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Clinicopathological Trends of Colorectal Carcinoma Patients in a Tertiary Care Centre in South India

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ABSTRACT

Background: Cancer is attributed to 10 million deaths worldwide in 2020. One in six deaths is due to Cancer. colorectal carcinoma ranked third contributing 1.93 million cases while deaths due to it stood second contributing 916000 next to lung cancer. The sustainable development goal 3 emphasizes on "Ensuring healthy lives and promote well-being for all at all ages". Regular screening is the process of detecting colorectal cancer in patients with no symptoms. The treatment for colorectal carcinoma is surgical removal of primary tumor, adjuvant chemotherapy and palliative radiotherapy.

Methodology: We reviewed data of colorectal carcinoma operated patients retrospectively for three consecutive years in a tertiary care centre in the South Indian State, Tamil Nadu (2018, 2019 & 2020). There were about 336 participants enrolled for the study. Their medical records were reviewed for data collection. Data collection was done by trained Senior Resident Doctors posted in the Department of Surgical Gastroenterology.

Results: The study found that the colorectal carcinoma is highly prevalent in the 40 – 60 years age group. It is predominant among male. The most common anatomical location being rectum, rectosigmoid junction, right colon and sigmoid colon. The most common symptoms at presentation were anorexia, bleeding, constipation, altered bowel habits and weight loss. Well differentiated adenocarcinoma was the most common histopathological type in all the three years.

Recommendations: The screening for the same can be done at a young age of 30 years itself as we do for other non-communicable diseases like systemic hypertension and diabetes. The symptoms at presentation ought to be explained in health education sessions to improve the general awareness of the public.

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INTRODUCTION

Cancer is attributed to 10 million deaths worldwide in 2020. One in six deaths is due to Cancer [1]. Neoplasms/ tumors are abnormal growth of cells. They may be benign or malignant. Generally, benign tumors are slow growing and can't spread to other tissues whereas malignant tumors grow rapidly and can spread to other organs known as metastasis. Incident cases of cancer account for 18.1 million cases universally in 2018 and is expected to rise to 29.4 million cases by 2040. Depending on the incidence of new cancer cases, colorectal carcinoma ranked third contributing 1.93 million cases while deaths due to it stood second contributing 916000 next to lung cancer [2]. The first target as per the WHO action plan for prevention and control

of non-communicable diseases (2013 – 2020) is 25% reduction in overall mortality due to the major non-communicable diseases like cardiovascular diseases, diabetes, cancers and chronic respiratory diseases [3]. The sustainable development goal 3 emphasizes on "Ensuring healthy lives and promote well-being for all at all ages". One of the indicators urges us to reduce mortality from NCD's and promote mental health [4]. This is also in line with the WHO action plan for control of non-communicable diseases.

Genetic and environmental risk factors contribute to the development of colorectal carcinoma. The risk doubles if a first degree relative is diagnosed with colorectal cancer when his age is greater than 70 years. The risk triples if his age is less than 50 years when diagnosed [5].

Acquired risk factors include diet, lifestyle, side effects of medical interventions and medical co-morbidities. Diet includes reduced

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consumption of fruits, vegetables, dietary fibre and increased intake of red meat and saturated fats. Drinking coffee and alcohol adds to the risk. Lifestyle comprises sedentary lifestyle and smoking [6]. Most cancers of the colon start as a polyp. These are over growth of the cells on the inner walls of the colon. These are called adenomas which are non-cancerous and may take long time to develop into an invasive colon carcinoma. These adenomas can be removed surgically during a colonoscopy called polypectomy [7].

Regular screening is the process of detecting colorectal cancer in patients with no symptoms. This can eventually prevent colorectal cancer. The five-year survival rate for detection at an early stage is 90% for colorectal carcinoma [8].

The treatment for colorectal carcinoma is surgical removal of primary tumor, adjuvant chemotherapy and palliative radiotherapy [9]. Nowadays, endoscopic removal practices are also available which is entirely based on the stage and severity of the illness [10].

Due to scarcity of data and poor screening, only very few papers have been published in the South Indian context. Hence, we reviewed data retrospectively for three consecutive years in a tertiary care centre in the South Indian State, Tamil Nadu at Government Mohan Kumaramangalam Medical College, Salem, Tamil Nadu with the objectives

1. To identify the age sex pattern of the patients who underwent surgery for colorectal carcinoma.
2. To analyze the symptoms, co-morbidities and anatomical position of the illness among the patients.
3. To throw light on the histopathological trends of the disease.

