

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20263991>

Original Research Article

Did the COVID-19 vaccination during pregnancy impact obstetric outcome?

Pranjali Rai^{1*}, Neetha J. Poonja¹, Shraddha Shetty²

¹Department of Obstetrics and Gynecology, K. S. Hegde Medical Academy, NITTE (Deemed to be University) Mangalore, Karnataka, India

²Department of Community Medicine, K. S. Hegde Medical Academy, NITTE (Deemed to be University) Mangalore, Karnataka, India

Received: 26 August 2026

Revised: 07 October 2026

Accepted: 08 October 2026

*Correspondence:

Dr. Smriti Agrawal,

E-mail: pranjalarais1993@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: The COVID-19 wave hit the world in 2019-20. However, vaccination for covid in pregnant women was still a light behind the wall. Gradually it was accepted and the vaccination was introduced for pregnant women also. This article helps to know the effect of the two commonly used COVID-19 vaccines on obstetric outcome. Aim was to study the safety of COVID-19 vaccination on pregnant women by analyzing its impact on course and outcome of pregnancy.

Methods: This was a cross-sectional study including 427 pregnant women and aims to study the safety of COVID-19 vaccination on pregnant women by analyzing its impact on course and outcome of pregnancy.

Results: Of the total number of women who received the vaccination, 258 (60.4%) received both the doses and 169 (39.6%) received only a single dose of vaccine. In terms of pregnancy outcomes, 30 (6.56%) had abortion and the remaining 427 of them continued the pregnancy up to 3rd trimester. Out of 427, 421 delivered liveborn infants. 6 IUDs and 10 spontaneous first trimester abortions were documented in our study. No fetal anomalies were identified in our study group. The incidence of FGR and oligohydramnios was 0.5%. (0.5%) had PIH. 0.9% of the mothers developed GDM. Preterm deliveries were noted in 15.2%. 8 cases (1.9%) had meconium-stained amniotic fluid at birth. 63.9% had a normal vaginal delivery and remaining 36.1% underwent LSCS. No significant changes were observed with respect to the birth weight of babies among vaccinated women. NICU admissions were noted for preterm care, birth hypoxia and hyperbilirubinemia. However, no serious neonatal morbidity was noted.

Conclusions: The study has not demonstrated any untoward effects on the course of pregnancy nor the fetus at birth, due to receiving covid vaccines. Thus, it can be safely considered during pregnancy.

Keywords: COVID-19, Pregnancy, Preterm, Vaccination, Vaccine

INTRODUCTION

Since the outbreak of the novel coronavirus 2019 (COVID-19), concerns have arisen about how to control and prevent severe acute respiratory syndrome 2.¹ India launched its vaccination program against COVID-19 on January 16, 2021. Pregnancy is associated with a higher rate of severe COVID-19. Furthermore, exposure to

COVID-19 during pregnancy is associated with an increased risk of morbidity and mortality for mothers and their babies, including preeclampsia, ICU admission, infection, prematurity, and delivery. These problems usually occur in women who are overweight, diabetic, have high blood pressure or have heart disease, chronic respiratory disease.²

Transmission to the fetus is possible, although less common. Therefore, this vulnerable group needs to be vaccinated and the negative effects of the vaccine during pregnancy are a serious issue. It is important to find a safe vaccine that protects the mother and the fetus. Due to the lack of evidence of safety, no recommendations have been issued for the vaccination of pregnant women because this group was excluded from Phase II/III studies.³

However, after the discovery of a different disease and the rapid onset of disease and severe disease in this group, it was decided not to vaccinate adult pregnant women. Initially, the vaccine was administered only to high-risk pregnant women (e.g. healthcare workers).⁴

However, within a few weeks, the recommendations were changed and, due to the high efficacy, the vaccine was recommended for pregnant women of all gestational ages. Vaccines against COVID-19 are safe for use during pregnancy because they do not contain live, attenuated viruses. Animal toxicology studies have not produced significant safety signals regarding the use of the vaccine against COVID-19 during pregnancy.⁵

Based on previous experience with other vaccines during pregnancy and due to the lack of consideration of harmful mechanisms, vaccinations against COVID-19 during pregnancy therefore, promotion and advocacy on the importance of vaccination is necessary. Then, obstetricians and gynecologists should be allowed to inject the vaccination to pregnant and lactating women.²

Therefore, this study aimed to evaluate the status and safety of vaccination against COVID-19 among pregnant women. In this study, we analyzed the pregnancy outcome in women who received vaccination against COVID-19 during pregnancy.

