



## The effect of coronavirus disease 2019 on newborns

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### **ABSTRACT**

To evaluate the available literature regarding effects of coronavirus disease 2019 (COVID-19) on newborns, ranging from effects related to in utero and perinatal exposure to maternal severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, to pandemic-related stress and socioeconomic changes.

### ***Recent findings***

Risk of vertical transmission from SARS-CoV-2 infected women to their babies seems to be low and unrelated to postnatal care practises such mother-newborn separation and breastfeeding, according to many major studies and national registries. Premature birth is an additional risk factor for infants exposed to SARS-CoV-2 in the womb. In most cases, SARS-CoV-2 infection in infants has a mild clinical presentation. Although there is a paucity of long-term follow-up data, early studies suggest that, like other natural catastrophes, being born during the pandemic may be linked to developmental risk.

### ***Summary***

Early evidence show developmental danger to the generation born during the pandemic, notwithstanding the minimal probability of vertical or perinatal transmission across a variety of postnatal care methods. The long-term effects of SARS-CoV-2 and the COVID-19 pandemic exposure during pregnancy and early childhood are not well understood.

**Keywords :** coronavirus disease 2019, development, newborn, pregnancy

### **INTRODUCTION**

There is concern that infants less than one year may be at greater risk of serious illness from COVID-19.

Newborns may get COVID-19 either during labour and delivery or later on from infected caretakers. Wear a tight-fitting face mask and wash your hands often when caring for your infant in the hospital if you have COVID-19 or are waiting for test results due to symptoms.



It's OK to keep your newborn's cot near your hospital bed, but try to get some restful hours away from him or her, too. When these procedures are done, the likelihood of an infant acquiring COVID-19 is minimal. You may need to be isolated from your infant, though, if you are very unwell with COVID-19.

Infants with COVID-19 but no symptoms may be discharged from the hospital. To avoid contracting the illness themselves, caregivers should wash their hands often and use face masks while handling the infant. For the next 14 days, parents should check in with their child's doctor often by phone, video chat, or in-person. Those newborns who test negative for COVID-19 may go home from the hospital.

The symptoms of COVID-19 infection may manifest in a number of ways. Patients may have no symptoms, moderate to severe symptoms, or even death from the condition. While children are not immune to COVID-19, they are far less likely to have symptoms or to have them worsen than adults. Furthermore, the sickness appears to be less frequent in babies less than 1 year of age; its frequency in this age range is believed to be 12–18 percent (2). (2). Why children are at lower risk for contracting this new virus is still a mystery. The major entrance route of the virus into the host system seems to be via poor expression of angiotensin-converting enzyme 2 (ACE2) receptors (3).

Although more detailed reports of the clinical and biochemical aspects of COVID-19 in children, particularly early babies, are scarce, the majority of symptoms in children with COVID-19 illness are respiratory and gastrointestinal in nature (4). (5). Actually, the clinical illness in newborns less than 90 days of age has only been documented in a few of investigations. A population-based research in the UK identified a more severe form of the disease among newborns infected with COVID-19 (6). Most of the youngsters with confirmed cases seemed to be part of families with many instances or to have had close interaction with people who had COVID-19 (7).

To a lesser extent than other countries, the Kingdom of Saudi Arabia was hit by the first wave of the COVID-19 pandemic, with 364,754 cases documented by January 17, 2021. Twenty percent, or 72,999, were kids, with 2,128 (3%) being infants or toddlers. The local burden of COVID-19 illness in children, particularly in babies and neonates, is poorly understood, as is

true everywhere (8, 9). Our study's overarching goal is to characterise the clinical features, course, and consequences of SARS-COV-2 infection in a local community of newborns less than 90 days of age.

### **Signs and symptoms of COVID-19 in children**

Children with COVID-19 might have many symptoms, only a few symptoms or no symptoms. The most common symptoms of COVID-19 in children are cough and fever. Possible signs and symptoms include:

- Fever
- effective cough
- Loss of smell or taste and/or chest discomfort
- Discoloration of the hands and feet are only two examples of skin changes.
- Throat pain
- Symptoms including nausea, vomiting, tummy ache, and/or loose stools
- Chills
- Difficulty moving and aching muscles
- Bad exhaustion and a brand-new, equally severe headache
- Weird new stuffiness in the nose

Determining whether or not to have kid tested for COVID-19 may rely on a variety of factors that vary from region to region. In the United States, a doctor will decide whether or not to test for COVID-19 depending on your child's symptoms and the extent to which he or she has come into contact with someone who has the virus. If your kid is at a greater risk for severe disease, a doctor may also recommend testing.

### **Multisystem inflammatory syndrome in children (MIS-C)**

Some organs, such as the heart, lungs, blood vessels, kidneys, digestive system, brain, skin, or eyes, become very inflamed in children with multisystem inflammatory syndrome (MIS-C), a life-threatening illness. Antibody test findings showing that many of these youngsters were exposed to the COVID-19 virus in the past imply that an overactive immune response is to blame for MIS-C.

