



## COMPARATIVE STUDY OF MATERNAL AND NEONATAL OUTCOME OF COVID POSITIVE PREGNANT WOMEN IN FIRST AND SECOND WAVE

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### ABSTRACT

**Introduction:** Corona virus disease-19 (COVID-19), produced by severe acute respiratory syndrome Corona virus 2 (SARS-CoV2), has become a global pandemic, giving rise to a serious health threat globally. In India we have seen a two wave pattern of reported cases with peak of first wave in September 2020 and peak of second wave in May 2021. Women undergoing pregnancy and those at the time of child birth and puerperium constitute potentially vulnerable populations for covid-19.

**Aims And Objectives:** To evaluate differences in clinical presentation, co-morbidities, pregnancy complications and outcomes in women with covid-19 during first wave and second wave of covid-19 pandemic.

**Materials And Methods:** We conducted a retrospective observational cohort study of all hospitalized pregnant and postpartum woman with SARS-CoV2 infection in Government General Hospital, Kurnool. All the patients admitted from 1st May to 31st October 2020 were considered to be in the first wave and those admitted from 1st April to 31st June were considered to be in second wave.

**Results:** Incidence of cases has increased from 14.18 to 16.8%. There was two fold increase in the symptomatic cases from 4.2 to 8% patients in the second wave were younger in the age group of 16-25yrs. The number of pregnant women delivered by Caesarean section have increased from 57.5 % to 61.1 %. ICU admissions have significantly increased from 2.7% to 3.1% Case fatality rate has increased from 0.4%-1.1%.

**Conclusion:** As observed from the above results there is higher frequency of severe Covid 19, increased ICU admissions and maternal deaths in second wave of Covid 19 pandemic as compared to the first wave. Although the exact causes of increase in severity and mortality are unknown, but probably due to emergence of most pathological strains of SARS-Co2.

### KEYWORDS :

#### INTRODUCTION:

Corona virus disease-19 (COVID-19), produced by severe acute respiratory syndrome Corona virus 2 (SARS-CoV2), has become a global pandemic, giving rise to a serious health threat globally. The pandemic has claimed many lives across the world, with many countries going through a second or third wave infection. India recently went through devastating second wave which started in March 2021. In addition to its direct impact on mortality and morbidity, the pandemic has significant indirect adverse effects on many other aspects of population health including reproductive health. In India we have seen a two wave pattern of reported cases with peak of first wave in September 2020 and peak of second wave in May 2021.

Empirical data show that the characteristics of the effects of the virus do vary between the two periods. Differences in age range and severity of disease have been reported. Second wave is evolving at phenomenal speed as compared to the first wave. There could be several factors responsible for the increased number of cases in the second wave. It is observed that the mutant virus has more effective transmission capability and its incubation period is also lesser. The second wave had severe consequences in the form of spiralling cases, reduced supplies of essential treatments, and increased deaths particularly in the young population, understanding why the second wave has been more dangerous than the first could help to identify the potential areas of diagnostics to target with future control strategies.

Women undergoing pregnancy and those at the time of child birth and puerperium constitute potentially vulnerable populations for covid-19. The world health organization stated that pregnant women who are older, overweight and have pre existing medical conditions such as hypertension and diabetes seem to have an increased risk of developing severe Covid 19. The medical literature indicates that maternal covid-19 affects pregnancy outcomes with increased

incidence of iatrogenic preterm birth and caesarean section due to maternal or foetal compromise or both. Additionally convincing evidence suggests that vertical transmission of SARS-CoV2 occurs and its common route of transmission for those neonates diagnosed covid-19 positive immediately after birth. Infection to the new born occurs primarily through postnatal exposure, but a significant proportion of infections might be congenital. Observed increase pregnant women with severe Covid 19 could relate to the emergence of a more pathogenic strain of SARS - CoV2.

#### AIMS AND OBJECTIVES

To evaluate differences in clinical presentation co morbidities pregnancy complications and outcomes in women with covid-19 during first wave and second wave of covid-19 pandemic.

