Foetal and neonatal outcomes of COVID-19 in pregnancy

Rapid review question
What evidence is available on adverse foetal and neonatal outcomes, for example miscarriage, stillbirth and neonatal death, associated with COVID-19 infection during pregnancy?

In brief

- An overview of systematic reviews reported that pregnant people with COVID-19 may be at increased risk of adverse birth outcomes, including preterm delivery, low birth weight and neonatal intensive care unit admission. However, COVID-19 during pregnancy was not associated with an increased risk of foetal or neonatal mortality compared to the general population.1

- Multiple systematic reviews concluded that severe COVID-19 infections in pregnant women were associated with adverse outcomes including foetal death, stillbirth, preterm birth and low birth weight.2-9

- Two systematic reviews reported that COVID-19 infection early in gestation was associated with preterm birth.10, 11 There are also reports of foetal distress and preterm delivery with the onset of COVID-19 infection in the third trimester.12

- The systematic reviews that compared rates of adverse outcomes in COVID-19 positive and negative women reported the following results.
  - A living review concluded that pregnant people with COVID-19 were at higher risk of preterm birth and stillbirth compared with pregnant people without COVID-19; however the overall rate of stillbirth and neonatal death was low.2, 3 A separate review reported COVID-19 associated neonatal death and stillbirth rates were lower than global non-COVID-19 associated rates.13
  - One reported maternal COVID-19 infection was not associated with neonatal death compared with no maternal COVID-19 infection.1, 14-16
  - One reported that the risk of prematurity is not significantly higher in COVID-19 mothers.16 Conversely, two separate systematic reviews reported that risk of premature delivery is high in COVID-19 mothers and leads to higher neonatal intensive care unit admission and low birth weight.13, 17
One reported maternal COVID-19 infection was not associated with neonatal death compared with no maternal COVID-19 infection.\(^{13, 17}\)

The risk of neonatal intensive care unit admission was higher in pregnant people with COVID-19 compared to those without COVID-19.\(^{1, 7, 14}\) Rates of admission to intensive care or neonatal intensive care units increased with severity of maternal COVID-19.\(^{5, 9, 16}\)

Two comparing risks between COVID-19 positive mothers and COVID-19 negative mothers reported no significant differences in outcomes between the two groups.\(^{18, 19}\) A separate systematic review reported no significant increased risk of pregnancy loss in women with COVID-19 in the first trimester.\(^{10, 11}\)

- Across systematic reviews, rates of adverse neonatal outcomes in maternal COVID-19 infection varied.
  - Foetal distress (2.8-61.1%)\(^{3, 4, 12, 13, 16, 19-29}\)
  - Premature birth (8.7-60.0%)\(^{18}\)
  - Preterm birth (<36 or <37 weeks) (13.3-64.0%) and very preterm birth (<34 weeks) (5.3-15%)\(^{1, 2, 5, 7, 9, 12, 15, 16, 18-20, 23-28, 30-34}\)
  - Foetal death (1.1-4.8%) and neonatal death (0.0-2.4%)\(^{3-5, 9, 11-19, 21, 22, 25, 27-31, 33-37}\)
  - Stillbirth (<1.0-2.4%) and miscarriage (1.4-2.6%)\(^{12, 5, 7-9, 11-17, 19, 21, 22, 24-26, 29, 30, 32, 36}\)
  - Abortion (<1.0-7.3%)\(^{3, 5, 17, 36}\)
  - Neonatal asphyxia (0.0-13%)\(^{3, 5, 6, 8, 17, 19, 21, 22, 24, 27, 33, 36}\)
  - Low birth weight (5-43%)\(^{1, 2, 5-7, 10, 12, 17, 19, 21, 22, 26, 27, 29, 36}\)
  - Small for gestational age (2.2-17.4%) or large for gestational age (1.1%)\(^{12, 22, 28-30}\)
  - Neonatal intensive care unit admission (8.7-76.9%).\(^{2, 5-7, 9, 14, 17, 24-26, 31, 33, 36}\)

**Limitations**

The number of publications on COVID-19 in pregnant people is increasing, however systematic reviews include mainly case reports and case series. There is heterogeneity among studies, with different outcomes considered and variations in some outcome definitions and use of terminology. Language used mirrors that in the relevant studies, this may result in some overlap. Some pregnant participants may have been included in multiple publications. Most studies only reported rates in COVID-19 infected women and not how these compared to the general population.

