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ORIGINAL ARTICLE

Patterns of Clinical Presentation of COVID-19 Patients in Federal Medical Centre, Asaba, Nigeria

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Keywords

Clinical

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ABSTRACT

Background: COVID-19 is a global pandemic affecting over 25 million people with more than one million deaths and having different patterns of clinical presentation. The study aimed to describe the patterns of clinical presentation of COVID-19 patients in Federal Medical Centre, Asaba, Nigeria.

Methods: After obtaining an ethical approval, a facility-based retrospective cross-sectional study was carried out among 50 eligible patients in the hospital's isolation ward. Data was collected from the patients' case notes using a proforma to describe the epidemiological history, medical history, symptoms, signs, treatment measures and complications. Data were analyzed with Statistical Package for Social Science (SPSS) version 20 and presented as percentages, mean and standard deviation.

Results: The mean age of respondents was 44.7 ± 17.3 years with slightly higher proportion of female 26 (52.0%) and majority 41 (82.0%) had tertiary level of education. Fever 29 (76.3%), followed by malaise 19 (50.0%), cough 18 (47.4%), difficulty with breathing 14 (36.8%) and headache 14 (36.8%) were the most common presenting symptoms while majority 43 (86.0%) of the respondents had mild to moderate clinical presentation. The commonest source of the infection was close contact with confirmed case 33 (66.0%).

Conclusion: Mild to moderate cases of COVID-19 were more, with over two-third of the patients being symptomatic. The replication of this study in other COVID-19 treatment centers/isolation wards will aid in the better management of COVID-19 patients.

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INTRODUCTION

In recent times, there has been increased incidence of emerging and reemerging diseases which has posed a serious public health challenge in various regions of the world. The last two decades played host to a number of viral epidemics such as Severe Acute Respiratory Syndrome (SARS) in 2002-2003, the H1N1 Influenza (Bird flu) in 2009, Ebola in 2014-2016, Lassa fever in 2018[1] and the current COVID-19 pandemic.[2,3] An epidemic of lower respiratory tract infections first classified as

"pneumonia of unknown etiology" was detected in Wuhan, Hubei province in China and was first reported to the World Health Organization (WHO) Country Office in China in December, 2019. Following extensive investigation, the causative agent was attributed to a novel virus of the coronavirus family and experts of the International Committee on Taxonomy of Viruses (ICTV) named it Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2). [1,2]

The disease caused by this virus was later announced as coronavirus disease 2019 (COVID-19) by the WHO on the 11th of February, 2020. Despite its emergence from East Asia, COVID-19 spread rapidly worldwide attaining pandemic status and declared as such on the 11th of March, 2020. Currently, over twenty-five million people have been infected with more than 800,000 deaths globally.[3] Most of this exponential rise in cases is attributed to community transmission of the disease facilitated by human to human spread compounded with the possibility of transmission by asymptomatic carriers.[4,5] Disease presentation can be typical and atypical. Typical presentation of disease refers to the traditional signs and symptoms associated with diagnosing a disease condition. When these signs and symptoms deviate from the norm, atypical presentation of disease occurs.[6] So far, the spectrum of this viral illness and patterns of its presentation range from asymptomatic infection, mild upper respiratory tract illness, severe pneumonia with respiratory failure (necessitating ventilators) to death.[7,8]

Typically, it was reported that patients with COVID-19 present with fever, cough and difficulty in breathing but with more cases reported worldwide and concurrent research being carried out, varying patterns of presentation continue to emerge.

Studies done in China amongst patients with the disease indicate fever as the most common symptom followed by cough, dyspnea, myalgia, headache and diarrhoea.[5] Rhinorrhea and sore throat were only noted in a few patients.[5,7] It was also reported in China that amongst adult patients, hypertension and cardiovascular disease were the most common underlying factors/diseases associated with fatality followed by diabetes mellitus.[5,7,9] Also, a study concluded in New York[10] found that the most common comorbidities were hypertension, obesity and diabetes which corroborates those done in China. [7,11] In Europe, olfactory and gustatory dysfunctions have been reported especially as patients with COVID-19 exhibited these symptoms without rhinorrhea or nasal obstruction.[4] Severe cases were shown to evolve into Acute Respiratory Distress Syndrome (ARDS), arrhythmia and septic shock while on admission.[11] Worthy of note is the fact that out of 5,700 patients involved in the New York study[10], only 1734 (30%) of them were febrile which differs from what was reported in China with 88- 94% of confirmed cases presenting with fever in various studies.[7,9,] There have also been reports of young COVID-19 patients in their thirties and forties having massive strokes without prior history of chronic conditions

that may predispose to cerebrovascular accident.[12]