#### MATERIALS AND METHODS

We conducted a retrospective observational cohort study of all hospitalized pregnant and postpartum woman with SARS-CoV2 infection in Government General Hospital, Kurnool. All the patients admitted from 1<sup>st</sup> May to 31<sup>st</sup> October 2020 were considered to be in the first wave and those admitted from 1<sup>st</sup> April to 31<sup>st</sup> June. Comparison was done by taking percentage of cases admitted during first and second waves. Pregnant women with confirmed Covid 19 who were near term and those who needed obstetric interventions, those with high risk pregnancies, and pregnant and postpartum women (up to 6weeks) with moderate or severe disease were admitted after screening at special screening outpatient department during both waves of Covid 19. We excluded those with suspected SARS-CoV2 infection but had no laboratory confirmation and those who came to the hospital with symptoms compatible with Covid 19 but did not require hospitalization. SARS-CoV2 infection was confirmed by RT PCR using swab samples from the upper respiratory tract. Pregnancy outcomes and Covid 19 severity were compared between women admitted during the first and second waves of Covid 19 pandemic in India.

**RESULTS**

A Total of 847 women were tested Covid positive among the 5970 of total admissions during the period of first wave with the incidence of 14.18%. During the period of second wave of total 3036 admissions 512 were tested Covid positive with the incidence of 16.8%. Incidence of Covid positive cases has increased from 14.18 % to 16.8 %. Symptomatic cases were also significantly higher at 8% in the second wave compared to the first when the proportion was 4.2 %. There was two fold increase in the symptomatic cases. Patients in the second wave were younger in the age group of 16-25yrs .The number of pregnant women delivered by Caesarean section have increased from 57.5 % to 61.1 % .ICU admissions have significantly increased from 2.7% to 3.1%. Case fatality rate has increased from 0.4% to 1.1%. Total number of deaths during first wave was 2 and during second wave were 4. Abortion rate have increased from 2.7 %to 3.5 %.

Regarding neonatal outcome, total number of preterm births has significantly increased from 3.48% to 9.4 %. Low birth weight infants have increased from 6.5% to 11.5%. Number of babies requiring NICU admission has increased from 4.7% to 5.3%. Only 1infant was tested Covid positive on day 1 of life.

**DISCUSSION**

Covid 19 is a global public health emergency and could cause devastating health issues during pregnancy as pregnant women have a propensity to acquire this infection due to altered physiological and immunological function .There is significantly increase in total number of Covid 19 cases in the second wave, resulting in more pregnant women being infected .patients admitted in hospital during the second wave were younger in the age group of 16-25yrs (70%).Most of them were multigravida (59%) , with a gestational age of 30 -40 weeks (65%) .Majority of the patients in our study during second wave were asymptomatic, only 8% were symptomatic .The most frequent signs and symptoms in both waves were fever (95%), cough (80%), and dyspnoea (25%), pneumonia signs in diagnostic imaging (10%). The most frequent maternal outcomes were c-section (61.1%) and preterm delivery (9.4%). The most common indication for c section is mainly due to prior section (49.5%), cephalopelvic disproportion (16%) , foetal distress (7%) ,oligohydramnios (12%) . Pregnant women with associated co morbidities like preeclampsia (19), eclampsia (4), gestational diabetics (3), and anaemia (22) were at higher risk. The associated co morbidities were similar in both the waves, but there were differences between those associated with mortality, highlighting the importance of severity of second wave .Total number of maternal deaths were 4, and was mainly due to Covid 19 pneumonia and respiratory failure.

Most of babies born were asymptomatic(95%) or presented fever(5%), low birth weight(11.5%), or pre term delivery (9.4%). Number of babies with NICU admission were 18, IUD were 5 . Neonatal deaths were 0.

