

Delay in First Treatment Initiation and Associated Factors among Colorectal Cancer Patients at TikurAnbessa Specialized Hospital, Addis Ababa, Ethiopia: A Retrospective Cohort Study

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Abstract

Background: Colorectal cancer (CRC) is a major cause of morbidity and mortality worldwide. There is a paucity of data on the clinical and demographic characteristics of CRC patients and factors associated with delayed treatment initiation.

Methods: This retrospective cohort study was conducted in 274 patients with CRC from July 1st 2019 to July 1st 2022. Data were collected from medical records, including demographic and clinical characteristics, symptoms, diagnostic findings, treatment modalities, and treatment delay. Bivariate and multivariate logistic regression analysis was performed to determine factors associated with delayed treatment initiation.

Results: The mean age of onset for CRC was 47.7+/- 14.7 years, with a slight male predominance. Patients experienced an average duration of complaints of 9.8 months, with bleeding per rectum, bowel habit change, and a rectal mass being the most frequently reported symptoms. Over 90% of cases were diagnosed at advanced stages, with the rectum being the most commonly affected site. Only 35% of patients received multidisciplinary team (MDT) care for the initial treatment plan, and radiotherapy was the most frequently delayed treatment modality, with a mean delay of 164.4 days. Multivariate logistic regression analysis revealed that delayed treatment initiation was significantly associated with the first treatment modality.

Conclusion: This study highlights the clinical and demographic characteristics of CRC patients, and the high incidence of delayed treatment initiation, particularly for radiotherapy. Efforts should be made to increase awareness and screening for CRC, improve utilization of MDT care, and reduce delays in treatment initiation.

Keywords: Colorectal Cancer, Delay, Treatment Initiation, Multidisciplinary Team.

1. Introduction

Colorectal cancer (CRC) is a major public health concern, accounting for an estimated 1.9 million new cases and 935,000 deaths worldwide in 2020 [1]. In Ethiopia, CRC is one of the leading causes of cancer-related deaths, with an estimated incidence of 1,967 cases and 1,289 deaths in 2020 [2]. The incidence of CRC is increasing in Ethiopia, with a higher proportion of cases occurring in younger age groups compared to developed countries [3].

Delayed treatment of CRC is a significant challenge in Ethiopia, with many patients presenting at advanced stages of the disease,

resulting in poor outcomes [4,5]. Factors contributing to delayed treatment include limited access to healthcare facilities, inadequate screening programs, and lack of awareness about CRC among the general population and healthcare providers [6,7].

Ethiopia is a low-income country according to the world bank classification, with limited resources for cancer prevention, screening, and treatment. The country's healthcare system is underdeveloped, with a shortage of healthcare workers and inadequate infrastructure [8]. The lack of awareness about CRC among the general population and healthcare providers is also

a significant challenge in Ethiopia. This is compounded by the absence of screening programs and the limited availability of diagnostic tools, such as colonoscopies and imaging tests [9].

To address the challenges of delayed treatment and improve the management of CRC in Ethiopia, it is essential to identify the factors associated with delayed treatment. This study aims to investigate the factors associated with delayed treatment among Ethiopian patients with CRC.

Previous studies have identified various factors associated with delayed treatment of CRC, including patient-related factors, healthcare system-related factors, and tumor-related factors. Patient-related factors include socioeconomic status, knowledge about CRC, attitudes towards screening and treatment, and fear of cancer diagnosis [10,11]. Healthcare system-related factors include access to healthcare facilities, availability of diagnostic and treatment services, and referral systems [12,13]. Tumor-related factors include tumor size, location, and histological grade [14,15].

However, few studies have investigated the factors associated with delayed treatment of CRC in Ethiopia. The existing studies have reported a high proportion of patients presenting with advanced-stage disease, with delayed treatment being a significant contributor to poor outcomes [16,17]. Factors contributing to delayed treatment in Ethiopia include limited access to healthcare facilities, inadequate screening programs, and low awareness about CRC among the general population and healthcare providers [18,19].

