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A Study on Epidemiological Factors Associated with Colorectal Cancer and Its Preventive Measures Among 30 to 70 Years Age Group in West Bengal: A cross-sectional observational study

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ABSTRACT

Background: Colorectal cancer (CRC) is one of the most common malignancies globally. Its increasing incidence in India, particularly in urbanizing regions like West Bengal, demands an understanding of associated risk factors and the extent of preventive health practices. **Objective**: To analyse the epidemiological factors associated with colorectal cancer among individuals aged 30 to 70 years in West Bengal and assess their awareness and adoption of preventive measures. **Methods**: A cross-sectional observational study was conducted with 32 histologically confirmed CRC patients in a tertiary care hospital. Epidemiological data, risk factors, and preventive practices were collected through structured interviews and medical records. **Results**: Key risk factors included a sedentary lifestyle (68.7%), high red meat consumption (53.1%), low fiber intake (62.5%), obesity (40.6%), and family history (15.6%). Only 21.8% of participants had undergone any form of CRC screening before diagnosis. Awareness about CRC prevention was low (34.4%). **Conclusion** in West Bengal is associated with modifiable risk factors. Public health interventions focusing on lifestyle modification, diet, and screening awareness are crucial for prevention.

KEYWORDS: Colorectal cancer, Urban.

INTRODUCTION

Colorectal cancer ranks among the top three most diagnosed cancers worldwide. In India, its incidence is steadily rising due to lifestyle changes, dietary shifts, and urbanization. Despite this trend, CRC remains underdiagnosed in its early stages due to lack of awareness and screening practices[1].

Colorectal cancer (CRC) is a significant health concern in India, ranking as the fourth most common cancer in both men and women. While the age-standardized incidence rates may appear relatively low (7.2 per 100,000 for males and 5.1 for females), the sheer size of India's population means a large number of individuals are affected[2]. Furthermore, there's a concerning trend of increasing incidence, particularly in urban areas, and a notably low five-year survival rate, often less than 40%. Key Points about CRC in India: Increasing Incidence: There's a consistent rise in CRC incidence across various Indian cancer registries, with some regions experiencing annual increases of 20% to 124%, according to the Indian Journal of Cancer[3-10]. Urban vs.

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23

Rural Disparity: Urban areas generally have higher CRC incidence rates compared to rural regions. Younger Age of Onset: The median age of CRC diagnosis in India is lower than in Western countries, with many cases occurring in individuals under 50. Advanced Stage at Diagnosis A significant proportion of patients present with advanced-stage disease, leading to poorer outcomes. Low Survival Rates: Five-year survival rates for CRC in India are among the lowest globally, highlighting challenges in diagnosis and treatment. Common Symptoms: Common presenting symptoms include lower gastrointestinal bleeding, abdominal pain, and changes in bowel habits. Risk Factors:

Risk factors include age, family history of CRC or polyps, inflammatory bowel disease, inherited syndromes, red meat consumption, sedentary lifestyle, diabetes, obesity, smoking, and alcohol consumption[11]. Importance of Screening: While CRC screening is not widely implemented in India, improving awareness of risk factors and symptoms could lead to earlier diagnosis and improved outcomes, according to the journal Clinical Colorectal Cancer

Epidemiological studies provide critical insights into the associated risk factors, aiding targeted prevention strategies[12]. This study was conducted to evaluate these factors among CRC patients aged 30–70 in West Bengal and assess their knowledge and engagement in preventive behaviours.
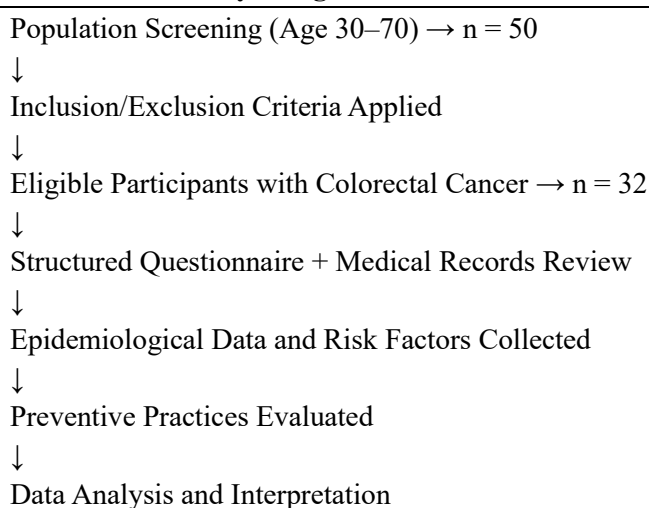
METHODS

This study was conducted in a tertiary hospital. After obtaining institutional ethical committee approval. It was Cross-sectional observational study conducted on 50 patients in the department of General Medicine at a tertiary care centre, from June / 2020 to December/2020.