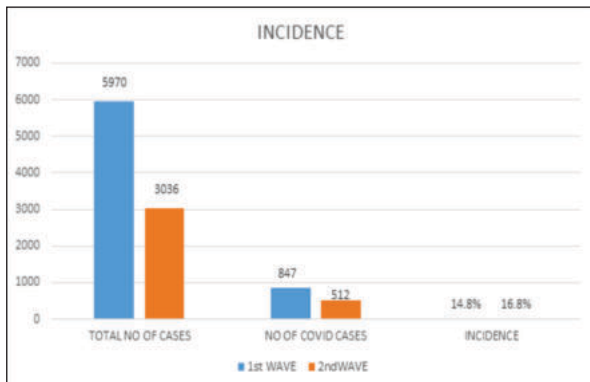


Table-1

Patients from second wave most frequently presented with renal (Acute renal failure) and gastro intestinal symptoms (vomiting, diarrhoea, and abdominal pain) and, were most often treated with non invasive mechanical ventilation and steroids and less often with invasive mechanical ventilation, conventional oxygen therapy and anticoagulants.

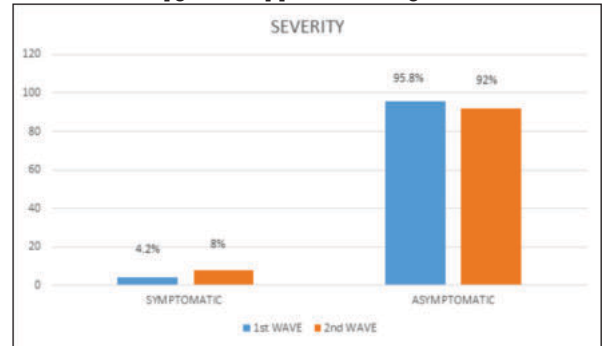


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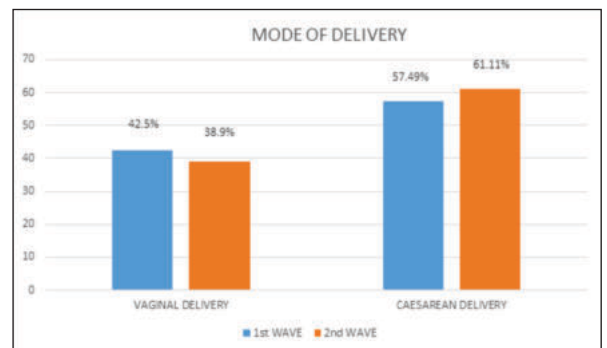


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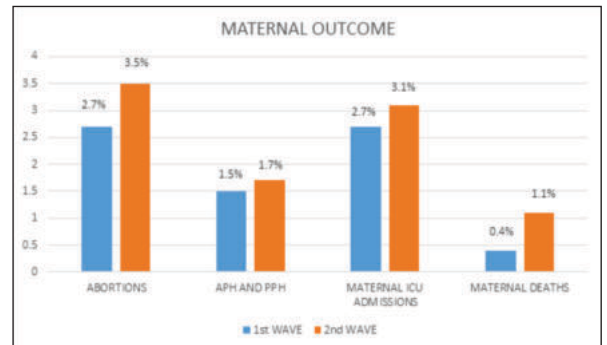


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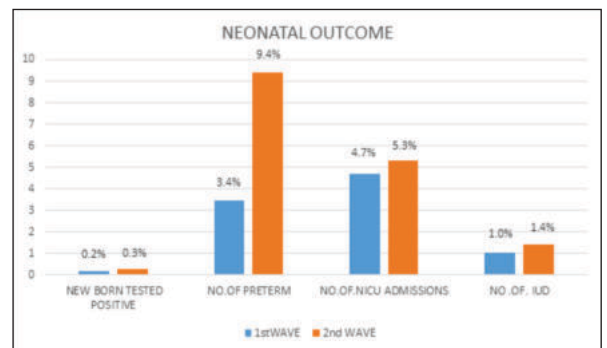


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**CONCLUSION:**

As observed from the above results there is higher frequency of severe Covid 19 ,increased ICU admissions and maternal deaths in second wave of Covid 19 pandemic as compared to the first wave .This is in line with a study from the ICMR and

study from the United Kingdom that reports higher frequency of severe Covid 19 in second wave ,but in contrast to a study reporting low severity of Covid 19 during the second wave in Spain .Although the exact causes of increase in severity and mortality are unknown ,but probably due to emergence of most pathological strains of SARS-CoV2. The findings of our study suggest importance of offering vaccination to pregnant and lactating women during the ongoing Covid 19 pandemic.

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