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Search Pack P200 (2023) Coronavirus (COVID-19) in pregnancy (2023)

Records on coronavirus (COVID-19) in pregnancy from 2023 only. For earlier records on this topic see P200 (2020), P200 (2021) and P200 (2022). Includes choice and accessibility of maternal health services. Does not include records on COVID-19 vaccination in pregnancy (P201); the effect of the pandemic on the mental health and wellbeing of women and their families during pregnancy, labour or postnatally (P202); COVID-19 in the neonate or infant feeding during the pandemic (PN193); the impact of COVID-19 on midwives (M95); COVID-19 in labour, birth and the impact on intrapartum care (L69) or the impact of COVID-19 on postnatal health and care (PN194).

Created: 10/03/2023

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P200 (2023) - Coronavirus (COVID-19) in pregnancy (2023) (27)

2023-02605

Systematic review and synthesis of stillbirths and late miscarriages following SARS-CoV-2 infections. Alcover N, Regioli G, Benachi A, et al (2023), American Journal of Obstetrics & Gynecology (AJOG) 24 January 2023, online

Objective

To describe the characteristics of fetal demises following SARS-CoV-2 infections and clarify if they are associated with clinical severity, placental lesions or malformations or due to actual fetal infections.

Data Sources

PubMed and Web of Science databases (searched between December 1, 2019 and April 30, 2022).

Study eligibility criteria

Cohort, cross-sectional and case-control studies, as well as case series or case reports describing stillbirths or late miscarriages (i.e. pregnancy loss occurring between 14 and 22 weeks, before and after the onset of labor, respectively) from mothers infected by SARS-CoV-2 during pregnancy (demonstrated by at least one positive real-time reverse transcription polymerase chain reaction on nasopharyngeal swabs, and/or placental infection with SARS-CoV-2). No language restrictions were applied; cases with other causes possibly explaining the fetal demise were excluded.

Study appraisal and synthesis methods

PRISMA and MOOSE guidelines were followed. Quality of case series/reports was evaluated with the specific Mayo Clinic Evidence-Based Practice Center tool. Maternal and clinical fetal data were collected as well as placental and fetal virology and histology findings. Data were summarized with descriptive statistics using World Health Organization criteria to classify disease severity and fetal-neonatal infections.

Results

Data from 184 mothers and 190 fetuses were analyzed. No clear link with maternal clinical severity or fetal malformation was evident. Approximately 78% of fetal demises occurred during the second and third trimester, ≈ 6 and 13 days after diagnosis of SARS-CoV-2 infection or the beginning of symptoms, respectively. Most (88%) placentas were positive for SARS-CoV-2 or presented the histological features of placentitis (massive fibrin deposition and chronic intervillitis) previously observed in transplacentally transmitted infections ($\approx 85-91\%$). Eleven (5.8%) and 114 (60%) fetuses had a confirmed or possible in utero transmitted SARS-CoV-2 infection, respectively.

Conclusions

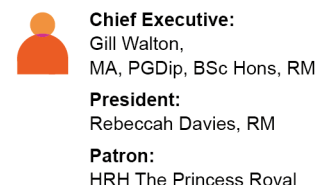
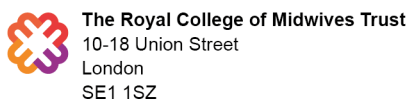
The synthesis of available data shows that fetal demises generally occur a few days after the infection with histological placental inflammatory lesions associated with transplacental SARS-CoV-2 transmission and eventually causing placental insufficiency. (Author)

2023-02589

Undetected Fetal Growth Restriction During the Coronavirus Disease 2019 (COVID-19) Pandemic. Zafman KB, Cudjoe E, Levine LD, et al (2023), Obstetrics & Gynecology vol 141, no 2, February 2023, pp 414-417

This was a retrospective cohort study of patients who delivered singleton, small-for-gestational-age (SGA) neonates between April and June 2019, before the coronavirus disease 2019 (COVID-19) pandemic (pre-COVID-19), and between April and July 2020, during the pandemic (COVID-19 epoch). The primary outcome was the rate of undetected antenatal fetal growth restriction (FGR) in the two periods. A total of 268 patients met inclusion criteria. Patients who delivered small-for-gestational-age neonates during the COVID-19 epoch were significantly more likely to have undetected FGR compared with those who delivered pre-COVID-19 (70.1% vs 58.1%, $P=.04$). Patients who