The findings from this study could inform the development of targeted interventions to improve the management of CRC in Ethiopia. These interventions could include increasing awareness about CRC, improving access to healthcare facilities and diagnostic services, and developing effective screening programs.

In conclusion, CRC is a significant health concern in Ethiopia, with a high incidence and mortality rate. Delayed treatment of CRC is a major challenge in the country, contributing to poor outcomes for patients. Identifying the factors associated with delayed treatment among CRC patients is essential in developing effective strategies to improve the management of CRC in Ethiopia. The findings from this study could inform the development of targeted interventions that could have significant implications for the country's cancer care and public health policies.

1.1 Statement of the Problem

Colorectal cancer (CRC) is a major public health concern in Ethiopia, with a higher proportion of cases occurring in younger age groups compared to developed countries [16]. Delayed treatment of CRC is a significant challenge, with many patients presenting at advanced stages of the disease, resulting in poor outcomes. Factors contributing to delayed treatment include limited access to healthcare facilities, inadequate screening programs, and lack

of awareness about CRC among the general population and healthcare providers [7,16].

To improve the management of CRC in Ethiopia, it is essential to identify the factors associated with delayed treatment. However, few studies have investigated this issue in Ethiopia. Therefore, this study aims to investigate the factors associated with delayed treatment among Ethiopian patients with CRC.

Previous studies have identified various factors associated with delayed treatment of CRC, including patient-related factors, healthcare system-related factors, and tumor-related factors. Patient-related factors include socioeconomic status, knowledge about CRC, attitudes towards screening and treatment, and fear of cancer diagnosis [16]. Healthcare system-related factors include access to healthcare facilities, availability of diagnostic and treatment services, and referral systems [7,16]. Tumor-related factors include tumor size, location, and histological grade [4,5].

The findings from this study could inform the development of targeted interventions to improve the management of CRC in Ethiopia. These interventions could include increasing awareness about CRC, improving access to healthcare facilities and diagnostic services, and developing effective screening programs.

1.2 Significance of the Study

The significance of this study lies in its potential to improve the management of colorectal cancer (CRC) in Ethiopia by identifying the factors associated with delayed treatment. CRC is a major public health concern in Ethiopia, with a higher proportion of cases occurring in younger age groups compared to developed countries. Delayed treatment of CRC is a significant challenge, with many patients presenting at advanced stages of the disease, resulting in poor outcomes.

By identifying the factors associated with delayed treatment, this study could inform the development of targeted interventions to improve CRC management in Ethiopia. These interventions could include increasing awareness about CRC, improving access to healthcare facilities and diagnostic services, and developing effective screening programs.

Moreover, this study can contribute to the body of knowledge on CRC management in low- and middle-income countries, where patient quality of care and survival rates are lower than those in developed countries. The findings from this study could be useful for designing interventions to improve the management of CRC in other low- and middle-income countries facing similar challenges.

Overall, this study has the potential to improve the quality of life and survival rates of CRC patients in Ethiopia and contribute to the global efforts to reduce the burden of CRC in low and middle income countries.

2. Objectives

2.1 General Objective

The general objective of this study is to assess the prevalence of delayed treatment and associated factors for patients with colorectal carcinoma after diagnosis is confirmed from July 1, 2019, to July 1, 2022, in TASH, Addis Ababa, Ethiopia.

2.2 Specific Objectives

1. To determine the prevalence of delayed treatment for colorectal cancer patients in TASH.
2. To identify the factors contributing to delayed treatment of colorectal cancer, including patient-related factors, healthcare system-related factors, and tumor-related factors.
3. To evaluate the impact of delayed treatment on clinical outcomes, including tumor stage and patient survival.
4. To provide recommendations for improving the management of colorectal cancer in Ethiopia, including strategies to reduce treatment delays and improve patient outcomes.

3. Methodology

3.1 Study Area and Period

This retrospective cohort study was conducted at TASH, a tertiary teaching hospital located in Addis Ababa, Ethiopia. The study period was from July 1, 2019, to July 1, 2022.

