

DIFFERENT CLINICAL PRESENTATIONS OF PATIENTS WITH COLORECTAL CANCER VISITING BAHAWAL VICTORIA HOSPITAL, BAHAWALPUR

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Abstract

The incidence of colorectal cancer (CRC) is on the rise, and delay in diagnosis is a great problem in clinical practice in Pakistan. The purpose of this study was to find the clinical presentation of CRC and to investigate the relationship of clinical presentation with demographic and pathological parameters in patients in the southern region of Punjab. In Bahawal Victoria Hospital in Bahawalpur, Pakistan, a descriptive cross-sectional study was carried out from February 2025 to June 2025. The patients were CRC patients with consecutively collected non-probability sampling, giving a total of 105 patients. Clinical manifestations, demographic data, and TNM stage were noted. Descriptive statistics were computed, and stratified analysis with Fisher's exact test or chi-square test, as appropriate, was conducted. The mean age of participants was 58.69 ± 7.91 years, and 65.71% were male. The most common tumour stage was stage III (41.90%), stage II (31.43%), and stage I (26.67%). The common clinical presentations were bleeding per rectum (86.67%), altered bowel habit (72.38%), anaemia (33.33%), weight loss (24.76%), and abdominal mass (19.05%). No statistically significant differences were seen between any clinical presentation and age, gender, or tumour stage ($p > 0.05$). The common presenting features were bleeding per rectum and change in bowel habits in this cohort. The high percentage of stage III disease indicates late presentation and highlights the need to increase awareness levels of symptoms and signs of lower gastrointestinal disease, particularly colorectal cancer, and establish organised screening programmes in southern Punjab.

1. Introduction

Colorectal cancer (CRC) is a major malignancy in the world in terms of incidence, with 10% of all cancer cases, and in terms of cancer-related mortality, with 9% of all cancer-related deaths worldwide¹. The burden is not even and has increased in South Asia and other regions experiencing a transition in socioeconomic status.³

The incidence of CRC has increased in the last 2 decades in Pakistan. There is a mean age at presentation of 46.5 years in studies from major tertiary centres, compared with 65–70 years in the West, and a high proportion of presentations at an advanced stage: in the region, 72.5% were left-sided tumours.

CRC often mimics other, non-cancerous conditions, such as haemorrhoids, IBS, and inflammatory bowel disease, and a high index of clinical suspicion is important, especially in areas without organised screening programmes.^{2,6,7}

The most common symptom is rectal bleeding, but this symptom alone is not sufficiently specific or sensitive, as 19% of people attending general practice each year report such bleeding, with about 97% of these not having cancer.⁸ Referral guidelines identify rectal bleeding combined with altered bowel habits as the strongest indication for urgent specialist evaluation.^{9,10}

Altered bowel habits, including diarrhoea, constipation, or an alternating pattern, are commonly associated with left-sided and rectal tumours due to luminal narrowing. Their diagnostic value increases significantly when combined with rectal bleeding, especially in patients over 50 years.^{11,12}

often called a red flag symptom, when weight loss is becoming higher than 10% of the whole-body weight, signifying advanced illness. It is an independent indicator of decreased overall survival in people with colorectal cancer.^{14,15}

Abdominal mass is a less common presentation, typically indicating locally advanced disease, and is more frequently encountered with right-sided colonic tumours. The identification of this ailment requires an urgent need radiological analysis.

Considering the fluctuations of the reported frequencies of presentation across various regions, highlighting the essential requirement of local data.^{16,17,18} No reliable data are available on the pattern of presentation of CRC in southern Punjab, which is a pressing concern to have locally generated data to inform symptom-based diagnostic pathways.

Therefore, the purpose of this study was to ascertain how frequently patients with colorectal cancer who visited Bahawal Victoria Hospital in Bahawalpur experienced various clinical manifestations, such as altered bowel habits, bleeding per rectum, weight loss, abdominal mass, and anaemia. Moreover, the present investigation aims to characterised the TNM stage distribution and demographic variable such as gender and age distribution, followed by the assessment of association between pathological attributes or patient profiles (i.e. demographic) and clinical presentations employing stratified analysis.

2. Material and Methods

2.1 Study Design and Setting

This cross-sectional and descriptive study was conducted in the Department of Surgery at Bahawal Victoria Hospital, a substantial teaching hospital at the tertiary level affiliated with Quaid-e-Azam Medical College in Bahawalpur. The hospital is a major referral hospital for all the districts of the Bahawalpur division and its adjacent regions of southern Punjab.

