

# Impact of Lockdown of COVID 19 Pandemic in Pregnancy Outcomes in a Tertiary Care Centre: What to Expect?

Anjali Subedi<sup>a,e</sup>, Poonam Magar<sup>b,e</sup>, Junu Shrestha<sup>c,e</sup>, Seema Subedi<sup>d,f</sup>

## ABSTRACT

**Introduction:** Corona Virus Disease 19 (COVID-19) was declared a "pandemic" in March 2020 by WHO and advocated lockdown measures with the use of mask, frequent hand washing and social distancing for decreasing the transmission of disease. In Nepal where antenatal coverage is just 50% and institutional deliveries 54%, this lockdown has further reduced the regular antenatal visits, institutional deliveries posing an increased adverse effect in pregnancy outcome. This study aimed to reveal the impact of lockdown of COVID 19 pandemic in pregnancy outcomes in a tertiary care center. **Methods:** It was a cross-sectional, analytical study done in the Department of Obstetrics and Gynecology, Manipal Teaching Hospital for three months lockdown period (March 2020 to June 2020) and total deliveries along with maternal and perinatal complications were studied in the lockdown period and compared with those in non-lockdown period. **Results:** During the lockdown period, there were total 1070 deliveries and maternal complication was seen in 17.38% of deliveries. In the non-lockdown period, there were total of 982 deliveries and maternal complication was present in 18.43% of deliveries (p= 0.53). In the study, more cases of early pregnancy complications were seen in lockdown period than in non-lockdown period. Regarding obstetric complications, hypertensive disorder was the most common one observed during lockdown period whereas preterm labor was common in non-lockdown period. There was no increase in perinatal complications during lockdown period on comparing to non-lockdown period. **Conclusion:** There was no increase in adverse pregnancy outcomes during lockdown of COVID 19 pandemic in a tertiary care center.

**Keywords:** COVID 19, Lockdown, Pandemic, Pregnancy outcome.

## INTRODUCTION:

Corona virus infection disease-2019 (COVID 19) is a respiratory disease caused by Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV-2) and was declared a "pandemic" in March, 2020 by WHO.[1] As it has a very high transmission rate with

low pathogenicity,[2] WHO has advocated lockdown measures with the use of mask, frequent hand washing and social distancing for decreasing the transmission from symptomatic as well as asymptomatic to the healthy people and special group of people like pregnant women, to decrease the chance of acquiring COVID infection.

WHO Antenatal care (ANC) guidelines 2016 recommend a minimum of eight ANC visits to reduce maternal and fetal morbidities and mortalities.[3] In Nepal where ANC coverage is just 50% and institutional deliveries 54%, [4] this

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a- Assistant Professor, Department of Obstetrics & Gynaecology.

b- Medical Officer, Department of Obstetrics & Gynaecology.

c- Associate Professor, Department of Obstetrics & Gynaecology.

d- Faculty Associate, Global Disease Epidemiology and Control Division, International Health Department.

e- Manipal College of Medical Sciences, Pokhara, Nepal.

f- Johns Hopkins Bloomberg School of Public Health, USA.

## Corresponding Author:

Anjali Subedi.

Email: [anzee739@gmail.com](mailto:anzee739@gmail.com)

ORCID: <https://orcid.org/0000-0002-9809-6180>

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lockdown has further reduced the regular visits and institutional deliveries posing an increased adverse effect in pregnancy outcome.

This study therefore aimed to reveal the impact of lockdown of COVID 19 pandemic in pregnancy outcomes in our center.

## METHODS

This was a cross-sectional, analytical study conducted in the Department of Obstetrics and Gynecology, Manipal Teaching Hospital, Pokhara, Nepal. It was done during the first phase of lockdown as implemented by the government for three months (March 2020 to June 2020) and the data of the corresponding months of the previous year was also taken.

All the women admitted to the ward either for termination of pregnancy or for delivery were enrolled in the study after their consent. However, pregnant women with early pregnancy complications (abortion and ectopic), obstetric complications like hypertensive disorder, preterm labor, pre-labour rupture of membrane, antepartum haemorrhage, intrauterine fetal demise, and others were only analyzed in the study. Women not consenting for study were excluded.

