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Obstetric Consequences of Pregnant Females with COVID-19: A Systematic Review

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Abstract

Since its discovery in December 2019, COVID-19 has spread to over 210 nations, with a mortality rate of three to four percent. Its consequences on a pregnant woman are mostly unknown. The systemic review's goal was to report on the obstetric outcomes of pregnant women who had Covid-19 until October 2020. To analyse some confirmed patients of parental, foetal, or neonatal death due to Covid-19 infection, data was searched from Scopus, PubMed, Web of Science database, and Google Scholar. Data on the effects of Covid-19 in pregnancy on parental, obstetric, and infant outcomes were included in the studies.The data gathered in this systematic review might aid healthcare personnel in providing the best possible therapy. The findings might help to guide and enhance prenatal therapy for women who are infected with Covid-19 during pregnancy.

Key words: *Covid -19, maternal mortality, neonatal outcome, pregnant females, obstetric outcome*

Introduction

On December 31, 2019, Chinese officials summoned the WHO (World Health Organization) to discuss a number of cases, including pneumonia, in Wuhan [1]. On January 7, 2020 and February 11, 2020, the World Health Organization (WHO) released a new term for an infectious disease: Corona Virus (COVID-19). The illness has been identified as a novel coronavirus by the Chinese Centers for Disease Control and Prevention. Symptoms of this illness include fever, TB, fever, wheezing, and shortness of breath [2].COVID-19 studies in Europe, China, and the United States have found that age and morbidity are major contributors in adverse effects and death. Although the Covid-19 studies in China are small (81%) [3-5], over 80% of instances occur in people over the age of 60, with just one fatality (0.1%) occurring in a person under the age of 19 [3-5]. Preeclampsia appears to be more severe and is related with neonatal outcomes, such as a higher risk of miscarriage, reduced foetal development, and

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preterm delivery, according to evidence from MERS-CoV and SARS-CoV.[6-9] The moment has arrived. Although the prospects for direct intrauterine surgery are inadequate, information from the UK suggests risk factors for bad maternal outcomes in more than 400 pregnant women with COVID-19 [10]. Birth control in COVID-19 patients is determined by pregnancy tests, according to the Royal College of Obstetrics and Gynecology, and frequent separations between the afflicted mother and her infant are discouraged [11].

The Outcome of COVID-19 on Women with Pregnancy: Maternal and Neonate Consequences

Individuals and societies have long been concerned about the danger of infection due to the introduction of novel viral illnesses and the evolution of viral diseases. This is especially true for expecting mothers who aren't frightened of themselves or their unborn child. Pregnant women, their foetuses, and their kids are the most vulnerable elements of society during an infectious disease pandemic. Pregnancy-related anatomical, physiological, and immunological changes can render pregnant women more vulnerable to newly emerging viral infections, making infection more severe.Local cell-mediated immunity is lost, and the maternal respiratory and cardiovascular systems are altered as a result of these changes. Increased oxygen supply, heart rate, stroke volume, reduced vital capacity, and other physiological alterations are all examples of this. Extremely severe [12, 13]. Emerging infectious illnesses that have harmed pregnant women have a long history, and they can be more hazardous as a result of the disease than sick women who are not pregnant. Influenza, Ebola virus, hepatitis E, and chickenpox have a more severe clinical course in pregnant women than in non-pregnant women have a higher incidence of problems, and may have a higher mortality rate for pregnant women. there is.

Infection's effects on the foetus are difficult to anticipate and depend on a variety of circumstances. Agents, gestational age of infection, and maternal-fetal interaction are all host-related characteristics. During the current Ebola virus outbreak, unvaccinated pregnant women were particularly prone to sickness and high mortality, foetal outcomes were dismal, and just two infants survived the infection [14].Pregnant women, on the other hand, may have no symptoms or very minor symptoms of illness, and even if the foetus is seriously afflicted, it may not be considered infectious. During a Zika virus pandemic, infected pregnant women are usually asymptomatic or have the least alert and mild symptoms. However, because the virus does not cause an inflammatory reaction, it silently slips through the placenta, causing foetal deformities, nerve damage, and death [15].