Study Design: A retrospective cohort study design was employed to assess the prevalence of delayed treatment and associated factors for patients with colorectal carcinoma after diagnosis is confirmed.

3.2 Source and Study Population

The source population included all patients diagnosed with colorectal cancer who visited the surgical referral clinic/ward and oncology clinic at TASH during the study period. The study population comprised all patients who met the inclusion criteria and visited the surgical referral clinic/ward and oncology clinic with a confirmed diagnosis of colorectal cancer during the study period.

3.3 Inclusion and Exclusion Criteria

The inclusion criteria for the study were patients diagnosed with colorectal cancer to which curative and/or palliative surgical/Oncologic treatment was applied for the first time.

The exclusion criteria were patients with incomplete data, those who underwent emergency surgery, and those who did not receive treatment at TASH

3.4 Sample Size and Sampling Technique

A retrospective cohort study design was employed to assess the prevalence of delayed treatment and associated factors for patients with colorectal carcinoma at TASH, a tertiary teaching hospital in Addis Ababa, Ethiopia. The study period spanned from July 1, 2019, to July 1, 2022.

Consecutive sampling was utilized to select the study participants.

The source population comprised all patients diagnosed with colorectal cancer who visited the surgical referral clinic/ward and oncology clinic during the study period. All eligible patients who met the inclusion criteria and presented themselves for treatment at TASH were included in the study. This sampling technique ensured a representative sample of patients diagnosed with colorectal cancer at the hospital within the specified time frame.

Data were collected from the medical records of the study participants using a structured data extraction form. The data extraction form included information on patient demographics, tumor characteristics, treatment modalities, and time intervals between diagnosis and treatment initiation. The medical records were reviewed by trained medical professionals who were not involved in the patient care.

3.5 Data Analysis

Data were entered into EpiData version 4.6 and analyzed using SPSS version 26. Descriptive statistics were used to summarize the data. The prevalence of delayed treatment was calculated as the proportion of patients who did not receive treatment within 60 days of diagnosis. Logistic regression analysis was used to identify the factors associated with delayed treatment.

3.6 Ethical Considerations

Ethical approval was obtained from the Institutional Review Board of Addis Ababa University, College of Health Sciences. Informed consent was not required as the study was retrospective and involved only a review of medical records. Patient confidentiality was maintained by using unique identifiers instead of patient names in the data extraction form.

It should be noted that this is a retrospective cohort study of patients presented to a specialized hospital and diagnosed with colorectal cancer. The actual prevalence and factors associated with delayed treatment of CRC in the general population may be different than what was found in this study.

3.7 Variables

3.7.1 Dependent Variable

The dependent variable in this study is delayed first treatment, which is defined as the time between diagnosis and initiation of treatment exceeding 60 days.

3.7.2 Independent Variables

The independent variables in this study include sex, residence, stage, MDT discussion, tumor location, type of first treatment, comorbidity, and family history.

3.7.3 Data Collection Procedure

Data were collected using a structured questionnaire that was developed in English, translated into Amharic, and back-translated into English to ensure consistency. The questionnaire included information on sociodemographic variables (age, sex, residence), stage, MDT discussion, tumor location, type of first

treatment, co-morbid illness, family history, clinical presentations, histological findings, durations of complaint, and duration of delay after diagnosis. The questionnaire was adapted from a standard questionnaire and previous studies.

3.7.4 Data Analysis and Processing

Data were checked manually for completeness and consistency. The collected data were coded and entered into SPSS version 25 for data processing and analysis. Descriptive statistics such as frequency distribution and percentages were used to describe the demographic characteristics of the study population. Binary logistic regression was used to measure the association of each independent variable with the dependent variable. Factors that were found to have an association with the outcome variable were included in the multivariable logistic regression analysis to control for potential con-founders. The results of the final model were expressed in terms of adjusted odds ratios (AOR) and 95% confidence intervals (CI), and statistical significance was declared if the p-value was less than 0.05.

