

# Clinical Characteristics of COVID-19 Patients Admitted at the Federal Medical Center, Abeokuta

Ayanfe Omololu<sup>1\*</sup>, Omobola Yetunde Ojo<sup>2</sup>, Segun Adebisi<sup>2</sup>, Victor Nwadike<sup>3</sup>, Oluwatomiwa Ajayi<sup>3</sup>, Tolulope Adesomi<sup>3</sup>, Oreoluwa Alade<sup>3</sup>

<sup>1</sup>Department of Internal Medicine, Federal Medical Center, Abeokuta, <sup>2</sup>Department of Community Medicine and Preventive Care, Federal Medical Center, Abeokuta,

<sup>3</sup>Department of Clinical Microbiology, Federal Medical Center, Abeokuta, Ogun State, Nigeria

## Abstract

**Background:** As the coronavirus disease 2019 (COVID-19) continues to ravage the world as a pandemic, there is a paucity of data in resource poor countries like ours on the clinical characteristics of these patients. **Aim:** The aim of our study was to find the sociodemographic, clinical, and laboratory characteristics of COVID-19 patients admitted in our facility between May and July 2020. **Materials and Methods:** A cross-sectional observational study was carried out on COVID-19 patients admitted during the study period. Their baseline demographic, clinical, and laboratory details were obtained from their clinical notes, recorded electronically, and analyzed. **Results:** Twenty-six COVID-19 patients were admitted during this period, with a mean age of 47.19 (standard deviation 16.56) years, and more males 16 (61.5%). Fever was the most common complaint 17 (65.4%), followed by breathlessness 15 (57.7%), weakness 11 (42.3%), and cough 9 (34.6%). Hypoxemia (SPO<sub>2</sub> <93%) was present in 10 (38.5%) of patients at admission, with dyspnea being the most common abnormality on general physical examination 20 (76.9%). Eleven (42.3%) patients had associated comorbidities with hypertension being the most common 7 (43.7%), followed by diabetes mellitus 4 (25.0%). Just 3 (11.5%) patients had mild disease, 13 (50.0%) had moderate disease, and 10 (38.5%) had severe disease. Lower respiratory tract infection or suspected COVID-19 was the initial diagnosis in 10 (38.5%) of patients at admission, while 16 (61.5%) were admitted with other diagnosis. Leukocytosis was found in 8 (30.8%) patients, 14 (53.8%) patients had anemia, elevated urea in 20 (76.9%), and elevated Creatinine in 11 (42.3%). Seventeen (65.4%) patients were discharged home, 2 (7.7%) referred to another center for hemodialysis, while 7 (26.9%) died. **Conclusion:** Understanding the clinical and laboratory characteristics of COVID-19 in our local environment will be integral to earlier identification and treatment outcomes for our patients.

**Keywords:** Clinical characteristics, COVID-19, Nigeria, severe acute respiratory syndrome coronavirus-2

## INTRODUCTION

The coronavirus disease (COVID-19) was first announced in Wuhan, China, in December 2019. Since then, it has spread rapidly throughout the world with over 63 million confirmed infections and over 1.4 million deaths worldwide<sup>[1]</sup> and was declared a pandemic by the WHO in March 2020.<sup>[2]</sup> Nigeria reported its first case on February 27, 2020, in an Italian man working at a cement factory at Ewekoro, Ogun state. At present (December 3, 2020), Nigeria has over 67,000 confirmed infections, and more than a thousand deaths from the disease, with over 2000 of these cases occurring in Ogun state.<sup>[3]</sup> A couple of these cases presented at the Federal Medical Center (FMC), Abeokuta for various medical complaints, and samples were sent and returned positive after a high index of suspicion by the attending physicians.

Various clinical characteristics have been reported for COVID-19 patients worldwide including risk factors for the disease, clinical presentations, associated comorbidities/complications, as well as laboratory features.<sup>[4-6]</sup> Internationally, clinical information/data on COVID-19 is still emerging, with a worse situation in resource poor countries like Nigeria. For a better understanding of this novel virus in our local environment, it will be important to analyze the unique presentations of our patients with the disease. This study aims

**Address for correspondence:** Ayanfe Omololu,

Department of Internal Medicine, Federal Medical Center, Abeokuta 110220,  
Ogun State, Nigeria.

E-mail: samayanfe@yahoo.com

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to evaluate the clinical characteristics of COVID-19 patients that were managed at the FMC, Abeokuta, during the earlier days of the pandemic (May to July 2020).