Total 50 participant were approached to project among them 18 were excluded in this study and Total 32 Confirmed cases were included on the basis of fulfilling of the eligibility criteria.

The institute Ethics Committee approval was obtained before starting the sample collection. A written and informed consent was taken from the patient regarding the study in his/her vernacular language and English. In this study Patients were subjected to: A detailed history of sign & symptoms and its duration. Detailed history of systemic diseases and its duration, medication were noted. Patients were subjected to General physical examination

Flowchart of Study Design

Population Screening (Age 30–70) → n = 50
↓
Inclusion/Exclusion Criteria Applied
↓
Eligible Participants with Colorectal Cancer → n = 32
↓
Structured Questionnaire + Medical Records Review
↓
Epidemiological Data and Risk Factors Collected
↓
Preventive Practices Evaluated
↓
Data Analysis and Interpretation

Study Design:
Cross-sectional, hospital-based observational study.
Sample Size:
32 patients diagnosed with colorectal cancer (histologically confirmed).

Study Setting:

Tertiary care centre in West Bengal over a 6-month period.

Inclusion Criteria:

- Age 30–70 years
- Histopathologically confirmed CRC
- Willingness to participate

Exclusion Criteria:

- Recurrent CRC
- Mental or cognitive impairment limiting participation

Data Collection:

Structured questionnaire including:

- Socio-demographic details
- Lifestyle and dietary habits
- Personal and family history
- Preventive screening history
- Awareness regarding CRC risk and prevention

Statistical Analysis:

Descriptive statistics using frequencies, means, and percentages.

Statistics and analysis of data

Data is put in excel sheet then mean, median and association is analyzed by SPSS version 20. Chi-square test was used as test of significance for qualitative data. Continuous data was represented as mean and SD. MS Excel and MS word was used to obtain various types of graphs such as bar diagram. P value (Probability that the result is true) of Pvaue <0.05 was considered as statistically significant after assuming all the rules of statistical tests. Statistical software: MS Excel, SPSS version 22 (IBM SPSS Statistics, Somers NY, USA) was used to analyse data. Sample size is calculated by N master statistical software

RESULTS

In this study we found that Colorectal cancer (CRC) is associated with demographic profile of patient. Male were more prone to suffered of Colorectal cancer (CRC) as compared to Female. Colorectal cancer (CRC) were more dominance among urban residence (Table 1).

Occupation (Sedentary job) are more prone to suffered of Colorectal cancer (CRC) its prevalence is 43.6%. Age is also associated factors for Colorectal cancer (CRC) . Average mean age for Colorectal cancer (CRC) is 56.4 ± 8.2 (Table 1).

Demographic Factors Table

Variable	Value (n=32)
Mean Age (years)	56.4 ± 8.2
Gender (Male/Female)	19 / 13
Residence (Urban/Rural)	20 / 12
Education Level (≥Secondary)	18 (56.3%)
Occupation (Sedentary job)	14 (43.8%)
Monthly Income > ₹20,000	11 (34.4%)

Colorectal cancer (CRC) have many risk factor among them these are most important Sedentary Lifestyle, High Red Meat Consumption, Low Dietary Fiber, Obesity (BMI > 30), Smoking/Tobacco Use, Alcohol Use, Family History of CRC and History of Inflammatory Bowel Disease (Table 2).

Risk Factors Table 2

Risk Factor	No. of Patients (%)
Sedentary Lifestyle	22 (68.7%)
High Red Meat Consumption	17 (53.1%)
Low Dietary Fiber	20 (62.5%)
Obesity (BMI > 30)	13 (40.6%)
Smoking/Tobacco Use	15 (46.9%)
Alcohol Use	10 (31.3%)
Family History of CRC	5 (15.6%)
History of Inflammatory Bowel Disease	3 (9.4%)

- **Lifestyle and Diet:**
  o 68.7% led sedentary lifestyles.
  o 62.5% consumed diets low in fruits and vegetables.
  o 53.1% regularly consumed red meat.
- **Preventive Measures and Awareness:**
  o Only 7 patients (21.8%) had undergone any CRC screening (colonoscopy or stool test).
  o Just 11 (34.4%) had heard about colorectal cancer before diagnosis.
- **Comorbidities:**
  o 40.6% were obese.
  o 46.9% had a history of smoking.