METHODS

This is a cross-sectional study conducted in the department of obstetrics and gynecology, K. S. Hegde medical academy, Mangalore. All pregnant women seeking antenatal care in the OPD, and have received their COVID-19 vaccines (Covishield, Covaxin) at least one or both doses during pregnancy, (the same was confirmed by their vaccination certificate issued by the govt of India,) in the duration of 6 months (between- 01 May 2022 to 31 October 2022) as per the criteria, were included in this study.

The course of pregnancy was being monitored to study the impact of covid vaccination, and the outcome after delivery was documented.

Inclusion criteria for the study included pregnant women aged between 18-40 years and all pregnant women at any gestational age who have received one or both doses of covid 19 vaccination.

Exclusion criteria were patients with history of recurrent pregnancy loss, patients with overt diabetes mellitus, those with known autoimmune disorders (SLE, APLA) and those women who were diagnosed with COVID-19 infection in the past.

Primary outcomes that were studied included-anaphylactic reactions requiring hospital admission, miscarriages, fetal anomalies, FGR, Oligohydramnios, preterm deliveries.

Secondary outcomes in the study were still births, NICU admissions and birth defects.

RESULTS

A total of 427 pregnant women were studied and data analyzed using SPSS software version 23.

Out of 427 pregnant women who received the mRNA vaccination for COVID-19, 172 were primigravidae and 255 were multigravida.

Of the total number of women who received the vaccination, 258 (60.4%) received both the doses and 169 (39.6%) received only a single dose of vaccine.

The maternal characteristics and vaccination information are shown in Table 1.

Table 1: Study population demographics and vaccination characteristics.

Study variables	Total study population (n=427) (%)
Age (in years)	
<35	396 (92.7)
>35	31 (7.3)
Parity	
Primipara	172 (40.3)
Multipara	255 (59.7)
Antenatal risk factors	
Breech	7 (1.6)
Pih	2 (0.5)
Gdm	4 (0.9)
Rh negative	1 (0.2)
Fibroid	2 (0.5)
Anemia	1 (0.2)
Placenta previa	5 (1.2)
Total number of doses received	
Single dose	258 (60.4)
Both doses	169 (39.6)
Trimester at which first dose was taken	
1 st (0-14 weeks)	36
2 nd (14-28 weeks)	267
3 rd (after 28 weeks)	124

None of the women included in our study had covid infection before vaccination.

After vaccination none of these women were diagnosed with COVID-19 infection.

In terms of pregnancy outcomes, 30 (6.56%) had abortion and the remaining 427 of them continued the pregnancy up to 3rd trimester (beyond 28 weeks).

Out of 427, 421 delivered liveborn infants. 6 IUDs were documented in our study.

Of the abortions, 18 was voluntary first trimester MTPs, and 10 had spontaneous first trimester abortions.

2 second trimester abortions were noted.

Table 2: Characteristics and outcomes of women who delivered.

Study variables	Women who delivered (n=427) (%)
Trimester at which first dose was taken	
1 st (0-14 weeks)	36 (8.4)
2 nd (14-28 weeks)	267 (62.5)
3 rd (after 28 weeks)	124 (29.03)
Both doses completed before delivery	169 (39.6)
Fetal demise	6 (1.4)
Preterm	
Less than 34 weeks	15 (3.5)
34-37weeks	50 (11.7)
Mode of delivery	
Vaginal	273 (63.9)
LSCS	154 (36.1)
Obstetric complications	
PIH	2 (0.5)
GDM	4 (0.9)
Placenta previa	5 (1.2)
Meconium	8 (1.9)
Fgr, oligo	2 (0.5)
Fetal birth weight	
<2.5 kg	65 (15.2)
2.5-3.5 kg	290 (67.9)
>3.5 kg	39 (9.1)

A total of 36 women in the study had received 1st dose of their vaccination during the first trimester (0-14 weeks), 267 during 2nd trimester (14-28weeks) and 124 during 3rd trimester (after 28 weeks).