3.7.5 Data Quality Control

To maintain the quality of the data, the data collectors and supervisors were trained for one day. The data collectors were residents. The project coordinator provided ongoing supervision and reviewed each completed data during the data collection period to ensure the quality of the data by checking filled formats for their completeness and consistency. The data collection instrument was pretested on 5% of the sample size before data collection in the study area, and any errors or ambiguities on the questionnaire were corrected and modified.

3.8 Operational Definitions

First Diagnosis: The date when histological confirmation of colorectal cancer is obtained.

Treatment Delay: The time elapsed between the date of first diagnosis and the initiation of treatment exceeding 60 days.

3.9 Staging

The extent of colonic cancer was determined using the 8th edition of the American Joint Committee on Cancer (AJCC) Cancer Staging Manual. All participants underwent diagnostic imaging, including computed tomography (CT) scans and/or magnetic resonance imaging (MRI), to assess the size and location of the tumor, as well as the presence of regional lymph node involvement or distant metastases. The imaging results were reviewed by experienced radiologists and oncologists to determine the cancer stage based on the TNM classification system.

The AJCC staging system was chosen for its widespread use and established prognostic value, and was applied consistently across all study participants. The staging information was collected and analyzed in a standardized manner to ensure accuracy and reliability.

3.10 Ethical Considerations

Ethical clearance was obtained from the Institutional Review Board (IRB) of Addis Ababa University, College of Health Sciences and School of Medicine. The research protocol and data collection procedures were reviewed and approved by the IRB. Participants' personal identifiers, such as names and phone numbers, were not included in the questionnaire to ensure confidentiality and privacy. Informed consent was not required as the study was retrospective and involved only a review of medical records. However, the study adhered to ethical principles, including respect for autonomy, beneficence, non-maleficence, and justice.

4. Results

The study findings indicate that the mean age of onset for Colorectal cancer (CRC) was 47.7 +/- 14.7 years, with a broad age range spanning from 13 to 87 years. While there was a slight male predominance, accounting for 52.9% of cases, the difference was not statistically significant. Moreover, the data did not reveal any significant evidence of familial inheritance (Table 1).

| Item | Respond | |
|--------------|---------------------|---------------|
| Age | Mean±SD (year) | 47.7 ±14.7 |
| | Range (year) | 74 (13 - 87) |
| | | Percentage |
| Sex | Male | 145(52.9%) |
| | Female | 129(47.1%) |
| Residence | Addis Ababa | 141(51.5%) |
| | Outside Addis Ababa | 133(48.5%) |
| Smoking | Current | 10(3.6%) |
| | Ex-smoker | 3(1.1%) |
| | None | 261(95.3%) |
| Co morbidity | Yes | 49(17.9%) |
| | No | 225(82.1%) |

| | | |
|----------------|-----|------------|
| Family history | Yes | 5(1.8%) |
| | No | 269(98.2%) |

Table 1: Sociodemographic Characteristics of the Colorectal Patients at Tikur Anbessa Specialized Hospital (TASH), Addis Ababa, Ethiopia, 2022

| Item | Respond | Percentage |
|-----------------------|-----------------------------|------------|
| Duration of illness | Median (month) | 9.8 |
| Clinical presentation | Rectal bleeding | 150(54.7%) |
| | Abdominal pain | 101(36.9%) |
| | Weight loss | 85(31%) |
| | Tenesmus | 92(33.6%) |
| | Change bowel habit | 142(51.8%) |
| | Symptoms of obstruction | 42(15.3%) |
| | Mass per rectal examination | 164(59.9%) |
| | Anemia | 82(29.9%) |
| | Abdominal mass | 11(4%) |
| | Sign of obstruction | 52(19%) |
| Location | Colon | 68(24.8%) |
| | Rectosigmoid | 40(14.6%) |
| | Rectum | 166(60.6%) |
| Histology | Adenocarcinoma | 265(96.7%) |
| | Others | 7(2.6%) |
| | Unknown | 2(0.7%) |
| Stage (AJCC) | Stage I | 0 |
| | Stage II | 27(9.9%) |
| | Stage III | 151(55.1%) |
| | Stage IV | 96(35%) |
| Pretreatment CEA | Normal | 103(37.6%) |
| | Elevated | 146(53.3%) |
| | Unknown | 25(9.1%) |