COVID-19 has a major influence on pregnant mothers and their unborn children. Several research [16] have looked at the effects of COVID-19 on pregnant women and babies. However, there is no information on whether pregnancy impacts the health of COVID-19-positive pregnant women. A study on a total of 38 percent of women with COVID-19 from a Chinese cancer background has been released. There were 37 women in their third year of pregnancy who were RT-PCR reversible (polymerase chain reaction) safe for SARS-CoV2.Thirty-nine children were born, one of them was a twin. Twenty-nine youngsters have access to comprehensive clinical data, pregnancy outcomes, and SARS-CoV-2 status. Chen et al. conducted a retrospective assessment of the medical records. [13] COVID-19 infection was discovered in 9 pregnant women. The Chinese Centers for Disease Control and Prevention (BioGerm, Shanghai, China) used an RT-PCR authorised application to screen women for SARS-CoV-2. The State Institute of Virology / Institute of Medical Virology and the Wuhan University School of Medicine's Zhongnan Hospital Clinical Laboratory tested RT-PCR at the

same time. The accuracy of SARS-CoV-2 will be questioned if positive test results are found in any laboratory. The mothers ranged in age from 26 to 40 years old. They claimed they were infected with a novel coronavirus and became pregnant after taking COVID-19. There were no chronic illnesses among the women in this research, such as heart disease, diabetes, or hypertension, although three of them looked to be at risk for infectious infections during pregnancy. Case 1: flu; case 2: preeclampsia; case 3: preeclampsia; case 4: preeclampsia; case 5: preeclampsia; case 6: preeclampsia; case 7: preeclampsia; case 8: pre When they came, seven of the ladies had a fever. Myalgia (3/9), cough (4/9), malaise (2/9), sore throat (2/9), dyspnoea (1/9), and intestinal symptoms (1/9) were added to the list of symptoms.This is a manifestation of. An rise in lymphopenia (5/9), C-reactive protein (6/9), and aspartate aminotransferase (3/9) alanine aminotransferase was discovered in the laboratory. In eight out of nine women, a CT scan reveals frailty, with atypical lungs and opaque glass. In four girls, the baby was delivered early. There are sometimes prenatal issues, such as premature ejaculation. There were no cases of serious pneumonia among the women, and no fatalities among the mothers. [14] Liu et al. Three pregnant women develop SARS-CoV-2 by the third trimester, according to studies. Three of the 17 pregnant women admitted to the maternity unit during labour make up 18% of the total. This lady is between the ages of 30 and 34. [15] Alternative clinical trials were chosen from 19 research, comprising 79 women in hospitals: COVID-19 has 41 views, MERS has 12, and SARS has 26. 91.8 percent of the people tested positive for pneumonia, 82.6 percent for fever, 57.1 percent for asthma, and 27.0 percent for dyspnea. The pregnancy rate was 64.7 percent, with 24.3 percent having a gestational age of less than 37 weeks. The initial rash appeared in 20.7 percent of cases, preeclampsia in 162 percent of cases, and the slow-growing foetus in 11.7 percent of cases. SARS affects 84 percent of women who give birth through caesarean surgery. The overall foetal death rate was 11.1 percent, with 57.2 percent of infants being cared for by the child health care department.In 41.1 percent of instances, temporary birth is the most prevalent cause of pregnancy. The mortality rate during childbirth was 7.0 percent. Vertical transmission is not seen in newborns. COVID-19 affects preeclampsia, foetal mortality, preterm birth, and increased caesarean section. There have been no formal media complaints. This material should be updated as quickly as possible as new evidence becomes available. The findings of this study aid and enhance foetal care in COVID-19-positive pregnant women, but they should be carefully evaluated in a number of other instances [17].

In a comprehensive analysis focusing on July 2020 and existing evidence of maternal, foetal, and neonatal morbidity linked with COVID-19 illness, researchers looked at current evidence of maternal, foetal, and neonatal morbidity. COVID-19 was studied in 2,815 investigations, with 37 maternal and newborn fatalities at the age of 12 recorded in 10 of them (7 foetal deaths and 5 infant deaths). Women with pre-existing illnesses such as diabetes, obesity, and asthma are more likely to die during pregnancy.