**Background**

There is evidence that COVID-19 infection may cause negative outcomes in both mothers and neonates. Pregnant people with severe COVID-19 are at higher risk of complications including requiring oxygen and ICU admission.\(^{5}\) There is low risk of vertical transmission of COVID-19, however its role in rates of premature births and other foetal complications remains unclear. Previous studies have shown that adverse outcomes are associated with severe acute respiratory syndrome coronavirus (SARS) infection or Middle East respiratory syndrome (MERS) infection during pregnancy.\(^{3}\) Pneumonia during pregnancy is associated with adverse neonatal outcomes, including low birthweight, preterm birth, and caesarean section.\(^{3, 23}\)

**Methods (Appendix 1)**

PubMed and grey literature were searched on 5 October 2021.
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<th>Summary</th>
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• Foetal distress (13.5%), pre-labour rupture of membranes (9.6%), prematurity (8.7%), foetal death (4.8%), and abortion (2.9%).  
• Six cases of foetal or neonatal death, most of the mothers suffered from severe COVID-19 and had exacerbated illness and hypoxemia prior to foetal death.  
• Foetal death significantly associated with cough and dyspnea, and mothers more likely to be treated aggressively with antibiotics, antivirals, anticoagulants, and hydroxychloroquine. |
• Intrauterine and/or foetal distress (14%) and premature rupture of membranes (8%). |
• Rate of preterm birth was 17%.  
• Seventy-two stillbirths (47 studies, 9020 offspring) and 41 neonatal deaths (51 studies, 8263 neonates).  
• Pregnant women with COVID-19 were at higher risk of any preterm birth and stillbirth although the overall number of stillbirths was small (only nine events in the COVID-19 group).  
• Neonatal intensive care unit admission 33%. Higher risk of Neonatal intensive care unit admission than neonates born to women without COVID-19.  
• No differences were observed for other perinatal outcomes. |
• Foetal outcomes included premature birth (n=64), decreased foetal movements (n=19), intrauterine foetal death or neonatal death (n=16), intrauterine foetal distress (n=28), miscarriage (n=7), severe neonatal asphyxia (n=5) and low birth weight (n=4). |
• Neonatal outcomes included stillbirth (n=1), prematurity (n=30), asphyxia (n=2), foetal distress, low birth weight (n=13), small for gestational age (n=2), large for gestational age (n=1), multiple organ |
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<th>Source</th>
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<td><strong>Peer reviewed sources</strong></td>
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</table>
| Banaei, et al. October 2020<sup>22</sup> | dysfunction syndrome, disseminated intravascular coagulation and neonatal death (n=1).  
- The Apgar score of one neonate affected by COVID-19 were three at one minute and four at five minutes. The other neonates scored ≥seven at one minute and ≥eight at five minutes. |
| **Pregnancy and Neonatal Outcomes in SARS-CoV-2 Infection: A Systematic Review** | Systematic review of 48 studies (n=245) on COVID-19 effects on pregnancy outcomes.  
- 71 of 201 (35.3%) neonates were delivered preterm (<36 weeks).  
- Average Apgar score was 6.49 at 1 minute and 8.98 at 5 minutes.  
- Foetal distress in seven foetuses (2.8%).  
- Stillbirth in 2 of 201 and neonatal death in 3 of 201. |
- 71 of 201 (35.3%) neonates were delivered preterm (<36 weeks).  
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- Stillbirth in 2 of 201 and neonatal death in 3 of 201. |
| Clinical features of neonates born to mothers with coronavirus disease-2019: A systematic review of 105 neonates | Systematic review of 14 studies from China (n=105 neonates) on neonatal outcomes among mothers with COVID-19.  
- Twenty-five (23.8%) were preterm 25 and 10 (11.2%) were small for gestational age.  
- One stillbirth and one neonatal death. |
| Chi, et al. February 2021<sup>30</sup> | Systematic review of 14 studies from China (n=105 neonates) on neonatal outcomes among mothers with COVID-19.  
- Twenty-five (23.8%) were preterm 25 and 10 (11.2%) were small for gestational age.  
- One stillbirth and one neonatal death. |
- Preterm delivery (14-64%).  
- Low birth weight (5-43%)  
- Higher risk of admission to neonatal intensive care unit.  
- Stillbirth and neonatal death rates are low.  
- Conclusion: Pregnant women with COVID-19 may be at increased risk of adverse pregnancy and birth outcomes. |
- Preterm delivery (14-64%).  
- Low birth weight (5-43%)  
- Higher risk of admission to neonatal intensive care unit.  
- Stillbirth and neonatal death rates are low.  
- Conclusion: Pregnant women with COVID-19 may be at increased risk of adverse pregnancy and birth outcomes. |
| **Coronavirus disease 2019 during pregnancy: a systematic review of reported cases** | Systematic review of six studies (n=51) on outcomes for pregnant patients with COVID-19.  
- One (in 48) foetal death in critically ill patient in the intensive care unit requiring extracorporeal membrane oxygenation.  
- One (in 48) neonatal death. |
| Della Gatta, et al. July 2020<sup>35</sup> | Systematic review of six studies (n=51) on outcomes for pregnant patients with COVID-19.  
- One (in 48) foetal death in critically ill patient in the intensive care unit requiring extracorporeal membrane oxygenation.  
- One (in 48) neonatal death. |
| The effect of coronavirus infection (SARS-CoV-2, MERS-CoV, and SARS-CoV) during pregnancy and the possibility of vertical maternal-fetal | Systematic review of 39 studies (n=1316) on effect of SARS-CoV, MERS-CoV, and SARS-CoV-2 during pregnancy.  
- Results for SARS-CoV-2:  
  - 14.3% preterm birth (<37 weeks), 2.4% miscarriage, 8.9% preterm premature rupture of membranes, 1.2% foetal growth restriction |
## Source

