ORIGINAL ARTICLE

# COVID-19 INFECTION DURING PREGNANCY: A PERSPECTIVE OF MATERNAL AND FETAL OUTCOMES

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ABSTRACT

**Introduction**: The novel coronavirus illness (COVID-19), which is brought on by the SARS-CoV-2 virus caused a worldwide pandemic declared by the World Health Organization (WHO). With nearly a million people infected as a result of the SARS-CoV-2 worldwide pandemic. The severe acute respiratory syndrome coronavirus (SARS-CoV) and the Middle East respiratory syndrome coronavirus (MERS-CoV) epidemics of human coronaviruses have taught us that pregnant women and their fetuses are particularly susceptible to unfavorable outcomes. Due to their immature immune systems, the foetus and the infant are extremely susceptible to infections. Regarding the COVID-19 pandemic, pregnant women and newborns are considered as potential risk groups.

**Material & Methods**: Pregnant patients with positive PCR (reverse transcriptase-polymerase chain reaction) reports presented to Hayatabad Medical Complex Peshawar were admitted to the Department of Obstetrics and Gynaecology from November 2020 to July 2021. Total 50 pregnant women with covid-19 positive PCR results were assessed.

**Results**: Mean age of the patients was 37±5 years and the mean gestational age was 36±7 weeks. Maternal complications of COVID-19 include preterm labor (6%), maternal mortality (2%), premature rupture of membranes (PROM) (6%), and oligohydramnios (17%). As a finding of routine COVID-PCR testing 52% (26) and 44% (22) patients were asymptomatic and mild symptomatic respectively while 4% (2) were having severe symptoms. Fetal complications of COVID-19 include stillbirth (6%), intrauterine growth restriction (IUGR; 17%), preterm birth (6%), fetal distress(2%) and median Apgar score of 5+2 All the neonates were covid negative in the first two days except one.

**Conclusion**: Pregnant women who test positive for COVID-19 have fewer symptoms than the normal population and may still test negative for viral pneumonia on RT-PCR. Preterm deliveries, low birth weight, C-sections, and NICU admissions appear to be more common than in the general population.

**Key Words**: IUD, Maternal Mortality, Oligohydramnios, PROM, Preterm Labor

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## INTRODUCTION

The novel coronavirus illness (COVID-19), which is brought on by the SARS-CoV-2 virus caused a worldwide pandemic declared by the World Health Organization (WHO).[1] With nearly a million people infected as a result of the SARS-CoV-2 worldwide pandemic. The increasing mortality rate warrants health authorities to identify and protect the community's most at-risk groups. Pregnant women and their fetuses are more vulnerable to negative effects, as demonstrated by the severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) outbreaks of human Corona Viruses. In previous studies, admissions to intensive care facilities are widespread, with a case mortality rate as high as 35% has been reported.[2,3] Due to their immature immune systems, the foetus and the infant are extremely susceptible to infections.[4] Cytokines and the complement cascade may negatively impact how the brain develops and functions.[5] Consequently, it is important to determine if an infectious agent may enter the fetus or newborn by vertical transmission from the mother.[6] Pregnant women and babies are seen as possible risk populations in relation to the ongoing COVID-19 pandemic. The results for mothers and perinatals of pregnant women infected with SARS-CoV-2 have only been reported in a few number of case studies and series. Health policy changes and continuously evolving clinical management guidelines. It is crucial that scientific information on the illness is disseminated clearly and effectively due to the scant data acquired about the novel coronavirus and the sharply rising burden of the disease.[7] We aimed to identify a quantitative synthesis of the clinical symptoms and maternal, and neonatal outcomes for COVID-19-affected pregnancies.

## MATERIAL AND METHODS

All Pregnant patients with positive PCR (reverse transcriptase-polymerase chain reaction) reports consecutively presented to Hayatabad Medical Complex Peshawar were admitted in the Obstetrics and Gynecology department from Nov 2020-July 2021. Informed consent was taken from all the included participants. This study included pregnant women who tested positive for COVID-19, while patients having anomalous fetuses, previous multiple cesarean scars, known hypertensive, diabetic and cardiac patients were excluded. A descriptive study was conducted. Data were collected after taking approval from the institutional ethical review board with letter no. 603/HEC/B$PSC/2022. The statistical analysis was conducted using SPSS version 22.0. In order to compute descriptive statistics, scale variables' means and medians as well as category variables' frequencies and percentages were taken into account.