Following approval by the Institutional Review Board (IRB), the research was performed between February 2025 and June 2025.

2.2 Sample Size Calculation

The WHO formula for estimating a single proportion was used to get the sample size:

$$n = Z^2 \times p \times q / d^2$$

Where:

$Z = 1.96$ (for 95% confidence interval)

p = Anticipated proportion = 11% (0.11), based on the reported frequency of bleeding per rectum in a previous study¹⁶

$q = 1 - p = 0.89$

d = Precision required = 0.06

$$n = (1.96)^2 \times 0.11 \times 0.89 / (0.06)^2$$

$$n = 3.8416 \times 0.0979 / 0.0036$$

$$n = 0.3761 / 0.0036$$

$$n = 104.47 \approx 105$$

A total of 105 patients were included in the study. When the protocol was developed, there was no published population-based prevalence data on any single CRC symptom from southern Punjab or similar centres in Pakistan, so this international estimate was used. The conservative number was chosen to obtain an adequate sample size to give sufficient statistical power to detect the primary presentation even at the lowest expected. Prevalence used for sample size estimation was much lower than the prevalence observed in our cohort (86.67%), resulting in narrower confidence intervals and increased precision than was originally expected.

2.3 Sampling Technique

Consecutive, non-probability sampling was employed. Patients who satisfied the inclusion criteria were enrolled one after the other until the target number of patients was attained. Consecutive sampling, however, is a non-probability sampling technique that may lead to selection bias and limit generalisability to a broader population. When analysing the results, this limitation needs to be considered.

2.4 Sample Selection

Inclusion Criteria:

- Both male and female patients
- Age between 30 and 70 years; identified as a case of colorectal cancer based on an abdominal CT scan and verified by histopathology
- Pathological diagnosis of colorectal cancer (stage 0-IV)

Exclusion Criteria:

- Patients who have had prior colorectal cancer treatment
- Patients with known hereditary cancer syndromes or concurrent other malignancies
- Patients with severe comorbidities precluding clinical evaluation, or those unable to provide informed consent

There were no patients with Stage IV colorectal cancer enrolled over the study period, as metastatic patients were usually referred immediately to the oncology department for palliative or systemic treatment in this centre. Therefore, only Stages I-III were included in the final cohort, which could limit the clinical presentations characterised in metastatic disease.

2.5 Data Collection

Following ethical review committee permission, 105 patients who visited Bahawal Victoria Hospital's Surgical Outpatient Department in Bahawalpur with inclusion criteria were enrolled; informed written consent was obtained from all patients. Demographic data (age and sex) and clinical presentation of altered bowel habits, bleeding per rectum, anaemia, weight loss, and abdominal mass were recorded on a structured case sheet (proforma) for each patient.

2.6 Operational Definitions

Colorectal cancer was confirmed by histopathological examination of tissue biopsy specimens. Bleeding per rectum was described as blood passage per rectum, whether alone or along with stool, identified on clinical history and physical examination. Altered bowel habits comprised diarrhoea, constipation, or an alternating pattern persisting for more than three months, as specified in the study protocol. Anaemia was defined as haemoglobin below 10 g/dL on complete blood examination at presentation, in accordance with the threshold specified in the CPSP-approved study protocol. Abdominal mass was defined as a palpable abdominal growth confirmed on CT scan as circumferential thickening of the colonic or rectal wall. Weight loss was defined as inadvertent weight loss of more than 10% of the original body weight at presentation, as documented in clinical records and per the study protocol.

2.7 Statistical Analysis

The data for present study was processed and assessed employing the SPSS (i.e. version 25; Armonk, IBM Corp., USA, NY). Moreover, descriptive tests were performed on the datasets

involving standard deviation and mean for continuous variables (such as age) and frequencies (i.e. percentage) for categorical factors (such as tumour stage, gender and clinical presentation). However, tumour stage, gender and age were taken as a significant stratification variable while subgroup investigation was conducted. Following stratification, chi-square test was performed with Fisher's exact test (i.e. only when expected cell frequency recorded less than five counts). A statistically significant p-value was defined as ≤ 0.05 . The Shapiro-Wilk test was used to determine whether the continuous variable (age) was normal.