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<tr>
<td>Transmission: a systematic review and meta-analysis</td>
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<td>Diriba, et al. September 202024</td>
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• Preterm birth <37 weeks 41.1% (14 of 32) and <34 weeks 15% (4 of 32).  
• Preterm prelabour rupture of membranes 18.8% (5 of 31).  
• Perinatal death 7% (2 of 41), 1 stillbirth (2.4%) and 1 neonatal death (2.4%).  
• Foetal distress 43% (12 of 30).  
• Neonatal intensive care unit admission 8.7% (1 of 10).  
• Apgar score <7 at 5 minutes 4.5% (1 of 41).  
• No cases of neonatal asphyxia. |
| Di Mascio, et al. May 202025 | |
| Impact of COVID-19 on maternal and neonatal outcomes: a systematic review and meta-analysis | • Systematic review of 24 articles (n=1,100) on impact of COVID-19 on maternal and neonatal outcomes.  
• Rate of preterm (<37 weeks) delivery 23%.  
• Low foetal and neonatal mortality risk (three stillbirths and three neonatal deaths).  
• One of 225 newborns had an Apgar score <7 at 1 minute and in three cases at 5 minutes. |
| Di Toro, et al. January 202115 | |
| COVID-19 in pregnancy: the foetal perspective—a systematic review | • Systematic review of 60 studies (n=1,318 foetuses) on perinatal outcomes and congenital anomalies.  
• Stillbirth rate was 9.9 per 1000 births in COVID-19 mothers.  
• Risk of caesarean delivery significantly higher in SARS-CoV-2 positive mothers but no significantly higher risk of prematurity.  
• Evidence of foetal distress (6.63%) and neonatal respiratory symptoms but stillbirth and neonatal death rate low.  
• Stillbirth in 13 foetuses, 7 of which were second-trimester miscarriages.  
• 3 intrauterine deaths, 15 spontaneous miscarriages and 4 induced miscarriages.  
• Neonatal death reported in 7 neonates in 5 studies, calculated neonatal death rate 5.47 per 1000 live births.  
• Premature and preterm premature rupture of membrane reported in 56 pregnancies.  
• Spontaneous preterm delivery 1.8% of neonates.  
• Rates of admission to intensive care units increased with severity of disease in mother. |
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<tr>
<td>Maternal and neonatal characteristics and outcomes among COVID-19 infected women: An updated systematic review and meta-analysis</td>
<td>- Nine studies reported a low Apgar score among babies born to SARS-CoV-2 positive mothers.</td>
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<td>- Premature birth 23%.</td>
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<td>- Low birth weight 7%.</td>
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<td>- Preterm birth and adverse pregnancy outcomes associated with infection acquired early in gestation (25-35 weeks).</td>
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<td>- One neonatal death.</td>
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<td>- 17 of 52 neonates delivered by emergency caesarean for foetal distress.</td>
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<td>Han, et al. November 2020¹⁷</td>
<td>- Rate of premature delivery was 25.32% and abortion or stillbirth &lt;0.01%.</td>
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<td>- Rate of 1 minute Apgar score ≤7 was 18.76% and 5 minutes ≤7 was 0.65%.</td>
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<td>- Low birth weight &lt;2,500g was 30.65%.</td>
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<td>- Rate of asphyxia &lt;0.01%.</td>
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<td>- Neonatal intensive care unit admission 24.41% and neonatal death rate &lt;0.01%.</td>
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<td>- Risk of premature delivery is high, leading to high risk of neonatal intensive care unit admission and low birth weight.</td>
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<tr>
<td>COVID-19 and maternal, fetal and neonatal mortality: a systematic review</td>
<td>- Systematic review of 10 studies (n=49) on maternal, foetal and neonatal mortality cases among women with COVID-19</td>
</tr>
<tr>
<td>Hessami, et al. August 2020³⁸</td>
<td>- In seven cases of intrauterine foetal death, leading cause was attributed to severity of maternal COVID-19 infection</td>
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<td>- In five neonatal deaths, mortality was related to prematurity, severe neonatal asphyxia, low birthweight, organ dysfunction, or deterioration of maternal condition</td>
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<tr>
<td>Adverse Pregnancy Outcomes Among Individuals With and Without Severe Acute Respiratory Syndrome</td>
<td>- Systematic review of six studies (n=4,564) on risk of intrauterine foetal death and neonatal death among mothers with COVID-19.</td>
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<td>- Foetal death in 8 of 728 (1.1%) COVID-19 positive patients and 44 of 3,836 (1.1%) of negative patients.</td>
