Original Research Article

Unforseen threats to perinatal health in COVID-19 pandemic

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Abstract

Aims & Objective: Antenatal care (ANC) is a fundamental component of routine maternal and child health services. After the onset of the COVID-19 pandemic, most countries have diverted their public health infrastructure to combating the novel coronavirus. Although mortality rates for COVID-19 appear to be low in children and in women of reproductive age[4] these groups might be disproportionately affected by the disruption of routine health services, particularly in low-income and middle-income countries (LMICs). With this in mind, we sought to quantify the potential indirect effects of the COVID-19 pandemic on maternal health. **Material and Methods:** The present study was conducted in the Department of Obstetrics and Gynecology at our tertiary care center for a period of 6 months from May 1, 2020, to October 30, 2020. The number of admissions, deliveries, high-risk women, and referrals was assessed. These data were compared with those from routine pre-COVID-19 days, May 1, 2019, to October 30, 2019.**Results:** A fall in admissions of about 36.66% was seen during the pandemic time. It was observed that there was an increase in the number of high-risk pregnancies by 13.2 percentage points in the pandemic as compared to previous. The decrease and irregularity in the antenatal check-ups and follow-ups of women were reflected in terms of increase in the maternal mortality, stillbirths and rise in the number of low-birth-weight babies. **Conclusion:** Intelligent use of technology and triaging based on maternal weeks of gestations and high-risk factors may help in combating our health care system in dealing with unforeseen consequences of pandemic on maternal and child health.

Key words: Antenatal care, pandemic, COVID-19, maternal mortality, still birth.

Introduction

Antenatal care (ANC) is a fundamental component of routine maternal and child health services and provides opportunities for many different services to be offered to pregnant mothers with the aim of screening and detecting danger signs early and providing the necessary timely interventions. Antenatal visits provide a window of opportunity to detect and possibly prevent adverse birth events. The goal of antenatal care is to reduce maternal and child mortality and morbidity.

After the onset of the COVID-19 pandemic, most countries have diverted their public health infrastructure to combating the novel coronavirus. However, beneath the surface, a global human rights crisis looms large in the form of an unprecedented threat to reproductive rights. By limiting the provision of essential care, patients will experience a near miss situation, or even a lethal event, not related to COVID-19[1]. The provision of prenatal care could be one of the conditions compromised by the above scenarios with the potential of resulting in adverse outcomes. The well-known factors increasing the risk for adverse maternal outcome are: delay in seeking care; delay in reaching healthcare services; and delay in receiving adequate care at the health facility.

On the face of the COVID-19 pandemic, these delays are more likely to occur increasing the risk for maternal and perinatal mortality.

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Reasons for the greater risk include pregnant women hesitant to reach caregivers or maternities due to the fear of getting the disease; financial problems and access to transportation may be limited due to restriction measures and lockdown to avoid virus spread.

Although mortality rates for COVID-19 appear to be low in children and in women of reproductive age these groups might be disproportionately affected by the disruption of routine health services, particularly in low-income and middle-income countries (LMICs). With this in mind, we sought to quantify the potential indirect effects of the COVID-19 pandemic on maternal health and foetal-maternal outcomes.

Material and Method

The present study was conducted in the Department of Obstetrics and Gynaecology at our tertiary care centre for a period of 6 months from May 1, 2020, to October 30, 2020. It was a prospective observational single-centre study that included all pregnant women admitted during the study period. The study was approved by the Institutional Ethics Committee and informed consent was obtained from the study participants. The number of admissions, deliveries, high-risk women, and referrals was assessed. These data were compared with those from routine pre-COVID-19 days, May 1, 2019, to October 30, 2019.

Statistical analysis

Data entry was carried out using MS Excel Software and analysed using SPSS version 21 (SPSS Inc.). The descriptive and analytical statistics are presented in frequency tables and graphs. The categorical variables were briefed as numbers and percentages. The Chi square test was used to analyse the demographic data. $P < 0.05$ was considered statistically significant.

Result

A total of 6368 obstetrics patients were admitted to the Department of Obstetrics over a period of 6 months from May 1, 2020 to October 30, 2020 during the COVID-19 pandemic. During routine pre-COVID-19 times, we had a total of 10053 patients admitted from May 1, 2019, to October 30, 2019. Thus, a fall in admissions of about 36.66% was seen during the pandemic time.