The present analysis admittedly only included chi-square tests, frequencies, and percentages. Considering odds ratios and logistic regression modelling with 95% confidence intervals would have added robustness to the analysis, but this was not part of the original study protocol. These methods should be included in future studies for

improved quantification of the magnitude of associations between clinical presentation and demographic/tumour related variables.

The study was carried out in one tertiary care referral centre, so there may be inherent referral bias, and the patients may have been more advanced and complicated cases than the general population. This needs to be taken into account when reading the results.

3. Results

3.1 Age Distribution

Over the six-month study period, 105 patients with histopathologically confirmed colorectal cancer were enrolled. The age range of the patients was from 30 to 70 years, with a mean age of 58.69 ± 7.91 years. Most of the patients belonged to the age group 51-60 years (36.19%), and the distribution was in favour of the sixth decade and seventh decade of the patients' age.

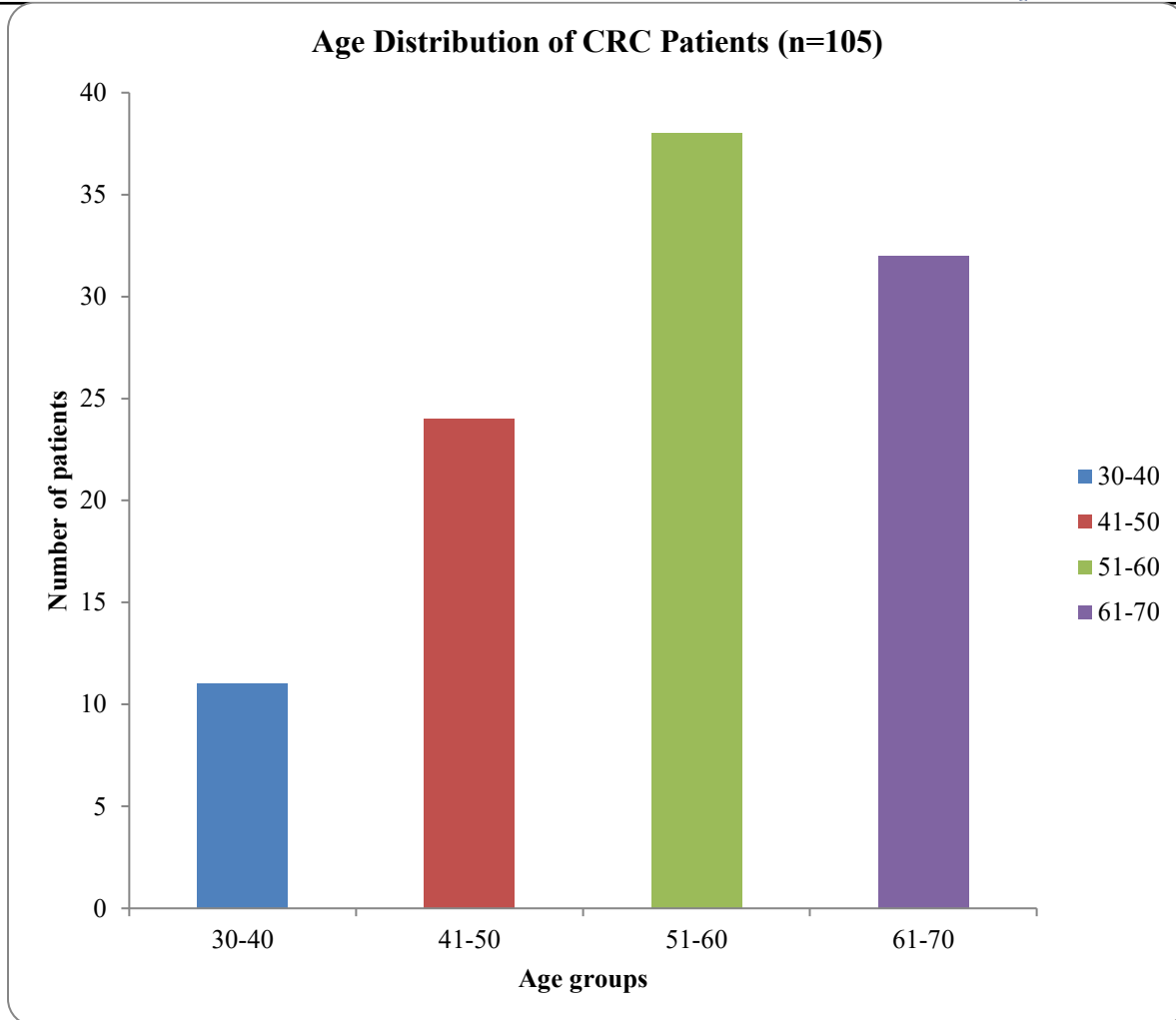


Figure 1: Bar chart presenting age distribution of colorectal cancer patients (n=105).

