

# Pregnancy complications in COVID-19 positive primigravid patients: a comparative study

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## ABSTRACT

**Background:** Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a new strain of corona virus causing COVID-19. Previous studies suggested that COVID-19 is more likely to affect older males with co-morbidities. But pregnant women are at greater risk of exposure to SARS-CoV-2 infection due to physiological and immunological changes during pregnancy. This study aimed to monitor the pregnancy complications and mode of delivery.

**Methods:** This prospective observational study was carried out in the Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital, Dhaka over from May 2020 to July 2020. A total of 20 primigravid singleton pregnant women of all trimesters having COVID-19 positive reports (mild to moderate) were included in this study. Similar numbers of primigravid singleton pregnant women of all trimester having negative COVID-19 report were included in this study. Women having age between 18 and 40 years were included. Patients with multiple pregnancy, pregnancy with hypertension, heart disease, renal disease and other metabolic diseases were excluded from this study.

**Results:** Most of the patients were between 26 and 35 years old. Mean age was  $29.25 \pm 4.42$  years in COVID positive group and  $31.10 \pm 4.65$  years in COVID negative group. In positive cases, most of them had gestational age below 37 weeks but in negative cases, most of them had gestational age  $\geq 37$  weeks. There was significant difference in gestational age between two groups. Regarding type of delivery, in positive cases most underwent Caesarean section and in negative cases maximum were normal vaginal delivery. Regarding antenatal complication during pregnancy, abortion, premature rupture of membrane and pre term labour was found significantly higher in positive cases than that of negative cases. Respiratory distress and psychological upset were observed significantly higher in positive cases than that of negative cases.

**Conclusion:** Regarding antenatal complications and mode of delivery, Frequency of abortion, PROM, preterm labor and LUCS was significantly higher in COVID-19 cases. Respiratory distress and psychological upset was significantly higher in COVID-19 positive cases. COVID-19 Among postnatal complications infection might increase the risk of pregnancy complications and pregnant women could have a severe clinical course of the disease.

**Key words:** COVID-19, singleton pregnancy, post-natal.

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## INTRODUCTION

The coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection has become a global pandemic.<sup>1</sup> It can affect anyone, pregnant women may be more susceptible to this viral infection due to physiological and immunological changes during pregnancy.<sup>2</sup> Viral infections are associated with adverse pregnancy and neonatal outcomes.<sup>3</sup> This study evaluated mode of delivery and complications among COVID positive pregnant patients and compared with a COVID negative group.

## METHODS

This prospective observational study was carried out in the Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital, Dhaka over a period of three months from May 2020 to July 2020. A total of 20 primigravid singleton pregnant women of all trimesters having COVID-19 positive reports (clinical mild to moderate disease) were included in this study. Similar number primigravid singleton pregnant women of all trimesters having negative COVID-19 negative were included in this study. COVID-19 was confirmed by RT-PCR. Women having age between 18 and 40 years were included. Patients with multiple pregnancy, pregnancy with hypertension, heart disease, renal disease and other metabolic diseases were excluded from this study. The results were expressed as frequency and percentage (categorical data) and mean  $\pm$  SD (numerical data). Unpaired t-tests and Chi-Square test was performed as applicable using SPSS for windows version 12.0 and  $p < 0.05$  was considered as significant.

## RESULTS

Most of the patients were between 26 and 35 years old. Mean age was  $29.25 \pm 4.42$  years in COVID positive group and  $31.10 \pm 4.65$  years in negative group. There was no significance difference between two groups (Table I).

**Table I** Distribution of the study subjects according to age in COVID-19 positive and negative groups (N=40)

Age (years)	COVID-19		p-value
	Positive (20)	Negative (20)	
21 - 25	3 (15.0)	2 (10.0)	
26 - 30	13 (65.0)	8 (40.0)	
31 - 35	2 (10.0)	7 (35.0)	
36 - 40	2 (10.0)	3 (15.0)	
Mean $\pm$ SD	$29.25 \pm 4.42$	$31.10 \pm 4.65$	0.205

In positive cases, most of them had gestational age below 37 weeks but in negative cases, most of them had gestational age  $\geq 37$  weeks. There was significant

difference in gestational age between two groups (Table II).

