أنواع السرطان لدى النساء والثاني بين أنواع السرطان لدى الرجال. ويعد سرطان القولون والمستقيم أحد الأسباب الرئيسية للوفاة والمرض في جميع أنحاء العالم، وأصبح أكثر شيوعا في البلدان النامية مثل ليبيا. الهدف من دراستنا هو دراسة التركيبة السكانية الأساسية لمرضى CRC في معهد المركز الوطني للسرطان، بما في ذلك الفئة العمرية والجنس ومكان الإقامة وموقع الورم وعلاج الورم. وتم تحديد الدراسة الوصفية لبيانات مرضى سرطان القولون والمستقيم التي تم جمعها في المعهد الوطني للأورام بصبراتة للفترة من 2021 إلى 2023 من خلال استخدام المتوسط الحسابي، وعدد الحالات والنسبة المئوية (٪). وتم تحليل 360 حالة سرطان القولون

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والمستقيم، وكشفت التركيبة السكانية للمرضى أن الجزء الأكبر من الحالات كان في الفئة العمرية60–69 (28%)، تليها الفئة العمرية 50–59 (26.9%). ومن خلال مقارنة أعداد المرضى لعامي 2021 و2023 كان عدد الرجال والنساء المصابين متساويين تقريباً. بينما عدد المرضى لعام 2022، كانت نسبة الذكور المصابين بالمرض أكبر من النساء. بالاضافة الى ذلك سجلت منطقة طرابلس اكثر عدد للحالات بنسبة (17.2%) تليها مدينة الزاوية بنسبة 11.3% تقريبًا. بينما جاءت 7.5% فقط مريض من مدينة صبراتة حيث يوجد مكان المعهد القومي للسرطان. وكشف تحليل الخلايا السرطانية في موقع سرطان القولون والمستقيم، أن حوالي 65.5% من الحالات كانت مصابة بسرطان القولون والمستقيم. وكان البروتوكول الأكثر استخداماً، FOLFOX، بنسبة 18.6%. ويتضح من نتائج تحليل البيانات لمدة ثلاث سنوات حول وبائيات سرطان القولون والمستقيم أن هناك رؤى مهمة حول أنماط واتجاهات هذا المرض. وفي النهاية، يمكن استخدام نتائج هذه الدراسة كنقطة انطلاق لمزيد من الدراسات. علاوة على ذلك، فإن اعتماد برامج الفحص على نطاق واسع ورفع مستوى الوعي حول سرطان القولون والمستقيم يمكن أن يؤدي إلى الكشف المبكر ولمعالجة التأثير المتزايد لسرطان القولون والمستقيم على الصحة العالمية.

الكلمات المفتاحية:– سرطان القولون والمستقيم، المعهد الوطني للأورام صبراتة، الديموغرافيا، العلاج الكيميائي، ليبيا.

Introduction

Colorectal Cancer typically starts as tiny collections of non-cancerous cells called polyps that develop on the colon's inner lining. If these polyps are not found and removed at an early stage, they may eventually turn into malignant tumors (Spanos, C. P. (2023). However, a variety of risk factors can lead to colon cancer development including One major risk factor for colon cancer is diets heavy in processed meats and low in healthy grains. The risk of contracting the condition is further raised by variables including tobacco use, obesity (high body mass index), and inactivity (Spanos, C. P. (2023).

According to prevalence and mortality rates, (CRC) was accountab le for roughly 9.6% of worldwide diagnoses and 9.3% of worldwid e deaths in 2022.(Leopa, N et al., 2023). Lung Cancer had the greatest death rate (18.7%), making it one of the leading causes of

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cancer-related deaths (Leopa, N et al., 2023). The incidence of CRC among young people (less than 55) rose by 2% year in 2024, according to the United State National Center of Health Statistics. It is ranked second for women and first for males (Obeidat, K. M., et al., 2023). Recent studies have revealed a concerning increase in colorectal cancer cases among younger people, especially those under 50 (Spanos, C. P. (2023). The objective of this research is to studying the demographics profile of colorectal cancer at the National Cancer Center Institute of Sabratha between 2021 and 2023, including age, gender, place, protocol of treatments received, and the site of the tumor.