3.2 Gender Distribution

For the entire study population, males (65.71%, n=69) outnumbered females (34.29%, n=36) with a male/female ratio of about 2:1.

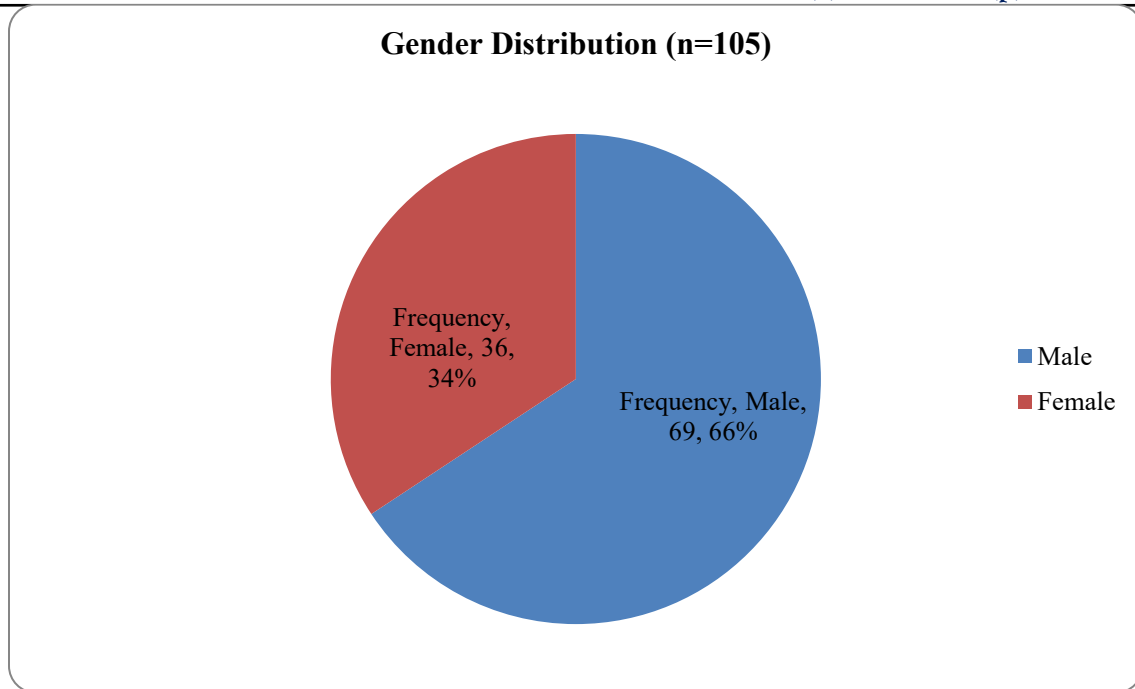


Figure 2: Pie chart showing gender distribution (n=105).

3.3 TNM Staging

The Stage III patients were the most numerous (41.90%), followed by Stage II (31.43%) and Stage I (26.67%).

