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Original Research Article

Effects of COVID-19 in maternal and perinatal morbidity and mortality among obstetrics patients in tertiary care center

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ABSTRACT

Background: By the end of 2019, WHO had identified COVID-19 disease as a public health emergency. Research has focused on the impact of SARS-CoV-2 infection during pregnancy, including symptoms, disease severity, risk of vertical transmission, and perinatal and neonatal prognosis.
Methods: This was a cross sectional prospective observational study, conducted at Gynae and Obstetric Department, in Bangabandhu Sheikh Mujib Medical University, between July 2020 to August 2021. 75 pregnant women who tested positive for COVID-19 were included in this study.
Results: Most of the patients 29(38.7%) were aged 25-29 years. Majority 96% (72) of the cases were asymptomatic, symptomatic cases with cough were 4% (3). On the basis of our data, 94.7% (71) of the cases were Antenatal, while Postnatal and Abortion were 4% (3) and 1.3% (1) respectively. Complications such as fetal distress 25.3% (19), scar tenderness 17.3% (13), pre-eclampsia 12% (9), post-dated pregnancy 9.3% (7), previous 2LSCS with pain abdomen 2.7% (2), oligohydramnios 2.7% (2), malpresentation (transverse lie) 1.3% (1). All pregnant postpartum women were administered antibiotics and enoxaparin. 60% (45) were given HCQ, 40% (30) were given Antiviral drugs, 40% (30) were given Steroids. Injection methyl-prednisolone and tablet hydroxychloroquine 400 mg 12 hourly loading dose on day 1 followed by 200 mg 12 hourly for next 4 days and improvement in symptoms were noted. 16% (12) were managed conservatively and only 1.3% (1) were ICU admissions.
Conclusions: In this study, we found that the majority of patients had moderate or no symptoms and discharged with satisfactory outcome.

Keywords: SARS-CoV-2, COVID-19, Maternal and perinatal morbidity, Mortality

INTRODUCTION

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was the novel coronavirus that initially appeared in Wuhan, China, in late December of 2019 and quickly spread to cause the condition known as COVID-19. It has been deemed a crisis for public health by the world health organization.[1] The family Coronaviridae includes the coronavirus. A single strand of positive sense RNA and enclosed virions are characteristics of coronaviruses (ribonucleic acid). Due to the club-shaped glycoprotein spikes that are present in the envelope, it has a crown-like or coronal look. The illness COVID19 is very contagious. Direct touch and respiratory droplets are the two basic methods of transmission. It can cause pneumonia and infect the upper and lower respiratory

tracts. The symptoms of the diseases can advance to shortness of breath and problems from pneumonia which is asymptomatic to fever, cough, muscle pains, vomiting, diarrhoea, nasal congestion, loss of taste and smell sensibility. According to several research, pregnant women are more likely than non-pregnant women to experience severe illness and unfavorable pregnancy outcomes from COVID-19, which can lead to more hospitalization and a higher risk of difficulties in the pregnancy's latter trimesters.[2-5] However, several studies have suggested that even while it affects pregnant women, most patients only experience mild to moderate symptoms compared to other healthy individuals.[6-8] Additionally, recent research from the UK reveals that pregnant women with COVID-19 positive status do not have a higher risk of having serious illness.[9] Age, obesity, and pre-existing illnesses like diabetes, congenital or acquired heart disease, hypertension, and obesity are all risk factors for developing serious illness in pregnant women. The danger of vertical transmission, or the transmission of an infection from the mother to the fetus during pregnancy or delivery, is, however, currently believed to be very low or nonexistent.[10] If it does, it doesn't seem to matter how the baby is born, how it is fed, or if the mother and child remain in the same room (rooming in).[11] The incidence of congenital defects has not significantly increased in the past few years, according to reports. It has been established that a roughly threefold greater risk of preterm delivery and an increased rate of caesarean birth go hand in hand. Determining the impact of COVID-19 on maternal and perinatal morbidity and death among obstetric patients in tertiary care facilities in Bangladesh was the goal of the current study.

Objectives

The objective of this study was to evaluate the effects of COVID-19 in maternal and perinatal morbidity and mortality among obstetrics patients in tertiary care center in Bangladesh.