MATERIALS AND METHODS

A retrospective data review was done for three consecutive years in 2018, 2019 and 2020 for patients who underwent surgery for colorectal carcinoma at our tertiary care centre, Government Mohan Kumaramangalam Medical College and Hospital (GMKMCH), Salem, Tamil Nadu, India. There were about 336 participants enrolled for the study. Their medical records were reviewed for data collection. Data collection was done by trained Senior Resident Doctors posted in the Department of Surgical Gastroenterology. Data was entered using excel and the descriptive data analysis was done using SPSS 16.0.1 software (SPSS Inc., Chicago, Illinois, USA) package. Mean, median, proportion and standard deviation were used. We obtained clearance from the college Institutional review board and the Institutional ethics committee for the conduct of the study. We used 95% confidence interval and significance level was set at 0.05.

RESULTS

Table 1: Total number of cases (gender wise) in the consecutive three years in GMKMC, Salem.

Year	No. of cases	Male (%)	Female (%)
2018	119	54 (45.3)	65 (54.7)
2019	111	53 (47.7)	58 (52.3)
2020	106	55 (51.8)	51 (48.2)

The data shows that there were 119 cases who were operated in 2018 for colorectal carcinoma. There were 54 and 65 male and female respectively. Among those operated for colorectal carcinoma in 2019, 47.7% were male and 52.3% were female. In 2020, male contributed 51.8% of those operated and female contributed 48.2% respectively (Table 1).

Table 2: Age of the cases who underwent surgery for colorectal carcinoma in the three consecutive years 2018, 2019 and 2020 at GMKMCH, Salem.

Year	Mean	Median	Range
2018	53.69 ± 13.88	58	32 – 77
2019	55.62 ± 12.42	56	24 – 80
2020	55.13 ± 12.05	55	26 – 80

The mean age of those operated in 2018 is 53.69 ± 13.88. The mean age of those operated in 2019 is 55.62 ± 12.42. The mean age of those operated in 2020 is 55.13 ± 12.05. The median age of those operated for colorectal carcinoma in the year 2018,2019 and 2020 were 58, 56 and 55 respectively. (Table 2)

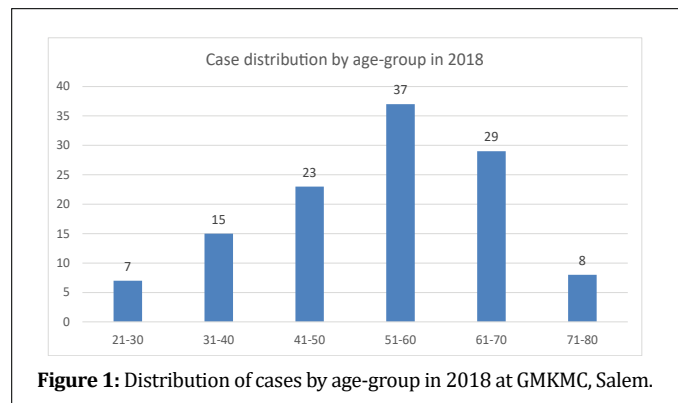


Figure 1: Distribution of cases by age-group in 2018 at GMKMC, Salem.

There were 119 cases operated for colorectal carcinoma in the year 2018. There were 7 cases in the 21-30 years age group, 15 cases in the 31-40 years age group, 23 cases in the 41-50 years age group, 37 cases in the 51-60 years age group, 29 cases in the 61-70 years age group and 8 cases in the 71-80 years age group respectively (Figure 1).

There were 111 cases operated for colorectal carcinoma in the year 2019. There was 1 case in the 21-30 years age group, 16 cases in the 31-40 years age group, 23 cases in the 41-50 years age group, 29 cases in the 51-60 years age group, 31 cases in the 61-70 years age group and 11 cases in the 71-80 years age group respectively (Figure 2).

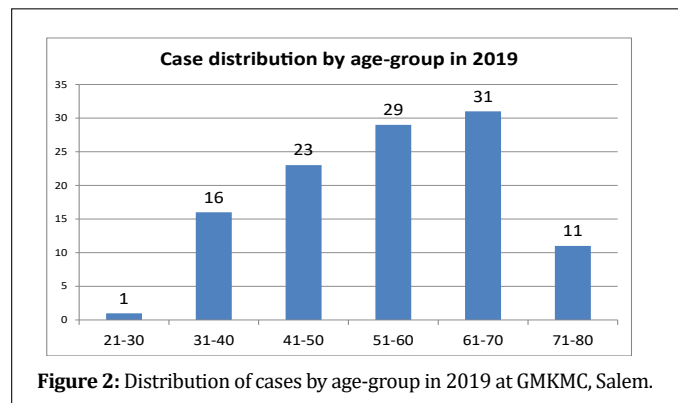


Figure 2: Distribution of cases by age-group in 2019 at GMKMC, Salem.