Following vaccination on pregnancy follow-up, for obstetric outcome, no fetal anomalies were identified in our study group.

2 cases (0.5%) were identified with FGR and oligohydramnios. 2 cases (0.5%) had PIH. 4 of the antenatal mothers (0.9%) developed GDM.

65 preterm deliveries were noted (15.2%) out of which 15(3.5%) were early preterm (less than 34 weeks) and 50 (11.7%) were late preterm (after 34 weeks).

8 cases had meconium-stained amniotic fluid at birth (1.9%).

273 women (63.9%) had a normal vaginal delivery and remaining 153(36.1%) underwent LSCS.

No significant changes were observed with respect to the birth weight of babies among vaccinated women. Among the available data 65(15.2%) had birth weight less than 2.5 kg, 290 (67.9%) had birth weight between 2.5-3.5 kg and 39 (9.1%) was above 3.5 kg. data of 33 cases were missing in the study.

NICU admissions were noted for preterm care, birth hypoxia and hyperbilirubinemia. However, no serious neonatal morbidity was noted.

DISCUSSION

Our study does not exhibit adverse perinatal outcomes due to covid vaccination during pregnancy. Our results are also supported by different studies done in other parts of the world. In a similar study by Blake way et al, which aimed to investigate the uptake and safety of COVID-19 vaccination among pregnant women. This study concluded that among the pregnant women eligible for COVID-19 vaccination less than one-third accepted COVID-19 vaccination during pregnancy and they experienced similar pregnancy outcomes with unvaccinated pregnant women. This study has contributed to the body of evidence that having COVID-19 vaccination in pregnancy does not alter perinatal outcomes.⁴

Trestle ME et al in a study of pregnant women at New York University Langone Health who received at least 1 dose of an mRNA COVID-19 vaccination approved by the US Food and Drug Administration (FDA), showed that there were no stillbirths and the rate of spontaneous abortion is within the expected rate and there was no increase in the preterm rate. The rate of SGA neonates is near the expected value based on the definition that 10% of neonates will be SGA at birth. The NICU admission rate was at par with the institutional rate.⁶

Further in a prospective observational study by Inna Bleicher et al, concluded that mRNA vaccine during pregnancy seems not to increase the rate of pregnancy complications and is effective in prevention of COVID-19 infection.⁸

Oo Leika et al in a brief review on COVID-19 vaccine and its consequences in pregnancy concluded that the mRNA

vaccine is primarily safe for expectant mothers and common adverse reactions are similar with non-pregnant individuals including fever and injection-site discomfort. There is no evidence that COVID-19 vaccination affects gestation, birth, or birth complications.⁷

A retrospective cohort study was conducted in 2021 at the Soroka University Medical Center (SUMC). Pregnancy, delivery and newborn characteristics and complications were compared between women who received 1 or 2-dose vaccines during pregnancy and unvaccinated women. The study concluded that prenatal maternal COVID-19 vaccine has no adverse effects on pregnancy course and outcomes.¹²

Adding to the stem of evidence to the safety of covid vaccine during pregnancy, similar and recent studies exhibit acceptance and safety of the vaccine in pregnant women.^{9,10}

Thus, the above studies act as evidences to support our study findings and also upholding the safety of mRNA vaccination for COVID-19 during pregnancy, with no significant untoward effects on the course of pregnancy as well as the neonatal outcome. These results can help patients accept vaccines safely during pregnancy without any fear.

However, this study does not demonstrate long term effects on the newborn, and also changes at the cellular level.