METHODS

This was a cross sectional prospective observational study, conducted at Gynae and Obstetric Department, in Bangabandhu Sheikh Mujib Medical University (BSMMU), between July 2020 to August 2021. There were 75 pregnant women who tested positive for COVID-19 and admitted to our center for at least 14 days of isolation or symptom relief and were included in this study. Patients with and without labor were both included in the study. All standard antenatal screenings, including Ultrasonography (USG), corona-specific tests for Interleukin-6 (IL-6), C-reactive protein (CRP), D-Dimer, and serum ferritin, were performed at the time of admission. Modified biophysical profile, Non-Stress Test (NST) and Amniotic fluid index (AFI) were used for fetal surveillance, and individuals were monitored all the way through delivery. The ward, labor room, and operating room were equipped with all the relevant recommendations as instructed by the MoHFW regarding the necessary steps, including PPE Kits, Gloves, KN-95 masks, goggles, and face shields. Version 20 of SPSS was utilized for the analysis.

Inclusion criteria

Inclusion criterion for current study was; pregnant women who tested positive for COVID-19 had nasopharyngeal and pharyngeal swabs obtained for sampling, and confirmatory diagnoses were made using either the True Nat method of testing or real-time reverse transcriptase-polymerase chain reaction (RTPCR).

Exclusion criteria

Pregnant women who had COVID-19-like symptoms and indications but tested negative for RT-PCR/True Nat were excluded.

RESULTS

The age distribution of the study patients are depicted in (Figure 1).

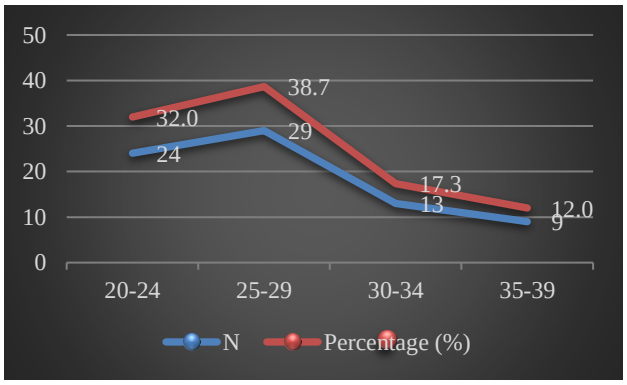

Figure 1: Age distribution of the study patients.

Most of the patients 29 (38.7%) were aged 25-29 years and followed by 24 (32%) were aged 20-24 years, 13 (17.3%) aged 30-34 years and 9 (12%) aged 35-39 years. Among the all 75 patients, 52% (39) were un-booked while 48% (36) were booked.

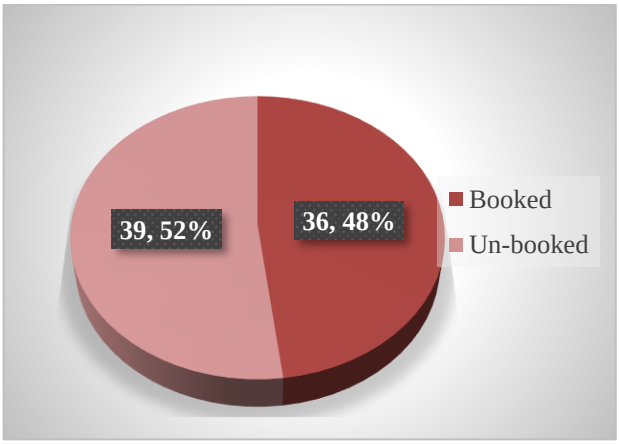

Figure 2: Booking status of the study patients.

The mode of delivery among the study patients is depicted in (Figure 3). Among the 75 pregnant women delivery was done in 62 patients (15% NVD and 85% LSCS). 72% of the patients, or 96%, were asymptomatic; the remaining 4% of cases had cough symptoms (3). Based on our data, 94.7% (71) of the instances were antenatal, 4% (3) were postnatal, and 1.3% (1) were abortions. 30.7% (23) of the total antenatal cases were 37 weeks POG. Multigravida and Primigravida instances made up 65.3% (49) and 34.7% (26) of all observed cases, respectively.

Table 1: Clinical presentation among the study patients.