Methodology

The data included in this descriptive study came from all colorectal cancers that were identified or treated at the Sabratha National Cancer Institute in Western Libya. The information was collected from the Institute archive between 2021 and 2023. The rate of colorectal cancer at Sabratha National Institute was then compared throughout the period of the three-year trial to show any increases or decreases. This study has been conducted to find different parameters like the age group, gender, site of tumor, place, and protocol of treatments of colorectal cancer patients. Tumors occurring in the cecum, ascending colon, hepatic flexure, and transverse colon were classified as proximal colorectal cancer, and those in the splenic flexure, descending colon, sigmoid colon, and rectum were grouped as distal colorectal cancer.

Statistical Analysis

The variables of the material were grouped into logical classes and descriptive statistics calculated for the continuous variables using SPSS 20.0 for Windows (SPSS, Inc., Chicago, USA) and Excel. Statistical analysis data are reported as mean (M), numbers (n) and percentage (%).

Results

Study results are shown in table 1. Over three years period 360 confirmed cases of colorectal cancer were registered at Sabratha

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Cancer institute. The average age of male cases was 53.8% while average age of female cases was 46.1% years.

Table 1: The distribution of colorectal cancer cases according to age group, Place of residence, site of cancer and treatment used.

Variables	Number of patients (n=360).	Percentage %
Gender		
Male	194	53.8%
Female	166	46.1%
Age Group		
20-29	7	1.9%
30-39	25	6.9%
40-49	57	15.8%
50-59	97	26.9%
60-69	101	28.0%
70-79	48	13.3%
80-89	17	4.7%
>90	3	0.8%
not mentioned	5	1.3%
Years		
2021		
Male	62	
Female	60	
Total	122	
2022		
Male	90	
Female	66	
Total	156	
2023		
Male	41	
Female	41	
Total	82	
Place of resident		
(Cities)		
Bani Waled	1	0.2%
Tarhona	3	0.8%
Gamata	1	0.2%
Alkhoms	1	0.2%
Tripoli	62	17.2%
Alazezia	12	3.3%
Zawia	41	11.3%
Alharsha	4	1.1%
Mutrad	3	0.8%
Sabria	6	1.6%
Aboessa	5	1.3%
Surman	23	6.3%
Sabratha	27	7.5%
Ajeelat	18	5%
Al-Jmail	10	2.7%
Regdalin	10	2.7%
Alasaba	4	1.1%

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Wadi alhaya	2	0.5%
Alharaba	1	0.2%
Tege	1	0.2%
Zoltun	8	2.2%
Zawara	13	3.6%
Gharian	24	6.6%
Alriyayna	4	1.1%
Yefren	11	3%
Rujban	9	2.5%
Almajabra	1	0.2%
Alshgega	1	0.2%
Mizda	1	0.2%
Zentan	8	2.2%
Jado	4	1.1%
Kabaw	2	0.5%
Nalot	6	1.6%
Sinawn	1	0.2%
Ghdames	2	0.5%
Sabha	2	0.5%
Obary	3	0.8%
Barak alshatee	2	0.5%
Traghen	1	0.2%
Aljufra	1	0.2%
not mentioned	21	5.8%
Anatomical Sites for CRC.		
Appendix	1	0.2%
Cecum	5	1.3%
Colon	236	65.5%
Sigmoid	27	7.5%
Rectum	79	21.9%
Rectosigmoid	12	3.3%
Protocol of Treatments		
Surgery -only	29	8%
Folfox -only	67	18.6%
Surgery +Folfox	41	11.3%
Folfox + Erbitux	10	2.7%
Folfox + Xeloda	10	2.7%
Capecitabine(Xeloda)-only	14	3.8%
Surgery +Capecitabine(Xeloda)	12	3.3%
Capecitabine + Oxaliplatine (Capox)	17	4.7%
Folfox +capox	7	1.9%
Surgery +(Capox)	9	2.5%
Folfoxiri +bevacizumab (Avastin)	33	9.1%
Surgery +Folfoxiri + Avastin	3	0.8%
Others	39	10.8%
No treatment	69	19.1%