There were 106 cases operated for colorectal carcinoma in the year 2020. There were 13 cases in the 31-40 age group, 24 cases in the 41-50 years age group, 28 cases in the 51-60 years age group, 29 cases in the 61-70 years age group and 12 cases in the 71-80 years age group respectively (Figure 3).

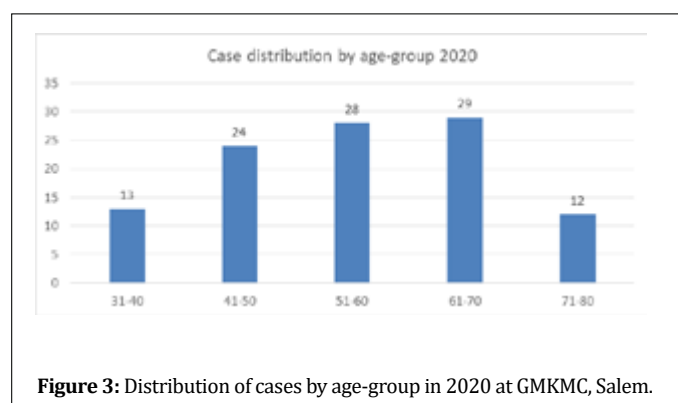


Figure 3: Distribution of cases by age-group in 2020 at GMKMC, Salem.

The observed comorbidities in the cases like hypertension and diabetes are tabulated. In those operated in 2018, 49 (41%) had diabetes and 42(35%) had hypertension. In those operated in 2019, 36 (32%) had diabetes and 42(37%) had hypertension. In

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Table 3: The co-morbidities present in the cases of colorectal carcinoma operated in the three consecutive years from 2018 to 2020 at GMKMCH, Salem.

Year	Disease	No (%)
2018	Diabetes	49 (41)
	Hypertension	42 (35)
2019	Diabetes	36 (32)
	Hypertension	42 (37)
2020	Diabetes	33 (31)
	Hypertension	42 (39)

Table 4: The gender-wise anatomical location of the tumor among those operated for colorectal carcinoma in the year 2018 at GMKMCH, Salem.

Location	Sex		Total (%)
	Male	Female	
Rectum	22	19	41 (34.5)
Rectosigmoid	14	13	27 (22.7)
Right colon	7	14	21 (17.6)
Sigmoid	9	12	21 (17.6)
Left colon	2	5	7 (5.9)
Transverse colon	0	2	2 (1.7)
Total	54	65	119

Table 5: The gender-wise anatomical location of the tumor among those operated for colorectal carcinoma in the year 2019 at GMKMCH, Salem.

Location	Sex		Total (%)
	Male	Female	
Rectum	18	16	34 (30.6)
Rectosigmoid	13	15	28 (25.2)
Right colon	8	11	19 (17.1)
Sigmoid	10	14	24 (21.6)
Left colon	3	1	4 (3.6)
Transverse colon	1	1	2 (1.8)
Total	53	58	111

Table 6: The gender-wise anatomical location of the tumor among those operated for colorectal carcinoma in the year 2020 at GMKMCH, Salem.

Location	Sex		Total (%)
	Male	Female	
Rectum	18	16	34 (30.6)
Rectosigmoid	13	15	28 (25.2)
Right colon	8	11	19 (17.1)
Sigmoid	10	14	24 (21.6)
Left colon	3	1	4 (3.6)
Transverse colon	1	1	2 (1.8)
Total	53	58	111

those operated in 2020, 33 (31%) had diabetes and 42(39%) had hypertension. **(Table 3).**

The most common location among those operated for colorectal carcinoma in the year 2018 was rectum 41 (34.5%), rectosigmoid 27 (22.7%), right colon 21 (17.6%), sigmoid 21 (17.6%), left colon 7 (5.9%) and transverse colon 2 (1.7%) **(Table 4).**

The most common location among those operated for colorectal carcinoma in the year 2019 was rectum 34 (30.6%), rectosigmoid 28 (25.2%), right colon 19 (17.1%), sigmoid 24 (21.6%), left colon 4 (3.6%) and transverse colon 2 (1.8%) **(Table 5).**

The most common location among those operated for colorectal carcinoma in the year 2020 was rectum 34 (32.1%), rectosigmoid 36 (34%), right colon 14 (13.2%), sigmoid 18 (17%), left colon 3 (2.8%) and transverse colon 1 (0.94%) **(Table 6).**