With the exception of one case in which the mother died of thromboembolism at delivery, the most prevalent causes of maternal mortality are acute respiratory distress syndrome and pneumonia. Infant and foetal mortality as a result of maternal infertility or early infertility are both discouraged. Surprisingly, no evidence of transmission was found among the infants that died. According to current statistics, maternal mortality is more prevalent and occurs in more severe instances in mothers with pre-existing illnesses than in newborns who are at high risk of infant death. To evaluate the severity of newborn and maternal mortality, further data is required [18].

Guo and colleagues Several instances have been found, including 324 pregnant women infected with COVID-19, of whom only 24 have matured as a result of systematic testing. There were nine instances in total (eight in a row) and a total of 15 cases. The case report includes a total of 20 pregnant women who had COVID-19 laboratory testing. With a total of eight case studies, pregnancy rates varied from 20 to 44 years, and gestational age at admission ranged from 5 to 41 weeks, with 211 (71.5%) laboratory findings in 84 (28.5%) patients diagnosed with COVID 19 in hospital. Shortness of breath, cough, fever, muscular discomfort, and weakness are the most frequent symptoms.

Cold sores were found to be common in the judicial system, ranging from 0% to 14%, with the majority of cases necessitating hospitalisation. Almost every instance has a good CT outcome based on previous experience. Six to 22 cases of severe SARS-CoV-2 (severe acute respiratory infection coronavirus 2) with DNA analysis on the nose and mammary gland were found to be inadequate. Only four occurrences of abortion or elective abortion have been confirmed. At the time of publishing, 219/295 women had been recruited for these studies, with 78 percent of them having access to a maternity ward. The gestational age of a baby varies from 28 and 41 weeks. For two to five minutes, the Apgar score varies from 7 to 10. Only eight youngsters gained less than 2,500 grammes of weight, and roughly a third of them were hospitalized.

A instance of newborn asphyxia and death has been reported. SARS-CoV-2 was inappropriate for all but three of the 155 children with IBD. There were no maternal fatalities in any of the eight cases. In nine severe instances of COVID-19, four intrauterine deaths, seven women, and two babies have been documented. Two moms, one infant, and two instances of SARS-CoV-2 infection were reported in another case. Despite the growing number of published COVID-19 research in pregnant women, there is no good evidence for an unsatisfactory outcome on COVID-19 infection or complications, as well as pregnancy, neonatal, and vertical issues. [19].

Fans et al.[21] Two instances of SARS-CoV-2 infection during the first three months of pregnancy have been linked to COVID-19, according to reports. Mothers and infants provide excellent results. SARS-CoV-2 hasn't been found in pregnant women or infants. Direct transmission of SARS-CoV-2 has been reported to have a reduced risk of intrauterine infection [20]. Wu et al. performed a back-to-back research, delivering 29 pregnant women with COVID-19 and 30 infants (twins) at two designated hospitals in Wuhan, China, between January 30 and March 10, 2020 [22].From hospital records, maternal disclosures, birth reports, scores, and laboratory testing. Newborns are admitted to the hospital if they have symptoms (case 5) or if their caregiver wishes to explore hospital separation (case 13), although they can also be released without symptoms and monitored by phone (12 words). The infant's health report at the hospital provided laboratory results as well as X-ray or CT scans of the heart. The SARS-CoV-2 vaccination was shown to be inhibited in the blood of four infants. Until they were twenty-nine years old, the majority of 29 pregnant women with COVID-19 (thirteen were admitted to 16 hospitals) had secondary school education (56.6%) and were employed (51.7%).

Fever (8), cough (9), shortness of breath (3), diarrhoea (2), and vomiting (1) were reported by 14 women, whereas 15 remained asymptomatic. 11 of the 29 women experienced pregnancy-related issues, and 27 of them wanted to start a family. 18 of the 30 babies were admitted to the Wuhan paediatric hospital for specialty and treatment, while the other 12 were left unmarked at birth and examined on a regular basis. COVID-19 instances in five hospitalised babies (two confirmed, three probable). In addition, 12 of the 13 hospital-borne patients had pneumonia radiographs on X-rays or CT scans, one for episodic cough and the other without

symptoms. Serum immunoglobulin M (IgM) and SARS-CoV-2 GS immunoglobulin (IgG) levels in four babies were tested at 2. The number of comparisons across groups was limited due to the small sample size. They discovered an estimate of COVID-19 or malaria in some, but not all, women born with COVID-19 in the research. These findings imply that intrauterine or intrapartum transmission is a possibility, necessitating clinical care and more investigation [21].