Obstetric parameters like age at delivery, period of gestation at delivery, parity, mode of delivery, indications for caesarean section in the women with complications were studied. For perinatal outcome, variables studied were congenital anomaly, still birth and neonatal death. For all the required information of corresponding months of previous year, hospital records were used. Ethical clearance was taken from Institutional Review Committee, Manipal College of Medical Sciences, Pokhara, Nepal (MEMG/IRC/361/GA).

The data were recoded and entered into STATA 15. All the figures have been presented for two groups: lockdown versus non-lockdown groups. Total deliveries are presented in number and the complication variables are presented as percentage of total complications occurring during the lockdown period. Comparison of all the variables, among the lockdown and non-lockdown group, are shown through the bar diagrams and other relevant

figures and tables and statistical significance was analyzed using Pearson Chi square test (confidence interval of 95% and p value < 0.05 as level of significance) and t-test (confidence interval of 95% and p value < 0.05 as level of significance) where applicable.

The main variables of interest were

- Total number of deliveries in the period (lockdown and non-lockdown)
- Percentage of maternal complications and perinatal complications.

## RESULTS

In the lockdown period, there were a total of 1070 deliveries. In the non-lockdown period, there were 982 deliveries.

### Maternal complications:

Among 1070 deliveries, there were 186 (17.38%) cases of maternal complications during the lockdown period. In the non-lockdown period, among 982 deliveries, there were 181 (18.43%) cases of maternal complications. However, this difference was not statistically significant ( $\chi^2=0.38$ ,  $df=1$ ,  $p=0.53$ ) On analyzing the profile of women with complications, the mean age, parity and mean gestational age of women having complications during lockdown were statistically not significant with those during the non-lockdown period (Table 1).

We found that there were increased cases of early pregnancy complications in the lockdown period in comparison to the non-lockdown period (Figure 1).

The most common maternal complication observed during the lockdown period was hypertensive disorder which accounted for 48 (25.8%) of total complications. Among the hypertensive disorder, there were six cases of eclampsia and 42 cases of severe pre-eclampsia. It was also observed that there were 37 (19.89%) cases of preterm labor, 26 (13.97%) cases of pre-labour rupture of membranes, 24 (12.9%) cases of preterm pre-labour rupture of membrane and 19 (10.21%) cases of antepartum haemorrhage.

Table 1. Clinical profile of patients with complications in the lockdown and the non-lockdown groups

Clinical profile	Lockdown period (n=186)	Non- lockdown period (n=181)	p-value
Mean age± SD (years)	26.6 ±5.1	26.7±5.8	0.86*
Parity			
Primipara	94(50.5%)	79 (43.6%)	0.19#
Multipara	92 (49.5%)	102 (56.4%)	
Mean gestational age at delivery± SD (weeks)	33.3±8.1	33.7±7.1	0.61*