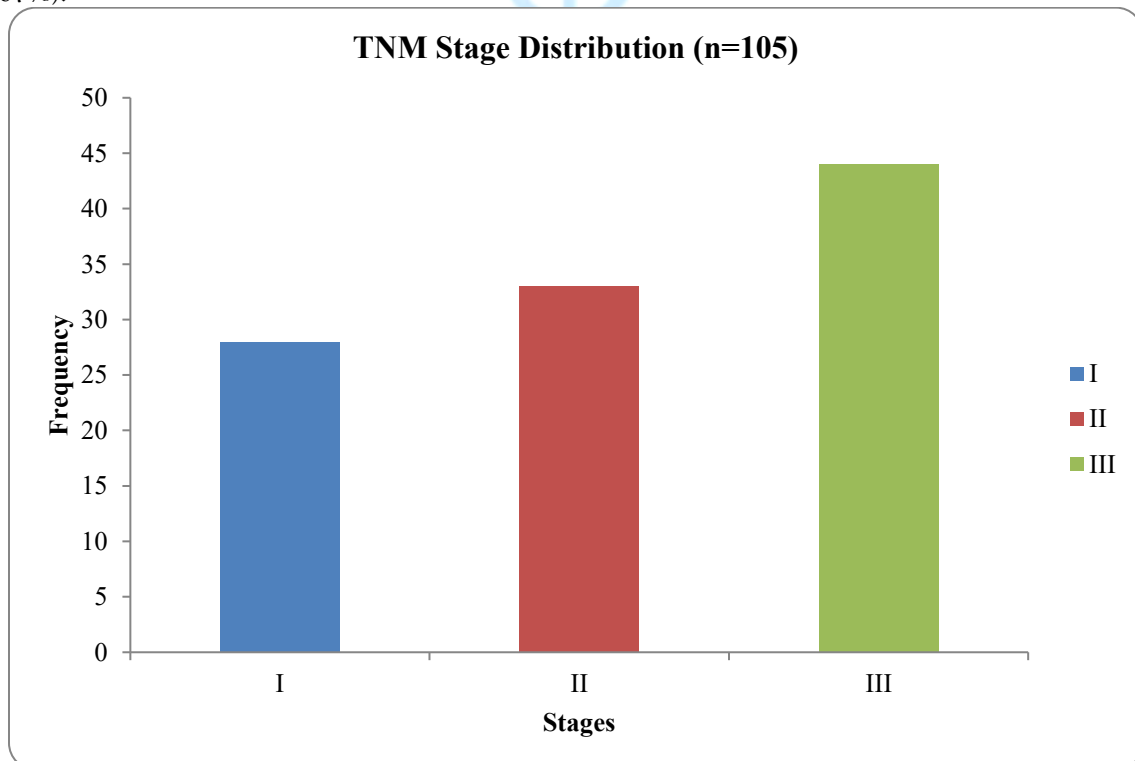


Figure 3: Bar chart showing TNM stage distribution (n=105).

3.4 Frequency of Clinical Presentations

The most frequent clinical manifestation was bleeding per rectum, observed in 91 patients (86.67%), followed by altered bowel habits (n=76,

72.38%), anaemia (n=35, 33.33%), weight loss (n=26, 24.76%), and abdominal mass (n=20, 19.05%).

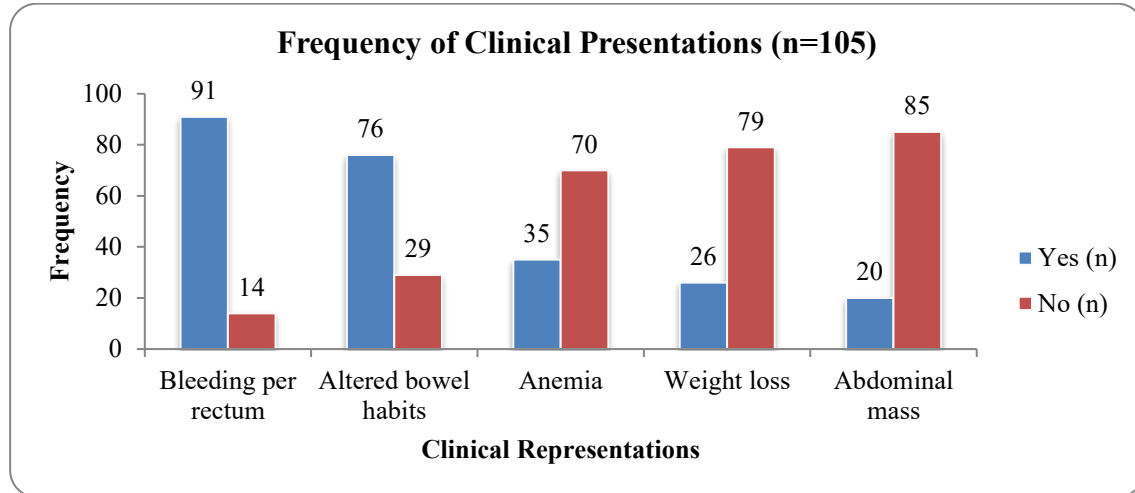


Figure 4: Grouped bar chart comparing frequency of clinical presentations (n=105).

3.5 Stratification Analysis

The findings for gender, TM stage and clinical presentations (by age group of 30 to 50 and 51 to 70 years) recorded non-significant relationship across all the five presentations (i.e. $p > 0.05$). Although, few subgroup numerical variations

were observed but those were also non-significant. Moreover, findings of the stratification are depicted below (Table 1, 2 and 3). The detailed stratification results are presented in Tables 1, 2, and 3.