The 2019 Conference on Infectious Diseases (COVID-19) has generated major concerns about possible harmful effects on pregnancy. For COVID-19 influenza outcomes in mothers and babies in pregnant women, there is inadequate information. A case-control study was undertaken to assess the clinical characteristics and outcomes of maternal and newborn pregnancy in pregnant women who did not have COVID-19. Between January 24 and February 29, 2020, 16 pregnant women were reported to have a cold COVID-19, as well as 18 suspected cases of being accepted to work in the third trimester. For the others, two of them were unintentionally produced via caesarean section. As a result of the respiratory symptoms (fever and cough), a number of individuals underwent a CT scan of the heart with a cold COVID-19. In comparison to controls, patients with cold COVID-19 exhibited higher levels of C-reactive protein (CRP), neutrophils, and white blood cell count (WBCs), as well as alanine aminotransferase and receptors. Women with the common cold had elevated amounts of C-reactive protein, leukocytes, eosinophils, and neutrophils in their transient red blood cell counts.

Mothers (18.8%) of mothers with COVID-19 were verified to have three (16.7%) cases of premature COVID-19 infection as a result of maternal difficulties, which was substantially higher than those with a body for management. There were no respiratory difficulties when I was in the hospital. There was no COVID-19 infection in neonates, and none of the babies had any severe issues. There is no danger of infection for the mother or the child in pregnant women with cold COVID-19 who give birth by accident or by caesarean section. COVID-19 revealed indications of shortness of breath in pregnant women with cold, which is required for adequate anaesthesia [22].

Zygam et al. [24] checked the database of all complaints and case reports from February 12 to April 4, 2020. COVID-19, pregnancy, maternal sickness, maternal death, hospital symptoms, problems, infant mortality, stillbirth, neonatal disease, and SARS-CoV-2 are among the conditions covered. Peer-reviewed research articles published in English or Chinese, as well as cyclic polymerase chain reaction (PCR) or double fluorescence reaction, are all acceptable methodologies. The study includes data from 108 pregnancies that occurred between December 8, 2019 and April 1, 2020, as well as data from eighteen individuals. Several studies have discovered that women with fever (68%) and asthma (34%) during the third trimester of pregnancy. Lymphocytopenia (59%) was seen in 91 percent of full-term women with high C-reactive protein (70%) and lymphocytopenia (70%). In the maternity department, three hospitalizations were documented, but no maternal deaths. In addition, there were infantile and intrauterine deaths. Despite the fact that the majority of pregnant moms had no severe problems, maternal morbidity and childbirth owing to COVID-19 were documented. COVID-19's vertical absorption does not need to be removed. COVID-19 pregnancy must be monitored, and steps to avoid newborn illnesses must be taken [23].

Juan as well as others. He's done extensive research on the effects of COVID-19 on pregnancy, delivery, and even neonatal outcomes. The most frequent symptoms during exposure include cough, fever, shortness of breath / dyspnoea, and fever. Malaria is uncommon, and most of

these patients need to be admitted to a critical care unit (health care department). Almost every patient in the surgery had a positive CT scan [25].

The 22-year-old patients were examined for DNA as well as different milk and milk samples, both of which were found to be negative for SARS-CoV-2. A total of 177 cases were identified, the majority of which were treated with surgery. At the time of birth, the gestation period spans from 28 to 41 weeks. A one-minute Apgar score can be anywhere between seven and 10, whereas a five-minute Apgar score can be anywhere between eight and ten. Because they were born with less than 2500 g, more than a third of patients were referred to the neonatal unit for newborn care. Any cause of asphyxiation and newborn mortality has been documented. There are 113 babies with nucleic acid-sensitive researchers in throat swabs, which is bad news for SARS-CoV-2. COVID-19 has been related to maternal fatalities in pregnant women in the past. COVID-19-treated pregnant women have the same clinical features as COVID-19-treated pregnant women. There is presently no indication that pregnant women with COVID-19 are more likely than non-pregnant women to develop a high fever [24].