The first case of COVID-19 in Nigeria was confirmed on 27th February, 2020 and since then the country has recorded over 54,000 cases with slightly over 1000 deaths. The case fatality rate has gradually declined from about 3.54% to the present rate of 1.9% as at 30th of August, 2020.[13] The Nigeria Center for Disease Control (NCDC) has continuously revised the case definitions for COVID-19 as more data came to light, therefore the clinical presentation for inclusion as a case has also undergone five modifications (four case definitions and one community case definition) and the last one was in May 2020, the community case definition. The most recent case definitions include Suspected Case which is defined as any person (including severely ill patients) presenting with fever, cough or difficulty in breathing AND who within 14 days before the onset of illness had any of the following exposures: History of travel to and more than 24 hours transit through any high risk country with widespread community transmission of SARS-CoV-2 OR Close contact with a confirmed case of COVID-19 OR Exposure to a healthcare facility where COVID-19 case(s) have been reported; Probable Case was defined as any suspected case whose test result for COVID-19 is indeterminate OR whose test result is positive on a pan-coronavirus assay OR where samples were not collected before the demise of a suspect case and; Confirmed Case was defined as any person with laboratory confirmation of SARS-CoV-2

infection with or without signs and symptoms.[14]

The aim of this study was to describe the patterns of clinical presentation of COVID-19 patients in Federal Medical Centre, Asaba. Studies so far published on patterns of clinical presentation of COVID-19 have not extensively described those from Delta State where the Federal Medical Centre, Asaba is situated. We therefore believe that the outcome of this study will add to the growing body of knowledge of COVID-19 and assist clinicians in prompt identification and triaging of patients presenting with the disease.

METHODOLOGY

Study Site

This study was carried out at the Centre for Communicable Diseases' Control and Research (CCDCR) Federal Medical Centre, Asaba, Delta State. Delta State has an estimated population of 5,818,176 as at 2020 projected from the 2006 census figure (4,100,000) at a growth rate of 2.5%. [15] It is a predominantly oil and agricultural producing state located in the South-South region of Nigeria. The capital city, Asaba, plays host to the Federal Medical Centre, a tertiary health institution which is a 320 bedded facility providing tertiary health care services to patients within Delta and contiguous states. It has a Centre for Communicable Diseases' Control and Research (CCDCR) which operates the isolation ward, with twelve (12) en-suite rooms consisting of ten (10) treatment rooms and two (2) holding rooms.

It is operated by a team of medical doctors from all specialties. Pharmacists, laboratory scientists, nurses, hygienists, environmental health officers and biomedical engineers are among other health care providers engaged in the Centre. The Centre is purpose-built and provides services to infectious/communicable diseases patients while complying with the Nigeria Centre for Disease and Control (NCDC) guidelines and international best practices on the control and management of communicable diseases including COVID-19 infection.

Study Design

This was a facility-based retrospective cross-sectional study design

Study Population

All case notes of confirmed cases of COVID-19 admitted and managed in the CCDCR's isolation ward at the Federal Medical Centre, Asaba, between April and July, 2020.

Inclusion Criteria

All case notes of confirmed cases whose first contact (were not transferred in or referred from other COVID-19 managing facilities), admission and treatment was in Federal Medical Centre, Asaba, CCDCR isolation ward between April-July, 2020. This was in order to reduce non-uniformity of data and to be able to triage unbiasedly and thereby reducing information bias, from being a major limitation of the study.

Sample size and Sampling method

The various patients' case notes were screened for completeness by the researchers and assistants and only case notes that met the study inclusion and exclusion criteria were selected. All eligible patients' case notes within the specified period of April to July 2020 were included in the study. This came to a total of fifty case notes from the seventy-one total admission at the isolation ward of CCDCR, Federal Medical Centre, Asaba for the period specified.

Methods of Data Collection

Two research assistants were trained on data collection from the case notes and data entry for a week. These are resident doctors that were part of the COVID-19 management team of the centre from inception of the pandemic.

