



STUDY OF FETO-MATERNAL OUTCOME OF PREGNANT PATIENTS DURING COVID PANDEMIC

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ABSTRACT Covid-19 has proved to be one of the most traumatic pandemics worldwide. Though it affected people of all ages and gender, pregnant ladies were the ones who suffered the bad consequences. Strongly occupied hospitals created a typical fear of the spread of infection among pregnant ladies. Due to all these factors, pregnant women could not even go out for a routine check-up, affecting the ANC care. **Objectives:** To study pregnant patients during the covid-19 pandemic and also to find out complications during the pandemic. **Methods:** Pregnant women who were admitted during the second wave of the covid-19 pandemic were included after a signed written informed consent was provided. At the Dept. of Obstetrics and Gynaecology of Dr. D.Y. Patil Hospital and Research Institute, Kolhapur, Maharashtra. **Results:** The majority were from the age group between 26 to 30 years followed by the age group 21 to 25 years. Regarding mode of delivery, Emergency LSCS was needed in 818 (68%) patients, normal vaginal delivery was performed in 354 (29.3%) patients and there were 32 (2.7%) cases of intra-uterine death. The most common maternal complication was the occurrence of anemia seen in almost half of the patients. The most common fetal complication was low birth weight in neonates, IUGR, and fetal distress. **Conclusion:** It was found that complications like abortions, preterm birth, intrauterine deaths, and intrapartum complications. During a pandemic, psychological stress among patients was increased, because of the scarcity of ANC services and intrapartum services.

KEYWORDS : Covid-19; pregnant ladies; preterm; abortion.

INTRODUCTION:

Covid-19 has quickly become of tremendous concern worldwide in 2019. Person-to-person transmission may occur through contact, respiratory tract, or possibly by the fecal-oral route^[1]. Due to the severity of this outbreak and the potential of spreading on an international scale, the WHO declared a global health emergency on 31 January 2020; subsequently, on 11 March 2020, they declared it a pandemic situation^[2]. Previous epidemics of many appearing viral infections have resulted in poor obstetrical outcomes including maternal morbidity and mortality, intrauterine vertical transmission, perinatal infections, and also life-threatening^[3]. The cardiovascular changes, the increase in metabolic rate and oxygen consumption, which leads to the decrease in functional residual capacity, and the mismatch between basic ventilation and perfusion, all these factors caused by pregnancy are easily led to hypoxic respiratory failure in women after infection with SARS-CoV2^[4]. No data suggest an increased risk of miscarriage or early pregnancy loss in relation to Covid-19 patients. The follow-up of Positively diagnosed pregnant women during the first and second trimesters should be taken into consideration, to understand the impact of a covid-19 pandemic on the pregnant mother, the fetus, and the whole course of pregnancy. It is well known that pregnant women are predisposed to a more severe course of pneumonia because there are physiologic maternal adaptations to pregnancy with subsequently higher maternal as well as fetal morbidity and mortality^[5]. But there is a lack of data in the literature about the effect of Covid infections during pregnancy, thus limiting both counseling and management of these patients. During the covid-19 pandemic, pregnant women were unable to get proper attention, affecting ANC care, and iron and folic acid supplements. In the private sectors also, transport services were affected and not easily available. There was tension among family and pregnant women due to fear of infections and the non-availability of beds in hospitals.

Social issues & scarcity of medical services were contributing to the adverse feto-maternal outcomes. Few descriptions of maternal-fetal

transmission of COVID-19 and their corresponding outcomes are in the literature at the moment. We, therefore, aimed to study the pregnancy outcome in the covid-19 pandemic and study the complication during pregnancy in a group of women admitted and delivered at a hospital.

Objectives:

To study pregnant patients during the covid-19 pandemic and also to find out complications during the pandemic.

MATERIAL AND METHODS:

This was a retrospective observational study that lasted for 12 months (April 2020 to March 2021) at the Dept. of Obstetrics and Gynaecology of the Dr. D.Y. Patil Hospital and Research Institute, Kolhapur, Maharashtra.

