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Obstetric Outcomes of pregnant women with Covid-19 infection during first and second waves of Covid Pandemic in Lagos Nigeria

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Abstract

Background: Coronaviruses are a group of enveloped positive-stranded RNA viruses. They constitute a very important human and animal pathogens. COVID-19, a novel coronavirus was identified towards the end of 2019 following a cluster of pneumonia in Wuhan city in China. Our study aims to document the obstetrics parameters and outcomes of pregnant women diagnosed and managed at the Lagos University Teaching Hospital, Nigeria.

Methods: The study was a retrospective review of the medical records of all pregnant women admitted to the Lagos University Teaching Hospital (LUTH) COVID 19 Isolation and Treatment Centre during the first wave (from April 2020 to October 2020) and second wave (from December 2020 to April 2021). The clinical characteristics (including COVID severity) and outcomes were retrieved.

Results: During the study period thirty-four pregnant women with suspected COVID-19 symptoms for which nasopharyngeal samples for RTPCR for SARS-CoV-2 nucleic acid were positive were seen and managed following their admission into the isolation ward for COVID-19. Of the 34 women, 50.0% (17) of them were discharged to the antenatal clinic following recovery, 44.1% (15) had childbirth while on admission, and 5.9% (2) had maternal death. Of the 15 deliveries, 14 occurred at term with 15 babies (a set of twins) and one preterm stillbirth.

Conclusion: The clinical manifestations of COVID-19 in pregnant mothers are similar to those described in the non-pregnant population as pregnancy does not seem to worsen the severity of the disease. Noticeably, severe infection occurred in women with comorbidities such as asthma and hypertensive disorders.

Key words: COVID-19, Pregnancy Outcomes, Lagos, Nigeria

Introduction

Coronaviruses are a group of enveloped positive-stranded RNA viruses.¹ They constitute a very important human and animal pathogens. COVID-19, a novel coronavirus was identified towards the end of 2019 following a cluster of pneumonia in Wuhan city in China.¹ At first, it started as epidemic in Hubei province in China before its rapid spread worldwide causing a global pandemic.^{1,2} The subtype of coronavirus that causes COVID-19 (betacoronavirus) was named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).²

The COVID-19 RNA sequence is closely related to two bat coronaviruses, because of which it has been postulated that bats may be the primary source of the virus; however, whether it is transmitted directly from bats to humans or through an intermediate host still remains unanswered.³ The primary route of spread is usually by direct person-to-person respiratory transmission: through respiratory particles, or viruses released in the respiratory secretions when a person with infection coughs and or sneezes.^{4,5} Although COVID-19 has been detected in non-respiratory specimens such as semen, stool, blood and ocular secretions, it is still uncertain if person-to-person transmission can occur through these routes.^{4,5} The confirmatory test for COVID-19 infection is real-time reverse-transcription polymerase chain reaction (RT-PCR) of nasopharyngeal and/or oropharyngeal swabs.^{1,6}

Patients infected with COVID-19 may be asymptomatic or symptomatic. The symptoms include, malaise, fever, cough, chills and rigors, recent loss of sense of taste or smell, sore throat, shortness of breath, abdominal pain, diarrhoea, runny nose, easy fatigability, body ache and headache.^{7,8}

Pregnancy does not increase a woman's susceptibility to COVID-19 infection, but it may worsen the progression of her disease. Some studies have associated SARS-CoV-2 infection with increased risk of preterm birth, but no increased risk of miscarriage, or congenital anomaly.⁸ It is our expectation that findings from this review could add to what is already known which will invariably improve the management and outcomes of pregnant women with COVID-19 - infection.

Materials and Methods

Study design and setting

The study was a retrospective review of the medical records of all pregnant women admitted to the Lagos University Teaching Hospital (LUTH) COVID 19 Isolation and Treatment Centre during the first wave (from April 2020 to October 2020) and second wave (from December 2020 to April 2021). The clinical characteristics (including COVID severity) and outcomes were retrieved.