Table 2: Clinical presentations of the Colorectal Patients in TASH, Addis Ababa, Ethiopia, 2022

The study results indicate that patients with colorectal cancer (CRC) experienced an average duration of complaints of 9.8 months. The most frequently reported symptoms were bleeding per rectum (54.7%), bowel habit change (51.8%), and a mass detected during rectal examination (59.9%). Notably, more than 90% of the CRC cases were diagnosed at advanced stages, with stage III accounts for 55.3% of cases and stage IV accounting for 35%. The rectum was the most commonly affected site, representing 60.6% of cases, followed by the rectosigmoid region at 14.6% (Table 2). These findings highlight the importance of early detection and intervention in the management of CRC, particularly given the high incidence of advanced-stage diagnosis in this study population.

The study findings reveal that only 35% of colorectal cancer (CRC)

patients were presented to the multidisciplinary team (MDT) decision for the initial treatment plan. Among those who received treatment, the first modality was chemotherapy in 47.7% of cases, surgery in 39%, and radiotherapy in 17.2% of cases.

Moreover, the study highlights that over 76% of CRC patients experienced delayed treatment initiation after diagnosis confirmation. Of note, radiotherapy was the most frequently delayed treatment, with delays ranging from 5 to 848 days for the first treatment. The mean duration for radiotherapy to commence was notably longer than for other modalities, with a mean delay of 164.4 days, compared to 80.7 days for chemotherapy and 67.8 days for surgery (Table 3).

| Item | Response | Percentage |
|----------------------------------|-----------------|------------------|
| MDT discussion | Yes | 96(35%) |
| | No | 178(65%) |
| First treatment | Chemotherapy | 130(47.7%) |
| | Radiotherapy | 47(17.2%) |
| | Surgery | 97(35.4%) |
| Chemotherapy(N=130) | Neoadjuvant | 51(39%) |
| | Palliative | 79(61%) |
| Radiotherapy(N=47) | Neoadjuvant | 39(82.9%) |
| | Palliative | 8(17.1%) |
| Surgery(N=97) | Curative intent | 77(79.3%) |
| | Palliative | 20(20.7%) |
| Delay in days | Mean | 90.6 |
| Class of delay | Delayed | 209(76.3%) |
| | Normal | 65(23.7%) |
| Chemotherapy (N=130) | Delayed | 106(81.5%) |
| Radiotherapy (N=47) | Delayed | 42(89.4%) |
| Surgery (N=97) | Delayed | 61(62.6%) |
| Duration for Chemotherapy (days) | Mean | 80.7 |
| | Range | 311 (3-314 Days) |
| Duration for Radiotherapy(days) | Mean | 164.4 |
| | Range | 843(5-848 Days) |
| Duration for Surgery(days) | Mean | 67.8 |
| | Range | 430(2-432 Days) |

Table 3: Treatments of the Colorectal Patients in TASH, Addis Ababa, Ethiopia, 2022

The study conducted Bivariate logistic regression analysis to determine the association between delayed treatment and several variables, including sex, residence, comorbidity, cancer stage, family history, tumor location, MDT discussion, and first treatment modality. The analysis revealed that MDT discussion, tumor location, and first treatment modality had a p-value of less than 0.2, indicating a potential association with treatment delay.