It was observed that there was an increase in the number of high-risk pregnancies by 13.2 percentage points in the pandemic as compared to previous. In comparison to 4434 (44.1%) high-risk admissions in pre-COVID-19 times, the institute had 3648(52.4%) high-risk admissions to the hospital during the pandemic. There was a statistically significant rise in the high-risk admissions. (Table I)

Table 1: Comparison in statistics between the pre-COVID-19 and COVID-19 periods in the Department of Obstetrics

Parameters	Year 2019	Year 2020	X^2	P value
OBG admission**(N)**	10053	6368		
High risk	4434 (44.1%)	3648 (57.3%)	271	<0.0001
ICU admission	465 (4.6%)	552 (8.6%)	109.7	<0.0001
Mortality	74 (0.73%)	85 (1.3%)	14.57	0.00013
Brought dead	11 (0.11%)	22 (0.34%)	10.83	0.001

Though all patients were registered at either government or private clinics but it was seen that there was a drop in booked cases by approximately 27 percentage point. In comparison to 5616 (56%) of booked cases (women with minimum 4 antenatal visits as per definition by WHO) in pre-COVID period, we had only 1855 women (29.1%) admitted to the hospital during the pandemic who were booked at either government or private clinics (Figure 1).

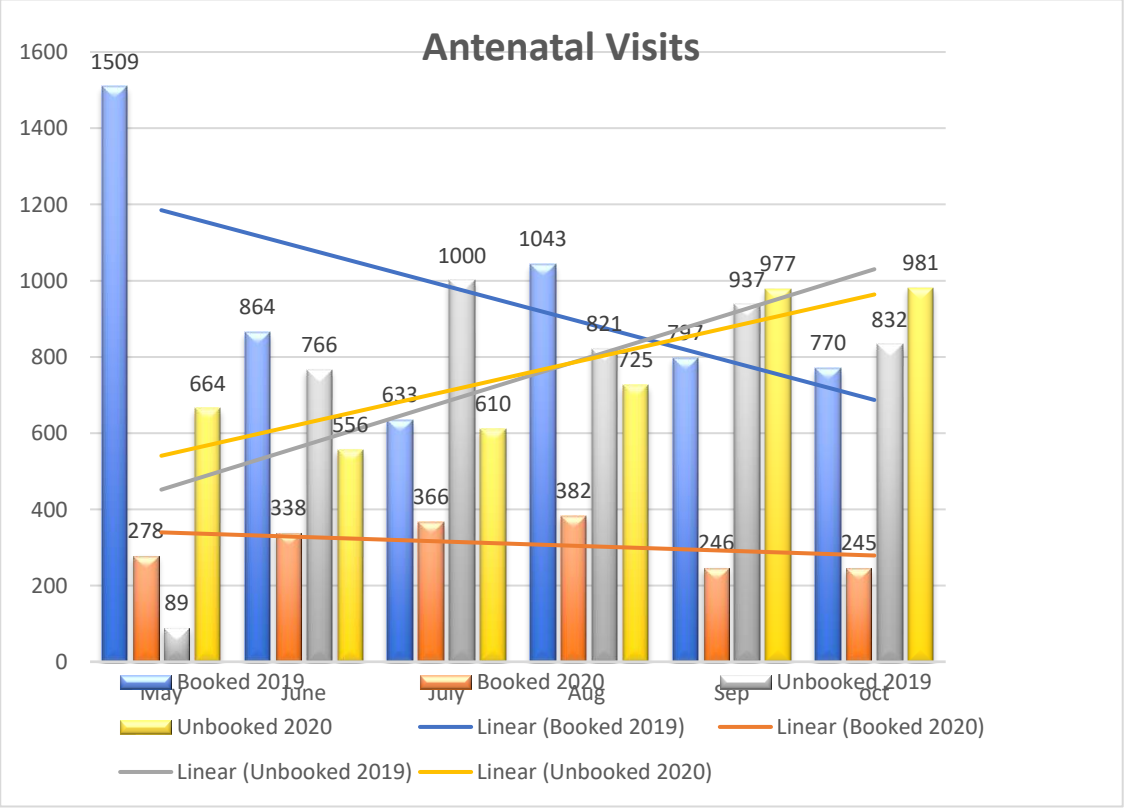

Fig 1: Comparison of Antenatal visits (Booked Vs Unbooked cases) between the pre-COVID-19 and COVID-19 period

Many women avoided routine check-ups during the strict lockdown for at least 3 months, from March to May 2020. This resulted in missing a significant number of co-morbidities relating to pregnancy.When compared with pre-COVID-19 times, this is a significant fall of in the number of deliveries at the study centre (Figure II).

