## Socio-Demographic And Clinico-Pathologic Pattern Of Patients With Colorectal Cancers Seen In Ahmadu Bello University Teaching Hospital, Zaria

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**Abstract** Introduction: Colorectal cancer is a major cause of morbidity and mortality in the world. It accounts for 10.2% of cancer incidence globally, with a mortality of 9.2%. It ranks third in terms of incidence but second in terms of mortality. Colorectal cancer is not uniformly common throughout the world. Its incidence is increasing in developing countries, probably due to the acquisition of western lifestyle.

**Aim:** The aim of this study was to determine the sociodemographic and clinicopathological pattern of patients with colorectal cancer seen in the Department of Surgery, Radiotherapy, and Oncology Centre, Ahmadu Bello University Teaching Hospital (ABUTH), Zaria, over a 10-year period.

**Materials and Methods:** In this retrospective study, data were collected from the case files and treatment cards of 122 patients with colorectal cancer managed at the Surgical, Radiotherapy, and Oncology Department of ABUTH, Zaria, from January 2006 to December 2015. Data items analyzed included age, sex, residential area, occupation, duration of symptoms, presenting complaints, subsite, histological type, grade, and stage. All analyses were performed by SPSS version 20.

**Results**: An annual incidence of 12.2 cases/annum was seen. Seventy (57.4%) were male and 52 (42.6%) were female. Male:female ratio was 1.3:1 and the age range was between 12 years and 78 years, majority were between 31 and 40 years (24.6%), with a mean age of 42.4 years and median age of 41 years. It was found to be more common among the urban dwellers, with the public/civil servants being the most affected (36.0%). The duration of presenting complain ranged from 3 weeks to 10 years, most patients presenting at 7–10 months with more than one symptom. Bleeding per rectum was the most common symptom seen in 20%. Adenocarcinoma was the predominant histology seen in 73% (n = 89) and 28.7% were well differentiated. The rectum was the most common subsite, while left-sided lesions (20%) were more common than right-sided lesions (17%). About 18% (n = 22) had distant metastasis.

Conclusion: The study showed that colorectal cancer was more common among the younger age group, with

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Submitted: 21-Jul-2019. Revised: 01-Jun-2020

Accepted: 25-Jul-2020

Published: 24-Sep-2020

Access this article online
Quick Response Code:
Website:
www.wajradiology.org
DOI:
10.4103/wajr.wajr\_27\_19

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How to cite this article: Theyra-Enias H, Adewuyi SA, Alabi A, Jummai DJ, Zubairu IH. Socio-demographic and clinico-pathologic pattern of patients with colorectal cancers seen in Ahmadu Bello University Teaching Hospital, Zaria. West Afr J Radiol 2020;27:136-42.

a slight male preponderance. They were mostly urban dwellers and civil/public servants. The most common presenting symptom was bleeding per rectum and majority of the cases presented at an advanced stage. Early detection through public health education, screening programs, affordable and effective treatment, and follow-up will help reverse this trend.

Keywords: Adenocarcinoma, age, colorectal cancer, Nigeria

#### **INTRODUCTION**

Colorectal cancer is a major public health problem worldwide, representing a major cause of morbidity and mortality.<sup>[1]</sup> It accounts for over 10.2% of cancer incidence globally in both sexes. It is the third most common cancer worldwide and the second most common cause of death.<sup>[2]</sup> Worldwide, colorectal cancer represents 10.9% of all incident cancer in men and 9.5% in women.<sup>[2]</sup> Colorectal cancer, however, is not uniformly common throughout the world. Colorectal cancer is mainly a disease of developed countries with western culture.<sup>[3]</sup> The incidence rate varies up to 10-fold between countries with the highest rates and those with the lowest rates.<sup>[2]</sup>