## MATERIALS AND METHODS

### Study design

This study was a cross-sectional observational study carried out at the FMC, Abeokuta, from May to July 2020.

### Study settings

The FMC, Abeokuta is a 350-bed tertiary health facility located in the capital city of Ogun state, with patient load from surrounding towns and villages as well from major cities like Lagos and Ibadan due to its proximity to them.

### Study participants

All confirmed adult cases of COVID-19 who were hospitalized during this period were recruited for the study after informed consent. Confirmed cases were defined as those whose nasopharyngeal and/or throat swabs were positive for Severe Acute Respiratory syndrome Coronavirus 2 (SARS-CoV-2) on reverse transcriptase-polymerase chain reaction (rt-PCR), with the primer sets for rt-PCR being those manufactured by Da An Gene Co Ltd. Cases were classified as mild, moderate, or severe according to NIH/WHO guidelines.<sup>[7]</sup> Asymptomatic cases were not included as testing was only performed for patients with symptoms. Mild cases were defined as patients with any of the signs and symptoms of COVID-19 such as cough, fever, malaise, anosmia, but no systemic symptoms such as dyspnea or abnormal chest imaging. Moderate cases were defined as patients with signs and symptoms of pneumonia/lower respiratory tract illness on clinical examination or imaging, with a SpO<sub>2</sub> ≥94% in room air, severe cases were defined as patients with hypoxemia (SpO<sub>2</sub> <94% in room air) requiring respiratory support and close monitoring.<sup>[7]</sup>

### Ethics

Ethical approval was obtained from the Ethical committee of the institution, with ethical standards being kept in accordance with the Helsinki Declaration of 1975, as revised in 2000.

### Data collection

Sociodemographic and clinical details including presenting complaints and their duration, history of comorbidities, general physical examination findings including vital signs at admission and during hospitalization, interventions received during hospitalization, findings from laboratory investigations, duration of hospitalization as well as outcome (died or survived) were obtained from patients at admission, and from their records during hospitalization and logged into an electronic data sheet (Google sheets). Interventions received included intranasal oxygen, intravenous fluids, antimalarial, intravenous or tablet antibiotics, or other supportive care depending on the clinical presentation of the patient and their associated comorbidities. All patients received oral azithromycin, Vitamin C, and Zinc. Routine investigations requested included full blood count, electrolytes and urea,

urinalysis, and other investigations as indicated for particular patients. Chest radiography done by few patients due to the lack of a dedicated machine for COVID patients at the time.

### Statistical analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS version 22, IBM Corporation, Armonk, NY, USA). Demographic and baseline clinical and laboratory characteristics were summarized into frequencies, medians, and interquartile ranges. Descriptive statistics including mean and standard deviation were used for continuous variables with normal distribution, while the median and range were used to describe continuous but skewed variables.

## RESULTS

As presented in Table 1, 26 patients with COVID-19 were hospitalized in our hospital during the study period, of which 9 (34.6%) were young individuals between the ages of 15 and 44 years, 14 (53.8%) were middle-aged individuals between the ages of 45 and 64 years, while just 3 (11.5%) were elderly. Mean age was 47.15 years (standard deviation 16.56). There were more males than females: 16 (61.5%) versus 10 (38.5%), with majority of study participants being married compared to single; 21 (80.8%) versus 5 (19.2%). Six (23.1%) had no formal or just primary education, with 10 (38.5%) having secondary education and 10 (38.5%) with tertiary education. Majority were artisans 18 (69.2%), with 6 (23.1%) being civil servants/salaried workers, and just 2 (7.7%) being students.

**Table 1: Sociodemographic characteristics of coronavirus disease 2019 patients**

Sociodemographic characteristics	Frequency (%)
Age (years)	
<45	9 (34.6)
45-64	14 (53.8)
>64	3 (11.5)
Mean	47.19
Median	47.50
Minimum	19
Maximum	75
SD	16.56
Gender	
Male	16 (61.5)
Female	10 (38.5)
Marital status	
Married	21 (80.8)
Single	5 (19.2)
Educational status	
No formal/primary education	6 (23.1)
Secondary	10 (38.5)
Tertiary	10 (38.5)
Occupation	
Artisan	18 (69.2)
Civil servant/salaried worker	6 (23.1)
Student	2 (7.7)