\* Student's t test, # Chi-square test

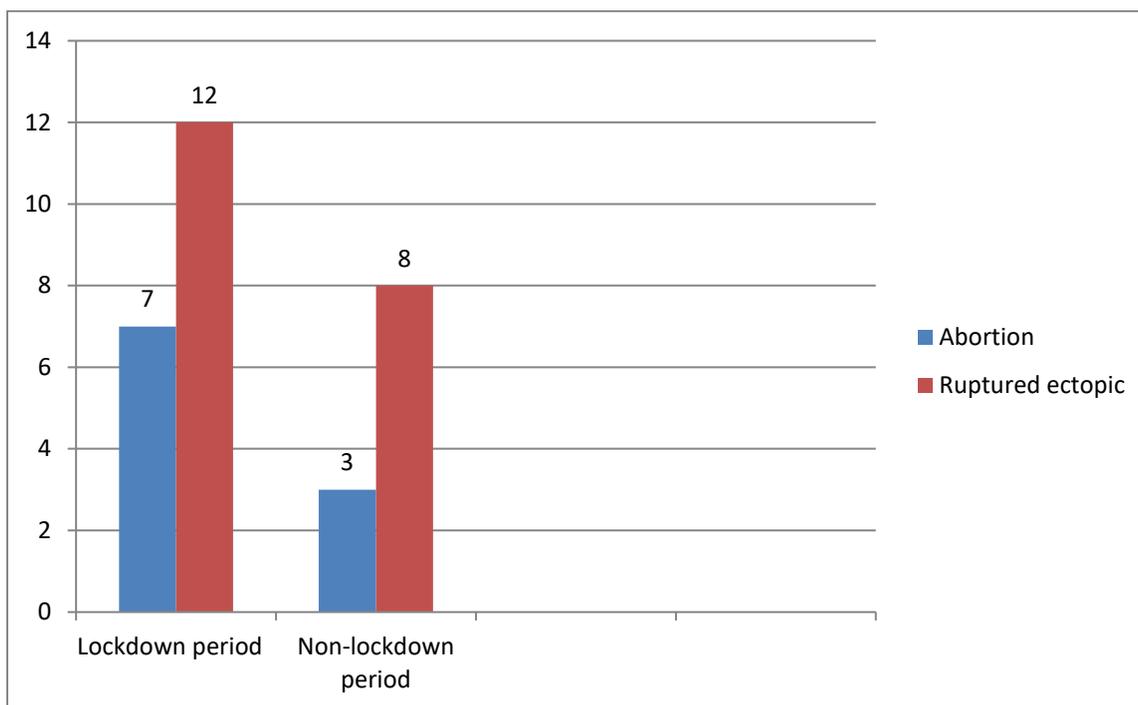


Figure 1. Early pregnancy complications in the lockdown and the non-lockdown periods.

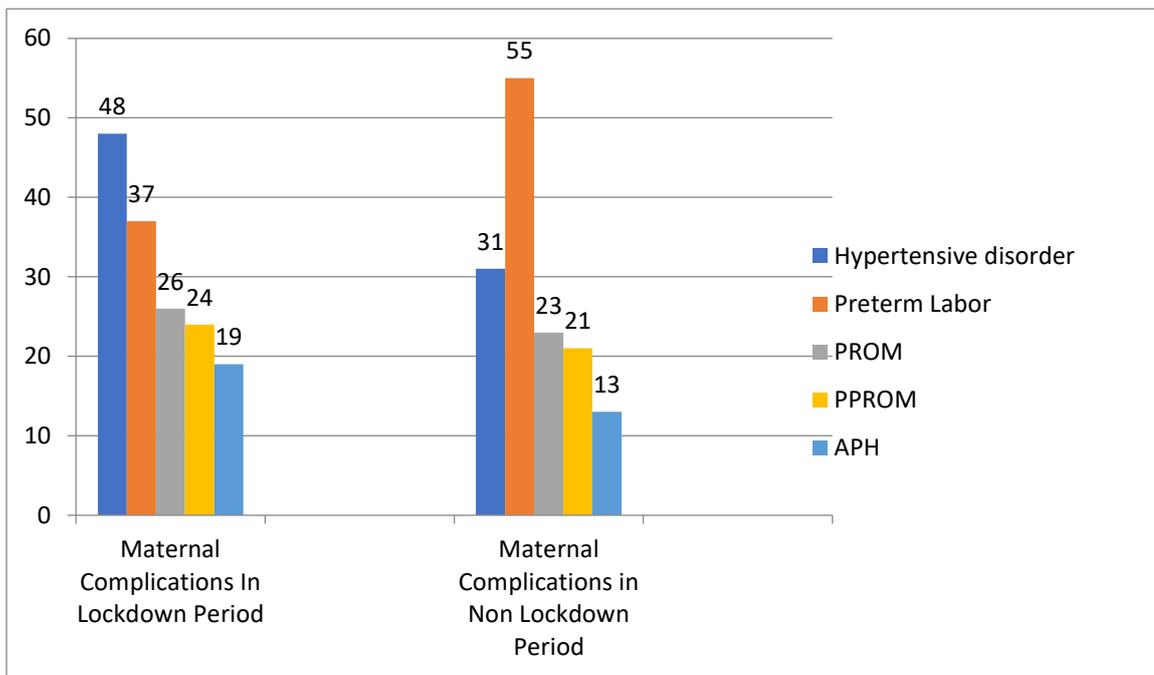
In the non-lockdown period, the most common maternal complication seen was preterm labor which comprised 55 (30.38%) of total complications. Hypertensive disorder comprised 31 (17.12%) of total complications including two cases of eclampsia and 29 cases of severe pre-eclampsia (Figure 2).