In the developing countries, especially West Africa, the rate has not yet reached the magnitude of developed countries.<sup>[4]</sup> However, current publications indicate that the incidence is increasing in developing countries including sub-Saharan Africa, especially in the urban areas,<sup>[5]</sup> as seen in Ghana, Nigeria, Tunisia, and Egypt where it represents about 10%–50% of all malignant tumors.<sup>[5]</sup> In Nigeria, the incidence of colorectal cancer is put at 3.4/100,000 compared with 35.8/100,000 each year in the USA.<sup>[6]</sup> Colon and rectal carcinomas are not common in native Nigerians when compared to the incidence of this disease in the United States (US) and the United Kingdom (UK). Nevertheless, studies in Nigeria have shown increased rates of this disease over the past 20 years.<sup>[7]</sup>

The likelihood of colorectal cancer diagnosis increases progressively from age 40 years, rising sharply after age 50 years. More than 90% of colorectal cancer cases occur in people aged 50 years or older.<sup>[3]</sup> The incidence rate is more than 50 times higher in persons aged 60–79 years than in those younger than 40 years. However, colorectal cancer appears to be increasing among younger persons.<sup>[3]</sup> In the US, colorectal cancer is now one of the 10 most commonly diagnosed cancers among men and women aged 20–49 years.<sup>[3]</sup> The median age at colorectal cancer diagnosis in the US is 68 years in men and 72 years in women.<sup>[8]</sup> The risk factors for the development of colorectal cancer include both modifiable and nonmodifiable factors. The nonmodifiable risk factors include advance in age, genetic risks such as the familial adenomatous polyposis, hereditary nonpolyposis colorectal cancer (HNPCC also known as Lynch syndrome), family history of colorectal cancer, personal history of adenomatous polyps, and inflammatory bowel disease.<sup>[3]</sup> The non modifiable risk factors has a lot to do with environmental factors such as diet rich in animal fat, high meat consumption, diet low in fruits and vegetables, physical inactivity,obesity, cigarette smoking and alcohol consumption.<sup>[3]</sup>

There has been an unexplained shift in the natural history of colorectal cancer during the past 30-40 years,<sup>[9]</sup> although left sided colon cancers are still more common, several studies done showed proximal right ward shift.<sup>[10]</sup>

Tumors of the colorectum arise in the mucosa and are mostly (>90%) adenocarcinomas. Other histologic types include squamous cell carcinoma, carcinoid, leiomyosarcoma, and lymphoma. Most grading systems classify adenocarcinoma as well, moderately, or poorly differentiated.<sup>[11]</sup> Colorectal cancer often produces minimal or no symptoms. The clinical presentation of colorectal cancer is determined largely by the site of the tumor. Cancers of the right colon are often exophytic and commonly associated with iron deficiency anemia due to occult blood loss. Many of these are diagnosed late. Cancers of the left colon and sigmoid colon are often deeply invasive, annular, and accompanied by obstruction and rectal bleeding. Rectal cancer frequently results in bleeding and alterations in bowel habits.<sup>[11]</sup>

Colorectal cancer is a disease for which screening and preventive measures have proven effective in developed countries.<sup>[12]</sup> Primary preventive measures against colorectal cancer include: ingestion of diet rich in fiber which has a protective role and regular physical activity. The aim of screening is to reduce its incidence by detecting and resectioning precursor lesions and mortality by this cause. <sup>[13]</sup> Screening which consists of stool-based, imaging and endoscopic tests is widely used. Stool-based tests which include Guaiac-based fecal occult blood test (gFOBT) and fecal immunochemical test (FIT) can reduce mortality rates by early detection of asymptomatic cancerous lesions. <sup>[14]</sup> Imaging techniques such as computed tomographic colonography which is gaining popularity, colon capsule endoscopy, and double-contrast barium enema are used. Endoscopic tests include flexible sigmoidoscopy, colonoscopy which is considered the "gold standard" in colorectal cancer screening because of its high sensitivity and specificity for detecting precancerous and cancerous lesions.<sup>[14]</sup>