Study location

The study was conducted at LUTH COVID 19 Isolation and Treatment Centre which has a total of 96 bed spaces in three wards with a separate intensive care unit of four beds located in another building. The centre which was set up in March 2020, admitted its first patient on the April 6th, 2020, and was one of the 5 designated COVID 19 isolation and treatment Centers in Lagos State. It is located inside LUTH and provided services for both children and adults. The LUTH COVID 19 Isolation and Treatment Centre is the only one in Lagos State that is located inside a

Table 1. Socio-demographics and clinical characteristics of the participants n= 34

AGE Group (years)	Frequency (%)
21-25	8(23.5)
31-35	17(50.0)
36-40	9(26.5)
Mean (SD)	31.3 (4.9)
Time of Diagnosis	
First trimester	7(20.6)
Second trimester	8(23.5)
Third trimester	17(50)
Postpartum	2(5.9)
Duration of Admission	
<10 days	27(79.4)
≥10 days	7(20.6)
Parity	
1-4	29(85.3%)
≥5	5(14.7)
Mode of Delivery	
Caesarean section	14(93.3)
SVD	1(6.7)
Maternal Outcome	
Recovered and discharged	17(50.1)
Delivered	15(44.1)
a) singleton	13(86.6)
b) Twins	1(6.7)
c) Preterm	1(6.7)
Died	2(5.8)
*#EBL	
<500MLS	12(83.3)
≥500MLS	3(16.7)

*EBL- estimated blood loss. SVD- spontaneous vaginal delivery, # n=15

Multispecialist tertiary hospital. A multi-disciplinary team consisting of obstetricians, anaesthetists, neonatologists, midwives, physicians and other specialists were formed to care specifically for these women and their infants using the locally and nationally established guidelines and protocols for the diagnosis and management of individuals with Covid-19 infection.^{9,10} The laboratory confirmation of COVID-19 infection was based on nasopharyngeal or throat swab test for Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) by using quan-

titative reverse transcription polymerase chain reaction (qPT-PCR).¹⁰ At the containment phase of the pandemic, confirmed cases were either admitted to the isolation ward for inpatient care or managed from home on supervised self-isolation based on the NCDC guidelines. Antenatal, mental health and emotional support were provided to mothers with counselling via telemedicine with focus on their own mental health and also on the management of their newborn post-delivery. In addition to virtual consultation, patients actually had some form of obstetric care in isolation ward - medication, fetal heart assessment, etc After delivery, mothers and their babies were nursed in the same room, but the mother were required/advised to wear a face mask and observe hand hygiene during breastfeeding and maintain physical distancing when not breastfeeding.

Study population

The review involved all patients with COVID 19 admitted to the isolation and treatment centre. These were both children and adults with positive real time reverse transcriptase polymerase chain confirmed SARS CoV 2

Sample size

The sample size for this study was 34 from a total of 602 patients managed at LUTH, which was determined by the number of patients admitted to the LUTH isolation ward between April 2020 and April 2021. The case notes for these patients were reviewed. The first wave lasted from April to October 2020, and the second wave extended from December 2020 to April 2021.

Data collection

The data were extracted into Excel and simple descriptive statistics were employed to report the findings utilizing means and standard deviations for continuous variables. Categorical variables were

Table 2. Common symptoms at presentation

Symptoms	Frequency (%)
Fever	19 (88.9)
Cough	16(66.7)
Chills	8(33.3)
Sorethroat	12(55.6)
Loss Of Taste\Smell	15(77.8)
Diarrhea/Abd Pain	3(11.1)
Difficulty in Breathing	7(38.9)
Runny nose/catarrh	7(33.3)
Fatigue	5(22.2)
Body Pain	6(33.3)
Headache	4(22.2)

*Some patients had more than one symptom.

shown as frequencies and percentages in the tables.

Study outcomes

The primary study outcome was maternal mortality rate, mode of delivery, severity of the symptoms and obstetrics complications.

