



**ORIGINAL RESEARCH PAPER**

**Obstetrics & Gynaecology**

**IMPACT OF COVID-19 ON PREGNANCY AND ITS OUTCOME IN ZONAL MILITARY HOSPITAL**

**KEY WORDS:** COVID-19, RT-PCR, APGAR, Vertical Transmission

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**ABSTRACT**  
**Introduction :** The corona virus disease 2019 [COVID-19] has rapidly spread worldwide and is now a global pandemic. It is matter of concern whether the COVID-19 affects the pregnancy and its outcome. In this study, investigation was done to determine the possibility of effects of COVID-19 on pregnancy and its outcome. **Materials and Methods :** A total of 1014 pregnant women were included in the study, from 1st April to 30 Nov 2020 at a zonal military hospital. There were 148 women who tested COVID-19 RT-PCR [reverse transcriptase polymerase chain reaction] positive and remaining 866 were COVID-19 negative. Findings of antenatal complications and perinatal outcome were compared in both the groups. **Results :** The incidence of COVID-19 positive pregnant women was found to be 14.59 %. No increase in rate of antenatal complications was seen in COVID-19 positive patients. Cesarean delivery rate was more in the COVID-19 positive group (52%) as compared to COVID-19 negative group (38%), (p > 0.05). Low APGAR score (0-3) was observed in 1 (0.67%) neonate of COVID-19 positive mothers and in 9 (1.03%) neonates of COVID-19 negative mothers. Overall 148 neonates were tested for the possibility of vertical transmission, 145 neonates were negative in RT-PCR, while 3 were positive. **Conclusion :** There is no significant effect of COVID-19 infection on maternal and foetal outcome in pregnancy and possibility of vertical transmission of the COVID-19 infection can not be ruled out.

**Introduction :**  
 COVID-19 is now considered a pandemic since World Health Organization (WHO) announcement on March 11, 2020. The patients of COVID-19 can present with array of symptoms. Most common are fever, cough, fatigue or myalgia, headache, loss of taste or smell with some cases developing into life threatening pneumonia. The mode of transmission is by way of droplets which can occur when the patient sneezes or coughs. The incubation period varies from 2 days to 2 weeks following exposure to the virus [1]. The diagnosis of COVID-19 infection done presently by detection of the viral RNA by RT-PCR (Reverse Transcriptase Polymerase Chain Reaction) from the nasopharyngeal mucosa.

Pregnant women need special attention in this situation as physiological modulation in the immune system during pregnancy puts them and their neonates at increased risk of negative outcomes of COVID-19 infection [2].

According to Center for Disease Control and Prevention (CDC), much is still unknown about the effects of COVID-19 on the pregnancy and neonatal outcome [3].

Therefore, it is important to gain knowledge about pregnancy and its perinatal outcomes during the COVID-19 pandemic, including the possibility of vertical transmission. In this study, an attempt is made to demonstrate the effects of COVID-19 on pregnancy and its perinatal outcome and the possibility of vertical transmission.

**Materials and Methods :**

This is a prospective observational study done in the Department of Obstetrics and Gynecology at Zonal Military Hospital. Approval of institutional ethics committee was obtained before starting the study. Informed consent was obtained from each patient prior to participation.

A total of 1014 patients were included in the study, who were in third trimester or labour, from 1st April to 30 Nov 2020. 148 women tested COVID-19 positive and 866 women were COVID-19 negative. Aim of the study was to assess the

maternal morbidity due to COVID-19 in the pregnant patients and to assess the effects of COVID-19 infection on perinatal outcome along with vertical transmission. Detailed history of patients like age, parity, gestational age, mode of delivery/ outcome, neonatal APGAR score were noted. The testing of all the pregnant women for COVID-19 was done by COVID-19 RT-PCR.

Symptoms like fever and cough, oxygen saturation and laboratory findings like CBC, C reactive protein were recorded in COVID-19 positive mothers. For neonates born to mother with COVID-19 infection, nasopharyngeal swab was collected within 24 hrs of birth and sent for COVID-19 RT-PCR test and analysed.

**Results :**

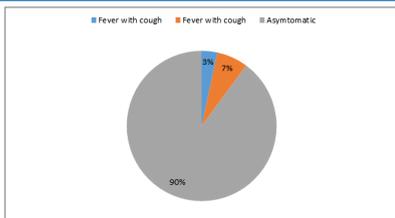
Total of 1014 pregnant women were analyzed. Demographic parameters like age, parity, mode of delivery, neonatal APGAR, vertical transmission was taken into consideration.