Data for the study was collected from the selected eligible patient's case notes with review of presenting complaints, history taking, examination, charts, treatment and nursing records. These were categorized into sections: Section A being socio-demographics of the patients and duration of admission; Section B included questions on patterns of presentations (fever, cough, respiratory distress, difficulty in breathing, loss of smell, loss of taste,) which was modified and adapted from recent studies on COVID-19 and Section C had questions on clinical presentation and management, presence of other comorbidities such as hypertension, diabetes mellitus, kidney diseases, and treatment uptake i.e. use of dexamethasone, intubation, oxygenation

etc. Information retrieved included epidemiological history (age, sex, ethnicity, possible place of infection), current and past medical history, symptoms, signs, confirmed laboratory results, treatment measures and complications. All the data collected were scrutinized by two physicians and interpretation were compared to ensure uniformity. Social class classification in this study was according to the UK National Statistics-Socio-Economic Classification (NS-SEC).[16] In 2001, the Registrar General Society Class (RGSC) was replaced with the National Statistics-Socio-Economic Classification (NS-SEC) to reflect current perceptions of both occupations and occupational advantage more accurately, from non-manual and manual groups into eight groups. These are: 1). Higher managerial and Professional occupations e.g. doctors, dentists, lawyers and engineers. 2). Lower managerial and professional occupations e.g. school teachers, nurses, police sergeants, journalists. 3). Intermediate occupations e.g. airline cabin crew, secretaries. 4). Small employers and own account workers e.g. self-employed, builders and hairdressers. 5). Lower supervisory and technical occupations e.g. train drivers, plumbers, electricians. 6). Semi-routine occupations e.g. shop assistants, post men, care assistants. 7). Routine occupations e.g. bus drivers, waitresses, cleaners and 8). Never worked and long-term unemployed e.g. the unemployed and those who have never had a paying job.

In this study, pattern of clinical presentation was taken as the presenting symptoms and signs of the patients as documented in the selected cases notes of the patients in addition to the required COVID-19 clinical management of the patients. They were then grouped as mild/moderate, severe and critical.

Data Analysis

Data were then coded, entered and analyzed using the SPSS version 20.0 software. Discrete variables such as educational status and marital status were presented as percentages while continuous variables that are normal in distribution (such as age) were expressed as mean ± standard deviation.

Ethical Considerations

Ethical clearance (FMC/ASB/A81 VOL X11/137) to conduct this research was obtained from the Federal Medical Centre, Asaba, Ethics and Research Committee. Permission was also sought from the Director of the Centre of Communicable Disease Control and Research, Federal Medical Centre, Asaba and the Head, Department of Public Health of the hospital. All data were kept secure and made available to only members of the research team.

RESULTS

Table 1 shows the socio-demographic characteristics of the patients with a mean age of 44.7 ± 17.3 years and a greater proportion 26 (52.0%) being in the age group of 20-49 years. Almost two-thirds 33

(66.0%) were married while all the participants were Christians. Over 80.0% of the patients had tertiary education and 28 (58.0%) belonged to social class 1 comprising of higher managerial and professional occupations. Nineteen (38.0%) of the respondents were of the Igbo ethnic group.

The most reported possible sources of the infection amongst the patients was being in close contact with a confirmed COVID-19 case 33 (66.0%), 19 (38.0%) had been to a health facility where COVID-19 was being managed while 3 (6.0%) had contact with a confirmed COVID-19 case in addition to exposure to a health facility where COVID-19 was being managed. (Table 2)

Table 3 revealed that twelve (24.0%) of the patients were asymptomatic at presentation while 38 (76.0%) were symptomatic. Regarding the presenting clinical signs and symptoms of patients, 29 (76.3%) had fever, followed by malaise 19 (50.0%), cough 18 (47.4%), difficulty with breathing 14 (36.8%) and headache 14 (36.8%) being the most common presenting symptoms. Others were loss of appetite 13 (34.2%), loss of smell 13 (34.2%) and loss of taste 13 (34.2%), among others. Majority 43 (86.0%) of the patients had mild to moderate pattern of clinical presentation, 5 (10.0%) were severe and 2 (4.0%) were in critical condition as at time of presentation.