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delivered SGA neonates during the COVID-19 epoch had more telehealth visits but fewer in-person prenatal visits, recorded fundal height measurements, and growth ultrasonograms. As telemedicine continues to be incorporated into prenatal care, these data may lend further support toward self-assessment of fundal height or routine third-trimester growth ultrasonograms to identify fetal growth abnormalities. (Author)

2023-02567

Pregnancy, childbirth and postpartum experience in pregnant women infected with SARS-CoV-2 in 2020 in Paris: a qualitative phenomenological study. Cadwallader JS, Berlingo L, Rémy V, et al (2023), BMC Pregnancy and Childbirth vol 23, no 83, January 2023

Full URL: <https://doi.org/10.1186/s12884-023-05406-x>

Background

The COVID-19 pandemic and the resulting lockdowns triggered social discontent on an unprecedented scale. Descriptive phenomenological studies showed that pregnant women were under intense stress during the COVID-19 outbreak, even though they remained uninfected. The purpose of this study was to report on the experiences of pregnant women affected by mild COVID-19 during the first wave of the pandemic.

Methods

In this non-interventional qualitative study, we analyzed pregnant women's experiences using an interpretive phenomenological analysis approach. We conducted semi-structured interviews with women who had had a mild COVID-19 during their pregnancy, and gave birth or planned to give birth in the maternity units of Sorbonne University in Paris, France.

Results

Participants reported that at the time they had COVID-19, they were not afraid of being seriously ill, but of transmitting COVID-19 to their close relatives. Their main concern was being pregnant and becoming a parent in a world where the pandemic deeply altered social environment. This included uncertainty about the future and an acute feeling of isolation related to lockdown. The idea that their partner might not be allowed to attend childbirth was almost unanimously felt as intolerable. In contrast, women had positive feelings regarding the fact that lockdown resulted in a de facto paternity leave leading to a certain degree of equality in the couple regarding baby care and household chores. Unexpectedly, the pandemic social distancing measures helped participants escaping from behavioral constraints, including the unspoken rule that they should welcome greetings from friends and family, despite being exhausted by the recent birth.

Conclusions

Our results suggest that avoiding separation from their partner is a key to benevolent medical care for pregnant women in times of health crises. The unexpected benefits women reported in a world of lockdown cast a new light on their expectation regarding parenthood today. (Author)

2023-02537

Efforts and expectations of pregnant women against the impact of the COVID-19 pandemic: a phenomenological study.

Dewi A, Safaria T, Supriyatningsih S, et al (2023), BMC Pregnancy and Childbirth vol 23, no 53, January 2023

Full URL: <https://doi.org/10.1186/s12884-023-05383-1>

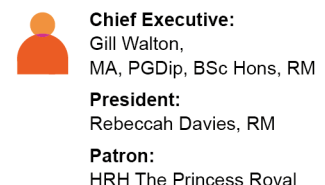
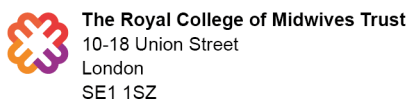
Background

COVID-19 is a global threat that directly impacts people's mental health and physical well-being. This study explored the efforts and expectations of pregnant women against the impact of the COVID-19 pandemic.

Methods

This study was a qualitative study that used a phenomenological approach. The informants of this study were pregnant women (n = 20). Data analysis used content analysis with software assistance (Nvivo Release 1.5).

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Results

The results of this study identified three themes which were: 1) causative factors of pregnant women's anxiety regarding the impact of COVID-19 including lack of knowledge regarding the impact of the COVID-19 virus and perceived susceptibility; 2) Efforts to reduce anxiety during the COVID-19 pandemic including a spiritual approach, the role of family and COVID-19 prevention; and 3) Expectation regarding healthcare services during COVID-19 including virtual based Antenatal Care (ANC) Services and Private ANC Services.