Table 1: Stratification of Clinical Presentations by Age Group (n=105).

Presentation	Response	30-50 yrs (n=35)	51-70 yrs (n=70)	p-value
Bleeding per rectum	Yes	30 (85.71%)	61 (87.14%)	0.839
Bleeding per rectum	No	05 (14.29%)	09 (12.86%)	
Altered bowel habits	Yes	26 (74.29%)	50 (71.43%)	0.758
Altered bowel habits	No	09 (25.71%)	20 (28.57%)	
Anaemia	Yes	12 (34.29%)	23 (32.86%)	0.884
Anaemia	No	23 (65.71%)	47 (67.14%)	
Weight loss	Yes	08 (22.86%)	18 (25.71%)	0.749
Weight loss	No	27 (77.14%)	52 (74.29%)	
Abdominal mass	Yes	06 (17.14%)	14 (20.00%)	0.724
Abdominal mass	No	29 (82.86%)	56 (80.00%)	

Table 2: Stratification of Clinical Presentations by Gender (n=105).

Presentation	Response	Male (n=69)	Female (n=36)	p-value
Bleeding per rectum	Yes	59 (85.51%)	32 (88.89%)	0.628
Bleeding per rectum	No	10 (14.49%)	04 (11.11%)	
Altered bowel habits	Yes	50 (72.46%)	26 (72.22%)	0.979
Altered bowel habits	No	19 (27.54%)	10 (27.78%)	

Anaemia	Yes	24 (34.78%)	11 (30.56%)	0.663
Anaemia	No	45 (65.22%)	25 (69.44%)	
Weight loss	Yes	19 (27.54%)	07 (19.44%)	0.362
Weight loss	No	50 (72.46%)	29 (80.56%)	
Abdominal mass	Yes	14 (20.29%)	06 (16.67%)	0.653
Abdominal mass	No	55 (79.71%)	30 (83.33%)	

Table 3: Stratification of Clinical Presentations by TNM Stage (n=105).

Presentation	Response	Stage I (n=28)	Stage II (n=33)	Stage III (n=44)	p-value
Bleeding per rectum	Yes	26 (92.86%)	29 (87.88%)	36 (81.82%)	0.393
Bleeding per rectum	No	02 (7.14%)	04 (12.12%)	08 (18.18%)	
Altered bowel habits	Yes	21 (75.00%)	22 (66.67%)	33 (75.00%)	0.675
Altered bowel habits	No	07 (25.00%)	11 (33.33%)	11 (25.00%)	
Anaemia	Yes	06 (21.43%)	13 (39.39%)	16 (36.36%)	0.285
Anaemia	No	22 (78.57%)	20 (60.61%)	28 (63.64%)	
Weight loss	Yes	03 (10.71%)	09 (27.27%)	14 (31.82%)	0.119
Weight loss	No	25 (89.29%)	24 (72.73%)	30 (68.18%)	
Abdominal mass	Yes	04 (14.29%)	07 (21.21%)	09 (20.45%)	0.741
Abdominal mass	No	24 (85.71%)	26 (78.79%)	35 (79.55%)	

3.6 Normality Assessment

The Shapiro-Wilk test revealed that the age distribution was significantly different from normal ($W=0.952$, $p=0.001$). However, mean and standard deviation were used as the main descriptive statistics for age, and age was

summarised descriptively only; parametric comparisons were not made using age as a variable. This method also allows for comparison to published literature, which typically reports ages as mean and standard deviation.