Anti-hypertensive was the most 14 (28%) commonly used medications followed by use

of oxygen and oral hypoglycaemic medications with 5 (10.0%) and 3 (6.0%), respectively while only 1 (2%) had intubation procedure done. Two of the fifty patients died, giving a percentage of 4.0% and they were both in the age group of 50 – 79 years. (Table 4)

Table 1: Socio-demographic characteristics of patients

Variables	Frequency (n=50)	Percent
Age groups (years)		
1 – 19	3	6.0
20 – 49	26	52.0
50 – 79	21	42.0
Sex		
Male	24	48.0
Female	26	52.0
Marital status		
Single	12	24.0
Married	33	66.0
Widowed	5	10.0
Religion		
Christianity	50	100.0
Islam	0	0.0
Level of Education		
None	1	2.0
Primary	2	4.0
Secondary	6	12.0
Tertiary	41	82.0
Social class		
Class 1	28	56.0
Class 2	7	14.0
Class 3	2	4.0
Class 4	5	10.0
Class 5	1	2.0
Class 6	2	4.0
Class 8	3	6.0
Ethnicity		
Igbo	19	38.0
Delta Ibo	11	22.0
Yoruba	1	2.0
Urhobo	13	26.0
Isoko	4	8.0
Esan	1	2.0
Itsekiri	2	4.0

Mean age of patients = 44.7 ± 17.3 years

Table 2: Patients Possible Source of COVID-19 infection

*Possible Source of infection	Frequency (n=50)	Percent
Close Contact with a confirmed COVID-19 Case	33	66.0
Exposure to health facility where COVID-19 was managed	19	38.0
Exposure to health facility where COVID-19 was being managed and close contact to a confirmed COVID-19 case	3	6.0

Multiple response

Table 3: Presenting Signs/Symptoms and Disease severity of patients

Variable	Frequency	Percent
Presence of Symptom(s) (n=50)		
Yes	38	76.0
No	12	24.0
*Signs/Symptoms (n=38)		
Fever	29	76.3
Malaise	19	50.0
Cough	18	47.4
Headache	14	36.8
Breathing Difficulty	14	36.8
Loss of appetite	13	34.2
Loss of smell	13	34.2
Loss of taste	13	34.2
Frequent stooling	10	26.3
Body pains	8	21.1
Respiratory distress	7	18.4
Vomiting	5	13.2
Sore throat	4	10.5
Runny nose/catarrh	2	5.3
Limb weakness	2	5.3
Disease severity (n=50)		
Mild/Moderate	43	86
Severe	5	10
Critical	2	4

Multiple response

DISCUSSION

Over half of the patients were in the age group of 20-49 years with a mean age of 44.7 ±17.3 years. This was not surprising as the SARS-CoV-2 infection has been documented to affect all age groups even more with increasing age. This finding could be attributed to the fact that the economically productive adults are in this age bracket, constituting the workforce that goes out to work daily and therefore more likely to be exposed to SARS-CoV-2 virus. This was at variance with findings from other studies where the mean age of respondents was 55 years and above[7,8].

Table 4: Treatment uptake and outcome of Patients

Variable	Frequency (n=50)	Percent
Treatment Uptake		
Antihypertensive medication	14	28.0
Oxygenation	5	10.0
Oral Hypoglycaemic medication	3	6.0
Blood transfusion	2	4.0
Anticonvulsant	2	4.0
Dexamethasone	1	2.0
Intubation	1	2.0
Treatment Outcome		
Recovered	48	96
Died	2	4

The variance in these findings could possibly be due to the type of demographic population curve/transition in the countries of study like China that may have a young population or an aging population, giving room for either more deaths among the young or older/dependent age group.

There were three children with COVID-19 in this study, with age ranging from 1-12 years old. They were all close contacts of a confirmed case of COVID-19 in the family which is in keeping with findings from a study in Katsina, Nigeria where all five paediatric cases had close contact with a family member with confirmed COVID-19 infection.[19] The findings of this study and that of Katsina corroborates what was reported in the largest paediatric COVID-19 bio-specimen repository in Massachusetts where it was found that children could have high levels of the virus in their upper airways but yet displays relatively mild or no symptoms.[19,20] There was an almost equal proportion of male to female patients' ratio, as female were slightly more than male patients, a finding which is consistent with

a multicenter European study[4] but inconsistent with reports from several studies conducted in China that showed a male preponderance of the disease.[2,5,7,8,21] This was also inconsistent with the Nigeria Center for Disease Control (NCDC) report showing that males were twice more likely to contact COVID-19 than females.[22] The slightly higher female dominance in this study may be attributed to better health seeking behaviour of females, as there has been several documentation of better health seeking behaviour among women.[23,24] Better health seeking behaviour may not only result in reduced morbidity and mortality but will also lead to reduced financial burden and better quality of life.