CONCLUSION

This article describes our experience with pregnant women who received mRNA vaccine for COVID-19 during the pandemic, in our institution. In par with the other published studies also observed no concerning trends. Our rate of spontaneous abortions, preterm birth, IUD are within the normal range of average.

No anomalous fetuses were noted among the women who received vaccination.

No higher incidences of PIH, GDM, FGR were noted among the study population. No significant changes in the mode of delivery noted.

Birth weight of babies, NICU admissions had no significant deviation from the normal trend.

Using EMR system to identify the subjects and thereby avoiding self-enrolment and self-reporting has reduced the selection and recall bias in this study. The results of this study conducted during the COVID-19 pandemic can be used to counsel and reassure pregnant patients to receive the vaccination with confidence and no fear. Especially at the current situation where there is a surge in covid cases.

Lack of matched control group of unvaccinated pregnant women and thereby direct conclusions could not be drawn about relative risks and complications. Also, this study does not express long term effects on the newborn. This study also does not express results of changes happening at the cellular level.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Cottin J, Benevent J, Khettar S, Lacroix I. COVID-19 vaccines and pregnancy: What do we know? *Therapie.* 2021;76(4):373.
2. Rasmussen SA, Kelley CF, Horton JP, Jamieson DJ. Coronavirus disease 2019 (COVID-19) vaccines and pregnancy: what obstetricians need to know. *Obstet Gynecol.* 2021;137(3):408.
3. Kant R, Dwivedi G, Zaman K, Sahay RR, Sapkal G, Kaushal H, et al. Immunogenicity and safety of a heterologous prime-boost COVID-19 vaccine schedule: ChAdOx1 vaccine Covishield followed by BBV152 Covaxin. *J Travel Med.* 2021;28(8):taab166.
4. Blakeway H, Prasad S, Kalafat E, Heath PT, Ladhani SN, Le Doare K, et al. COVID-19 vaccination during pregnancy: coverage and safety. *Am J Obstet Gynecol.* 2022;226(2):236-e1.
5. Bianchi DW, Kaeser L, Cernich AN. Involving pregnant individuals in clinical research on COVID-19 vaccines. *JAMA.* 2021;325(11):1041-2.
6. Trostle ME, Limaye MA, Avtushka V, Lighter JL, Penfield CA, Roman AS. COVID-19 vaccination in pregnancy: early experience from a single institution. *Am J Obstet Gynecol MFM.* 2021;3(6):100464.
7. Leik NK, Ahmedy F, Mac Guad R, Baharuddin DM. COVID-19 vaccine and its consequences in pregnancy: Brief review. *Ann Med Surg.* 2021;72:103103.
8. Bleicher I, Kadour-Peero E, Sagi-Dain L, Sagi S. Early exploration of COVID-19 vaccination safety and effectiveness during pregnancy: interim descriptive data from a prospective observational study. *Vaccine.* 2021;39(44):6535-8.
9. Arora M, Lakshmi R. Vaccines-safety in pregnancy. *Best Pract Res Clin Obstet Gynaecol.* 2021;76:23-40.
10. Bleicher I, Kadour-Peero E, Sagi-Dain L, Sagi S. Early exploration of COVID-19 vaccination safety and effectiveness during pregnancy: interim descriptive data from a prospective observational study. *Vaccine.* 2021;39(44):6535-8.
11. Federation of Obstetric and Gynecological Societies of India (FOGSI). FOGSI Covid Registry. Available at: <https://www.fogsi.org/fogsi-national-registry-on-covid-19-infection-in-pregnancy/>. Accessed on 25 April 2021.

12. Wainstock T, Yoles I, Sergienko R, Sheiner E. Prenatal maternal COVID-19 vaccination and pregnancy outcomes. *Vaccine*. 2021;39(41):6037-40.

Cite this article as: Rai P, Poonja NJ, Shetty S. Did the COVID-19 vaccination during pregnancy impact obstetric outcome? *Int J Reprod Contracept Obstet Gynecol* 2026;15:4443-7.