

# COVID-19: Maternal and Child Health Care

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In the sunset of 2019, the world encountered the beginning of a pandemic due to corona viral infection disease (COVID-19). The rapid spread via respiratory route transmission, absence of vaccine and specific anti virals is the main reason for making the situation worse. Like every aspect COVID-19 was found to be of great concerns in maternal and child health care. The objective of this short communication was to found the effects of COVID-19 in maternal and child health care. It was identified that the clinical manifestations of COVID in pregnant and non-pregnant patients have same manifestations. The mode of delivery even has no significant association with specific infection. The evidence to support inutero peripartum or postpartum transmission is also deficient. Only positive finding observed was the presence of fetal distress. So it was clinched that after birth neonates must be kept in isolation for careful evaluation of any sign of infection and hence it's management. It was concluded that serial follow up investigations like cardiactocography, Doppler's and amniocentesis should be done to assess fetal wellbeing in the intrauterine period. However, in post partum period both mother and baby should remain in isolation for careful monitoring of any signs of infection and hence timely management.

**Keywords:** COVID-19, pregnancy, maternal outcome, neonatal outcome, diagnostic modalities

## Introduction

### Severe Acute Respiratory Syndrome - Corona Viral Infection (SARS-CoV-II)

Virus outbreaks have been occurring in the world for many decades. In December 2019, Severe Acute Respiratory Syndrome Corona viral infection (SARS-CoV-II) epidemic started from Wuhan China. Afterwards it encompassed two dozen countries with death toll to around millions across Globe. In 2020 the disease

caused by this new SARS-CoV-II, had taken a shape of a pandemic, which is rapidly spreading and taking many lives daily. Few years back the member of same corona vial group i.e Middle east respiratory syndrome Corona viral infection (MERS-CoV) began in Saudi Arabia and took thousands of lives. Until that time till to date, the scientist are working to discover the vaccines and anti virals for CoV, but satisfactory results are deficient (1).

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### Routes of Transmission

In the absence of vaccines and anti virals, the respiratory mode of spread is adding up to the worsening of situation. The first case of the CoVID-19 disease was through direct exposure to the Huanan seafood wholesale market of Wuhan, the animal-to-human transmission was thought to be the cause. The new virus seemed to be highly contagious, harboring a property for transmission amongst humans. The people who have symptoms are the most frequent source of COVID-19 spread (2). However, in subclinical or asymptomatic period of 3-4 days (5.2 days approx.) is even more dangerous. Unknowingly person can be a source for infection transmission. But still a debate is there for infection transmission in asymptomatic phase (3, 4). The Global statistical in current pandemic scenario, concluded that each positive patient can transmit the infection to an additional 2.2 individuals. This is how the regional epidemic doubles every seven days. Cumulative score of various regions around the Globe thus, doubles every week (2).

### Predisposition & Clinical Presentations

The published data strongly supports that immunosuppressed, elderly, or patients with comorbidities are at high risk for acquiring infection. The most common symptoms in incubation period includes fever which is non responsive to antipyretics, and a state of malaise. Later on there is development of dry cough in the acute phase. After 5-7 days, high risk patients, begin to experience shortness of breath and increased respiratory rate. However, in more fragile elderly patients, dyspnea may already appear at the onset of symptoms (5). The frequency estimation of clinical presentations revealed that the highest percentage was seen for fever in 87.9%. This

with passage of time was followed by dry cough (67.7%), fatigue(38.1%), and sputum production (33.4%). With deterioration of infection, next in sequence were shortness of breath (18.6%), myalgia/arthralgia (14.8%), headache (13.6%) sore throat (13.9%), and chills (11.4%). Less common symptoms were congestion (0.8%), nasal congestion (4.8%), nausea/vomiting (5%), diarrhea (3.7%), and hemoptysis (0.9%)(6).

### Preventive Measure

Published data suggests that the use of isolation is the best way to contain this epidemic and pandemic. Close contact with patients spreads the infection at a faster rate. While practicing good hygienic measures like frequent hand washing, maintaining cleanliness are the keys to combat the spread of this infection. Besides this, for hospital settings, wearing of personal protective equipments(PPEs), frequent use of hand sanitizers, use of surface good disinfectants, can help reducing the spread of infection (2, 5).

In the current scenario of COVID-19 pandemic, a rapidly spreading pattern was observed across the Globe. In the absence of vaccine and specific anti viral, we are left with only adoption of preventive measures to combat this infection. Besides ones preventive measures mentioned above, positive pregnant females must be dealt as high risk pregnancies (7, 8).

### COVID-19 & Pregnancy

Recklessly of the COVID-19, the presence of pneumonia in pregnancy exhibit high morbidity and mortality rates. It is considered one of the serious non-obstetric infection (9). About 25% of such cases requires mechanical ventilation and intensive care treatment. In comparison with bacterial pneumonia, viral pneumonia is concomitant with higher morbidity and

mortality rates. From such infection, common complications can be premature rupture of the membranes (PROM), intrauterine growth restriction (IUGR), intrauterine fetal death (IUFD), preterm labor, and neonatal death (6).