All the respondents were Christians and greater proportion were of Igbo ethnicity. The predominance of Christianity could be attributed to the study being carried out in the South-South region of the country, where the treatment centre is located given that a larger proportion of the people in the South-South practice Christianity.[25] In

addition to the above, majority of our patients had tertiary level of education and were skilled workers, which ultimately would result in better health seeking behaviour and health care. The most common possible source of infection in this study was being in close contact with a confirmed COVID-19 case, followed by attending a health facility where COVID-19 was being managed. This corroborates the conclusion of person to person transmission as has been earlier documented.[11] The possible contributory factor was that at the start of the COVID-19 pandemic in Nigeria, there was this high belief that it was a hoax and therefore not real. This, compounded with the poor or non-existent practice of infection prevention and control measures exposed many to the infection due to close contact with confirmed and unconfirmed COVID-19 cases. This finding is in-tandem with findings from studies done in other parts of the world where infection prevention and control measures were not properly implemented early.[26,27] The belief by many that the disease is a hoax or propaganda may have inadvertently led to non-acceptance of death being due to the disease by relatives.

About two-third of the patients presented with symptoms and among the clinical symptoms the most common ones included fever, malaise, cough, headache and difficulty with breathing. These were in-tandem with the clinical pattern of COVID-19 as published by the WHO and NCDC. [13,16] The loss of appetite, smell and taste lends credence to reports of olfactory and gustatory dysfunctions as part of the clinical presentation of COVID-19, especially in mild to moderate cases.[4] This presentation of over two-thirds of the patients being symptomatic could probably have been due to the study being facility-based and conducted in a COVID-19 treatment centre. As majority of patients that presented for care would have been sick somewhat with signs and symptoms in need of expert medical care, needing treatment especially in the face of many people assuming the disease was a hoax.

The mild to moderate pattern of clinical presentation of the patients was more, while severe and critical presentations were few. Patients with severe and critical presentations required not only hospitalization for treatment but also needed oxygen support and advanced intensive care such as intubation. The finding of majority of the patients presenting clinically as mild to moderate cases was in keeping with findings from other studies[1,8] and also in line with the Nigeria Centre for Disease Control [14] and World Health Organization clinical documentations on COVID-19 management.[17,18] Part of what may have contributed to the low rate of critical and severe clinical presentations as found by this study could be the young population of the patients and the relatively low rate of comorbidities among the patients. Associated comorbidities such as diabetes mellitus and hypertension in addition to older age have been documented to

negatively affect outcome and prognosis of the disease.[26,27]

A meta-analysis conducted by Morgan Spencer Gold et al revealed high prevalence of diabetes mellitus among fatal cases of COVID-19 which may have resulted in the innate immunity being compromised amongst these group of patients[28] The study by Sanyaolu A et al reported increased severity of COVID-19 in patients with type 2 diabetes mellitus and an all-round increased mortality rate with poor glycaemic control.[29] Fortunately, this was not recorded in this study. This study recorded two deaths which were in those 50 – 79 years. This could partly be due to older age, as many studies[5,7,8,29] have documented increasing age as part of the possible determinant resulting in poor prognosis. Limitations in this study are the small sample size and that it could be prone to differential documentation, as data was retrieved from documented case notes of the patients, which may limit interpretation of our findings.

Conclusion: Majority of the patients presented as mild to moderate cases of COVID-19 with over two-thirds of them presenting symptomatic at the Federal Medical Centre, Asaba CCDCR isolation ward. The patterns of clinical presentations, are in keeping with that of WHO and NCDC case definitions and those described by previous studies. We therefore believe that the outcome of this study will add to the growing body of knowledge of COVID-19 infection and assist clinicians in prompt

identification and triaging of patients presenting with the disease. The replication of this study in other COVID-19 treatment centers/isolation wards will aid in the better management of suspected and confirmed COVID-19 patients. Hospital administrators/management and Medical Directors can draw up Standard Operating Procedures (SOPs) and protocols on proper description of patterns of clinical presentations of COVID-19 to be used in their facilities, to guide in the management of these patients as they present. Lastly, health care workers at all levels of care, should not only watch out for these signs and symptoms of the COVID-19 disease in presenting patients, they should also apply these presenting signs and symptoms efficiently in line with the recommended case definitions with the mind set of achieving correct patterns of clinical presentation. As doing this will improve the management of these patients, reduce consequential morbidities and possible mortality from the COVID-19 disease.

Authors' contributions: AAQ, ONL and OM conceived and designed the study. AAQ, ONL, OAN, EEO and OVA supervised data collection and reviewed the manuscript. AAQ, CD and P-EL conducted literature search. AAQ, ONL, OM and CD did the data analysis and wrote the initial draft. All authors read and approved the final draft of the manuscript.

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