Guidelines from the American Society of Clinical Oncology and World Gastroenterology Organization recommend the use of gFOBT or FIT in an environment with limited endoscopic resources. In sub-Saharan Africa, there are no organized colorectal cancer screening projects or pilot projects, and in Nigeria, there is little evidence to suggest the efficacy and feasibility of gFOBT and FIT.<sup>[15]</sup>

However, in Nigeria despite the low incidence, the outcome of treatment still remains poor largely due to lack of screening, late presentation, ignorance, poverty, and superstition<sup>[6].</sup> The aim of the study is to determine the sociodemographic and clinicopathological pattern of colorectal cancer seen in Ahmadu Bello University Teaching Hospital (ABUTH), Zaria, as comparable to documented cases in other regions.

## MATERIALS AND METHODS

This study was carried out at the Surgical Outpatient Department and Radiotherapy and Oncology Department of ABUTH, Zaria. It is a tertiary institution located in Kaduna State, Northwest of Nigeria. The region has an average total population of 6,113,503 according to the Nigerian census figure, 2006.

It was a retrospective study; the case folders and surgical notes of all patients with histological diagnosis of colorectal cancer that were managed in either the surgical and or radiotherapy and oncology department of the institution over a 10 year period (January 2006–December 2015) were retrieved and studied. A total of 122 patients with a diagnosis of colorectal cancers were seen.

## Definition of anatomical sites of colorectal cancer

- Right sided: Lesions arising from the caecum, ascending colon, hepatic flexure, or transverse colon
- Left sided: Lesions arising from the splenic flexure, descending colon, or sigmoid colon
- Rectal: Rectosigmoid junction and rectal tumor
- Colorectal cancer: It is a cancer that involves the large intestine, extending from the caecum to the rectum.

## **Inclusion criteria**

Patients with histological diagnosis of colorectal cancer, who presented to either department of surgery or radiotherapy and oncology department between January 2006 and December 2015 were included in the study.

## **Exclusion criteria**

- · Patients with benign diseases of the colon and rectum
- Patients without a histological diagnosis of colorectal cancer
- Staging system used was the Dukes' staging system.

Collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.0 (Chicago, United States of America). and presented in tables. Chi-square was used to test for statistical significance between the tumor location and stage of the disease.

## Ethical consideration

Ethical approval to conduct the study was granted by the Ethics and Research Committee of the hospital before the commencement of the study. Confidentiality was maintained, as data gotten from patient's folder and surgical notes were restricted to the researchers.

## RESULTS

A total of 59,810 patients with cancers were seen in surgical and radiotherapy and oncology department during the study period (January 2006–December 2015). Of these, 122 cases were colorectal cancer cases accounting for 0.2% of all cases.

## Sociodemographic data

The age of presentation ranged from 12 to 78 years. Peak distribution was from 31 to 40 years. The median age was 41 years, mean 42.4 years, and the modal age was 40 years, with a standard deviation  $\pm 14.9$ . The male-to-female ratio was 1.3:1. Civil servants (36%) and those living in the urban region (91%) were the most affected [Table 1].

## **Clinical Presentation**

Majority of the patients presented with more than one symptom, bleeding per rectum was the most common complain (n=82) with duration of symptoms ranging from 7-12 months (n=38) [Table 2].

Anatomical sites, histological patterns, and tumor stage Multiple sites of origin were noted, with the rectal site being the most common, while the left-sided lesion was more common than the right sided, with a ratio of 1.2:1. The right-sided lesion was more common among the males, with a male-to-female ratio of 1.3:1 [Table 3]. Adenocarcinoma was the most common histological type [Table 4]. Of the Theyra-Enias, et al.: Sociodemo and Clinicopath of patients with colorectal Ca. seen in ABUTH, Zaria