SD: Standard deviation

As presented in Table 2a-c, fever was the most common presenting complaint 17 (65.4%) versus 9 (34.6%), followed by breathlessness 15 (57.7%) versus 11 (42.3%), weakness 11 (42.3%) versus 15 (57.7%), cough 9 (34.6%) versus 17 (65.4%), vomiting 9 (34.6%) versus 17 (65.4%), malaise 6 (23.1%) versus 20 (76.9%), diarrhea 5 (19.2%) versus 21 (80.8%), loss of consciousness 4 (15.4%) versus 22 (84.6%), loss of appetite 4 (15.4%) versus 22 (84.6%). Hypoxemia (SPO<sub>2</sub> <93%) was present in 10 (38.5%) of patients at admission, while 16 (61.5%) had a SPO<sub>2</sub> ≥93%. Dyspnea was the most common abnormality on general physical examination 20 (76.9%), followed by tachycardia 16 (61.5%), fever 10 (38.5%), dehydration 7 (26.9%), pallor 6 (23.1%), pedal edema 3 (11.5%), jaundice 2 (7.7%), and hypotension 2 (7.7%). Duration of complaints was less than or equal to five days in more instances than greater than five days. Overall, 11 (42.3%) patients had associated comorbidities with hypertension being the most common 7 (43.7%), followed by diabetes mellitus 4 (25.0%) and others. Nearly two-thirds 16 (61.5%) of hospitalized patients were moribund on admission with a WHO performance score of 3 or 4, while 10 (38.5%) presented with a performance score of 2 or less.

**Table 2a: Presenting complaints of hospitalized patients and their duration**

Presenting complaints	Yes	No	Duration of complaints (days)	
			≤5	>5
			Fever	17 (65.4)
Cough	9 (34.6)	17 (65.4)	3 (33.3)	6 (66.7)
Sore throat	0	26 (100.0)	-	-
Malaise	6 (23.1)	20 (76.9)	5 (83.3)	1 (16.7)
Diarrhea	5 (19.2)	21 (80.8)	5 (100.0)	0
Breathlessness	15 (57.7)	11 (42.3)	13 (86.7)	2 (13.3)
Loss of consciousness	4 (15.4)	22 (84.6)	4 (100.0)	0
Weakness	11 (42.3)	15 (57.7)	7 (63.6)	4 (36.4)
Loss of appetite	4 (15.4)	22 (84.6)	3 (75.0)	1 (25.0)
Loss of smell	0	26 (100.0)	-	-
Vomiting	9 (34.6)	17 (65.4)	8 (88.9)	1 (11.1)

**Table 2b: SpO<sub>2</sub> at admission and general physical examination findings**

	Frequency (%)
<93%	10 (38.5)
≥93%	16 (61.5)
<b>Physical examination</b>	
Tachycardia	16 (61.5)
Pallor	6 (23.1)
Jaundice (icterus)	2 (7.7)
Hypotension	2 (7.7)
Fever	10 (38.5)
Dehydration	7 (26.9)
Pedal edema	3 (11.5)
Dyspnea	20 (76.9)

Just 3 (11.5%) patients had mild disease, while 13 (50.0%) had moderate disease and 10 (38.5%) had severe disease.

As presented in Table 3, lower respiratory tract infection or suspected COVID-19 was the initial diagnosis in 10 (38.5%) of patients at admission, while 16 (61.5%) were admitted with other diagnosis like congestive cardiac failure, sepsis, chronic liver disease among others. All patients received oral antibiotics (azithromycin),

**Table 2c: Associated comorbidity (n=26), performance status, and disease severity**

	Frequency (%)
<b>Comorbidity</b>	
Tuberculosis	1 (6.2)
Hypertension	7 (43.7)
Diabetes mellitus	4 (25.0)
Stroke	0
Kidney disease	1 (6.2)
Liver disease	1 (6.2)
Cancer	1 (6.2)
CCF	0
Hematological condition, e.g., SCD	1 (6.2)
<b>Performance status of hospitalized patients</b>	
0 - No symptoms, normal activity level	2 (7.7)
1 - Symptomatic, but able to carry out normal daily activities	3 (11.5)
2 - Symptomatic, in bed less than half of the day; Needs some assistance with some daily activities	5 (19.2)
3 - Symptomatic, in bed more than half of the day	9 (34.6)
4 - Bedridden	7 (26.9)
<b>Disease severity</b>	
Level of severity	
Mild	3 (11.5)
Moderate	13 (50.0)
Severe	10 (38.5)
Total	26 (100.0)

CCF: Congestive cardiac failure, SCD: Sickle cell disease

**Table 3: Diagnosis at admission and interventions received**

	Frequency (%)
<b>Diagnosis</b>	
Lower respiratory tract infection/COVID-19	10 (38.5)
Other diagnosis	16 (61.5)
Total	26 (100.0)
<b>Interventions received</b>	
Interventions	
IV fluids	22 (84.6)
Blood	5 (19.2)
Antimalarials	7 (26.9)
Oral antibiotics	26 (100.0)
IV antibiotics	24 (92.3)
Intranasal oxygen	14 (53.8)
Others*	8 (30.8)