As a next step, multivariate logistic regression analysis was performed to investigate the relationship between delayed treatment and MDT discussion, tumor location, and first treatment modality. The results showed that surgery as the first treatment modality had a statistically significant association with treatment delay. . (AOR: 0.37(95%CI: 0.22-0.69, P<0.002) (Table 4).

| Item | Parameter | COR(95%CI) | AOR(95%CI) | P vale |
|--------------------|-----------|--------------------|----------------|--------|
| Sex | male | 0.81(0.46-1.14) | - | |
| | Female | 1 | - | |
| Place of residence | AA | 0.75(0.43-1.31) | - | - |
| | Outside | 1 | - | |
| Co morbidity | yes | 0.73 (0.366-1.47) | - | - |
| | No | 1 | - | - |
| Stage | Stage II | 1 | - | |
| | Stage III | 1.39(0.56-3.46) | - | |
| | Stage IV | 1.4(0.56-3.67) | - | |
| Tumor location | Colon | 0.9(0.46-1.76) | 1.25(0.6-2.57) | 0.55 |

| | | | | |
|-----------------|---------------|-----------------|-----------------|--------|
| | Recto sigmoid | 0.57(0.27-1.23) | 0.74(0.34-1.65) | 0.15 |
| | Rectum | 1 | 1 | |
| MDT discussion | Yes | 1.71(0.92-3.19) | 1.63(0.82-3.24) | 0.16 |
| | No | 1 | 1 | |
| First treatment | Chemotherapy | 1 | 1 | |
| | Radiotherapy | 1.9 (0.68-5.32) | 1.6(0.52-4.7) | 0.4 |
| | Surgery | 0.38 (0.21-0.7) | 0.37(0.22-0.69) | 0.002* |

Table 4: Multivariate Logistic Regression for Delayed Colorectal Patients' Treatments, TASH, 2022

5. Discussion

The findings of the study suggest that colorectal cancer (CRC) can affect individuals across a broad age range, with the mean age of onset being 47.7 +/- 14.7 years. This is consistent with previous studies that have shown that CRC can occur at any age, although the incidence increases with age [21].

In terms of sex distribution, the study found a slight male predominance, accounting for 52.9% of cases. However, this difference was not statistically significant, which is consistent with previous studies that have shown no significant gender differences in CRC incidence [20, 21].

The study did not reveal any significant evidence of familial inheritance of CRC. This is somewhat surprising, as previous studies have shown that up to 20% of CRC cases have a familial component [20]. However, it is possible that the sample size of the study was not large enough to detect a significant familial component.

The findings of the study suggest that CRC can affect individuals across a broad age range, with no significant gender differences in incidence. The lack of significant evidence of familial inheritance in this study is somewhat surprising but may be due to the limitations of the sample size. Further research is needed to better understand the role of familial inheritance in CRC.

The study results suggest that patients with colorectal cancer (CRC) experience a prolonged duration of complaints before diagnosis, with an average of 9.8 months. This is consistent with previous studies that have shown that CRC symptoms can be vague and nonspecific, leading to delayed diagnosis [22].

The most frequently reported symptoms in this study were bleeding per rectum (54.7%), bowel habit change (51.8%), and a mass detected during rectal examination (59.9%). These symptoms are consistent with the classic triad of symptoms associated with CRC, which includes rectal bleeding, change in bowel habits, and abdominal pain [22].

Notably, more than 90% of the CRC cases in this study were diagnosed at advanced stages, with stage III accounting for 55.3% of cases and stage IV accounting for 35%. This is a

concerning finding, as early detection and intervention are crucial for improving outcomes in CRC patients. Previous studies have shown that early-stage CRC has a better prognosis than advanced-stage disease [21].

The rectum was the most commonly affected site in this study, representing 60.6% of cases, followed by the rectosigmoid region at 14.6%. This is consistent with previous studies that have shown that the rectum is the most common site of CRC, accounting for approximately 30% of cases [21].

The findings of the study underscore the importance of early detection and intervention in the management of CRC. The prolonged duration of complaints and high incidence of advanced-stage diagnosis in this study population highlights the need for increased awareness and screening for CRC. Clinicians should be aware of the classic triad of symptoms associated with CRC and consider early referral for diagnostic evaluation in patients with these symptoms.

The study findings suggest that a relatively low proportion of colorectal cancer (CRC) patients were presented to a multidisciplinary team (MDT) for the initial treatment plan, with only 35% of patients receiving this type of care. This is concerning, as MDTs have been shown to improve treatment decision-making, reduce delays in treatment initiation, and improve patient outcomes in CRC [23].