Study Participants:

After getting Ethical permission study was started. 1204 pregnant women who were admitted during the second wave of the covid pandemic were included after a signed written informed consent was provided. All patients with either RTPCT or RAT positive as well as negative were included.

Data Collection:

Data was collected from the participants' prenatal consultation and pregnancy and pregnancy monitoring record as well as their referral sheet monitoring records. All the data was recorded in pre-tested, pre-structured care record proforma which were designed for the study. Data related to demographic characteristics, presenting symptoms, pregnancy history, parity, co-morbidities, treatment received a record of ante-natal, intra-natal, and post-natal events or complications, fetal complications, need for NICU, birth weight, neonatal complications, and related information.

Statistical Analysis:

Data were entered into a prepared Microsoft Excel 2020 Spreadsheet

by non-clinical staff. The data was then double-checked item by item to ensure accuracy and completeness. For analysis, the data was exported to SPSS version 23. Data were expressed in frequency, percentage, and median (interquartile range) were necessary.

RESULTS:

Out of 1204 participants, the majority, 629 (52.4%) were from the age group between 26 to 30 years followed by 486 (40.3%) from the age group 21 to 25 years. The mean age of the patients was 23.76 ± 3.25 years ranging from 18 to 31 years. 266 (22%) were primipara and 938 (78.2%) were multipara. 684 (56.8%) patients visited the hospital during the ante-natal period and 520 (43.2%) came to the hospital the first time for delivery. (Table.1)

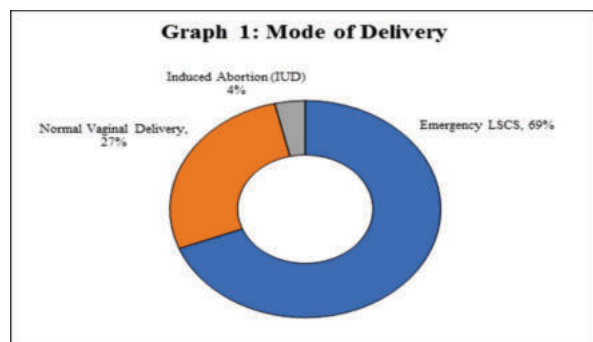
Table: 1 Demographic and pregnancy-related details of mother:

Maternal Details		Frequency	Percent
Age group (Years)	18 to 20 Years	89	7.3%
	21 to 25 Years	486	40.3%
	26 to 30 Years	629	52.4%
Parity	Primipara	266	22.0%
	Multipara	938	78.0%
ANC visits	Yes	684	56.8%
	No	520	43.2%
Total		1204	100.0%

Table 2: Presenting Symptoms of the patients:

Major Symptom	Frequency	Percentage
Asymptomatic	748	62.3%
Cough/Cold	177	14.7%
Fever	133	11%
GI Symptoms	111	9.2%
Sore throat	34	2.8%
Total	1204	100%

Most of the patients, 748 (62.3%) were asymptomatic, the most common presenting complaint fever in 177 (14.7%), cough and cold were seen in 133 (11%) cases, and gastrointestinal symptoms were seen in 111 (9.2%) patients. The sore throat was a lesser common symptom seen in 34 (2.8%) cases only. (Table 2)



Regarding mode of delivery, Emergency LSCS was needed in 818 (68%) patients, normal vaginal delivery was performed in 354 (29.3%) patients and there were 32 (2.7%) cases of intra-uterine death, so induced abortion was done in those patients. (Graph. 1)

Table: 3 Indication of LSCS:

Indication of LSCS	Frequency	Percent
Previous LSCS	266	22.3
Fetal Distress	151	12.8
Pregnancy Induced Hypertension	122	10.2
CPD* during Labour	115	9.6
Oligohydramnios	67	5.6
Breech Presentation	53	4.4
PROM	19	1.6
Transverse Lie	11	0.9
Twin gestation	8	0.7
LSCS not needed	382	32.0
Total	1204	100.0