An examination of the cases by age group found that throughout the three years (2021-2023), around 24.6% of cases were under the age of 50, while 74.5% were above the age of 50. (Figure 1).

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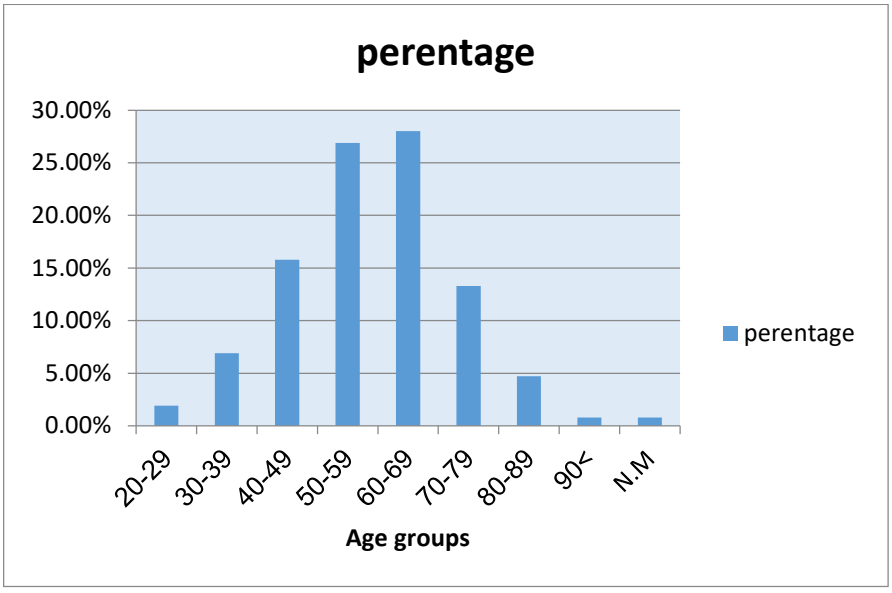

Fig. 1: The distribution of colorectal cancer cases by age group.

Figure (2) showed the distribution of cases by place of residence. About 17.2% of the cases came from Tripoli, followed closely by Zawiya with approximately 11.3%.

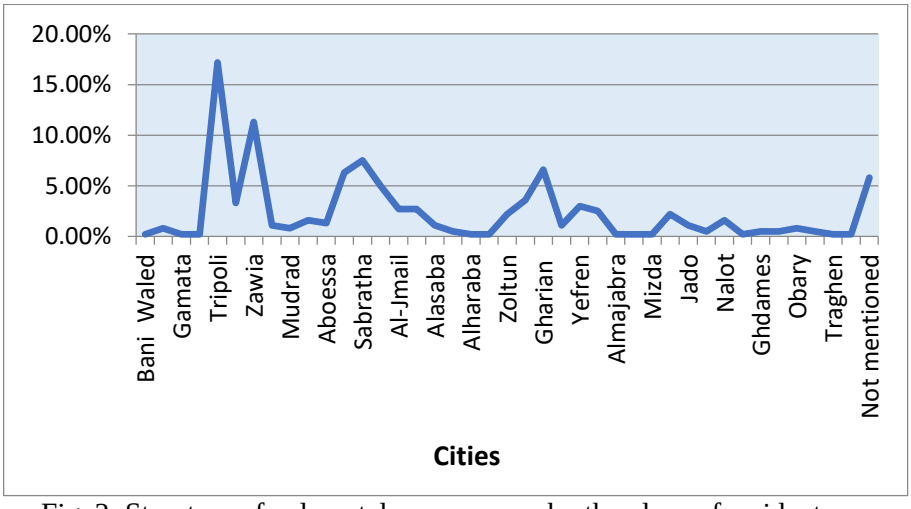

Fig. 2: Structure of colorectal cancer cases by the place of resident.