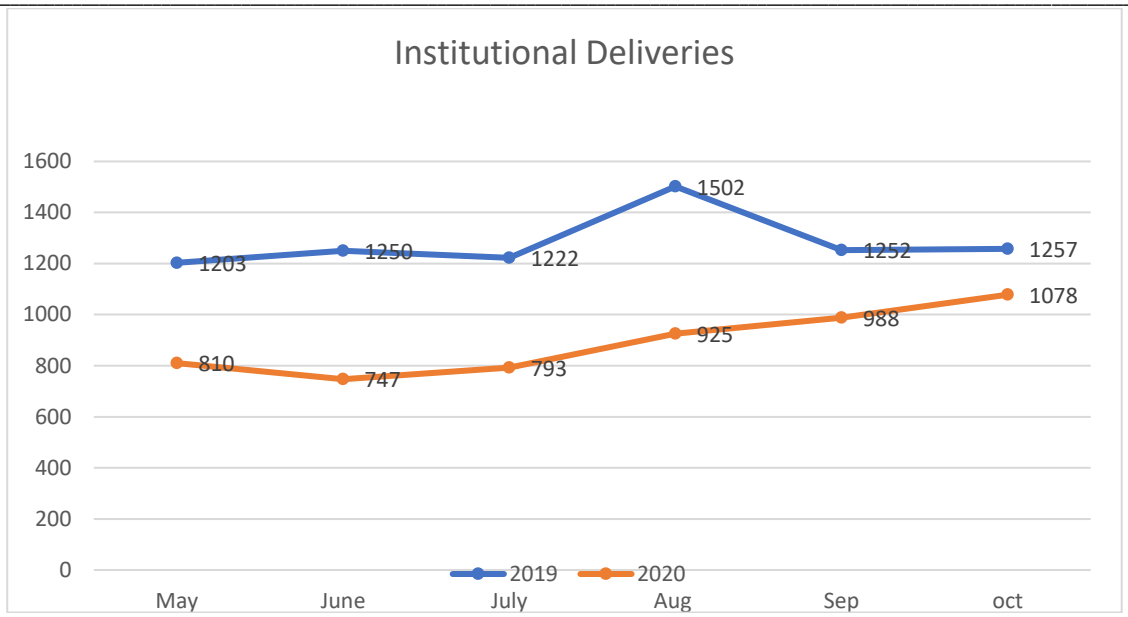

Fig 2:Comparision of Institutional deliveries between the pre-COVID-19 and COVID-19 period

The total number of deliveries in pre-COVID-19 times was 7705 over 6 months (May 2019 to October 2019), while in COVID-19 times, it was 5361 (May 2020 to October 2020). Of these 5361 deliveries during COVID-19 times, 3175 (59.3%) were vaginal deliveries and 2186 (40.9%) were caesarean deliveries. The decrease and irregularity in the antenatal check-ups and follow-ups of women were reflected in terms of increase in the maternal mortality, stillbirths and rise in the number of low-birth-weight babies. (Table 1,2).

Table 2: Comparison of Birth Weight between the pre-COVID-19 and COVID-19 period

Birth weight	2019	2020
< 2.5kg	2050(27%)	1767(33%)
> 2.5kg	5384 (73%)	3677 (67%)

Table 3: Comparison of No. of Still Born between the pre-COVID-19 and COVID-19 period

	2019	2020
Total no. of Deliveries(N)	**N=7705**	**N=5361**
May	**62**	**51**
June	**66**	**43**
July	**54**	**49**
Aug	**64**	**61**
Sep	**67**	**53**
oct	**52**	**34**
Total	365(4.7%)	291(5.4%)

As compare to pre COVID-19 time there is significant rise in maternal mortality {85 (1.3% of obstetric admission) in 2020; 74(0.75%) in 2019}, this was statistically significant with a p value of <0.00013. Similarly, we can see increase no. of brought dead patients in pandemic time (Table I). Lack of transport and delay in seeking help results in increase in the brought dead women. Among the 22 brought dead patients in pandemic period 13 were antenatal and 9 were postnatal patients. The leading cause of death was hypertensive disorder of pregnancy, which is a treatable and avoidable cause if women have regular antenatal follow-ups and timely referral to higher centres.