Ethical consideration

Ethical approval for this study was obtained from the Health Research and Ethics Committee (HREC) of the Lagos University Teaching Hospital.

Data analysis

Data were entered into an excel sheet and then exported to the Statistical Package for Social Science (SPSS, IBM, Armonk, New York, USA) version 23 for analysis. Categorical variables were presented with frequency and percentages.

Results

During the study period, thirty-four pregnant women with confirmed COVID-19 infection were seen and managed at the Covid-19 Isolation Ward of LUTH. Of the 34 women, 50.0% (17) of them were discharged to the antenatal clinic following recovery, 44.1% (15) had childbirth while on admission, and

5.9% (2) had maternal death. Of the 15 deliveries, 14 occurred at term with 15 babies (a set of twins) and one preterm stillbirth.

Discussion

It's been earlier reported that majority of pregnant women showed mild clinical course of COVID-19 infection (85%). Severe cases occur in 9% while about 5% will require critical care.¹¹ Pregnant Black, Asian and Hispanic women were also noted to have disproportionately increased rates of COVID-19 infection, intensive care unit admission and death.^{11,12} These observed disparities may be because of the differences in socioeconomic status, access to good and quality healthcare systems and other occupational hazards.^{11, 12}

The aim of our study was to document the Obstetrics parameters and outcomes of pregnant women diagnosed with covid-19-infection, the mean age was 31.33+4.935 (ranged from 21-40), most women were between 26-30 years. This was also similar to the finding of Osaikhuwuomwan et al in Benin city, Nigeria.⁸

Overall, symptoms of COVID-19 in pregnant women generally appear to be similar to those in nonpregnant individuals, although asymptomatic cases may also occur.¹³ In our study the common presenting symptoms were fever, loss of taste and sense

Table 3. Obstetric complications

Variables	Frequency (%)
None	15(83.4)
Hypertensive disorders	5(27.8)
Shock	2(11.1)
ARDS	2(11.1)
Asthma	1(5.6)
Pulm Embolism	1(5.6)
PPH	1(5.6)
SSI	2(11.1)
Maternal ICU Admission	3(16.7)

of smell, cough, sore throat, difficulty in breathing, runny nose and catarrh. These clinical symptoms are similar to other published reports on COVID-19 symptoms.^{8, 13} Some of these symptoms may also overlap with symptoms that occur as physiological changes in normal pregnancy (eg, fatigue, shortness of breath, nasal congestion).¹³

The number of women with severe illness requiring intensive care unit admission was 16.7% which is similar to other studies on COVID-19 infection in pregnancy.^{8, 13} This also supports the fact that the majority of cases of COVID-19 infections during pregnancy may be asymptomatic or mild disease and may not require critical care. In this study also, most of the infected pregnant women recovered satisfactorily from the infection and were discharged home similar to what was reported earlier at Benin city Nigeria.⁸

We also found significant association between COVID-19 positive women who developed severe disease requiring intensive care unit admission and subsequent maternal death and the presence of hypertensive diseases of pregnancy and other respiratory comorbidity such as Asthma, even though that the overall absolute risk for severe disease (such as increased risk of intensive care unit admission, mechanical ventilation, receiving extracorporeal membrane oxygenation or maternal death) in women infected with COVID-19 remains relatively low.^{8, 11, 12} We also had the two maternal death in our study, two of which had other comorbidities such as asthma and Diabetes mellitus, this correlates with what was suggested by some authors that women with pre-existing comorbidities, such as respiratory and cardiovascular disease, diabetes, advanced maternal age and obesity, may be at increased risk of severe COVID-19 infection.^{8, 11, 12, 13}

In conclusion, the clinical manifestations of COVID-19 in pregnant mothers are similar to those described in the non-pregnant population as preg-

nancy does not seem to worsen the severity of the disease. Noticeably, severe infection occurred in women with comorbidities such as asthma and hypertensive disorders.

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