The analysis of study results by site cancer cells of colorectal cancer revealed that around 65.5% of cases had colon cancer (Figure3).

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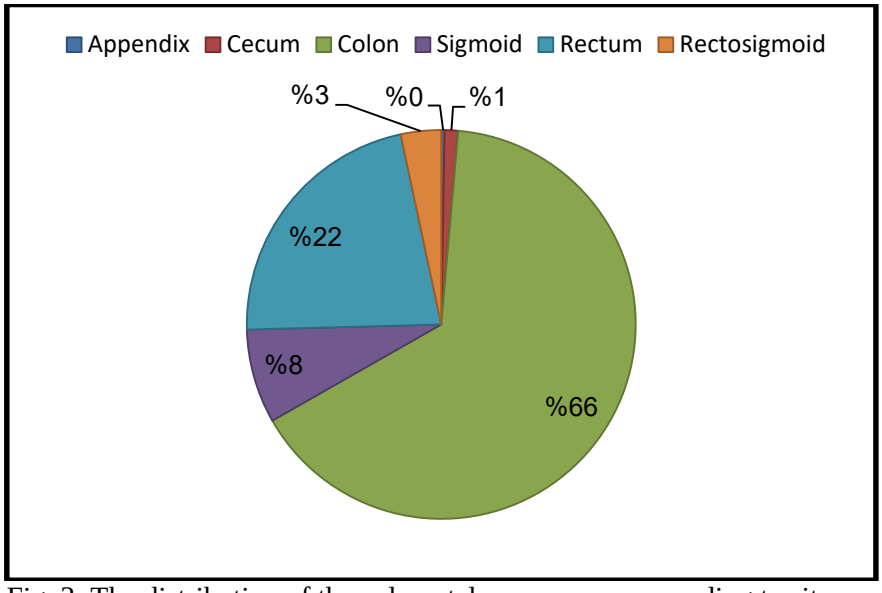

Fig. 3: The distribution of the colorectal cancer cases according to site.

The image (4) showed the most often used protocol, FOLFOX, by 18.6%.