The following symptoms were present in those operated in the year 2018. They were anorexia 86 (72.3%), bleeding 71 (59.7%), weight

loss 70 (58.8%), altered bowel habits 50 (42%), constipation 49 (41.2%), pain 28 (23.5%), obstruction 23 (19.3%), painful defecation 21 (17.6%) and mass 16 (13.4%). The symptoms in those operated in 2019 were bleeding 75 (67.6%), anorexia 73 (65.8%), weight loss 64 (57.7%), constipation 51 (45.9%), altered bowel habits 39 (35.1%), pain 25 (22.5%), obstruction 24 (21.6%), painful defecation 18 (16.2%) and mass 14 (12.6%). The symptoms in those operated in 2020 were bleeding 70 (66%), anorexia 62 (58%), weight loss 57 (53.8%), constipation 51 (48.1%), altered bowel habits 35 (33%), obstruction 25 (23.6%), pain 21 (19.8%), mass 13 (12.3%) and painful defecation 13 (12.3%). **(Table 7)**

Among those who underwent surgery in 2020, well differentiated adenocarcinoma was found in 40 (37.7%), 41 (36.9%) and 58 (48.7%) in 2020, 2019 and 2018 respectively. Moderately differentiated adenocarcinoma was found in 35 (33%), 37 (33.3%) and 44 (37%) in 2020, 2019 and 2018 respectively. Poorly differentiated adenocarcinoma was seen in 19 (18%), 23 (20.7%) and 12 (10.1%) in the respective years of 2020, 2019 and 2018. Mucinous and other types

Table 7: The symptoms at presentation of colorectal carcinoma in those operated in 2018, 2019 and 2020 at GMKMCH, Salem.

Symptoms	Number (%)		
	2018	2019	2020
Anorexia	86 (72.3%)	73 (65.8%)	62 (58%)
Bleeding	71 (59.7%)	75 (67.6%)	70 (66%)
Constipation	49 (41.2%)	51 (45.9%)	51 (48.1%)
Altered bowel habits	50 (42%)	39 (35.1%)	35 (33%)
Weight loss	70 (58.8%)	64 (57.7%)	57 (53.8%)
Obstruction	23 (19.3%)	24 (21.6%)	25 (23.6%)
Pain	28 (23.5%)	25 (22.5%)	21 (19.8%)
Mass	16 (13.4%)	14 (12.6%)	13 (12.3%)
Painful defecation	21 (17.6%)	18 (16.2%)	13 (12.3%)

Table 8: Histopathological trends of the cases operated in three consecutive years (2018, 2019 & 2020) at GMKMCH, Salem.

Name	2020	2019	2018
	Number (%)	Number (%)	Number (%)
Well differentiated adenocarcinoma	40 (37.7)	41 (36.9)	58 (48.7)
Moderately differentiated adenocarcinoma	35 (33)	37 (33.3)	44 (37)
Poorly differentiated adenocarcinoma	19 (18)	23 (20.7)	12 (10.1)
Mucinous and others	12 (11.3)	10 (9.1)	5 (4.2)

were seen in 12 (11.3%), 10 (9.1%) and 5 (4.2%) in 2020, 2019 and 2018 respectively (**Table 8**).

DISCUSSION

Sudarshan et al did a study on colorectal carcinoma in young adults in North India. The majority of the findings like male preponderance, rectum being the commonest anatomical location are similar. This study highlights a higher proportion of under 40 years individuals suffering from colorectal carcinoma which is less commonly quoted in literature [11].

Kudale SS et al did a study in Goa involving patients from both the private and public sector. They showed a similar age-group of presentation as our study. The most common anatomical location of presentation is also reported as rectum by both articles. However, their study showed a female preponderance which was not seen in all three years of our study and most published articles [12].

Smith D et al did a study on symptomatology in early colorectal cancer in United Kingdom and the presenting symptoms like anorexia, weight loss, bleeding matched with our study results. However, the mean age at presentation was higher in the western study. Though we tabulated the symptoms at presentation, we did not technically classify them as it was beyond the objective of our study [13].

Patil PS et al did a study in Tata Memorial Hospital, Mumbai. The findings were similar to our study showing male predominance and similar symptoms at presentation. However, their mean age at presentation was little lower to that of our study. We did not study the tumor markers and metastasis of the disease [14].

CONCLUSION

The study found that the colorectal carcinoma is highly prevalent in the 40 – 60 years age group. It is predominant among male. The most common anatomical location being rectum, rectosigmoid junction, right colon and sigmoid colon. The most common symptoms at presentation were anorexia, bleeding, constipation, altered bowel habits and weight loss.