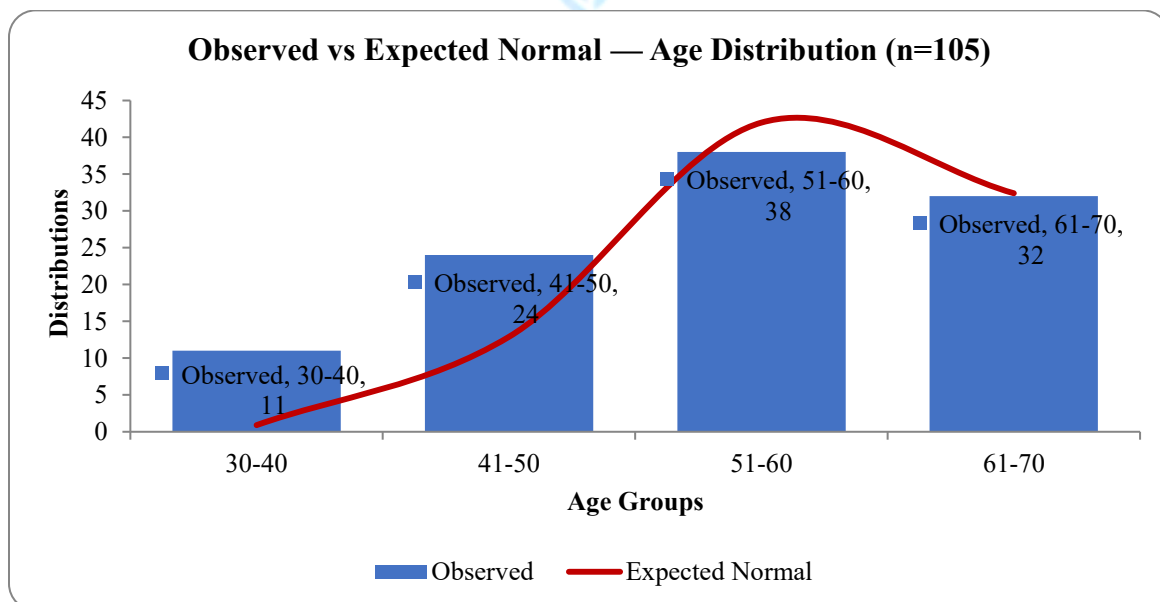


Figure 5: The observed versus expected frequency distribution for age groups (n=105).

4. Discussion

This study demonstrates the clinical presentation profile of colorectal cancer in 105 patients of Bahawal Victoria Hospital, Bahawalpur, and presented some valuable information regarding the local disease scenario in southern Punjab.

4.1 Demographic Profile

The average age of 58.69 ± 7.91 years in our cohort is higher than the 46.5 years reported by Anwar et al. (2008) from Lahore⁴ and 47.7 years by Midha et al. (2021) from India.¹⁷ This discrepancy may reflect differences in the catchment population served by Bahawal Victoria Hospital, where delayed healthcare-seeking behaviour in a predominantly rural setting may contribute to later diagnosis. Secondly, the age range (30 – 70 years) may have limited the number of younger patients seeking care at medical or paediatric services. Nonetheless, 33.34% of patients were under 50 years, supporting the established trend of younger-onset colorectal cancer in South Asian populations³.

The male-to-female ratio of 2:1 aligns with Midha et al. (1.79:1)¹⁷ and Anwar et al.⁴, and is attributed to hormonal factors, particularly the proposed protective effect of oestrogen in premenopausal women, as suggested by epidemiological evidence²⁴, as well as higher rates of dietary risk factors, tobacco use, and occupational exposures among males in this region.

4.2 TNM Staging

The high percentage of stage III disease (41.90%) is alarming and could be due to a lack of organised screening programmes, delayed health-seeking behaviour, limited access to specialist care, and the frequent misattribution of symptoms to minor ailments in the population in our region.^{4,5} Five-year survival rates are more than 90% in stage I disease and about 40–70% in stage III disease^{22,23}; these results highlight the critical need for public health initiatives promoting early symptom recognition and screening in our region.

4.3 Bleeding Per Rectum

The most common presentation was bleeding per rectum (86.67%), which was similar to that reported in England by Smith et al. (2006) (89%).¹⁵ Pathophysiology includes direct mucosal disruption by the tumour with friable neovascularisation related to tumour angiogenesis and surface ulceration, which results in intermittent or continuous blood loss. Tumours on the left side are more likely to bleed into the bowel, as are those in the rectum because it is close to the anal verge and it is easier to pass fresh blood per rectum.⁴

Although rectal bleeding is very sensitive, it is not very specific; around 97% of patients who present to primary care with rectal bleeding do not have cancer.¹⁹ This diagnostic dilemma is especially applicable in our practice, which has limited colonoscopy services. The stratification analysis revealed no significant differences by age ($p=0.839$), gender ($p=0.628$) or stage ($p=0.393$); this indicated that rectal bleeding is a common occurrence irrespective of demographic or pathological subgroup.²⁰