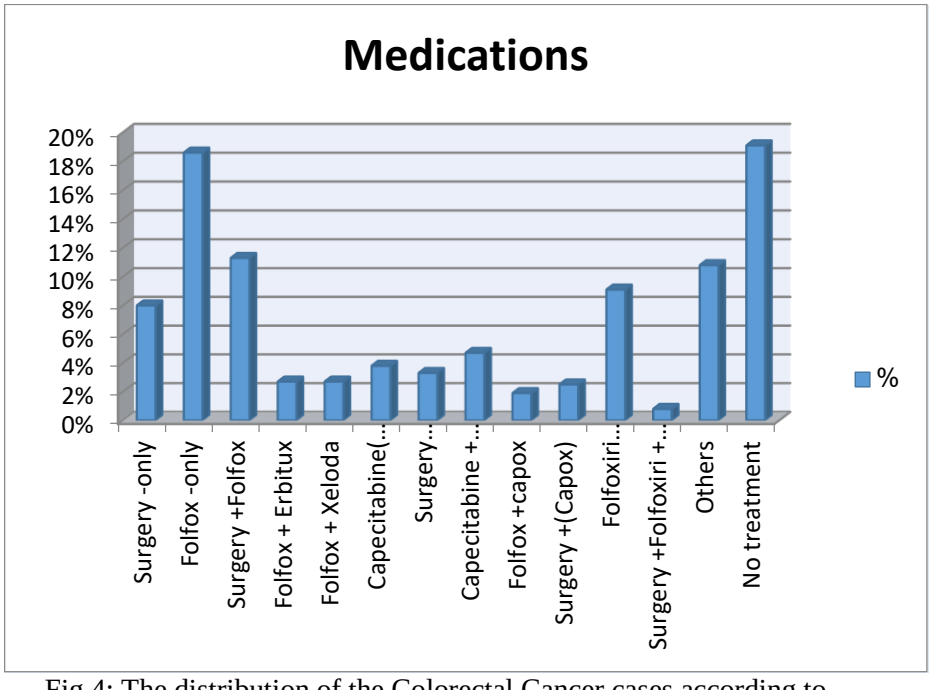

Fig.4: The distribution of the Colorectal Cancer cases according to medication.

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Discussion

The Sabratha National Cancer Institute's (NCI) analysis of the epidemiology data for colorectal cancer (CRC) over the last three years has yielded important insights into the trends of this type of cancer, including the demographic distribution of colorectal cancer, the most commonly used drugs, and areas that require targeted interventions. An examination of the cases by age group found that throughout the three years (2021-2023), around 24.6% of cases were under the age of 50, while 74.5% were above the age of 50 years. Additionally, from the data analysis in present study is the increasing incidence of CRC, particularly among aged between 50-59 &60-69 years this also consistent with (Azzam, K. *et, al*. 2022). Another study findings are consistent with study carried out in the Constanta Emergency Hospital are represented by Leopa N, *et al.* there were 62 older adults over 40 and only 19 younger people under 40, suggesting that CRC is more common in the elderly. Another study by Obeidat, K. *et, al*. 2023 utilizing information from the Surveillance, Epidemiology, and End Results (SEER) database, the study sought to examine patterns in CRC cases from 2000 to cancer cases from 2000 to 2019. CRC was found in 727,590 instances overall, with a little male predominance (51.8% male vs. 48.2% female), With a rise in incidence among younger age groups (18–25 years), showed a peak in 2002 and a fall in 2013(Obeidat, K. *et, al*. 2023).

Additionally, our study revealed a notable rise in infection rates among younger age groups, with those between the ages of 20 and 39 experiencing an increase of about 10%. Males were slightly more prevalent (54%) than females (46%), according to our statistics. All things considered, examining colorectal cancer by age group emphasizes how critical it is to comprehend the unique risk factors, tumor features, and therapeutic concerns for various age groups. This information can help guide focused preventative initiatives and individualized treatment plans to enhance the prognosis for everyone afflicted by the illness.

According to the table's data and a comparison of the number of male and female patients throughout the course of the three years, the number of men and women was nearly equal in 2021 and 2023. However, the proportion of sick men was higher than that of women in 2022.

According to an analysis of the study results by anatomical sites of CRC, the combined parts of the colon (ascending colon and hepatic

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flexure, transverse colon and splenic flexure, and descending colon) accounted for 66% of cases, with the cecum accounting for about 1%, the sigmoid colon for 8%, the rectosigmoid junction for 3%, and the rectum for 22% .This similar from right side shift reported in certain developed countries (Takada, H. *et, al*. 2002) and (Ponz de Leon, M. *et, al*. 2004).

On the other hand, the following is the distribution as stated by (Spanos, C. P. 2023). Cecum: 12%–17%, ascending colon: 7%–10%, rectum: 23%–32%, sigmoid colon: 23%–30%, descending colon: 3%, hepatic flexure: 3%, transverse colon: 5%–6%, and splenic flexure: 2%. The study by (Desai, K. et, al. 2023) states that 66% of all cases are caused by the ascending colon, transverse colon, descending colon, hepatic flexure, and splenic flexure. Furthermore, the sigmoid colon is the most frequent site, accounting for 34.41% of all cases. This distribution demonstrates how the incidence of CRC varies significantly depending on the anatomical location.