Clinical Presentation		N	%
Obstetrics status on admission	Antenatal	71	94.7
	Postnatal	3	4.0
	Abortion	1	1.3
Gestational age of patient on admission	<37	23	30.7
	≥37	52	69.3
Gravidity	Primigravida	26	34.7
	Multigravida	49	65.3
COVID-19 symptoms	Asymptomatic	72	96.0
	Cough	3	4.0
Indication for LSCS	Fetal distress	19	25.3
	Scar tenderness	13	17.3
	Pre-eclampsia	9	12.0
	Postdated pregnancy	7	9.3
	Previous 2LSCS with pain abdomen	2	2.7
	Oligohydramnios	2	2.7
	Malpresentation (Transverse lie)	1	1.3

Table 2: Laboratory findings among the study patients.

Laboratory findings		N	%
C-Reactive protein normal range	CRP raised	61	81.3
	CRP normal	14	18.7
Interleukins 6 normal range: 1.8 pg/ml (15 cases)	IL-6 range	15	20.0
Chest X-ray findings (39 cases)	Pneumonitis	29	74.4
	Normal	10	25.6

A previous 2LSCS with discomfort in the belly 2.7% (2), oligohydramnios 2.7% (2), fetal distress 25.3% (19), scar tenderness 17.3% (13), pre-eclampsia 12% (9), post-dated pregnancy 9.3% (7), and malpresentation (transverse lie) 1.3% are examples of complications (1).

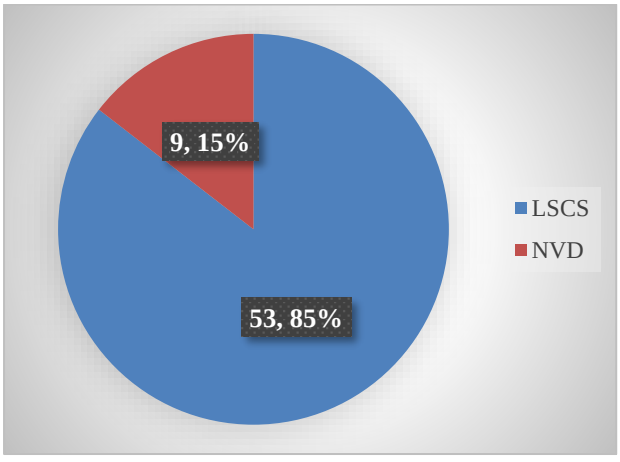

Figure 3: Mode of delivery among the study patients.

A sizable portion of pregnant women 81.3% (61) had elevated CRP levels, while 15 of the pregnant women on whom IL6 testing was done had abnormally high levels of the hormone. The oxygen saturation (SpO2) of the patients was monitored while they were moved to an oxygen bed. 39 pregnant women underwent chest x-ray examination; 74.4% (29) had pneumonitis, while 25.6% (10) had normal results. Antibiotics and enoxaparin were given to all pregnant postpartum women. 40% (30) received antiviral medication, 40% (30) received steroids, and 60% (45) received HCQ. Improvement in symptoms was seen after starting with an injection of methylprednisolone and 200 mg of hydroxychloroquine per day for the next four days. All patients also received zinc and vitamin C. Remedesivir, an antiviral, was given postpartum. Only 1.3% (1) were admitted to the ICU, while 16% (12) were conservatively handled. 60% (45) of prenatal and neonatal outcomes were found to be normal. IUGR's 8% prevalence rate (6) was higher than IUDs' 4% observed prevalence rate (3). Preterm neonates 2.7% (2) and neonatal deaths 2.7% were lower than NICU admissions at 5.3% and 4. respectively (2). 3% (2) of patients died while receiving treatment, which is relatively low when compared to the

97% (73) of patients who were released from the hospital in good condition.

Table 3: Treatment given to the study patients.

Treatment	N	%
Hydroxychloroquine (HCQ)	45	60.0
Antiviral treatment	30	40.0
Use of steroids	30	40.0
Conservative management only	12	16.0
ICU admission	1	1.3

Table 4: Maternal and perinatal/neonatal morbidity and mortality among the study patients.