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| **Coronavirus 2 (SARS-CoV-2): A Systematic Review and Meta-analysis**  | • Neonatal death in 0 of 432 (0.0%) positive patients compared to 5 of 2,500 (0.2%) negative patients.  
• Preterm birth in 95 of 714 (13.3%) positive patients compared to 446 of 3,759 (11.9%) of negative patients.  
• Rates of small for gestational age and large for gestational age were similar between groups.  
• Rates of Apgar score <7 at 5 minutes were similar between the two groups (2.1% positive compared with 1.7% negative).  
• Admission to neonatal intensive care unit similar frequency between two groups.  
• No significant differences in outcomes for positive compared to negative patients.                                                                                                                                                                                                 |
| Huntley, et al. April 2021<sup>18</sup>                                |                                                                                                                                                                                                                                                                                                                                                                                                 |
| **Rates of Maternal and Perinatal Mortality and Vertical Transmission in Pregnancies Complicated by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Co-V-2) Infection: A Systematic Review** | • Systematic review of 13 studies (n=538 pregnancies) on maternal and neonatal outcomes among pregnant women with COVID-19.  
• Preterm birth rate 20.1% (57 of 284).  
• Neonatal death rate 0.3% (1 of 313).  
• Overall neonatal intensive care unit admission rate 64.9%.  
• Apgar scores <7 at 5 minutes 0.5%.                                                                                                                                                                                                                                        |
| Huntley, et al. August 2020<sup>31</sup>                               |                                                                                                                                                                                                                                                                                                                                                                                                 |
• Four cases of spontaneous miscarriage or abortion.  
• Apgar scores ≥7 at 1 minute and 5 minutes.  
• Low birth weight in eight neonates.  
• Nearly 33% transfer to a neonatal intensive care unit.  
• One case of neonatal asphyxia, four neonatal deaths, four intrauterine foetal deaths.                                                                                                                                                                            |
| Juan, et al. July 2020<sup>36</sup>                                    |                                                                                                                                                                                                                                                                                                                                                                                                 |
| **COVID-19 pneumonia and pregnancy: a systematic review and meta-analysis** | • Systematic review of nine studies (n=87) on COVID-19 during pregnancy.  
• Premature birth 60% and foetal distress 31%.  
• Apgar scores >7 at 1 minute and 5 minutes.  
• Neonatal death 0.2% and stillbirth 0.02% compared to global 1.2% and 1.5%.  
• Premature birth high compared to global estimate (11%).                                                                                                                                                                                                             |
| Kasraeian, et al. May 2020<sup>13</sup>                                |                                                                                                                                                                                                                                                                                                                                                                                                 |
| **COVID-19 and cause of pregnancy loss during the**                   | • No significant increased risk of pregnancy loss in women with COVID-19 infection in the first trimester.                                                                                                                                                                                                                             |
## Source

