IJBPAS, February, Special Issue, 2022, 11(2): 262-270
ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)
'A Bridge Between Laboratory and Reader'
www.ijbpas.com

A REPORT ON LESSONS LEARNED FROM THE PANDEMIC-PREGNANCY OUTCOMES WITH COVID-19

RASHID S[1], PATIL SS[2] AND PATIL Y[3]

1. Resident, Department of Obstetrics And Gynaecology, Krishna Institute of Medical Sciences, Karad, Maharashtra, India
2. Professor, Department of Obstetrics and Gynaecology, Krishna Institute of Medical Sciences, Karad, Maharashtra, India
3. Professor, Department of Obstetrics And Gynaecology, Krishna Institute of Medical Sciences, Karad, Maharashtra, India

***Corresponding Author: Dr. Shazia Rashid: E Mail: reshurashid@yahoo.com**

Received 15th July 2021; Revised 18th Aug. 2021; Accepted 29th Oct. 2021; Available online 15th Feb. 2022

https://doi.org/10.31032/IJBPAS/2022/11.2.1034

ABSTRACT

Background

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) had a great impact on the maternal outcomes when studied retrospectively. This was not associated with increased mortality, but was associated with a modest increase in morbidity.

Materials and Methods

This was a retrospective observational study done in the department of Obstetrics and Gynaecology. Krishna Institute of Medical Sciences, Karad, Maharashtra, India. Over 1 year. 300 singleton pregnancy cases were studied, dividing them into 2 groups, 1st group with COVID-19 (RT-PCR/RAT) positive status and other with covid negative.

Results

Out of 150 COVID-19 positive women were between the age of 24-29 years.75% were asymptomatic and in both group primigravidae were maximum. Cesarean section was done for 62% patients for including over indications like fetal distress etc.

INTRODUCTION

SARS-CoV-2 (severe acute respiratory syndrome coronavirus-2) has a significant impact on maternal outcomes. The COVID-19 pandemic was first detected in Wuhan, China, in December 2019, and the number of positive patients is rapidly rising around the world **[1]**. COVID-19 has caused 858,629 deaths worldwide as of September 3, 2020, with a total of 25,842,652 confirmed cases as of September 3, 2020 **[2]**.

The diagnosis of COVID-19 infection, according to the Indian Council of Medical Research (ICMR), is based on five pillars: epidemiological vulnerability and exposure, clinical features, laboratory parameters, CT chest abnormalities, and a positive RT-PCR examination of nasal and pharyngeal tissues **[3]**.

Because pregnancy is a unique physiological and immunological state, mothers-to-be are more susceptible to illnesses. The upper respiratory tract becomes inflamed as a result of increased progesterone and estrogen levels during pregnancy, and there is also restricted lung expansion due to upward shifting of the diaphragm due to the overgrowing uterus, all of which contribute to increased susceptibility to respiratory pathogens. Apart from the effects of COVID-19 on a child-bearing woman, there are also worries about the potential effects on fetal and neonatal outcomes **[4]**.

Pregnant women made up only 1% of all patients infected with the influenza A subtype H1N1 virus in 2009, yet they were responsible for 5% of all H1N1 virus-related deaths **[5]**. Similarly, during their respective outbreaks, SARS-CoV-2 and Middle Eastern respiratory syndrome (MERS-COV) caused significant problems in pregnant women, resulting in admission to critical care units, endotracheal intubations, renal failure, and death **[6, 7]**.

Fever, cough, and shortness of breath are common symptoms of the condition, with severe cases leading to pneumonia and breathing difficulties. Millions of people have been infected over the world, resulting in thousands of deaths and affecting the majority of pregnancies.

According to the Indian Council of Medical Research (ICMR), the diagnosis of COVID-19 infection is a five-pillar structure with the pillars being namely, epidemiological vulnerability and exposure, clinical attributes, laboratory parameters, CT chest findings, and a positive RT-PCR analysis of nasal and pharyngeal specimens.

Because pregnancy is a physiological and immunological condition unlike any other, it makes child-bearing women more susceptible to illnesses. The upper respiratory tract becomes inflamed during pregnancy as a result of increased progesterone and estrogen levels, and there is also restricted lung expansion due to upward shifting of the diaphragm due to the overgrowing uterus, all of which contribute to increased susceptibility to respiratory pathogens. Aside from the effects of COVID-19 on a child-bearing woman, there are also worries about the potential effects on fetal and neonatal outcomes.

Given the impact of prior outbreaks on pregnant women, we recognize the urgent need for specialized research and studies to assist us figure out the impact of COVID-19 on a pregnant woman and her future progeny in the short and long term, as existing data is limited.

Many studies have also revealed that it impacts the host cell via a receptor similar to angiotensin converting enzyme 2. It was also found in placental and endometrial tissues.