**Table II** Distribution of the study subjects according to gestational age in COVID-19 positive and negative groups (N=40)

Gestational age (weeks)	COVID-19		p-value
	Positive	Negative	
$\leq 20$	6 (30.0)	1 (5.0)	0.001*
21 - 30	4 (20.0)	0 (0.0)	
31 - 36	5 (25.0)	1 (5.0)	
37 - 40	5 (25.0)	18 (90.0)	
Mean $\pm$ SD	$28.10 \pm 9.84$	$36.55 \pm 5.33$	

Regarding antenatal complication during pregnancy, abortion, PROM and pre term labour was found significantly higher in positive cases than that of negative cases. There were abortion 7 cases in positive and 1 case in negative groups (Table III). Regarding mode of delivery, in positive cases most were LUCS and in negative cases maximum were NVD. The difference in type of delivery was statistically significant between positive and negative COVID-19 groups. (Table IV).

**Table III** Antenatal complication during pregnancy in COVID-19 positive and negative groups (N=40)

Antenatal complication during pregnancy	COVID-19		p-value
	Positive	Negative	
Abortion	7 (35.0)	1 (5.0)	0.048*
Pre-eclampsia	3 (15.0)	2 (10.0)	1.000
PROM	9 (45.0)	2 (10.0)	0.033*
Pre term labor	8 (40.0)	1 (5.0)	0.023*
UTI	4 (20.0)	5 (25.0)	1.000
IUD (Intra Uterine death)	3 (15.0)	1 (5.0)	0.596

Multiple responses

**Table IV** Mode of delivery among COVID-19 positive and negative groups (N=32)

Mode of delivery	COVID-19		p-value
	Positive (n=13)	Negative (n=19)	
LUCS	11 (84.6)	6 (31.6)	0.009*
NVD	2 (15.4)	13 (68.4)	

Respiratory distress, post partum haemorrhage and psychological upset were observed higher in positive cases than that of negative cases. Except post partum haemorrhage, others two were significantly higher in positive cases than that of negative cases (Table V).

**Table V** Post natal complication in COVID-19 positive and negative groups (N=40)

Post natal complication	COVID-19		p-value
	Positive	Negative	
Respiratory distress	7(35.0)	1(5.0)	0.048*
Wound Infection	2(10.0)	2(10.0)	1.000
Post partum haemorrhage	9(45.0)	3(15.0)	0.084
Psychological upset	6(30.0)	0(0.00)	0.026*

Multiple responses

## DISCUSSION

In Wuhan, Hubei Province of China, first cases of COVID-19 was found in December 2019. Since then, the infection has rapidly spread all over the world.<sup>4</sup> Previous studies suggested that COVID-19 is more likely to affect older males with co-morbidities.<sup>5</sup> But now pregnant women are considered a high risk group during and after pregnancy, and on their neonates. In our study, most of the (84.6%) positive cases were delivered by emergency Caesarean section. Among COVID-19 positive cases abortion was 35.0%, PROM was 45.0% and preterm labour was 40.0%. Regarding post natal complication, respiratory distress was in 35.0% cases, post partum haemorrhage in 45.0% cases and psychological upset in 30.0% cases in our study. Liu et al. found that 38.0% were delivered by emergency Caesarean section because of pregnancy complications including fetal distress, premature rupture of the membrane and stillbirth; six patients (46%) had preterm labour in their study.<sup>6</sup> In the meta-analysis of Dubey et al., the rate of C-section was 91.0% in Chinese studies, 40.0% in the US studies and 38.0% in European studies.

The rate of preterm birth was 19.0% in Chinese studies, 17.0% in European studies and 12% in the US studies.<sup>7</sup>

## Conclusion

Regarding antenatal complications and frequency of abortion, PROM, preterm labor and LUCS was significantly higher in COVID-19 cases. Among postnatal complications, respiratory distress and psychological upset was significantly higher in COVID-19 positive cases. More than 100 million women are pregnant worldwide. Corona virus disease might increase the risk of pregnancy complications and pregnant women could have a severe clinical course of the disease. So, meticulous management and multi-disciplinary approach should be taken for safe maternal and fetal outcome.

## Limitation

Since aim of the study was to monitor the pregnancy complications and mode of delivery, we did not include the information about neonates RT-PCR test results. Further large scale, multi-centric study is needed.

**Authors' contribution:** Two authors had equal contributions. They themselves collected data, analyzed data and completed the write up.

**Conflicts of interest:** Nothing to declare.

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