### Peer reviewed sources

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| **pandemic: A systematic review**                                     | - Miscarriages due to COVID-19 in first trimester due to placental insufficiency and include spontaneous miscarriage, preterm delivery, and intrauterine growth restriction.  
  - COVID-19 infection can lead to placental inflammation resulting in foetal growth retardation.  
| **A systematic review and meta-analysis of data on pregnant women with confirmed COVID-19: Clinical presentation, and pregnancy and perinatal outcomes based on COVID-19 severity** | - Systematic review of 62 studies (n=31,016) on pregnancy and perinatal outcomes in pregnant women with confirmed COVID-19.  
  - 23.4% were preterm (<37 weeks), 16.6% were low birth weight, and 23.7% were admitted to a neonatal intensive care unit.  
  - Almost 13% of the infants experienced asphyxia.  
  - 21 stillbirths (1.6%) and 24 neonatal deaths (1.6%).  
  - Spontaneous first-trimester abortion (7.3%), elective termination or induced abortion (2.6%), and foetal loss or miscarriage (2.6%).  
  - Apgar scores >7 at 1 minute and 5 minutes.  
  - Risk of preterm birth, very preterm birth (<32 weeks) and neonatal intensive care unit admission higher, and mean birth weight lower in mothers with severe COVID-19.  
  - Thirty-one of 94 neonates were delivered preterm (<37 weeks) (37.7%).  
  - Five newborns were delivered early preterm (<34 weeks).  
  - Apgar <7 at 1 minute and 5 minutes.  
  - No severe neonatal asphyxia.  
  - Three foetal deaths and three neonatal deaths.  
  - Neonatal intensive care unit admission in 63.7% of cases.  
  Matar, et al. February 2021[33]                                                                                         |
| **Analysis of Maternal Coronavirus Infections and Neonates Born to Mothers with 2019-nCoV; a Systematic Review** | - Systematic review of nine studies (n=89 neonates) on pregnant COVID-19 patients and maternal and neonatal outcomes.  
  - Foetal distress n=15, preterm labour n=30, stillbirth n=1, preterm rupture of membranes n=6, low birth weight n=7, small for gestational age n=2, large for gestational age n=1 and neonatal death n=2.  
  - Risk of foetal distress, preterm delivery and preterm rupture of membranes increases with onset of COVID-19 in third trimester.  
  - Premature birth n=37,18.9%.  
  - Apgar scoring was >7 at 1 minute and 5 minutes in 84 (96.6%) and 85 (97.7%) newborns respectively.  
  - Low birth weight in 9 of 62 newborns (14.5%).  
  - Neonatal asphyxia in two cases (5.6%).  
  - Neonatal intensive care unit admission for 24 cases (27.9%).  
  Source                                                                                                               |
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<tr>
<td>Novoa, et al. January 20216</td>
<td>• One miscarriage, one intrauterine death and one neonatal death, all in women with severe COVID-19.</td>
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<tr>
<td><strong>Impact of SARS-CoV-2 on the clinical outcomes and placental pathology of pregnant women and their infants: A systematic review</strong></td>
<td>• Systematic review of 41 studies (n=315) on maternal and neonatal clinical outcomes among pregnant women with COVID-19.</td>
</tr>
<tr>
<td>Oltean, et al. March 202134</td>
<td>• High rate of preterm birth (21%) and caesarean section (79%).</td>
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<tr>
<td>Papapanou, et al. January 20217</td>
<td>• Miscarriage rate &lt;2.5%.</td>
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<td>• Stillbirth rate 0.6% to 2.4%.</td>
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<td>• Low birth weight rate 5.3% to 47.4%.</td>
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<td>• Neonatal mortality rate &lt;3%.</td>
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<td>• Higher preterm birth rate and neonatal intensive care unit admission.</td>
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<td>• Neonatal morbidity and mortality linked to severe or critical infection in mother.</td>