4.4 Altered Bowel Habits

The higher prevalence, in part, may be related to the dietary pattern in the region, including increased consumption of refined carbohydrates and relatively low fibre intake, which have been linked with increased bowel irregularity in the literature, and may be exacerbated by luminal narrowing resulting from a tumour. In addition, the habit of late presentation in our population may lead to progressive mechanical obstruction, which will present with increasing constipation, diarrhoea or a combination of both.¹² Rectal bleeding, along with change in bowel habits, is a red flag symptom and should encourage prompt investigation of the lower gastrointestinal tract.²¹

4.5 Anaemia

The prevalence of anaemia was 33.33%, which is similar to the prevalence of anaemia in other South Asian studies. The mechanism is chronic occult bleeding from the surface of the tumour, causing iron-deficiency anaemia, which is usually the result.¹³ This is especially relevant in the right-

sided colonic tumours because they start to grow without blocking the colon, and the only complaint that patients may have is anaemia.^{12,13} In our study, we did not gather location information for tumours, so this data cannot be correlated with anatomical location. There was a non-significant trend towards an increase in frequency with increasing stage (21.43% in Stage I vs 36.36-39.39% in Stage II-III), possibly associated with increasing tumour burden and vascularity, although this trend needs to be confirmed in larger numbers of patients.

4.6 Weight Loss

The mechanisms underlying cancer-related weight loss are complex: decreased oral intake due to pain, nausea or partial obstruction, cancer cachexia (high levels of pro-inflammatory cytokines such as tumour necrosis factor alpha [TNF- α] and interleukin 6 [IL-6] and tumour-derived proteolysis-inducing factors), and changes in intermediary metabolism with greater energy expenditure, and malabsorption as a result of disruption to the mucosal barrier.¹⁴ The frequency was observed to increase in a stage-wise manner (10.71% in Stage I vs. 31.82% in Stage III; $p=0.119$), which might indicate that weight loss could serve as a marker of the advanced disease burden, though this was not statistically significant and needs to be confirmed in larger studies.

4.7 Limitations

This study is limited in several ways. First, as a single-centre study at a tertiary referral hospital, inherent referral bias may limit generalisability to the broader population. Second, establishing causal linkages is impossible due to the cross-sectional design. Third, the sample size of 105 was appropriate for the main objectives but might have been too small to identify small but clinically significant differences among the stratification analyses. Fourth, data on tumour location (right-sided vs left-sided), symptom duration, family history, body mass index, smoking status, diabetes, and dietary history were not collected, which limits the depth of clinical characterisation and introduces the possibility of

residual confounding. Fifth, chi-square tests and descriptive statistics were used in statistical analysis, and odds ratios, 95% confidence intervals, and logistic regression would have proved useful to strengthen the quantification of associations. Lastly, documentation was used clinically to determine weight loss, which could have led to some variability in measurement. In addition, clinical presentation was partially determined by patients' self-reports, which can result in information or recall bias.

4.8 Recommendations

Based on these findings, patients presenting with rectal bleeding, particularly when accompanied by altered bowel habits or other alarm features, should undergo prompt lower gastrointestinal evaluation. The combination of rectal bleeding with altered bowel habits should serve as a high-priority referral criterion. Unexplained iron deficiency anaemia in patients over 40 warrants lower gastrointestinal investigation. Public health campaigns promoting early symptom recognition and implementation of targeted screening programmes are recommended for the southern Punjab region. Future studies could be conducted using multi-centre designs, a greater number of samples, and other variables such as location of tumour, histological grade, and treatment outcome.

5. Conclusion

Bleeding per rectum is the commonest symptom (86.67%), followed by altered bowel habits (72.38%), anaemia (33.33%), and abdominal mass (19.05%) in this cohort of 105 cases with histopathology-proven colorectal cancer at Bahawal Victoria Hospital. The findings are consistent with international trends, but the very high prevalence of altered bowel habits compared with Western studies indicates variations in prevalence across populations, which may be linked to dietary factors or to differences in how the condition is presented. There was no significant difference in clinical presentation with age, gender, or tumour stage. The demographic profile (with a higher proportion of males, mean age of 58.69 years, and most presenting at stage

III) underscores the need to develop organised screening programmes and prompt detection strategies in southern Punjab. The results of these findings will be useful as local evidence to guide clinical practice, to provide local evidence that may contribute to future symptom-based screening guidelines; and to promote the implementation of colorectal cancer screening in this under-screened region of Pakistan.

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