MATERIALS AND METHODS

This was a retrospective observational study done in the department of Obstetrics and Gynaecology. Krishna Institute of Medical Sciences, Karad, Maharashtra, India. over 1 year. 300 singleton pregnancy cases were studied, dividing them into 2 groups,

1st group with positive status and other with negative results.

The study included COVID-19 positive and negative pregnant women detected by RTPCR tests over a period of 1 year from July 2020 to June 2021.

Maternal outcome

It was assessed in terms of signs and symptoms, mode of delivery, time of delivery and any complications.

OBSERVATIONS AND DISCUSSIONS

Pneumonia is the most common non-obstetric infectious disease that affects pregnant women. When compared to other bacterial etiologies, viral pneumonia has a greater rate of maternal and neonatal morbidity and mortality **[8]**. History has shown that the effects of viral infection in the past, such as H1N1, SARS-CoV, MERS pandemic, and Ebola outbreak, have been detrimental to pregnant women, resulting in PPROM, preterm labor, intrauterine fetal mortality, and newborn death **[9, 10]**. According to the findings of our present study, the majority of women infected in their third trimester and were between the ages of 20 and 30 years old. Similar to our study, Liu *et al*. and Fan *et al*. found that the majority of patients in

their third trimesters got infection, with a median age of 30 years.

The majority of persons (pregnant and general population) may be asymptomatic or have moderate respiratory symptoms from COVID-19 infection, according to the Federation of Obstetrics and Gynecological Society of India (FOGSI). According to the World Health Organization (WHO), pregnant women with co-morbid illnesses such diabetes, hypertension, obesity, and other medical risk factors may arrive with pneumonia and substantial hypoxia, or may quickly proceed to this state **[14, 15]**.

Most common age group affected with Covid 19 were between the age of 24-29yrs followed by 20-24 years in both groups.

58% and 32% pregnant women were infected in 24-29 years and 20-24 years age group respectively. The healthy pregnant study group followed closely at 60% and 59% in infected and healthy groups which was not statistically significant **[12, 13]**.

Lower socio-economic class were the most affected by COVID -19.

In infected group, it stood at 58% and in healthy group it stood at 63%.

This was probably due to the housing characteristics and non-occupational and/or educational variables.

Asymptomatic patients were the highest in COVID-19 study group at (56%) followed by those experiencing generalized weakness (47%) and fever (42%). Thus, it can be concluded that COVID -19 infected patients experienced more symptoms compare d to healthy population. The finding were statistically significant.

As for the treatment process, all hospitalized SARS COVID 2 infected pregnant women received low molecular weight heparin therapy. Overall, 70 received hydroxychloroquine, 45 were given feviperavir, 35 did not receive any treatment.

3 patients were given both hydroxychloroquine and feviperavir treatment. Oxygen supplementation was required for 14 of them.

PIH was seen in 121 patients in infected group as opposed to 19% in healthy group. IUGR was also noted in 14% cases of the infected group compared to healthy group. Although not statistically significant. A rise in development of PIH and IUGR in COVID -19 infected cases is noteworthy.

In this study, number of term deliveries were similar in both infected and healthy group. Although, some studies have reported a greater rate of pre term deliveries, this study had no such

observation and was also not statistically significant.

The study showed a greater incidence of cesarean section among COVID-19 positive group (63%) compared to healthy group (41%).

Infection, however, CS was not indicated as a delivery technique. In the vast majority of cases, this mode was seen.

The most common reason for CS was a previous CS who refused to participate in a regular trial, followed by fetal distress. This was noteworthy from a statistical standpoint.

In this study, there was no evidence of PPH. Each delivery was actively managed during the third stage of labor. All symptomatic instances were delivered without skin-to-skin contact or delayed cord clamping. Following the delivery, all infants were promptly quarantined.

COVID-19 infected mothers were shifted to ICU post CS for monitoring.

Recovery for both was uneventful. There were no maternal deaths reported during the study period.

CONCLUSION

There aren't enough studies on the impact and ramifications of SARS CoV-2 infection on pregnant women and their newborns, and there's not enough evidence to reach a definite conclusion on its exact potential.

Despite the small patient pool (only 150 patients), ongoing clinical data aggregation and research is underway with the goal of answering some pressing questions about the disease's spectrum, risk of congenital infection, optimal peripartum, intrapartum, and postpartum approaches, and delivery mode and timing in order to improve the COVID-19 protocols.