## RESULTS

A total of 50 pregnant women with PCR results for COVID-19 positive were evaluated in total. The mean age of the patients was 47±5 years and the mean gestational age was 36±7 weeks. Maternal complications of COVID-19 included preterm labor (6%), maternal mortality (2%), premature rupture of membranes (PROM) (3%), and oligohydramnios (7%) as shown in Table-1. As a finding of routine COVID-PCR testing 52% (26) and 44% (22) patients were asymptomatic and mild symptomatic respectively while 4% (2) were having severe symptoms as shown Figure-1.

Fetal complications of COVID-19 included stillbirth (6%), intrauterine growth restriction (IUGR; 3%), and preterm birth (6%), fetal distress (5%) as shown in Table-2. All the neonates were covid negative in the first two days except one.

## DISCUSSION

The current study timeframe captured the initial days' experience of our practice. Results from this study suggest overall increased complications of SARS-CoV-2 infections at the time of delivery in expectant women in comparison to the general population. Two patients were sent to the intensive care unit and kept in isolation.

Only one SARS-CoV-2 infection case with PCR confirmation was found among the neonates delivered to these women who completed testing, in spite of the existence of perinatal complications. Maternal-fetal transmission generally occurs by the hematogenous route, in which the placenta is infected by a virus that is circulating in the mother's blood, and ultimately transmits to the fetus after passing through the chorionic villous tree and fetal blood vessels. However, according to reports, coronavirus infections in pregnant women do not result in the transfer of this disease through this mechanism. SARS-

CoV-2. Though the mother is infected by this severe maternal pneumonia, maternal mortality, and miscarriages are caused by coronaviruses.[11]

Additional knowledge on COVID-19's impacts on pregnant women and their unborn children will become available as this global pandemic spreads. If SARS-CoV-2 infection in pregnant women or newborns were to tragically result in death, as it has in many instances of emerging infections, pathological assessment of tissues and molecular characterization of the virus would be helpful in determining the etiology of the disease.[8] On the obstetrical care of SARS-CoV-2 infection in pregnant women, revised recommendations are currently available.[9] Additionally, it is important to remember that pregnant women should be considered for inclusion in the clinical trials and eventual distribution of the COVID-19 vaccination unless the hazards outweigh the possible advantages.[10]

According to research done in Saudi Arabia, 4.2% of pregnant women had COVID positivity, which was complicated by abortion (6 versus 2%, p=0.00), fetal mortality (3 versus 1.3%), and cesarean birth (30.8 against 22.4%, p=0.00). In addition, independent of COVID-related symptoms, newborn mortality was more prevalent in older, COVID-positive mothers than in younger ones (4 vs 0%).[12] More than 70% of patients of patients in Bangladesh had births throughout the course of the research, and 23% of them carried on with their pregnancies. LUCS was done in 67 patients, compared to 7 vaginal deliveries, 3% of whom had abortions, and 1% of whom had IUFDs. 80.82% of the 73 live births were term, 10.1% were preterm, and 25% of the newborns were small for gestational age.[13] More than 42,754 pregnant women who tested positive for COVID-19 in the meta-analysis, the incidence rates of cesarean deliveries from pregnant COVID-19-positive women were 53.2%, spontaneous vaginal deliveries were 41.5%, and surgical deliveries were 6.4%. Infected women had somewhat high rates of various negative newborn outcomes, such as preterm birth (16.7%) and low birth weight (16.7%). Maternal mortality (0.012%), vertical transmission (3.5%), neonatal death (3%), and stillbirth (1.9%), 1.5-2.[14] while in our study only 6% of patients presented with IUFD.

We had 81.7% asymptomatic patients. Only 2 (3.3%) had severe pneumonia, while the remaining 11 patients (9%) had moderate illness. Early pregnancy loss (5%), oligohydramnios (21.7%), preterm delivery (31.7%), and cesarean section (53.3%) were all more likely. Preterm birth rates were noticeably higher in symptomatic women compared to asymptomatic ones (p=0.01). Pregnant women with COVID positivity had oligohydramnios substantially more frequently than those with COVID negativity (p = 0.048).[15] Another research found that maternal vascular malperfusion, which was present in 17 instances (44.7% of the total), was the most frequent. Fetal outcomes included a rate of 13.2% for neonatal intensive care unit admissions, dyspnea, 31.6% for newborns, 7.9% for infants with anosmia, 2.6% for intrauterine fetal death, 2.6% for infants who died from asphyxia, and 5.3% for infants who contracted COVID.[16] In this study 48% of the patients were symptomatic and 17% had oligohydramnios.