Table 1: The sociodemo	ographic cl	haracteristic	s of patients
	Patients sex		Frequency (%
	Male	Female	
Age range (years)			
10-20	3	5	8 (6.6)
21-30	12	9	21 (17.2)
31-40	20	10	30 (24.6)
41-50	8	15	23 (18.8)
51-60	15	9	24 (19.7)
61-70	11	3	14 (11.5)
71-80	1	1	2 (1.6)
Total	70	52	122 (100.0)
		Frequenc	y (%)
Ethnicity			
Hausa		48 (39.	.3)
Igbo		11 (9.0	D)
Yoruba		8 (6.7	') '
Fulani		7 (5.7	·)
Others		48 (39.	.3)
Occupation			,
Civil/public servants		44 (36.	.0)
Housewives		20 (16.	4)
Students		18 (14.	8)
Business/traders		16 (13.	1)
Pensioners/retirees		11 (9.0	D)
Farmers		7 (5.7	´)
Unemployed		3 (2.5	5)
Artisans		3 (2.5	5)
Residential area		( · · ·	,
Urban		111 (91	.0)
Rural		11 (9.0	D) (

Table	2:	Distribution	of	clinical	presentations	and	duration	of
symp	tor	ns						

	Frequency (%
Clinical presentation	
Bleeding per rectum (haematochezia/melaena stool)	82 (20.0)
Weight loss	58 (14.0)
Change in bowel habit	52 (12.7)
Abdominal pain (colicky and burning, epigastric pain)	44 (10.7)
Tenesmus (feeling of incomplete evacuation)	41 (10.0)
Absolute constipation	36 (8.7)
Abdominal swelling/distension	28 (7.0)
Vomiting	16 (3.9)
Anal protrusion/mass	14 (3.4)
Pains while defeacating	11 (2.7)
Fecal incontinence	9 (2.2)
Absolute diarrhea	6 (1.5)
Low back pain	4 (1.0)
Anorexia	2 (0.5)
Urinary retention	2 (0.5)
Passage of stools through the vagina	1 (0.2)
Bloody urine	1 (0.2)
Urinary incontinence	1 (0.2)
Vaginal mass	1 (0.2)
Passage of urine through the anus	1 (0.2)
Foul smelling anal discharge	1 (0.2)
Duration of symptoms (months)	
≤6	35 (28.7)
7-12	38 (31.1)
13-18	10 (8.2)
19-24	25 (20.5)
>24	14 (11.5)

n=22 patients with Dukes' stage D disease, n=18 cases were located in the rectum [Table 5].

West African Journal of Radiology | Volume 27 | Issue 2 | July-December 2020

Table 3: Cross-tabulation of site and patient's sex

Site	Patie	Frequency (%)	
	Male	Female	
Right sided	14	11	25 (17.0)
Left sided	20	9	29 (20.0)
Rectal	53	39	92 (63.0)
Total	87	59	146 (100)

#### Table 4: Histological type, grade, and stage

	Frequency (%)
Histological type	
Adenocarcinoma	89 (73.0)
Mucinous adenocarcinoma	22 (18.0)
Signet ring cell carcinoma	3 (2.6)
Squamous cell carcinoma	2 (1.6)
Adenocarcinoma with neuroendocrine features	1 (0.8)
Cloacogenic basaloid squamous cell carcinoma	1 (0.8)
Mixed mucinous and signet ring carcinoma	1 (0.8)
Mucinous adenocarcinoma (papillary pattern)	1 (0.8)
Papillary adenocarcinoma	1 (0.8)
Small cell carcinoma	1 (0.8)
Total	122 (100.0)
Grade	
Well differentiated (Grade 1)	37 (30.3)
Moderately differentiated (Grade 2)	36 (29.5)
Grade not specified	14 (28.7)
Poorly differentiated	35 (11.5)
Stage	
Dukes' A	2 (1.6)
Dukes' B	11 (9.0)
Dukes' C	15 (12.4)
Dukes' D	22 (18.0)
Total staged	50 (41.0)
Not staged	72 (59.0)
Overall total	122 (100)