Table 1: Age Distribution of Study Cases

Age	COVID-19 POSITIVE CASES(n=150)	COVID-19 NEGATIVE CASES(n=150)
>18 - <20 YEARS	5(3%)	8(5%)
20-24 YEARS	48(32%)	48(32%)
25-29 YEARS	87(58%)	89(60%)
30-35 YEARS	10(7%)	5(3%)
TOTAL	150(100%)	150(100%)

The chi-square statistic is 2.1339. The p-value is .545085. The result is not significant at p < .05.

Table 2: Comparison of Symptoms Between Study Cases

SYMPTOMS	COVID-19 POSITIVE CASES (n=150)	COVID-19 NEGATIVE CASES (n=150)
BREATHLESSNESS	5 (3%)	0 (0%)
FEVER	71 (47%)	17 (11%)
GENERALISED WEAKNESS	63 (42%)	8 (5%)
COUGH	25 (17%)	17 (11%)
LOSS OF TASTE AND SMELL	21 (14%)	0
DIARRHEA	9 (6%)	5 (3%)
CHEST PAIN	0 (0%)	0 (0%)
SPO2 <94%	5 (3%)	0 (0%)
ASYMPTOMATIC	84 (56%)	129 (86%)

The chi-square statistic is 11.1622. The p-value is .0248. The result is significant at p < .05.

Table 3: Comparison of Maternal Complications Between Study Cases

COMPLICATIONS	COVID-19 POSITIVE CASES (n=150)	COVID-19 NEGATIVE CASES (n=150)
PRE-ECLAMPSIA SYNDROME	71 (47%)	21 (14%)
GDM	6 (4%)	9 (6%)
IUGR	21 (14%)	9 (6%)
IUFD	5 (3%)	3 (2%)

The chi-square statistic is 6.0423. The p-value is .196009. The result is not significant at p < .05.

Table 4: Comparison of Mode of Delivery In Study Cases

MODE OF DELIVERY	COVID-19 POSITIVE CASES (n=150)	COVID-19 NEGATIVE CASES (n=150)
CESAREAN SECTION	93 (62%)	63 (42%)
VAGINAL DELIVERY	57 (38%)	87 (58%)

The chi-square statistic is 8.0128. The p-value is .004645. The result is significant at p < .05.

Table 5: Comparison of Indications of Cesarean Section In Study Cases

INDICATION	COVID-19 POSITIVE CASES (n=93)	COVID-19 NEGATIVE CASES (n=63)
FETAL DISTRESS	17 (17%)	18 (28%)
SEVERE IUGR	5 (4%)	3 (4%)
SEVERE OLIGOHYDRAMNIOS	8 (8%)	5 (7%)
PREVIOUS LSCS	34 (37%)	17 (26%)
BREECH	3 (3%)	5 (7%)
FAILURE OF INDUCTION	9 (9%)	6 (9%)
SEVERE PREECLAMPSIA	12 (12%)	8 (11%)
MATERNAL REQUEST	6 (6%)	3 (4%)

The chi-square statistic is 2.2756. The p-value is .685215. The result is not significant at p < .05.

REFERENCES

[1] Prevalence and severity of corona virus disease 2019 (COVID-19): A systematic review and meta-analysis. Hu Y, Sun J, Dai Z, *et al*., J Clin Virol, 127, 2020, 104371. [PMC free article] [PubMed] [Google Scholar]

[2] WHO Coronavirus (COVID-19) dashboard. [Jul, 2021], https://covid19.who.int 2021

[3] Guidance for management of pregnant women in COVID-19 pandemic, 2021. https://www.icmr.gov.in/pdf/covid/techdoc/Guidance_for_Management_of_Pregnant_Women_in_COVID19_Pandemic_12042020.pdf 2020

[4] Why are pregnant women susceptible to COVID-19? An immunological viewpoint. Liu H, Wang LL, Zhao SJ, Kwak-Kim J, Mor G, Liao AH, *J Reprod Immunol,* 139, 2020, 103122, [PMC free article] [PubMed] [Google Scholar]

[5] Pandemic 2009 influenza A (H1N1) virus illness among pregnant women in the United States, Siston AM, Rasmussen SA, Honein MA, *et al*. *JAMA,* 303, 2010, 1517–1525, [PMC free article] [PubMed] [Google Scholar]

[6] Pregnancy and perinatal outcomes of women with severe acute respiratory syndrome. Wong SF, Chow KM, Leung TN, *et al*. Am J Obstet

Gynecol, 191, 2004, 292-297. [PMC free article] [PubMed] [Google Scholar]

[7] Middle East Respiratory Syndrome Coronavirus (MERS-CoV) infection during pregnancy: report of two cases and review of the literature, Alfaraj SH, Al-Tawfiq JA, Memish ZA, J Microbiol Immunol Infect, 2019, 52, 501-503. [PMC free article] [PubMed] [Google Scholar]