Among patients who received treatment, the first modality was chemotherapy in 47.7% of cases, surgery in 39%, and radiotherapy in 17.2% of cases. This is consistent with current treatment guidelines for CRC, which recommend surgery as the primary treatment modality for resectable tumors, with adjuvant chemotherapy or radiotherapy used in selected cases [24].

The relatively low proportion of patients receiving MDT care in this study may be due to several factors, including lack of awareness among healthcare providers, lack of resources, and logistical challenges in coordinating care. However, it is important to note that MDT care is an essential component of high-quality cancer care, and efforts should be made to ensure that all CRC patients receive this type of care.

The findings of the study suggest that MDT care is underutilized in the management of CRC, with only 35% of patients receiving this type of care. The most common treatment modalities in this study were consistent with current treatment guidelines for CRC, with surgery being the primary treatment modality. Efforts should be made to increase the utilization of MDT care in the management of CRC, as this has been shown to improve treatment decision-making and patient outcomes.

The study findings suggest that a significant proportion of colorectal cancer (CRC) patients experienced delayed treatment initiation after diagnosis confirmation, with over 76% of patients experiencing delays. This is a concerning finding, as delayed treatment initiation has been associated with worse outcomes in CRC patients, including higher mortality rates [26].

Notably, radiotherapy was the most frequently delayed treatment modality in this study, with delays ranging from 5 to 848 days for the first treatment. The mean duration for radiotherapy to commence was significantly longer than for other modalities, with a mean delay of 164.4 days, compared to 80.7 days for chemotherapy and 67.8 days for surgery.

The reasons for delayed treatment initiation can be multi factorial, including patient-related factors (such as fear, lack of awareness, and financial barriers), healthcare system-related factors (such as delays in referral and scheduling), and provider-related factors (such as communication breakdowns and lack of coordination). However, the longer mean delay for radiotherapy may be due to logistical challenges in coordinating care, as radiotherapy typically requires specialized equipment and facilities, as well as trained personnel [25].

Efforts should be made to reduce delays in treatment initiation for CRC patients, particularly for radiotherapy, which appears to be the most frequently delayed treatment modality in this study. This may involve improving referral processes, reducing scheduling delays, and improving coordination among healthcare providers. Additionally, interventions targeting patient-related factors, such as improving patient education and reducing financial barriers, may also be beneficial in reducing delays in treatment initiation.

In conclusion, the findings of the study highlight the high incidence of delayed treatment initiation in CRC patients, particularly for radiotherapy. Efforts should be made to reduce delays in treatment initiation for all treatment modalities, as this has been associated with better outcomes in CRC patients.

5.1 The limitations of this Study Include

Retrospective design: The study was conducted retrospectively, which means that the researchers had to rely on data that was already collected in medical records. This may limit the ability to collect additional information or verify the accuracy of the data.

Single-center study: The study was conducted in a single center,

which may limit the generalizability of the findings to other populations or settings.

Small sample size: The sample size of the study was relatively small (274 patients), which may limit the statistical power of the analyses and increase the risk of type II errors.

Selection bias: The study may have suffered from selection bias, as it only included patients who were diagnosed and treated at the study center. This may limit the ability to draw conclusions about the characteristics and treatment of all CRC patients in the wider population.

Missing data: The study may have been limited by missing data, as some variables may not have been documented in the medical records or were incomplete. This may limit the ability to draw conclusions about the relationship between certain variables and delayed treatment initiation.

6. Conclusion

The study findings indicate that colorectal cancer (CRC) can affect individuals of various age groups, with no significant gender differences in incidence. The majority of CRC cases were diagnosed at advanced stages, emphasizing the need for early detection and intervention. Delayed treatment initiation and underutilization of multidisciplinary team (MDT) care were observed, highlighting the importance of reducing delays and increasing access to comprehensive care for CRC patients. Improving coordination among healthcare providers and addressing patient-related barriers are essential in optimizing CRC management and improving patient outcomes.

Conflict of Interest

No conflict of interest or Declaration.

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