\*Other supportive care and drugs for management of comorbidities. COVID-19: Coronavirus disease 2019, IV: Intravenous

with 24 (92.3%) receiving intravenous antibiotics for a superimposed bacterial infection or sepsis, 22 (84.6%) received intravenous fluids, 14 (53.8%) received intranasal oxygen, 7 (26.9%) received antimalarial (chloroquine), while 5 (19.2%) received blood and 8 (30.8%) received other interventions including other supportive care and drugs for management of comorbidities.

As presented in Table 4, leukocytosis was found in 8 (30.8%) patients, with neutrophilia in 3 (11.5%) and neutropenia in 10 (38.5%), while lymphocytosis was found in 5 (19.2%) and lymphocytopenia in 1 (3.8%). Fourteen (53.8%) patients had anemia, 3 (11.5%) had thrombocytosis, while 7 (26.9%) had thrombocytopenia. Hyponatremia was found in 2 (7.7%) patients with hyponatremia in 13 (50.0%), hyperkalemia in 3 (11.5%) with hypokalemia 11 (42.3%), metabolic acidosis in 10 (30.8%), elevated Urea in 20 (76.9%), and elevated Creatinine in 11 (42.3%). Abnormalities in urinalysis including the presence of protein and glucose were found in half of admitted patients.

As presented in Table 5, majority of patients 20 (76.9%) spent less than or equal to seven days on admission before they were either discharged or died, while 6 (23.1%) spent greater than seven days on admission. Seventeen (65.4%) patients were discharged home, with another 2 (7.7%) referred to another center for hemodialysis, while 7 (26.9%) died.

## DISCUSSION

More than half of the patients in our study were middle-aged individuals, with an overall mean age of 47.1 years in keeping with findings from other studies.<sup>[9,10]</sup> Similar to other local and international studies,<sup>[4,5,9]</sup> there was also a male gender predominance, and the most commonly reported symptoms were fever, breathlessness, weakness, and cough, in keeping with the epidemiology of the disease.<sup>[4,9,11]</sup> Fever and cough are both symptoms that are commonly associated with the

disease, but these were absent in 34.5% and 65.4% of our patients, respectively, and highlights the importance of maintaining a high index of suspicion in assessing patients who may not have these symptoms but present with other clinical features or epidemiological risks suggestive of the disease. Anosmia was not reported by any of the patients in this cohort. Dyspnea was the most common abnormality on general physical examination, and this has been said to be a risk factor for severity.<sup>[12-14]</sup> Patients with dyspnea might benefit from risk profiling for COVID-19, after excluding other causes, as well as closer monitoring in patients with the disease. Only few of our patients presented with mild disease, with half presenting with moderately severe disease and more than a third presenting with severe disease. This is in contrast to many other studies evaluating hospitalized COVID-19 patients where majority of cases are either asymptomatic or mild, compared to moderate and severe cases.<sup>[4,9,10,14]</sup> This may be due to the fact that during the earlier part of the pandemic, only symptomatic hospitalized patients received testing in our facility, many of which might have presented late or have associated comorbidities predisposing to severe disease. In keeping with this, all of our severe cases presented with hypoxemia, necessitating administration of oxygen, with a couple of them also requiring mechanical ventilators and intensive care which they could not receive at the time due to paucity of ventilators and lack of a dedicated intensive care unit (ICU). Nearly half of the patients in our study had associated comorbidities with hypertension and diabetes being the most common in keeping with other local and international studies,<sup>[9,15,16]</sup> which have also shown that patients with comorbidities are more likely to have a severe disease or to result in death.<sup>[15-18]</sup> This could have accounted for the higher numbers of severe cases we had; nearly half of our patients with comorbidities had severe disease, as well as a higher mortality rate (four of the seven patients that died had comorbidities). It might be important then