### Maternal Outcomes Following COVID-19

Upon comparison with SARS-CoV-II (COVID-19) and MERS-CoV, low mortality rate, and less severe maternal and fetal outcomes were seen in COVID-19, pregnant ladies. So far Global statistics revealed only 32 (n) positive cases of COVID-19 in pregnant ladies. Amongst those 32 cases, none was in first trimester of pregnancy. The mortality rate amongst all these were zero. In maximum cases (n=27), mode of delivery was caesarean section, while remaining five cases had normal vaginal delivery. The marked symptoms of fetal distress was the main reason for specific mode of pre term delivery (10). In a published report by Zhu *et al*, it was concluded that only three women became symptomatic in the post-partum period. All after intensive care management completely recovered (11).

One more study revealed the presence of identical symptoms via comparative analysis of COVID-19 in pregnant and non-pregnant females. In both groups the predisposing factors were same and were labelled as high risk groups. Presence of typical infiltrates in lungs suggestive of severe pneumonia were confirmed by computed tomography. While supportive lab studies showed decreased total leucocyte counts, lymphopenia, mild thrombocytopenia and deranged liver function tests (6).

### Transmission from Mother to Child

The good supportive evidence is deficient for to support the vertical transmission route of COVID-19. A published study in Lancet,

describes the transmission routes for SARS-CoV-II. Various samples were collected i.e amniotic fluid, umbilical cord blood and throat swabs of the neonates instantly after delivery. Besides that milk samples were also taken in postpartum period. All the samples revealed negative results (10). Moreover, placentas of positive cases were also examined. The histopathological evaluation was negative to support the presence of infection. Concluding the published statistics, there is no evidence of intrauterine transmission of SARS-COV-2 onto the fetus (12).

### Neonatal Outcomes

Nevertheless, cautiousness is obligatory to save the lives of babies born to a mother having COVID. This is direly required because the evidence for transmission in utero or peripartum phase is extremely deficient. The neonatologists recommended keeping those babies in isolation and to have their close monitoring, so that any sign of infection can be timely diagnosed. It was observed that the Apgar score after one and five minutes was found unremarkable in babies of positive mothers. The elevated cardiac enzymes were seen in one baby, on first post partum day which later proved to be non significant for clinical relevance (10).

Amongst neonatal outcome, so far only one neonate turned to be positive, there was only one case of still birth and one mortality. Multi-organ failure along with disseminated intravascular coagulopathy on ninth day of life became the reason for mortality. While few neonates developed respiratory distress syndrome. Which was followed by gastro intestinal symptoms, fever, tachycardia and vomiting (13).

### **Breastfeeding in Cases of Suspected Infection or Confirmed SARS-Cov-2 Infection**

In literature review regarding transmission of infection via breast feeding is deficient either for suspected or confirmed cases. But, still to be on safer side European institute of breast feeding and lactation recommends that the milk should be pumped off and feeding should be provided by healthy assistant (14,15).

### **Maternal & Neonatal Samples for COVID-19 Diagnosis by RT-PCR**

To ensure maternal and child health, preferred samples can be umbilical cord blood, amniotic fluid, neonatal gastric samples, neonatal throat swab and breast milk samples. However, so far, there is no evidence supporting the vertical transmission of COVID-19 (10).

### **Management of Infected Pregnant Patients & Monitoring of Fetal Well Being**

The right of treatment and management of pregnant is equal to that of non-pregnant patient, provided clear contraindications there. Though the evidence for using remdesivir and hydroxychloroquine in pregnancy is yet deficient. But the benefit and potential risks should carefully be weighed and explained to the mother, for opting the management. This is the same decision as in case for opting any management in pregnancy. However, isolation and quarantine should be the first modality to go for, just like in any positive or suspected case. Mechanic ventilation and oxygen support should be arranged to manage for the signs of respiratory failure. Superimposed bacterial and other co infections should be managed along with specific COVID. Prior the start of empirical antibiotics, recommended protocols for blood cultures should be followed for accurate management. Moreover, all recommendations

and guidelines for the adoption of specific mode of delivery are deficient (16,17).

In concerns for fetal monitoring, regular cardiotocography (CTG), Doppler and amniotic fluid analyses should be done to eliminate placental failure and hence the development of intrauterine growth retardation (IUGR) (17).

### **Conclusion**

It was concluded that serial follow up investigations like cardiotocography, Doppler's and amniocentesis should be done to assess fetal wellbeing in intrauterine period. However, in post partum period both mother and baby should remain in isolation for careful monitoring of any signs of infection and hence timely management.

### **Recommendations**

1. Serial sampling of mother and baby during the pregnancy and after birth are necessary for safe maternal & child health care.
2. The preferred samples can be umbilical cord blood, neonatal throat swab, amniotic fluid, neonatal gastric and breast milk samples.
3. For the monitoring of fetal well-being, amniotic fluid analyses, Doppler and regular cardiotocography (CTG) should be done to eliminate placental failure and hence the development of IUGR.
4. The presence of fetal distress should be monitored carefully and can become an indication of cesarean section.
5. Neonatal isolation protocols should be strictly followed along with monitoring for the signs of infection, and blood complete picture.
6. European institute of breast feeding and lactation recommends that for positive or suspected cases, breast milk should be pumped off and feeding should be provided by healthy assistant.

## Conflicts of Interest

The authors declared no conflict of interest.

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