Liu et al. [26] They're presently looking at clinical pictures of infants infected with SARS-CoV-2 and learning more about COVID-19's natural consequences. 19 babies were admitted to Tongji hospital between January 31 and February 29, 2020. Their mother was either diagnosed with COVID-19 or had a blood test to see whether she had it. A total of 19 babies were involved in the research. SARS-CoV-2 RT-PCR was discovered positive in ten women with COVID-19 in throat swabs, whereas SARS-CoV-2 RT-PCR was found positive in nine moms with COVID-19 in throat swabs. The infant is delivered in a separate room and is immediately separated from the mother for at least 14 days. There is no indication that the foetus is in distress. The infants tested negative for SARS-CoV-2 RT-PCR using throat, urine, and faeces when they were 38.6 to 1.5 years old and weighed 3293 to 425 grammes. The presence of SARS-CoV-2 RT-PCR in the breast and amniotic fluid is also concerning. Any newborn has not developed any clinical, radiological, haematological, or biochemical investigations. We did not identify SARS-CoV-2 transmission without problems throughout the third trimester. Birth rates should differ from mother to kid, caregiver to newborn, and provider to newborn [25].

Yu et al. provide an overview of central repetition. [27] This covered all pregnant women with COVID-19 who were hospitalised to Tongji Hospital in Wuhan, China. They look at the hospital, the therapy, and the foetus and foetal outcomes. Seven individuals were enrolled in the research, who were hospitalised to Tongji Hospital between January 1 and February 8, 2020. The patients had a 32-year life expectancy and a 39-week plus-one-day gestation period. Fever (6 patients, 86%), cough (1 patient, 14%), shortness of breath (1 patient, 14%), and diarrhoea (1 patient, 14%) were among the clinical symptoms (1 patient, 14 percent).Both patients had a caesarean section three days after presenting clinically, at a gestational age of 39 weeks and two days. The deadline for final submissions is February 12, 2020. The mother is hoping for a favourable result for her child. Three newborns were tested for SARS-CoV-2, and one sick individual got infected 36 hours after delivery, according to the results. In the lack of sufficient data, maternal, foetal, and foetal results for late pregnancy patients are great, and these results are achieved with aggressive and effective therapy, which is probably the most prevalent approach. [26].A review of clinical trials and outcomes of acute coronavirus infection 2 during pregnancy, as well as the possibility of direct transmission, was conducted. Between January 20, 2020, and March 24, 2020, Yan Gu et al. [28] reported hospital reports of 116 pregnant women with MERS-CoV 2019 from 25 hospitals in China. Vertical disease testing was used as proof of transmission in a research of birth control, newborn blood, and neonatal

throat. The presence of the SARS-CoV-2 coronavirus is determined. The gestational age was 38 weeks at the time of admission. The most common symptoms were fever (50.9 percent, 59/116) and cough (28.4 percent, 33/116). 23.3 percent of patients (27/116) had no score. In 96.3 percent of patients (104/108), radiographic findings are uncommon. There were eight cases of high fever (6.9%), but none of the 116 cases resulted in maternal death.

In one of eight individuals, pregnancy was disregarded in the first trimester, at the start of the second month. 21 (21.2%) of the 99 women gave birth prematurely, with six of them suffering from skin rupture. By 37 weeks, the delivery rate was 6.1 percent (6/99). The loss of a newborn infant sparked a major upheaval. In addition, 86 of 100 newborns tested for SARS-CoV-2 were found to be ineligible; ten of those children had negative results for severe coronavirus 2 infection, as well as foetal semen and blood samples. SARS-CoV-2 infection was not linked to an increased risk of miscarriage or preterm delivery during pregnancy. There is no indication of SARS-CoV-2 infection being transmitted during the third trimester of pregnancy [27].