**Table 4: Laboratory investigation results of hospitalized patients**

Laboratory investigation	Reference range <sup>[8]</sup>	Normal	Elevated	Depressed
WCC ( $\times 10^3/\text{mm}^3$ ) (%)	3.5-11.0	6 (23.1)	8 (30.8)	0
N	20.0-70.0	8 (30.8)	3 (11.5)	10 (38.5)
L	15.0-45.0	6 (23.1)	5 (19.2)	1 (3.8)
PCV	34.5-54.0	8 (30.8)	0	14 (53.8)
Platelets ( $\times 10^3/\text{mm}^3$ )	100.0-450.0	11 (42.3)	3 (11.5)	7 (26.9)
Na (mEq/L)	135.0-145.0	8 (30.8)	2 (7.7)	13 (50.0)
K (mEq/L)	3.5-5.0	9 (34.6)	3 (11.5)	11 (42.3)
Cl (mEq/L)	95.0-105.0	10 (38.5)	5 (19.2)	8 (30.8)
HCO <sub>3</sub> (mEq/L)	20.0-30.0	13 (50.0)	0	10 (30.8)
Urea (mg/d)	3.36-8.40	0	20 (76.9)	3 (11.5)
Creatinine (mg/d)	0.8-1.3	7 (26.9)	11 (42.3)	5 (19.2)
<b>Urinalysis category</b>		<b>Frequency (%)</b>		
Normal urinalysis		13 (50.0)		
Abnormal urinalysis*		13 (50.0)		
Total		26 (100.0)		

\*Abnormal urinalysis was taken as presence of glucose, protein, nitrites, or leucocytes in urine. WCC: White cell count, PCV: Packed cell volume

**Table 5: Duration of hospitalization in Federal Medical Center, Abeokuta (days), and outcome**

	Frequency (%)
Duration (days)	
≤7	20 (76.9)
>7	6 (23.1)
Total	26 (100.0)
<b>Outcome at FMCA isolation center</b>	
Outcome	
Discharged	17 (65.4)
Died	7 (26.9)
Referred	2 (7.7)
Total	26 (100.0)

FMCA: Federal Medical Center, Abeokuta

to constantly counsel patients with comorbidities about consistently adhering to preventive measures such as use of face masks, hand hygiene, and physical distancing to avoid coming down with the disease, as well as paying closer attention to identifying comorbidities in COVID-19 patients who might then benefit from more critical care. Slightly more than a third of patients had an initial diagnosis of suspected COVID-19 or lower respiratory tract infection while nearly two-thirds had other initial diagnosis including congestive cardiac failure, chronic liver disease, and sepsis among others, with testing for SARS-CoV-2 occurring due to high index of suspicion from persistence of particular symptoms, or failure of resolution of typical diseases despite adequate therapy. Testing for SARS-CoV-2 might then be considered when there are atypical presentations of diseases in hospitalized patients. All of our patients received tabs azithromycin, and standards of care as recommended by the Nigerian Center for Disease Control,<sup>[19]</sup> with some receiving tabs chloroquine as well. Superiority of one medication over the other could not be ascertained from the structure of our study. More than half of our patients had oxygen administered, likely due to the higher numbers of severe cases we had. A wide spectrum of laboratory abnormalities has been reported in COVID-19 patients, similar to findings in our study. Many studies have shown that the white cell count in COVID-19 patients is usually low or normal,<sup>[20,21]</sup> but there is an increase with progression of the disease,<sup>[22]</sup> and leukocytosis is a predictor of more severe disease and ICU admission.<sup>[20,23]</sup> Neutrophilia, lymphopenia, anemia,<sup>[23]</sup> and thrombocytopenia, findings that were seen in our patients were also associated with more severe disease and predictive of adverse outcome. Platelet counts were generally found to be normal or low in nonsevere patients, but markedly reduced in severe cases.<sup>[20]</sup> Abnormalities in renal function, including elevated creatinine and urea, which was found in majority of our patients, were also associated with more severe and fatal disease.<sup>[22,23]</sup> Many of these patients required hemodialysis which was not available in our center at the time due to the lack of a dedicated dialysis machine, and which could have been responsible for poorer outcomes in our study. Greater attention should be focused on any patient presenting

with any of these laboratory abnormalities, due to the risk of more severe or fatal disease in them. Majority of our patients spent less than seven days on admission before there was an outcome; discharge or death, with a median duration of hospitalization of five days. About two-thirds of our patients were discharged, two were referred to other facilities for dialysis, while we had a mortality rate of 26.9%, higher than that reported in many other studies.<sup>[4,5,14]</sup> Our study is limited by having a small sample size from a single institution which might limit the generalizability of findings.

## CONCLUSION

There has been much progress in the understanding of COVID-19 since the earlier days of the pandemic, but there is still an urgent need for larger possibly multi-center studies to evaluate the clinical and laboratory characteristics of this disease which will lead to better understanding and treatment outcomes for the patients in our local environment.

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## Conflicts of interest

There are no conflicts of interest.

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