Discussion

The Covid-19 Pandemic poses a worldwide challenge for healthcare system. The pandemic and the response to the pandemic affects both the provision and utilisation of, maternal, and child health (MCH) services. Government had restricted the population movement by closing borders, reducing public transport, halting nonessential activities, and issuing shelter-in-place orders to control the spread of disease. These restrictions had a negative effect on economy accesses to the health care facility. Movement restrictions had reduced physical access, exacerbated by reduced transport availability resulting in decreased antenatal visits and delay in seeking help[2].The indirect impact of pandemic can be seen in terms of decrease in number of admissions and hospital deliveries as compared to the pre-covid time. Though the number of admissions were reduced it was observed that majority of pregnant women admitted at the facility were high risks and with complications. Many women avoided routine check-ups during the lockdown, resulting in missing a significant number of co-morbidities related to pregnancy. The positive effect of good antenatal care maternofoetal outcome is a proven fact. Women not coming for regular antenatal follow-up may have maternal complications as well as low birth weight, this was seen in study by Prince Kubi Appiah et al[3]. According to the joint stillbirth estimates released by UNICEF, WHO, the World Bank Group and the Population Division of the United Nations Department of Economic and Social Affairs almost 2 million babies are stillborn every year – or we can say around 1 in every 16 seconds. This report has stated that the COVID-19 pandemic

could worsen the global number of stillbirths. As WHO notes, "People, efforts, and medical supplies all shift to respond to the emergency. This often leads to the neglect of basic and regular essential health services. People with health problems unrelated to the epidemic find it harder to get access to health care services."[4].

Due to the diversion in focus of health care services to combat the pandemic, there is estimated 50 per cent reduction in essential health services that may cause nearly 200 000 additional stillbirths over a 12-month period in 117 low- and middle-income countries. This corresponds to an increase in the number of stillbirths by 11.1 per cent[5]. At our institute we have also faced significant increase in the number of stillborn babies in Covid 19 pandemic from 4.7% to 5.4%.

A study of the 2014 epidemic of Ebola virus disease estimated that, during the outbreak, antenatal care coverage decreased by 22 percentage points, and there were declines in the coverage of family planning (6 percentage points), facility delivery (8 percentage points), and postnatal care (13 percentage points)[6]. Qualitative studies suggest that these reductions were due to fear of contracting Ebola virus at health facilities, distrust of the health system, and rumours about the source of the disease[7]. Present study shows similar results of decrease in number of antenatal visits.In India, previous reports have indicated that the proportion of women who had four or more ANC visits has increased by approximately 38% over a 10-year period, from 37% in 2006 [8] to 51% in 2016 [9]. But during this pandemic it was observed that there was a decline in the ANC visits. In our study we have observed a decline in the antenatal booking from 56% to 29 % in Covid-19 period which is an alarming situation. Similar observations were seen in study by Goyal et al[10] where 32.5% pregnant women had fewer antenatal visits than advised and 4.42% women had no antenatal visits.

This lack of access to appropriate ANC may have potentially adverse short- and long-term impacts on Indian women and new-borns. These adverse effects may include maternal morbidity and mortality[11], as well as stillbirth and neonatal death[12]. At our institute we have seen a statistically significant rise in the maternal mortality and still births. The leading cause of maternal death at our institute was hypertensive disorder of pregnancy.

Conclusion

Pandemic pose unique challenges for obstetrics care. Though countrywide lockdowns had proven role in slowing down viral transmission and optimising time for adaptations of health system, but other essential care like antenatal care and in patient deliveries suffered due to lockdown. In country like India where we are still struggling to reduce maternal mortality antenatal care is prudent. Health care facilities need to identify these gaps, plan more systematically and comprehensive approach to maternal health care.

Intelligent use of technology and triaging based on their weeks of gestations and high-risk factors can help in achieving this target. This may be possible by collaborative work model working at community and regional health centre.

Conflict of Interest: Nil
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