**Demographic profile [n-1014]**

**Table:1**

Parameters	Covid positive	Covid Negative
Mean age	28 ± 7	26 ± 5
Parity	Primigravida-60 [40.54%] Multigravida- 88 [59.46%]	Primigravida-520 [61%] Multigravida- 346 [39%]
Mode of delivery	Vaginal-72 [48%] Cesarean -76 [52%]	Vaginal -537 [62%] Cesarean -329 [38%]
Total	148	866

Symptoms like fever and cough were taken into consideration. Out of 148 COVID-19 positive patients 10 patients reported having fever, 5 patients reported having fever and dry cough, with oxygen saturation normal in all asymptomatic patients while one mother develop dyspnea with hypoxia after cesarean delivery and was on oxygen support for 8 days.



Antenatal complications like premature rupture of membranes [PROM], oligohydramnios, preterm labour, intrauterine growth restriction and intrauterine fetal demise [IUGR] was also compared in COVID-19 positive and COVID-19 negative group. No increase in antenatal complications seen in COVID-19 positive patients.

**Antenatal Complications**

**Table:2**

Antenatal Complications	Covid-19 positive N = 148	Covid-19 negative N = 866	p value
Oligohydramnios	2 [1.35%]	22 [2.54]	< 0.05
Preterm labour	2 [1.35%]	49 [5.65%]	< 0.05
PROM	3 [2.02%]	53 [6.12%]	< 0.05
IUGR	1 [0.67%]	20 [2.30]	< 0.05
IUFD	0	6 [0.69%]	< 0.05

Neonatal outcome in respect to APGAR score was also compared in COVID-19 positive patients and COVID-19 negative patients. No significant change in neonatal outcome was noted.

**Neonatal outcome n = 1014**

**Table:3**

Apgar score	Covid-19 positive	Covid-19 negative	p value
7-10	145	834	< 0.05
4-6	2	23	< 0.05
0-3	1	9	< 0.05

To determine the possibility of vertical transmission, neonates of COVID-19 positive patients were tested by COVID-19 RT-PCR. Out of 148 neonates, 145 neonates were negative in RT-PCR, while 3 were positive. All neonates were asymptomatic.

**RT PCR Test Result for Neonates n =148**

**Table:4**

Parameters	Value
RT-PCR positive	3 [2.02%]
T-PCR Negative	145 [97.97%]
Total	148

**Discussion :**

There is a very limited data currently available on maternal and fetal outcomes in COVID-19 infection in pregnancy. Chen et al. [4] reported the maternal-neonatal outcomes and vertical transmission potential of COVID-19 pneumonia in pregnant women. Their study focused on pregnant women who only delivered babies by LSCS, and no case has been reported for normal vaginal delivery.

Lam et al; [5] studied the clinical course and outcome of pregnancy in patients with infections caused by pathogens similar to COVID-19 pathogens. The study showed that complications including sepsis, acute kidney injury, and disseminated intravascular coagulation (DIC) were considerably increased in pregnant women. Besides, they observed that the use of mechanical ventilation and mortality were more common among them than others.

Several studies have reported that most women who were

COVID-19 underwent LSCS because of obstetric indications. [4, 6, 7,] For vertical transmission in COVID-19 the data is limited. In one case series, three neonates were born vaginally (one singleton, one set of twins) and throat swabs for PCR at day one of birth were negative for COVID-19 in all three cases [8].

In study by Chen et al. (4) the amniotic fluid, cord blood, neonatal throat swab, from newborn neonates of COVID-19 positive mothers were negative for COVID-19. Mimouni F et al and Muhidin S et al have revealed about the possibility of the vertical transmission in pregnancy [9,10,11].

In our study results revealed that the most common symptoms among COVID-19 positive pregnant women were fever, and cough. The majority of COVID-19 positive patients delivered by cesarean delivery and they were discharged from hospital with no significant complications. Antenatal complications were not increased in COVID-19 group. Besides this our analysis revealed that neonates with positive COVID-19 infection were diagnosed by nasopharyngeal swab test. All COVID-19 RTPCR positive neonates were asymptomatic.

**Conclusion :**

There is a very limited data currently available on maternal and fetal outcomes in COVID-19 infection in pregnancy.

In our study, the clinical outcome was satisfactory for both mothers and neonates and there were no maternal or neonatal deaths due to COVID-19 as compared to COVID-19 negative mothers and neonates. The results of the study suggested that there is no effect of COVID-19 infection on maternal and perinatal outcome in pregnancy.

In our study, three neonates out of 148, tested positive for COVID-19 infection.

Though statistically not significant as shown by the p value, the rare possibility of vertical transmission in pregnant women with COVID-19 infection cannot be completely ruled out. Finally, to determine whether if vertical transmission indeed occurs, further larger scale studies are needed to be performed.

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