*CPD- Cephalo-Pelvic Disproportion

There were various indications for LSCS. Most common indication was history of previous LSCS in 266 (22.3%) patients, fetal distress in

151 (12.8%) patients, pregnancy-induced hypertension (PIH) in 122 (10.2%) patients and cephalon-pelvic disproportion (CPD) in labour in 115 (9.6%) patients. Lesser common indications were Oligohydramnios, breech Presentation, premature rupture of membrane (PROM), Transverse Lie, and twin gestation. Some of the patients were having more than one indication for LSCS. LSCS was not needed in 382 (32%) patients. (Table. 3)

Maternal and Foetal Complications:

Graph 2 shows maternal and foetal complications. Out of 1204 mothers, 937 showed one or other complications. The most common maternal complication was the occurrence of anemia seen in almost half 613 (51.1%) of the patients followed by the need for LSCS needed in 818 (68%), pregnancy-induced hypertension (PIH) in 122 (10.2%) patients, Oligohydramnios in 67 (5.6%), because of intra-uterine death (IUD), there were 27 (2.3%) cases of induced abortion, 19 (1.6%) case of premature rupture of membrane and one case of maternal death was seen. 263 (21.9%) mothers didn't show any complications. In the present study, there were 716 female neonates and 484 male neonates. Fetal complications are shown in figure 3. Out of 1204 cases, 667 neonates showed one or other complications. The most common fetal complication was low birth weight in 417 (34.8%) neonates, IUGR in 227 (18.9%) neonates, and fetal distress in 198 (16.5%) neonates. Lesser common complications were preterm in 132 (11%), IUD in 41 (3.4%), meconium-stained liquor (MSL) in 23 (1.9%). 537 (44.4%) neonates didn't show any complications. The need to keep neonates in NICU was seen in 748 (62.3%) cases.

DISCUSSION:

The Covid-19 pandemic affects maternal health both directly and indirectly. We described the pregnancy outcome in covid pandemic and study the complication during pregnancy. Our study shows, that out of 1204 participants, the majority, 52.4% were from the age group between 26 to 30 years, the mean age of the patients was 23.76 ± 3.25 years ranging from 18 to 31 years. 22% were primipara and 78.2% were multipara of 56.8% of patients visited the hospital during the ante-natal period and 43.2% came to the hospital first time for delivery. Most of the patients, 62.3% were asymptomatic, the most common presenting complaint was fever in 14.7%, cough and cold were seen in 11% of cases which have been found in similar proportions in other published studies^[6,7], while the lesser common symptoms were sore throat and gastrointestinal symptoms. Similar to this **Chen H. et al**^[8], elaborated in a case series of 9 pregnant women that the presentation ranges from asymptomatic in about 50 % of the pregnant women. In a systemic review, the majority of pregnant women reported symptoms of cough, fever, and fatigue that is similar to our patients^[9].