[8] Potential maternal and infant outcomes from (Wuhan) Coronavirus 2019-nCOV infecting pregnant women: lessons from SARS, MERS, and other human Coronavirus infections, Schwartz DA, Graham AL, Viruses, 2020, 12 [PMC free article] [PubMed] [Google Scholar]

[9] Management guidelines for obstetric patients and neonates born to mothers with suspected or probable severe acute respiratory syndrome (SARS) Maxwell C, McGeer A, Tai KF, Sermer M, J Obstet Gynaecol Can, 31, 2009, 358-364. [PMC free article] [PubMed] [Google Scholar]

[10] H1N1 influenza in pregnancy: what all obstetric care providers ought to know, Carlson A, Thung SF, Norwitz ER, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2760905/ Rev Obstet Gynecol, 2, 2009, 139-145. [PMC free article] [PubMed] [Google Scholar]

[11] What obstetrician-gynecologists should know about Ebola: a perspective from the Centers for Disease Control and Prevention? Jamieson DJ, Uyeki TM, Callaghan WM, Meaney-Delman D, Rasmussen SA, Obstet Gynecol, 124, 2014, 1005-1010. [PubMed] [Google Scholar]

[12] Clinical and CT imaging features of the COVID-19 pneumonia: focus on pregnant women and children, Liu H, Liu F, Li J, Zhang T, Wang D, Lan W, J Infect, 80, 2020, 0. [PMC free article] [PubMed] [Google Scholar]

[13] Perinatal transmission of 2019 Coronavirus disease-associated severe acute respiratory syndrome Coronavirus 2: should we worry? Fan C, Lei D, Fang C, *et al*., Clin Infect Dis, 72, 2021, 862-864. [PMC free article] [PubMed] [Google Scholar]

[14] FOGSI GCPR on pregnancy with COVID-19 infection version 2. [Jul;2021];Gandhi A, Ganatra A, Tank P. https://www.fogsi.org/wp-content/uploads/covid19/fogsi_gcpr_on_pregnancy_with_COVID_19_version_2.pdf *India.* 2020

[15] Coronavirus disease 2019 (COVID-19) situation report - 72. [Jul;2021]; https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200401-sitrep-72-covid-19.pdf 2019. 19, 2019, 72. [Google Scholar]

[16] Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records, Chen H, Guo J, Wang C, *et al*., Lancet, 395, 2020, 809–815. [PMC free article] [PubMed] [Google Scholar]

[17] Impact of the Coronavirus infection in pregnancy: a preliminary study of 141 patients, Nayak AH, Kapote DS, Fonseca M, Chavan N, Mayekar R, Sarmalkar M, *et al*., J Obstet Gynaecol India, 70, 2020, 256–261. [PMC free article] [PubMed] [Google Scholar]

[18] Clinical features and obstetric and neonatal outcomes of pregnant patients with COVID-19 in Wuhan, China: a retrospective, single-centre, descriptive study, Yu N, Li W, Kang Q, *et al*., Lancet Infect Dis, 20, 2020, 559–564. [PMC free article] [PubMed] [Google Scholar]

[19] Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia, Zhu H, Wang L, Fang C, *et al*., Transl Pediatr, 9, 2020, 51–60. [PMC free article] [PubMed] [Google Scholar]

[20] Coronavirus disease 2019 in pregnant women: a report based on 116 cases, Yan J, Guo J, Fan C, *et al*., Am J Obstet Gynecol, 223, 2020, 111. [PMC free article] [PubMed] [Google Scholar]

[21] Amaral WND, Moraes CL, Rodrigues A, Noll M, Arruda JT, Mendonca CR, Maternal Coronavirus Infections and Neonates Born to Mothers with SARS-CoV-2: A Systematic Review. Healthcare (Basel), 8(4), 2020.

[22] Arinkan SA, Dallı Alper EC, Topcu G, Muhcu M, Perinatal Outcomes Of Pregnant Women Having SARS-COV-2 Infection, Taiwanese Journal of Obstetrics & Gynecology, https://doi.org/10.1016/j.tjog.2021.09.001.

[23] Chadeau-Hyam M, Bodinier B, Elliott J, Whitaker MD, Tzoulaki I, Vermeulen R, *et al*., Risk factors for positive and negative COVID-19 tests: A cautious and in-depth analysis of UK biobank data, Int J Epidemiol, 49, 2020, 1454–1467.

[24] Llorca J, Lechosa-Muñiz C, Lasarte-Oria L, Cuesta-González R, López-

Hoyos M, Gortázar P, *et al*., The MOACC-19 Group. Influence of Socioeconomic Status on SARS-CoV-2 Infection in Spanish Pregnant Women, The MOACC-19 Cohort, Int J Environ. Res, Public Health 18, 2021, 5133. https://doi.org/10.3390/ ijerph18105133.