#### DISCUSSION

The data of 122 patients with colorectal cancers over a 10 year period were collated and analyzed. The study showed an average annual incidence of 12.2 cases/annum. The low annual incidence of 12.2 cases/annum is similar to the low average annual hospital incidence for colorectal cancer (5 cases/annum) reported by Mbah in northwestern part of Nigeria,<sup>[12]</sup> 6 cases/annum reported by Yawe et al. in northeastern part of Nigeria,<sup>[16]</sup> and 3.7 cases/year in Burundi.<sup>[17]</sup> This is in contrast to a study in Southwest of Nigeria with an average of 24 cases/annum<sup>[18]</sup> and 32.3 cases/annum,<sup>[19]</sup> in the Republic of Korea with annual incidence as high as 45/100,000,<sup>[20]</sup> 42.7/100,000 in Slovakia,<sup>[20]</sup> and 35.2/100,000 in Canada.<sup>[20]</sup> The low annual incidence in northern Nigeria as compared to southern Nigeria can be attributed to culture, diet, and terrain which are drastically different.<sup>[7]</sup>

The study revealed that males were more affected than females by a ratio of 1.3:1 which is similar to the study by Abdulkareem *et al.* in Lagos and Sagamu, Southwest Nigeria,<sup>[19]</sup> in Jos Northcentral Nigeria with a

Table 5: Cross-tabulation of tumor site and stage of the disease						
Tumor site	S	Total				
	Duke's	Duke's	Duke's	Duke's		
	Α	В	С	D		
Right sided	1	5	6	2	14	
Left sided	0	2	2	2	6	
Rectal	1	4	7	18	30	
Total	2	11	15	22	50	
Test of association	n betwee	en tumor	site and	disease s	tage	
Statistical test	Value	df	Asymptotic significant (two-sided)			
Pearson Chi-square	9.139ª	6	.166			
Likelihood ratio Number of valid cases	10.034 50	6	.123			

 $^{\mathrm{a}}\mathsf{Eight}$  cells (66.7%) have expected count < 5. The minimum expected count is 0.24

male-to-female ratio of  $1.5:1,^{[21]}$  and Popoola *et al.* in Lagos, Southwest Nigeria with a male-to-female ratio of  $1.3:1.^{[22]}$ In Kashmir Valley, India, the male-to-female ratio was  $1.2:1.^{[23]}$  This is in contrast to a study by Madubogwu with a male-to-female ratio of  $1:2,^{[19]}$  with females being more affected than males and Mbah who found an equal ratio of male-to-female ratio of  $1:1.^{[12]}$  The median age in this study was 41 years which is similar to a study done in Jos located in Northcentral Nigeria with the average age of 43.7 years, while the median age was 42 years,<sup>[21]</sup> Mbah in Sokoto, Nigeria, reported a modal age of fifth decade.<sup>[12]</sup> Of the 122 cases, 59 patients (48.4%) were 40 years and below, while 63 (51.6%) were 40 years and above. This is comparable to a study in Egypt where 25% of cancers occurred in patients aged <40 years.<sup>[24]</sup>

From the study, the peak age was 31–40 years which is similar to the findings in Northeast of Nigeria with a peak age in the third decade of life.<sup>[25]</sup> The youngest patient was 12 years old, while the oldest patient was 78 years old. In Burundi, the mean age was 50.8 years, extremes of 19 years and 78 years.<sup>[17]</sup> This is in contrast to the US where the peak age is between 65 and 79 years, making it a disease of the elderly and not the young.<sup>[26]</sup>

The major ethnic groups seen were the Hausas (39.3%). This reflects the geographical region which is predominantly a Hausa settlement but made up of other minority ethnic groups. Majority (91%) were residents of urban settlement and mainly Civil/Public servants (36.0%)by profession, while 9% were residents of rural region and predominantly farmers (5.7%). In contrast to Yawe *et al.*, in North-Eastern Nigeria, it was most common among farmers (29.7%).<sup>[16]</sup> In Tanzania, East Africa, majority of the patients (70.5%) where from rural areas.<sup>[27]</sup> In this study, the high incidence in urban region is most likely due to sedentary lifestyle, physical inactivity, excess body weight, and central

deposition of adiposity which are established risk factors and probably play a prominent role in the pathogenesis of the disease in our population.<sup>[28]</sup> Westernization of the diet with resultant overconsumption of energy and developing insulin resistance may contribute to the prevalence in the more affluent region of the country's population, while the lack of specific macronutrients and certain other dietary ingredients in meals may play a part in the underprivileged strata.<sup>[28]</sup>