These findings emphasize the role of modifiable risk factors and the lack of awareness about CRC in the community.

DISCUSSION

The study highlights multiple epidemiological determinants for CRC in the West Bengal population, notably lifestyle and dietary factors. The majority of participants had a sedentary lifestyle and consumed low-fiber, high-red-meat diets — both established CRC risk factors[13].

In this study we found that Colorectal cancer (CRC) is associated with demographic profile of patient. Male were more prone to suffered of Colorectal cancer (CRC) as compared to Female. Colorectal cancer (CRC) was more dominance among urban residence (Table 1).

Occupation (Sedentary job) are more prone to suffered of Colorectal cancer (CRC) its prevalence is 43.6%. Age is also associated factors for Colorectal cancer (CRC). Average mean age for Colorectal cancer (CRC) is 56.4 ± 8.2 (Table 1).

Colorectal cancer (CRC) has many risk factor among them these are most important Sedentary Lifestyle, High Red Meat Consumption, Low Dietary Fiber, Obesity (BMI > 30), Smoking/Tobacco Use, Alcohol Use, Family History of CRC and History of Inflammatory Bowel Disease (Table 2). Preventing colorectal cancer involves a combination of lifestyle modifications and regular screening. Maintaining a healthy weight, eating a diet rich in fruits and vegetables, limiting alcohol consumption, and avoiding tobacco use are key lifestyle choices[14-18]. Regular screening, particularly colonoscopies, can detect and remove precancerous polyps, significantly reducing the risk of developing colorectal cancer. Lifestyle Changes: Healthy Diet: Emphasize fruits,

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26

vegetables, and whole grains, which are rich in vitamins, minerals, fiber, and antioxidants that may help prevent cancer. Limit red meat consumption, especially processed meats. Physical Activity:

Engage in regular physical activity, aiming for at least 30 minutes of exercise most days of the week[19]. This can be as simple as walking, swimming, or cycling. Weight Management:

Maintain a healthy weight, as obesity is linked to an increased risk of colorectal cancer. Aim to lose weight slowly through a combination of diet and exercise. Alcohol Consumption:

Limit alcohol intake. If you choose to drink, do so in moderation, with one drink per day for women and two for men. Avoid Tobacco: Smoking is a significant risk factor for colorectal cancer, so it's crucial to quit smoking or avoid starting altogether. Screening: Colonoscopy:

This procedure allows doctors to visualize the entire colon and rectum, remove polyps, and detect early signs of cancer. It's generally recommended to begin screening at age 45 for average-risk individuals[20]. Other Screening Methods: Other options include stool-based tests and flexible sigmoidoscopy, which examines the lower part of the colon. Other Important Factors: Family History: Individuals with a family history of colorectal cancer or polyps should discuss screening with their doctor, as they may need to start screening earlier. Inflammatory Bowel Disease (IBD):People with IBD, such as ulcerative colitis or Crohn's disease, have an increased risk and should talk to their doctor about appropriate screening[21-23].

Conditions: Certain genetic conditions, like Lynch syndrome and familial adenomatous polyposis (FAP), significantly increase colorectal cancer risk, requiring specialized screening and management Low awareness and poor uptake of screening tests contributed to delayed diagnoses. These results align with national and international trends but reflect regional vulnerabilities like limited education, low income, and rural residence[24].

Preventive strategies including health education, improved screening accessibility, and dietary counselling can significantly reduce CRC burden. Programs like FIT testing and colonoscopy for high-risk groups must be promoted.

CONCLUSION

Colorectal cancer in West Bengal among adults aged 30–70 years is predominantly linked to modifiable risk factors such as diet, physical inactivity, and obesity. Awareness levels and screening practices remain critically low. Recommendations for Colorectal cancer Launch state-wide screening awareness programs, promote healthy diets rich in fiber and low in red meat, Encourage physical activity through community health initiatives., Target high-risk groups with preventive education and periodic evaluations.

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28

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29