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<td>• Abnormal Apgar scores, neonatal asphyxia, stillbirth and neonatal death rates similar between COVID-19 infected and uninfected foetuses.</td>
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<tr>
<td><strong>COVID-19 and pregnancy: A review of clinical characteristics, obstetric outcomes and vertical transmission</strong></td>
<td>• Systematic review of 60 studies (n=1,287) on outcomes of COVID-19 in pregnant women.</td>
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<tr>
<td>Pettirrosso, et al. October 202011</td>
<td>• Six neonatal deaths, seven stillbirths and five miscarriages.</td>
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<td>• Preterm birth was reported in 10 to 100% of cases for women diagnosed with COVID-19 at less than 37 weeks gestation.</td>
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<td>• Six neonates had Apgar scores of &gt;7 at either 1 or 5 five minutes postpartum.</td>
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<tr>
<td><strong>Maternal and neonatal outcomes associated with COVID-19 infection: A systematic review</strong></td>
<td>• Systematic review of nine studies (n=92) on pregnancy and neonatal outcomes in COVID-19-positive pregnant women.</td>
</tr>
<tr>
<td>Smith, et al. June 202026</td>
<td>• Preterm births 63.8% (30 of 47).</td>
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<td>• Foetal distress 61.1% (11 of 18).</td>
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<td>• Neonatal intensive care unit admission 76.9% (11 of 13).</td>
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<td></td>
<td>• Low birth weight 42.8% (9 of 21).</td>
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<td></td>
<td>• Perinatal mortality rate 3.9% (2 of 37).</td>
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<td></td>
<td>• One stillbirth mother admitted to an intensive care unit.</td>
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<td>• Apgar scores &gt;7 at 1 and 5 minutes in all cases.</td>
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- Two stillbirths, prematurity incidence 28%.  
- Apgar scores >7 at 1 minute and/or at 5 minutes (97%), five cases (3%) <7 at 5 minutes.  
- One case of neonatal asphyxia.  
- Two stillbirths from mothers with severe COVID-19.                                                                                                                                 |
- Preterm births (<37 weeks) 35%, low birth weight 20% and foetal distress 14%.  
- One neonatal death (2%) and no cases of severe neonatal asphyxia.  
- No Apgar scores <5 at 1 min or <7 at 5 min.                                                                                                                                 |
- Stillbirth 1.4% and neonatal fatality 1.0%.  
- Five neonates died born to mothers with critical COVID-19 in intensive care units.  
- 6 of 7 stillbirths preterm and in women with severe or critical COVID-19.  
- Preterm 33.7%.  
- Seven miscarriages, 5 of 31 (16.1%) in first trimester and 2 of 55 (3.6%) in second trimester.  
- Nine women chose to undergo termination of pregnancy in the first and second trimester due to anxiety about potential adverse outcomes.  
- Six neonates with Apgar scores <7 at 1 and 5 minutes of life, all delivered preterm due to foetal distress among mothers with critical COVID-19.  
- 54 (11.3%) neonates admitted to a neonatal intensive care unit. 51 of these mothers with severe or critical COVID-19.                                                                                                                                 |
- Compared with no SARS-CoV-2 infection in pregnancy COVID-19 was associated with preeclampsia, preterm birth, stillbirth, lower birth weight and intensive care and neonatal intensive care unit admission.  
- COVID-19 was not associated with neonatal death compared with no COVID-19.                                                                                                                                 |