Some of the possible MIS-C symptoms include:



- Symptoms of fever that have persisted for more than a day
- Vomiting
- Diarrhea
- Tummy ache Redness and itching Rapid heart rate
- Rapid respiration
- Intense glare
- Lip and tongue erythema or edoema
- Tiredness that I can't explain
- Hand or foot redness and swelling
- Weakness, dizziness, or fainting
- lymph nodes swelling

If your kid is exhibiting any of the above indicators or is very ill with additional symptoms, you should get them to the closest emergency room immediately or dial 911. If your kid isn't critically unwell but displays any of the other symptoms of MIS-C, you should seek medical treatment immediately.

### **Review of Literature**

(Priya et al., 2022) studied “Impact of Corona Virus Disease in Pregnancy and New-borns” The corona virus has brought a halt to all of human activity. Both the first and second wave of COVID have caused a huge increase in the amount of dread felt by pregnant women and the treating obstetricians in India. To investigate the effects of COVID-19 on pregnancy and the infant, as well as to compare the maternal and neonatal outcomes of pregnant women who were COVID-19 negative and pregnant women who were COVID-19 positive during the first and second waves of the COVID outbreak. The components and the procedure: A tertiary care hospital in South India played host to a prospective research that took place over the course of one calendar year, from July 2020 to July 2021. There were a total of four hundred pregnant women who attended the prenatal outpatient department during COVID and were willing to participate in the study. The nasopharyngeal region was examined using RT-PCR. We examined the socio-demographic profiles, as well as the maternal and neonatal outcomes, of pregnant women who did not have COVID with those who did have COVID. According to the findings of this study, there was an increase in the number of adverse effects experienced by mothers and newborns that were related with the COVID second wave. Vaccination is therefore something that should be advocated to all pregnant women.



(Kyle & Dumitriu, 2021) studied “The effect of coronavirus disease 2019 on new-borns” The percentage of infected people in certain nations, like as the United States and Sweden, has surpassed 10 percent of the total population. A significant amount of focus has been directed into preventing people that are most susceptible to severe cases of coronavirus illness 2019 (COVID-19). Early on in the pandemic, expectant mothers and newborns were identified as two populations who would be at increased risk of contracting the disease based on the epidemiology of previous viral infections. Initial reports of probable vertical transmission and severe new-born sparked panic and helped lead to conservative postnatal care practises. These policies included mother–new-born separation and advice against direct and/or indirect nursing. Acquiring SARS-CoV-2 from a mother who is sick with it is uncommon in newborns, and those newborns who do become infected perinatally have a clinical history that is often mild or asymptomatic, according to the accumulating evidence that has been collected since then. On the other hand, a large number of studies that have been conducted on different in-utero exposures to microbial infections and/or maternal immune activation (MIA) have revealed that long-term impacts on development may not be visible until much later in life. In addition, it is recognised that prenatal and postnatal stress alone, which is common during global events such as pandemics, can have an effect on development.

(Yu & Chen, 2020) studied “Coronavirus Disease 2019 (COVID-19) in Neonates and Children: A Review In Wuhan, which is located in Hubei Province, an unusual coronavirus began to spread before the end of 2019. The number of confirmed cases shot up quickly across the country, in part because of the increased movement of the populace during the New Year's holiday. The new coronavirus pneumonia was subsequently given the name Coronavirus Disease 2019 (COVID-19) by the World Health Organization (WHO), and the virus that causes severe acute respiratory syndrome was given the name Coronavirus-2 (SARS-CoV-2). As soon as possible, it was determined that the virus transmitted from person to person, and it quickly expanded to a number of other countries. To this day, a significant number of instances have been observed among children and adolescents. The care and treatment procedures have also been enhanced, which we feel will be beneficial to paediatric series conducted in other countries as well. However, the features of infection in neonates and children have not yet been investigated in depth. This is a gap in our knowledge.



(Indian Council of Medical Research, 2020) studied Guidance for Management of Pregnant Women in COVID-19 Pandemic It does not appear that pregnant women have a greater risk of contracting the virus than the general population does. Pregnancy, on the other hand, causes changes in the immune system and the way the body reacts to viral infections in general. These changes can often be linked to more severe symptoms, and this will be the case with COVID-19 as well. Cases of COVID-19 pneumonia reported in pregnant women are less severe and had a better prognosis for recovery. In other forms of coronavirus infections, such as SARS and MERS, the dangers to the mother appear to grow, in particular during the third trimester of pregnancy. It is unknown if all cases of premature birth in women with COVID-19 were caused by medical intervention or whether some preterm births occurred naturally. There have been case reports of premature birth in women with COVID-19. Women who are pregnant and already have heart disease have the highest risk (congenital or acquired). The current outbreak of the coronavirus raises the probability of prenatal anxiety and depression, in addition to the danger of domestic violence.