**Mode of delivery:**

In the lockdown period, among 186 cases, 104 cases underwent caesarean section accounting for 55.9% whereas during the non-lockdown period, 45.9% of

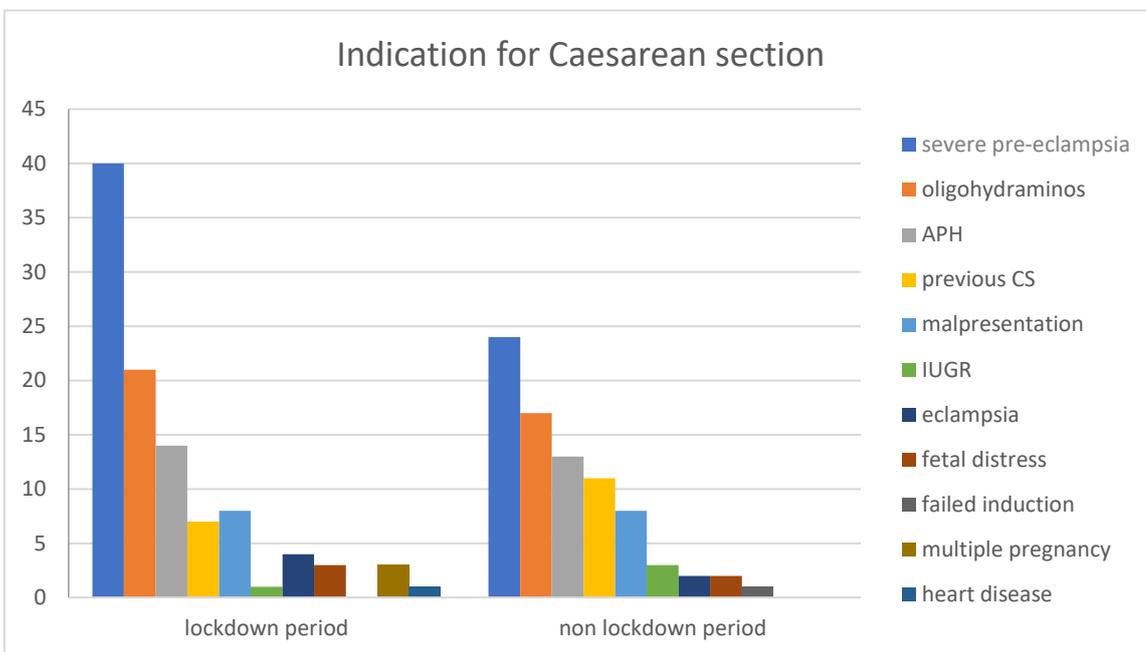
women with complications underwent caesarean delivery.

In the lockdown group, the most common indication for caesarean delivery was severe pre-eclampsia (n=40, 38.4%) followed by oligohydramnios (n=21, 20.1%), antepartum haemorrhage (n=14, 13.4%), mal-presentation (n=8, 7.6%), previous caesarean section (n=7, 6.7%) and eclampsia (n=4, 3.8%). The indications for caesarean section in the non-lockdown group were similar to that of lockdown period as shown in Figure 3.



PROM- pre-labour rupture of membrane, PPROM- preterm pre-labour rupture of membrane, APH- antepartum haemorrhage

Figure 2: Types of maternal complications seen during the lockdown and the non-lockdown periods.



IUGR- intrauterine growth restriction APH- antepartum haemorrhage CS- caesarean section

Figure 3. Indications for caesarean section during the lockdown and the non-lockdown periods

### **Perinatal complications:**

In the lock down period, regarding the perinatal outcomes, there were 21 (1.96%) cases of still birth. In the non-lockdown period, there were 19 (1.93%) cases of still birth and this difference was not statistically significant ( $\chi^2=0.00$ ,  $df=1$ ,  $p=0.96$ ). Similarly, the difference in neonatal death between the lockdown ( $n=10$ , 0.93%) and the non-lockdown ( $n=6$ , 0.61%) periods was also statistically not significant ( $\chi^2=0.69$ ,  $df=1$ ,  $p=0.405$ ).