Variations in CRC cancer rates among residential groups could be a sign of disparities in access to healthcare and screening. Surman, Sabartha, and Alajeelat, which are close to the cancer institute, accounted for just 6%, 8%, and 5% of cases, respectively. In contrast, Tripoli and Zawia accounted for 17% and 11% of patients, respectively.

However, rural and remote places, such parts of southern Libya and the western mountains, have had low rates of CRC for example (Ghdames , Alriyayna , Alasaba, Wadi alhaya , Alharsha, Tarhona, Mutred) were around 0.5%) and for all of Bani Waled and Tege were (0.2%) . Uninhabited communities reside in these places, which exacerbates the situation by delaying screenings, resulting in late-stage diagnoses, and lowering survival rates. (Decker et al., 2024).

Therefore, surgery is the main treatment used alone after the CRC is limited and in its early stages (stages one and two). This makes it possible to remove the tumor completely without using adjuvant medications (Spanos, C. *et, al.* 2023). It was observed that only 8% of patients who had surgery at the NCI in Sabratha without chemotherapy did so, possibly as a result of the absence of routine screens for the early diagnosis of colorectal cancer.

According to the American Cancer Society states that the most common regimens are FOLFOX (5-FU, leucovorin, and oxaliplatin)

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or CAPEOX (capecitabine and oxaliplatin). However, depending on the patient's age and medical requirements, some patients may receive 5-FU in combination with leucovorin or capecitabine alone. Our study found that the percentage of patients on FOLFOX ,FOLOX+ surgery and CAPOX was 18.6%, 11.3% and 4.7%, respectively. According to Takemori, K. *et, al.* (2024) Triplet chemotherapy, such as FOLFOXIRI ± Bevacizumab, which improves the conversion of incurable to treatable disease, and it has demonstrated notable survival advantages. Subroto *et al*. (2023) found that patients with mCRC who had FOLFOXIRI therapy with bevacizumab had a better overall survival rate. Additionally, 9% of patients were found to be taking this combination.

For metastatic colorectal cancer (mCRC) patients who did not respond to first-line XELOX/FOLFOX regimens, Zhang, x. et al. state that the first head-to-head trial demonstrated that single-agent irinotecan produced PFS, OS, and ORR comparable to FOLFIRI, with a more favorable toxicity profile. As a result, it may be a more advantageous standard chemotherapy regimen. Even though just 2% of patients in our trial take first-line XELOX/FOLFOX, in this study did not observe irinotecan administered alone. It is suggested that the NCI Sabratha treatment protocol include irinotecan as a single drug. The current study found that the treatment approach changes based on the stage of CRC and in cases of significant toxicity. At an 11% rate, the medication regimens consist of courses of 5-FU and leucovorin, with or without a targeted drug ,Capecitabine, with or without a targeted drug, Irinotecan, with or without a targeted drug , Cetuximab.

Finally, knowing that approximately 19% of the cases were diagnosed as CRC at the NCI Sabratha, they did not receive any treatment within the institute. This may be due to some patients traveling to neighboring countries for treatment or other social reasons. Although Libya has been working to improve cancer diagnosis and treatment, the country has had a difficult time in recent years due to political unrest and conflict, which has had an impact on the healthcare system. As a result, the country continues to struggle to provide adequate cancer care.

Conclusion

To sum up, the results of this three-year data analysis on the demographic profile of colorectal cancer at the Sabratha National Cancer Institute offer important new information about the patterns

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and trends of this illness. Colon cancer is just as common in women as in men, and colorectal cancer at Sabratha National Cancer Institute is more common in older people and does not have an age preference. The illness typically manifests in its advanced stages. Lastly, the findings of this study may serve as baseline information for other research projects. Additionally, expanding health education and awareness regarding colorectal malignancies and implementing screening programs widely can result in early detection and greatly enhance the outcome.

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