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<tr>
<td></td>
<td>• Stillbirth 1.2%, neonatal death 1.2%, preterm birth 21.3%, low birth weight (&lt;2500 g) 5.3%, foetal distress 10.7% and neonatal asphyxia 1.2% were reported.</td>
</tr>
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<td></td>
<td>• Case control study showed no significant differences in foetal and neonatal outcomes.</td>
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<tr>
<td><strong>Clinical manifestations and perinatal outcomes of pregnant women with COVID-19: a systematic review and meta-analysis</strong> Yee, et al. October 2020</td>
<td>• Systematic review of 11 studies from China (n=9,032 pregnant women, n=338 neonates).</td>
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<td>• Preterm delivery 30% (compared to norm 5-18%), premature rupture of membranes and foetal distress 2%.</td>
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<td>• Small for gestational age 17.4%.</td>
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<td>• Mean Apgar scores 8.8 at 1 minute and 9.2 at 5 minutes.</td>
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<td>• Foetal death 2% (higher than norm 0.43%), neonatal death 0.4%.</td>
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<td>• 48 of 185 (25.9%) newborns born prematurely.</td>
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<td>• Small for gestational age 5 of 60 cases (8.3%) and low birth weight 15 of 96 cases (15.6%).</td>
</tr>
<tr>
<td></td>
<td>• One neonatal death (1 of 177 cases, 0.6%) and two stillbirths.</td>
</tr>
<tr>
<td></td>
<td>• Premature rupture of membrane in 16 or 126 cases (12.7%) and foetal distress in 15 of 141 cases (10.6%).</td>
</tr>
<tr>
<td></td>
<td>• One neonatal death and one intrauterine foetal death.</td>
</tr>
</tbody>
</table>
Appendix

PubMed search terms


67 studies retrieved on 5 October 2021.

Google search terms

COVID-19 AND (neonatal outcomes OR foetal outcomes)

Inclusion and exclusion criteria

<table>
<thead>
<tr>
<th>Inclusion</th>
<th>Exclusion</th>
</tr>
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<tbody>
<tr>
<td>• Published in English</td>
<td>• Not in English</td>
</tr>
<tr>
<td>• Systematic reviews</td>
<td>• Abstract only</td>
</tr>
<tr>
<td></td>
<td>• Study type other than systematic review</td>
</tr>
</tbody>
</table>

References


Rapid evidence checks are based on a simplified review method and may not be entirely exhaustive, but aim to provide a balanced assessment of what is already known about a specific problem or issue. This brief has not been peer-reviewed and should not be a substitute for individual clinical judgement, nor is it an endorsed position of NSW Health.