(Yıldız et al., 2022) studied Hearing test results of new-borns born from the coronavirus disease 2019 (COVID-19) infected mothers Congenital hearing loss is an important disorder because it can result in a delay in the development of speech and language, and it can also lead to difficulties in educational and social settings. 1,2 Some congenital infections, most notably cytomegalovirus (CMV) infection, are known to be the cause of hearing loss in newborns. It is extremely important for these infants to have an early diagnosis of this ailment. This is because the sooner therapy can begin, the lesser the danger of permanent pathologies, and the sooner a diagnosis can be made, the sooner treatment can begin. As a result of this, new-born screening programmes in some countries include hearing screening, just as this screening is provided in our nation. Other countries' new-born screening programmes also include hearing screening. This particular virus afflicted a large number of individuals all across the world, including pregnant women, and it specifically targeted children. Even though it is well knowledge that being pregnant does not have a negative impact on the progression of a coronavirus infection, researchers are currently looking into the possibility of vertical transfer of the virus to offspring. Although it is feasible in theory for an infection caused by Coronavirus disease 2019 (COVID-19) to be passed vertically from one person to another, this has not yet been demonstrated. It is possible for an illness to be passed on to the infant by intrauterine vertical transmission,



transmission from breast milk, or contact with the mother's vaginal secretions, skin, or anus at the time of delivery. These are all possible routes of infection transmission.

(De Rose et al., 2020) studied Novel Coronavirus disease (COVID-19) in newborns and infants: what we know so far Recently, there was an outbreak of viral pneumonitis in Wuhan, Hubei, China, which subsequently spread as a global pandemic. This led to the identification of a novel beta coronavirus species, the 2019 novel coronavirus, which was subsequently designated 2019 then SARS-CoV-2). In addition, this outbreak led to the discovery of a new beta coronavirus species. The coronavirus disease 2019 (COVID19) is a clinical illness that is caused by the SARS-CoV-2. This syndrome can range in severity from a minor upper respiratory tract infection to severe pneumonitis, acute respiratory distress syndrome (ARDS), and even death. Even fewer cases have been reported in new-born's, who appear to have a better clinical course than other age groups. Fewer cases have been observed in youngsters and teenagers, who tend to have a more favourable clinical outcome than other age groups. The purpose of this study is to offer an overview of the information about SARS-CoV-2 epidemiology, transmission, the related clinical presentation, and outcomes in new-borns and babies up to six months of age.

(Singhal, 2020) studied A Review of Coronavirus Disease-2019 (COVID-19)" The development and spread of the 2019 novel coronavirus (2019-nCoV), also known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV2), has created a new public health emergency that poses a threat to the whole world (SARS-CoV-2). The virus was first detected in bats and spread to people in December 2019 in Wuhan, which is located in Hubei province in China. The intermediary animals responsible for the transmission are still a mystery. To far (05/03/2020), there have been about 96,000 cases of coronavirus disease 2019 (COVID-2019) documented, and there have been 3300 fatalities reported. The disease can be caught by breathing in contaminated droplets or coming into touch with them, and the incubation period can last anywhere from 2 to 14 days. The symptoms often include fever, cough, sore throat, shortness of breath, exhaustion, and general malaise in addition to other symptoms. The condition is moderate in most individuals; nevertheless, it can develop to pneumonia, acute respiratory distress syndrome (ARDS), and multi organ failure in certain people (often the elderly and those with comorbidities). The majority of people do not exhibit any symptoms. It is expected that between 2 and 3 percent of the cases will result in fatalities. Specialized





molecular tests are used to demonstrate the presence of the virus in respiratory secretions in order to make a diagnosis. Normal or low white cell counts are a common result in laboratories, although increased C-reactive protein levels are observed (CRP). Even in patients who have no symptoms or just moderate illness, the chest computed tomography scan will typically show abnormalities. The treatment consists mostly on providing support; the role of antiviral medicines has not yet been determined. In order to prevent the spread of the disease, suspected patients and those with minor diseases must be isolated at home, and hospitals must implement stringent infection control measures, including safeguards against contact and droplet transmission. The virus has a lower mortality rate than its two progenitors, the severe acute respiratory syndrome coronavirus (SARS-CoV) and the Middle East respiratory syndrome coronavirus (MERS-CoV), but it spreads more quickly. It is not yet possible to predict how this new disease will affect the whole world.

#### CONCLUSION

Large studies and national registries have conclusively shown that vertical and/or perinatal transmission of SARS-CoV-2 from infected mother to newborn is rare. Newborns with in utero exposure to maternal SARS-CoV-2 infection have a higher risk of premature birth but are otherwise healthy and possibly protected from neonatal SARS-CoV-2 infection. In addition, most newborns who do become infected with SARS-CoV-2 have a mild or asymptomatic disease course. However, long-term follow-up data are urgently needed to determine whether in utero exposure to SARS-CoV-2 and/or the COVID-19 pandemic, a global societal disruptor, will impact development in these children.

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