In the present study, 29.3% of patients delivered vaginally, 68% of patients went through an emergency caesarean, and 2.7% had an abortion. The indications for caesarean sections were a history of previous LSCS in 22.3% of patients, fetal distress in 12.8% of patients, pregnancy-induced hypertension (PIH) in 10.2% of patients, and cephalon-pelvic disproportion (CPD) in Labour in 9.6% patients. Most of the common reasons were Oligohydramnios, breech Presentation, premature rupture of membrane (PROM), Transverse Lie, and twin gestation. There are two Chinese studies showing that their route of delivery was caesarean in 100% and 76.9% respectively^[8,10]. Only when there were indications posed by SARS-CoV-2 infection to pregnant women or fetuses, such as maternal breathlessness and related complications as well as fetal intrauterine distress, caesarean sections were performed as needed. Thus, those symptoms of COVID-19 have contributed to the high rate of caesarean section among the infected mothers^[11]. Our study finding shows that 96.6% of fetuses were alive with an APGAR score greater than 7 in the first minute and we have two (3.6%) Intrauterine deaths. **Zhu H. et al**^[12], in China retrospectively analyses 10 neonates born to 9 pregnant mothers to evaluate perinatal transmission. One was intrauterine death due to an unexplainable cause. However, a case report by **Dong L. et al**^[13], explains the possible hypothesis of vertical transmission was explained by the presence of IgM and IgG antibodies in the neonate after 2 hours of birth. **Huijun et al**^[10] did not find neonatal complications in his series of nine births, all performed by caesarean section. In our study, the most common fetal complication was low birth weight in 34.8% of neonates, IUGR in 18.9% of neonates, and fetal distress in 16.5% of neonates. Preterm neonates were seen in 11%, of cases, IUD in 3.4%, and meconium-stained liquor (MSL) in 1.9%. 44.4% of neonates didn't show any complications. 62.3% of neonates were kept in NICU. In a study by **Hasina Sadiq et al**^[14]. Fetal distress was noted in about 4 mothers in the third trimester with active

COVID infection. A study shows intrauterine fetal distress noted among 6 neonates in a study of 10 neonates born to pregnant mothers with disease^[16]. This may be a sign of some inflammatory abnormality in the fetus or placental insufficiency. Although not proven majority of indications for term delivery of COVID-19 infected mothers were fetal distress and hence extensive research is awaited^[15]. This seems to be in line with a systemic review indicating preterm birth in about 21.3 % number of patients^[13]. **Hasina Sadiq et al**^[14] showed a greater number of preterm births in 4 and PPROM in 2 cases out of 7 patients. One of the case series including 20 patients conducted in Pakistan by **Mushtaq R. et al**^[16], demonstrated no serious maternal and fetal adverse outcomes in patients who were asymptomatic or mildly symptomatic. another local study conducted at Rawalpindi by **Syed S. et al**^[17], showed good maternal and fetal outcomes in pregnant patients with COVID disease in the third trimester. **Khan et al** 2020, showed a rate of 29.1% preterm birth and 16.4% low birth weight among their babies^[18]. During the pandemic, there is difficulty in finding beds in hospitals, and transport facilities and fear among patients becomes a major risk factor that leads to feto-maternal complications^[19]. **Zhang et al**^[20] respectively compared 16 Covid-19 positive pregnant women against 45 non-covid pregnant women and found that in case of critical illness timely termination of pregnancy will not increase the risk of premature birth and asphyxia but is beneficial to the treatment and convalescence of maternal pneumonia. Studies have shown that a mother's response to infection tends to promote the fetus's inflammatory response syndrome which we define as (FIRS). High levels of cytokines have been shown to affect the central nervous system and circulatory system and tend to cause fetal abnormal morphology in animal models including ventricular expansion and bleeding^[21]. Hence active treatment should be given to prevent the more serious effects of infection on the mother as well as the fetus. A study by **Nicola Vousden et al-**, showed that babies born during a pandemic-, were more likely to be admitted to a neonatal unit, regardless of the mother's status. There was no significant increase in stillbirth and neonatal deaths in hospitalized pregnant women with SARS-CoV-2^[22].

CONCLUSION:

During the Covid-19 pandemic, it was found that complications like abortions, preterm birth, intrauterine deaths, and intrapartum complications. During a pandemic, psychological stress among patients was increased, because of the scarcity of ANC services and intrapartum services. Advice to many patients was given on phone. So, psychological counseling played the main role during a pandemic. There is a requirement for further in-depth studies regarding risk factors associated with the adverse outcomes in mothers as well as fetuses.

Recommendation:

Our findings need to be taken into account in guidance in order to prevent immediate complications such as neonatal prematurity and long-term complications associated with over-intervention in care. So, we must be aware of those that are potentially vulnerable during this time, both patients and colleagues and we must ensure adequate supports are available to them during these uncertain times.

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Conflicts of Interest:

The authors declare no conflicts of interest regarding the publication of this paper.

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