A study conducted in a tertiary care hospital of Pakistan revealed 51.3% of SARS-Cov-2 infected patients while they were in their 3rd trimester. Asymptomatic patients make up 53% of the total population.[17] In Pakistan; more women (52%) experienced no symptoms after exposure to COVID-19, whereas just 4% needed ventilator assistance. When mothers turned COVID-19 negative, 80% of them were still nursing their newborns. No maternal problems were identified in 72% of the women. Oligohydramnios was noted in 14% of them. 6% of patients reported PROM/PPROM and preterm labour. 10% of preterm births were reported; the APGAR score for the fetus was 7-9 out of 10. 94% of newborns were reported to have no early deaths. Distress/meconium was 8%, IUGR was 6%, and stillbirth was 5% in the 42% of pregnancies. Neonatal in 82% of cases tested COVID-19 negative by PCR.[18] In this study, 17% of the patients experienced oligohydramnios, while 52% of the patients had no symptoms.

Another study conducted in Pakistan had more than 72 pregnant mothers who tested positive for COVID-19. Females had a mean age of 28+5.6 years and a mean gestational age of 37 weeks. Anxiety (18.1%), runny nose and fever (12.5%), cough and fever (9.7%), and sore throat (8.3%) were the most frequent symptoms, whereas 48.6% of individuals had no symptoms.[19] A total of 106 women were reported to be SARS-CoV-2 positive in a

different investigation conducted in Pakistan throughout the study period. All of the mothers gave birth to singletons. Five (4.71%) of the 106 newborns tested positive for SARS-CoV-2 at 24 hours, and just one (0.94%) tested positive at 48 hours before testing negative on the 7th day.[20]

A single-centered study was conducted with a small sample size due to poor follow-up of the patients.

## CONCLUSION

Pregnant women who test positive for COVID-19 have fewer symptoms than the normal population and may still test negative for viral pneumonia on RT-PCR. Preterm deliveries, low birth weight, C-sections, and NICU admissions appear to be more common than in the general population.

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Table 1: Maternal outcomes

| Maternal complications | No.of patients | percentage |
|---|---|---|
| Preterm labour | 3 | 6% |
| PROM | 3 | 6% |
| Maternal deaths | 1 | 2% |
| Oligohydramnios | 7 | 17% |
| No complication | 36 | 72% |

Table 2: Fetal outcomes

| Fetal complications | No. of patients | percentage |
|---|---|---|
| Preterm birth | 5 | 6% |
| Stillbirth/IUD | 2 | 6% |
| Fetal distress | 5 | 2% |
| IUGR | 3 | 17% |
| No complication | 36 | 72% |

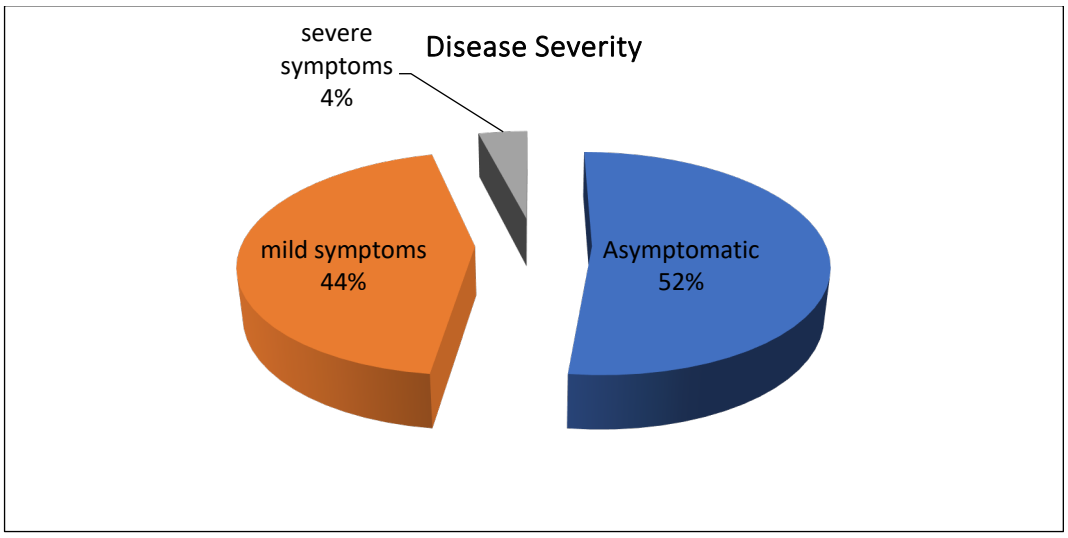


Figure: 1