The duration of symptoms ranged from 3 weeks to 4 years. with majority of cases (31.1%) presenting between 7-12 Months after first symptoms. This is similar to the findings in Sudan where the median duration until the presentation was 10 months.<sup>[29]</sup> Similarly, in a study in northeastern Nigeria, the mean duration of symptoms was 14.5 months,<sup>[16]</sup> in Burundi, the median duration was 20 months from the beginning of symptoms and the first medical visit.<sup>[17]</sup> Most of the patients presented with more than one symptom. In this study, the most common symptom seen was bleeding per rectum which accounted for 20% (n = 82), weight loss accounted for 14% (n = 58), and change in the bowel 12.7% (n = 52). Similar to the findings by Phillipo et al. where the most common presentation was rectal bleeding 54.2%, change in bowel habit was 51.8%, abdominal pain: 46.1%, constipation: 42.2%, and weight loss: 36.7%,<sup>[27]</sup> and the findings by Bakari et al. showed that the major clinical features were gastrointestinal tract bleeding (70.3%), change in bowel habits, abdominal pain, weight loss, anorexia, anemia, and rectal mass.<sup>[16]</sup> This is a reflection of the most common site being the rectum, late presentation, and advanced stage.

The late presentation and advanced disease may be accounted for by poverty, ignorance, and gullibility which lead to unfavorable health-seeking behavior.<sup>[18]</sup> In this part of the world, rectal bleeding falls under the umbrella of "jedi-jedi". Jedi-jedi is a spectrum of diseases such as diarrhea, dysentery, low back pain, hemorrhoids, and pruritus ani. "Agbo jedi which is the native brew for this ailment is popular and is sold widely. Patients always vouch for its efficacy until the tumor dictates differently by causing pain, incontinence, or large bowel obstruction.<sup>[18]</sup> Lack of purchasing power keeps orthodox health care out of the reach of many of these patients. Religious beliefs influence the health-seeking behavior of patients with serious illness, many patients seek healing both in church and through traditional medicine.<sup>[18]</sup> In fact, in this subregion, it is the general belief that cancer also known as "jeji" was cured only by the native doctor who was the first point of call. Patients were not referred until the disease was advanced.<sup>[16]</sup> In this study, the site of tumor was broadly classified into right colonic cancer (cecum, ascending colon, hepatic flexure, and the transverse colon), left colonic cancer (splenic flexure descending and sigmoid colon), and rectal cancer (recto-sigmoid and rectum). The most common tumors were rectal tumors (n = 92) with the rectum accounting for 63% and the left-sided lesion (20%) was more common than the right-sided lesion accounting for 17%, with the right-sided cancers being commoner among males than females. This is similar to the findings by Abdulkareem et al. found in Southwest Nigeria where the left-sided (distal colon) tumor was more common (62%) than right sided (proximal) (14%) ones,<sup>[19]</sup> and Ahmed et al. in Egypt found that the left-sided tumors were more common at 43%, the right at 36%, and the rectum at 21%.<sup>[24]</sup> In Tanzania, there were 60.8% of the left sided (distal colon), 23.5% of right-sided (proximal) tumors, and 15.7% of rectal tumors.<sup>[27]</sup> In contrast with the US where the proximal colon was the most common site (42%), followed by the rectum (28%) and distal colon (23%).<sup>[26]</sup>