There were six cases of congenital anomaly which included two cases of neural tube defects and hydrops each and one case each of club foot and heart disease in the lockdown period whereas in the non- lockdown period, there were three cases of congenital anomaly which included one case each of neural tube defect, hydrops and omphalocele.

### **DISCUSSION**

COVID 19 infection is a respiratory infection with high infectivity rate.[5] For the containment of the infection and to curb the widespread of the disease, WHO ushered for lockdown measures, social distancing, and frequent hand washing. Lockdown measures included varying degree of travel restrictions and closure of regular outpatient department in hospitals. As lockdown measures were implemented by the countries worldwide, it was found out that especially in developing countries, it halted women from seeking care from health facility due to undue fear of disease transmission from hospitals.[6]

A study done in Jordan which evaluated the impact of lockdown on antenatal care showed that there was significant increase of pregnant women not receiving antenatal care from 4% to 59.3%.[7] In Nepal, the scenario is expected to be similar as we already have less women receiving antenatal care and this lockdown is expected to further reduce the number. And there is also very little scope of telemedicine, and telephone consultation in our country. So, it can be expected that there may be adverse effect on pregnancy outcome during the period of lockdown.

However, in our study, we observed that there was no significant change in the number of deliveries

during the lockdown period on comparing to the non-lockdown period and this may be due to the diversion of patients to our center from the government hospital which was converted to COVID dedicated center. In a study done in Nepal regarding the impact of COVID 19 pandemic response in pregnancy outcome, it was found that the institutional deliveries in study hospitals were reduced by approximately half in comparison to the non-lockdown period.[8] Similarly during Ebola outbreak in 2014-2016 in West Africa, there was significant reduction in utilization of antenatal care and facility based deliveries in comparison to pre outbreak period.[9] So whenever there was an outbreak of a disease, fear of transmission and increased risk of infection in pregnancy might have precluded women from having a supervised antenatal care and deliveries.

As the use and quality of antenatal care decrease, there is high probability that the pregnancy related complications increase. In an article published in an esteemed newspaper of Nepal, it was cited that the maternal mortality was found to increase sharply (200%) during the lockdown period.[10]

But in our study, we could see that the percentage of maternal complications (17.38%) was similar to that of non-lockdown period (18.43%) and there was no case of maternal mortality in the study period. This can be attributed to the fact that despite the implementation of lockdown, our center resumed its services with no compromise in the quality of health care provided to our patients.

But on analyzing the early pregnancy complications including abortion and ruptured ectopic, the cases were more in lockdown period than in non-lockdown period. The reason behind this increase can be explained by travel restrictions, and closure of clinics and OPDs, decrease in the supply chain, which barred women to access family planning counseling and contraception and hence increasing the proportion of women with unmet contraception needs as cited in study by Aly et al.[11]

On exploring the maternal complications, though the incidence was similar during the lockdown and the non-lockdown periods, the spectrum of complications differed from that in the non-lockdown time. There were more cases of hypertensive disorder in the lockdown period which

may be increased due to unsupervised antenatal care and late presentations delaying early management of the cases. There has also been a lot of psychosocial stress to pregnant women during this COVID 19 pandemic which might have led to the increased incidence of hypertension. [12, 13]

In our study, we found that there was no increase in still birth and neonatal death during the lockdown period in comparison to the non-lockdown period which contradicted the findings in the study by Ashish et al. [8] In their study, there was significant rise of still birth and neonatal death in comparison to pre-lockdown period. This divergent finding may be because our hospital did not compromise on the delivery of quality health services as there was no cut down of manpower or any other facilities during the period of lockdown.

There are a few limitations of this study. It was a cross-sectional study done for three months of lockdown period which was a shorter duration to see the real impact as during that lockdown period, there was no evidence of community spread due to which the implementation of travel restriction was not fully implemented. So the findings in the study cannot be generalized. This study also falls back in assessing the percentage of antenatal coverage during the lockdown period and psychosocial status of pregnant women during the time of delivery.

## CONCLUSIONS

Despite the lockdown measure implemented for the containment of COVID 19 pandemic, it did not have any negative impact on institutional deliveries, maternal and perinatal outcomes in this tertiary care center.

**Conflict of Interest: None.**

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