Strengths and limitations:

This article portrays the epidemiology of colorectal carcinoma in a tertiary care hospital in South India. The data was retrospectively reviewed over a period of three years. We failed to include patients getting treated in the private sector which could have given us more information.

Recommendations:

The screening for the same can be done at a young age of 30 years itself as we do for other non-communicable diseases like systemic hypertension and diabetes. The symptoms at presentation ought to be explained in health education sessions to improve the general awareness of the public.

Competing Interests:

The authors declare that they have no competing interests.

Author Contributions:

Principal Investigator: KV; Conception and design: KV, KB, PM, POK, SA; Data collection: KV, POK; Development of data capture tool: KV, KB, PM, POK, SA; Data analysis and interpretation: KV, KB, PM, POK, SA; Preparation of first draft: KV, SA; Critical review and approval of final draft: all authors.

REFERENCES

- Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA: A Cancer Journal for Clinicians [Internet]. 2021 May 1 [cited 2022 Feb 18];71(3):209–49. Available from: <https://onlinelibrary.wiley.com/doi/full/10.3322/caac.21660>
- WHO REPORT ON CANCER SETTING PRIORITIES, INVESTING WISELY AND PROVIDING CARE FOR ALL 2020 WHO report on cancer: setting priorities, investing wisely and providing care for all [Internet]. 2020. Available from: <http://apps.who.int/bookorders>.
- Global NCD Action Plan [Internet]. WHO. 2021 [cited 2022 Feb 18]. Available from: <https://ftcc.who.int/>
- WHO. Introduction to the Sustainable Development Goals (SDGs). SEARO. 2017 Feb;
- Kuipers EJ, Grady WM, Lieberman D, Seufferlein T, Sung JJ, Boelens PG, et al. COLORECTAL CANCER. Nat Rev Dis Primers. 2016 Nov;1.
- Lin OS. Acquired Risk Factors for Colorectal Cancer. Vol. 472, Cancer Epidemiology. Humana Press; 2009. 361–372 p.
- NCCN Foundation. National Comprehensive Cancer Network [Internet]. [cited 2022 Mar 19]. Available from: <https://www.nccn.org/patientresources/patient-resources/guidelines-for-patients>
- Detecting Colorectal Cancer | Can Colorectal Cancer Be Found Early? [Internet]. American Cancer Society. 2020 [cited 2022 Mar 19]. p. 3–5.

Available from: <https://www.cancer.org/cancer/colon-rectal-cancer/detection-diagnosis-staging/detection.html>

9. Papamichael D, Audisio RA, Glimelius B, de Gramont A, Glynne-Jones R, Haller D, et al. Treatment of colorectal cancer in older patients: International Society of Geriatric Oncology (SIOG) consensus recommendations 2013. *Ann Oncol* [Internet]. 2015 Mar 1 [cited 2022 Mar 20];26(3):463–76. Available from: <https://pubmed.ncbi.nlm.nih.gov/25015334/>
10. Colon Cancer Treatment, by Stage. How to Treat Colon Cancer [Internet]. American Cancer Society. 2020 [cited 2022 Mar 20]. Available from: <https://www.cancer.org/cancer/colon-rectal-cancer/treating/by-stage-colon.html>
11. Sudarshan V, Hussain N, Gahine R, Mourya J. Colorectal cancer in young adults in a tertiary care hospital in Chhattisgarh, Raipur. *Indian J Cancer* [Internet]. 2013 Oct [cited 2022 May 3];50(4):337–40. Available from: <https://pubmed.ncbi.nlm.nih.gov/24369213/>
12. Kudale SS, Mallya MV, Pinto RGW. A One-year Study of Colorectal Cancer in a Tertiary Care Hospital | *todayclinician.com* [Internet]. [cited 2022 May 3]. Available from: <https://todayclinician.com/a-one-year-study-of-colorectal-cancer-in-a-tertiary-care-hospital/>
13. Smith D, Ballal M, Hodder R, Soin G, Selvachandran SN, Cade D. Symptomatic Presentation of Early Colorectal Cancer. *Annals of The Royal College of Surgeons of England* [Internet]. 2006 Mar [cited 2022 May 3];88(2):185. Available from: </pmc/articles/PMC1964069/>
14. Patil PS, Saklani A, Gambhire P, Mehta S, Engineer R, De'Souza A, et al. Colorectal Cancer in India: An Audit from a Tertiary Center in a Low Prevalence Area. *Indian Journal of Surgical Oncology* 2017 8:4 [Internet]. 2017 Apr 22 [cited 2022 May 3];8(4):484–90. Available from: <https://link.springer.com/article/10.1007/s13193-017-0655-0>



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