Ashish et al. [29] Determine the number of births, as well as their outcomes (infant mortality and stillbirths) and the quality of intrapartum care, before and during Nepal's nationwide COVID-19 lockdown. They gathered team data from nine hospitals in Nepal for pregnant women who participated in placement and promotion studies between January 1 and May 30, 2020 for this retrospective analysis. This timeframe comprised 12.5 weeks prior to the nationwide lockdown and 9.5 weeks during the lockdown. Women who are 22 weeks or more pregnant at the time of admission, have suffered a foetal heart attack, and consent to participate are eligible to participate. They are on the lookout for pregnant mothers and their unborn children. Information on demographics and pregnancy was gathered by having impartial doctors write letters on health worker performance. Before and after lockdown, several types of feedback are collected to establish the birth rate, standard of care, and mortality. Out of a total of 22,907 skilled women, 21,763 skilled women, 20354 infants, and 10,543 births were registered for health worker outcomes. The average weekly birth rate fell by 524 percent from the start to the conclusion of the research period, from 1,261.1 births before the lockdown to 651.4 births (49.9) during the lockdown. The maternal death rate increased from 14 to 21 per 1,000 preterm deliveries ($p = 0.0002$), while infant mortality increased from 13 to 40 per 1,000 births ($p = 0.0022$). In terms of control, foetal concentration dropped 13.4% during delivery, and nursing dropped 3.5 percent within an hour of birth. Skin-to-skin contact with newborns and mothers rose by 13.2 percent (12.1 to 14.5; p 0.0001) throughout the incubation period, and hand hygiene following delivery increased by 12.9 percent (11.8 to 13.9).Childbirth has decreased by more than half during the lockdown, owing to increased mother and newborn death rates, as well as reduced treatment rates. Many procedures have altered, including how pregnant moms are protected. There is an urgent requirement for operators of the most afflicted medical system to get restricted therapy during delivery and to avoid recurrence during this sickness [28].

SARS-CoV-2 2019 (COVID-19), a new corona virus, has produced a highly infectious sickness that the World Health Organization (WHO) has classified as a worldwide disease. COVID-19 findings should be evaluated in future mothers and newborns, according to pregnant women who have suffered respiratory infections and hypersensitivity. It's still unclear if SARS-CoV-2 may be transmitted intrauterine. We looked at the influence of COVID-19 on maternal and baby outcomes in a total of 80 COVID-19-infected women and 80 babies, based on previous research, including those published in Chinese. The vertical intrauterine transmission channels are the primary routes of transfer to the infant. We performed comprehensive study among them to learn from SARS experience since SARS-CoV-2 is SARS-CoV-2 relevant to SARS-related SARS. Although there is no evidence to suggest vertical intrauterine transmission of

SARS-CoV-2, our extensive research shows that COVID-19 has a significant impact on mothers and babies. Furthermore, we postulated that the discrepancy of samples from babies between the DNA and serum structure of SARS-CoV-2 IgS might be related to the inducer of SARS2 infection destroying the amniotic septum. To understand the effect of SARS-CoV-2 on maternal and child outcomes, our study useful [29].

COVID-19 has expanded around the globe in terms of cases, fatalities, and nations affected. There is no particular information on COVID-19's clinical results in maternal, foetal, or placental problems. Although the elderly and men are the most impacted, the population was the most affected in the first occurrence, as in 2009. Pregnant women are more prone than non-pregnant women to have problems during the H1N1 pandemic and the Ebola outbreak. Unanswered inquiries concerning pregnant women, such as if she has a serious condition or is using intrauterine devices. More information is needed to make a critical decision, such as whether pregnant health workers should be considered, whether infected mothers and babies should be separated, and whether infected women should be able to breastfeed without difficulty. Effects of 2019-nCoV infection and pregnancy outcome [30], Gonsalves AK.

Conclusion

Pregnant women required extra attention and were regarded suspect during the global rollout of COVID-19. Obstetricians and healthcare professionals should update their knowledge in light of recent WHO guidelines on treatment and personal safety for pregnant women. During, during, and after delivery, every suspect with a COVID-19 certificate has an opportunity to get good therapy. Based on the current information, the features and symptoms of COVID-19 infection during pregnancy are comparable to those seen in the general population. The manner of delivery should be evaluated depending on the state of the foetus in the mother. Breastfeeding can be started by taking measures to minimise the transmission of droplets through oral contact, as well as the increased risk of infection during intubation. Washing your hands, becoming distracted, avoiding touch, and avoiding busy locations are all vital precautions to take.

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Authors Contribution

All authors contributed equally

Data Availability

Data will be provided on demand

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