Maternal and perinatal/neonatal morbidity and mortality	N	%
Normal	45	60.0
IUGR	6	8.0
IUD	3	4.0
NICU admissions	4	5.3
Preterm	2	2.7
Neonatal death	2	2.7

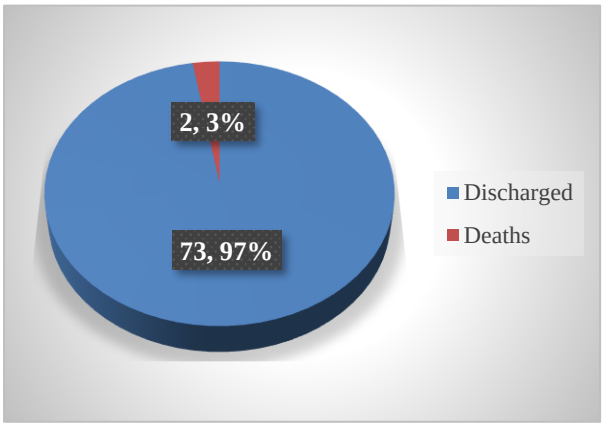

Figure 4: Outcome among the study patients.

DISCUSSION

Regardless of the symptoms or gestational age, 75 pregnant women with COVID19 infection who had been discovered during a normal prenatal checkup at the district hospital were referred to our institution for this study. The COVID-19 test should be administered to all pregnant women, regardless of whether they are experiencing symptoms, in labor, or are expected to give birth within the next five days, according to FOGSI guidelines.[12] Out of these 60, the most (96%, or 72 instances) were asymptomatic; the remaining 4% of individuals had cough symptoms.[3] Cough and fever were shown to be the most prevalent symptoms in pregnant women who tested positive for COVID 19 in studies conducted by Muhidin et al.[13] In our study, 29 patients (38.7%) were aged years, followed by 24 patients (32%) who were aged 20–24 years, 13 patients (17.3%) who were aged 30-34 years, and 9 patients (12%) who were aged 35-39 years. Similar conclusions were reached in a study by Knight et al.[14] In addition to regular prenatal testing, CRP and IL6 tests specific to COVID-19 was sent upon admission. Due to the lack of an IL-6 facility in our center, IL-6 testing was delayed and only completed in 15 cases, where all of the cases had elevated IL-6 levels. In 80.0% (48) of the cases, elevated C-reactive protein levels were discovered. When compared to non-pregnant people, pregnant women with COVID 19 have physiological "silencing" of the Th1 pro-inflammatory response and a relative Th2 dominance that lowers the inflammatory cascade, lessening the disease's severity and reducing the likelihood of maternal fatalities.[15] Despite elevated inflammatory markers in our study as well, both maternal and neonatal outcomes were favorable. According to research by Yan et al., 65.5% (76) of the 116 cases had been discharged with no maternal deaths.[16] In our study, pregnant women with covid-19 infection had similar favorable outcomes, with maternal death being only 3%. (2). Following surgery on day 2, two patients were brought to the intensive care unit (ICU) because to worsening COVID-19 symptoms; both patients passed away from pulmonary embolism. Since pregnancy is a known hypercoagulable state, D-dimer levels must also be monitored.[17] Elevated D-dimer in pregnant women with COVID-19 has been linked to an increased death risk, according to case series research.[18] In our study, pneumonia was radiologically diagnosed in 74.4% (29) patients; only 2 of these patients passed away from respiratory complications. Out of 427 pregnant women with proven SARS-CoV-2 infection, 10% needed respiratory support, and 1% passed away, according to a prospective cohort study by Knight et al.[14] Thus, it demonstrated that low rates of maternal death and morbidity were present despite the presence of radiological signs of pneumonitis. In our study, fetal distress, scar tenderness, pre-eclampsia, post-dated pregnancy, prior 2 LSCS, oligohydramnios, and malpresentation were indicators that 85% (53) of newborns will be delivered via caesarean section. The UKOSS study, which found that 59% of women had caesarean deliveries, half of which were due to maternal or fetal impairment, supports these conclusions. Obstetrical issues need rest (example, progress in labour, previous caesarean birth). Only 5.3% of the 62 newborns were admitted to the neonatal intensive care unit (NICU), and 2.7% of neonatal deaths and 2.7% of intrauterine deaths owing to abruption and aspiration pneumonitis respectively (Thick Meconium-stained liquor).

CONCLUSION

In this study, we found that the majority of COVID-19-positive women had moderate or no symptoms. The majority of the patients had radiographic evidence of pneumonitic alterations while being asymptomatic. Enoxaparin was initially administered combined with antibiotic and antiviral medications to treat the symptoms. When covid-19 obstetric patients received this rigorous treatment, they needed less acute care, recovered well after giving birth, and were discharged in satisfactory condition.

Even the neonatal result was quite positive. Our research, we believe, will be highly valuable in furthering this research's efforts to battle and defeat the virus.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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