Adenocarcinoma was the predominant histology seen in 73% (n = 89), followed by a variant of adenocarcinoma-mucinous adenocarcinoma was seen in 18% (n = 22), and then, signet ring carcinoma accounted for 2.6% (n = 3). The histological type of adenocarcinoma with neuroendocrine features was seen in the youngest patient age 12 years. In Egypt, histology revealed adenocarcinoma as the most common (91%), two signet ring cell carcinoma (4%), two mucoid carcinoma (4%), and one anaplastic carcinoma (2%).[24] This finding is in agreement with Phillipo et al. in Tanzania who reported similar histological patterns.<sup>[27]</sup> The histological patterns of mucinous adenocarcinoma and signet ring carcinoma, which were seen in the younger age group <40 years, are usually aggressive/unfavorable behavior and this translates into poor prognosis.<sup>[17]</sup> Mucinous adenocarcinomas respond poorly to chemotherapy and tend to be located in the proximal colon and associated with microsatellite instability.[27]

About 30% of the cancers were well differentiated, 29.5% were moderately differentiated, 28.7% were not specified, and 11.5% were poorly differentiated. This concurs with the study by Abdulkareem *et al.* in Southwest Nigeria where the majority were well to moderately differentiated adenocarcinoma (76.4%), mucinous carcinoma (10.7%), and signet ring carcinoma (1.2%) and more common in patients under 40 years compared to well differentiated tumors.<sup>[19]</sup> Majority of the patients were not staged (59%), of the 41% that were staged, 18% (n = 22) had distant metastasis, 12.3% (n = 15) comprised Dukes' C, 9.0% (n = 11) comprised Dukes' B, and 1.6% (n = 2) were Dukes' A. Most of the patients presented with advanced

disease as shown by the stage - Dukes' D and Dukes C (Astler coller C1 and C2). This concurs with Nwafo et al. in Southeast Nigeria where most patients were classified as Dukes' C (33.3%), 30.6% had distant metastasis, 19.9% had stage A, and 16.7% had stage B.<sup>[30]</sup> Similar findings were found in Yawe et al.'s study in Maiduguri<sup>[16]</sup> and Popoola et al. in Lagos,<sup>[22]</sup> all in Nigeria where the patients presented with advanced disease. The findings are comparable with Saidi et al. in Nairobi, Kenya, where most of the patient's presented with Dukes stage C and D<sup>[31]</sup> and Humadi et al. in Iraq were Dukes C accounted for 71.3%, Dukes' D lesion: 56.9%, and Dukes' B and Dukes' A 7%.<sup>[32]</sup> Similar findings were found in Zambia by Zahir et al. where 74% of cases presented with stage 3 and 4 diseases.<sup>[28]</sup> Laishram et al. in Manipur, India, showed that 38.88% of lesions were stage C and above, i.e., involvement of local lymph nodes and distant metastasis.<sup>[33]</sup> Of the 22 patients with advanced-stage disease (Dukes D), 18 of these were located within the rectum and the test of association between the two variables were not statistically significant.

Late presentation and advanced stage is usually associated with an unfavorable prognosis which may be due to the fact that colorectal cancer has a biologically more aggressive course in Africa and this contributes to the unfavorable staging at the time of presentation and this is further worsened by the combination of ignorance and high cost of medical care.<sup>[21]</sup> The late presentation can also be attributed to the absence of specific screening measures for colorectal cancer among Nigerians.

#### CONCLUSION

The study established that colorectal cancer is becoming more common among the younger age group. The demographics and clinicopathological pattern is similar to other regions within Nigeria and other African countries. These include a slight male preponderance, mostly urban dwellers and civil/public servants. Bleeding per rectum being the most common complaint, rectal predominance and majority of the cases presented at an advanced stage.

The increasing incidence in the young necessitates family screening for genetic mutations since genetic factors may play an important role in the development of this disease. Early detection through public health education, screening programs, affordable and effective treatment, and follow up will help reverse this trend.

# Financial support and sponsorship Nil.

### **Conflicts of interest**

There are no conflicts of interest.

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