Conclusion

A spiritual approach, the role of family, and COVID-19 prevention will help pregnant women reduce their anxiety about being infected with the COVID-19 virus. Furthermore, virtual-based ANC Services, and private ANC services, such as home visits and dividing ANC services and general services into two different tracks as a protective mechanism from being infected with the COVID-19 virus, would assist pregnant women feel safer and secure. (Author)

2023-02505

Delivery and neonatal outcomes of pregnant women during the Shanghai lockdown: A retrospective analysis. Zhou F-Y, Li C, Qin K-Z, et al (2023), *Frontiers in Global Women's Health* 2 February 2023, online
Full URL: <https://doi.org/10.3389/fped.2023.992908>

Objectives: Shanghai witnessed an unprecedented outbreak of COVID-19 and experienced a strict lockdown from March 28, 2022 to May 31, 2022. Most studies to date are on the first lockdown after the outbreak in December 2019. This study aimed to examine the impact of lockdown on delivery and neonatal outcomes among uninfected pregnant women in the new phase of the COVID-19 outbreak.

Methods: A retrospective analysis was conducted in the Obstetrics and Gynecology Hospital of Fudan University. Pregnant women without COVID-19 who delivered from March 28, 2022 to May 31, 2022 (lockdown group) and the same period in 2021 (non-lockdown group) were recruited for this study. Logistic regression models and 1 : 1 propensity score matching (PSM) were used to assess the effect of lockdown on delivery outcomes.

Results: A total of 2,962 patients were included in this study, 1,339 of whom were from the lockdown group. Compared with the non-lockdown group, pregnant women giving birth during lockdown had an increased risk of term prelabor rupture of membranes (TPROM) (aOR = 1.253, 95% CI: 1.026–1.530), and decreased risks of postpartum hemorrhage (PPH) (aOR = 0.362, 95% CI: 0.216–0.606) and fetal malformation (aOR = 0.309, 95% CI: 0.164–0.582). The risk of large for gestational age (LGA) (aOR = 0.802, 95% CI: 0.648–0.992) and rate of admission to the neonatal intensive care unit (NICU) (aOR = 0.722, 95% CI: 0.589–0.885) also significantly declined. After 1 : 1 PSM, the impact of lockdown on the risk of TPROM (aOR = 1.501, 95% CI: 1.083–2.080), PPH (aOR = 0.371, 95% CI: 0.211–0.654), fetal malformation (aOR = 0.332, 95% CI: 0.161–0.684), LGA (aOR = 0.749, 95% CI: 0.594–0.945) and rate of admission to the NICU (aOR = 0.700, 95% CI: 0.564–0.869) all remained. There were no other delivery or neonatal outcomes affected by the lockdown after the COVID-19 outbreak.

Conclusion: This study indicated a significant increase in the risk of term PROM, significant decreases in the risk of PPH, fetal malformation and LGA, and a marked decline in the rate of admission to the NICU during Shanghai Lockdown. (Author)

2023-02406

Comparing maternal substance use and perinatal outcomes before and during the COVID-19 pandemic. Lien J, Hayes T, Liu-Smith F, et al (2023), *Journal of Perinatology* 06 February 2023, online

Objective

To examine the effect of the COVID-19 pandemic on maternal substance abuse and neonatal outcomes.

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Study design

Cross-sectional observational study of neonates admitted to the NICU and born to mothers with evidence of substance abuse pre-pandemic compared to during the COVID-19 pandemic.

Result

We noted a significant increase in fentanyl (12% vs. 0.6%, $p < 0.001$) and tobacco use (64% vs. 33%, $p < 0.001$) during the pandemic compared to pre-pandemic, including an increase in fentanyl use among mothers enrolled in opioid maintenance therapy (OMT) during the pandemic (32.3% vs. 1.5%, $p < 0.001$). There was a significant increase in preterm births (58% vs. 48%, $p = 0.022$) and lower birth weight (2315 ± 815 vs. 2455 ± 861 g, $p = 0.049$) during pandemic.

Conclusion

There was a significant increase in maternal fentanyl use during the pandemic, even with OMT enrollment, with an increase in preterm births and lower birth weights among infants born to mothers with substance use. (Author)

2023-02321

Food insecurity and its socioeconomic and health determinants in pregnant women and mothers of children under 2 years of age, during the COVID-19 pandemic: A systematic review and meta-analysis. Azevedo FM, de Moraes NS, Silva DLF, et al (2023),

Frontiers in Global Women's Health 24 January 2023, online

Full URL: <https://doi.org/10.3389/fpubh.2023.1087955>

Background: The COVID-19 pandemic has reduced access to adequate food in terms of quality and quantity, especially for the most vulnerable population groups. The objective of this study was to evaluate the prevalence of Food Insecurity and its main socioeconomic and health determinants in pregnant women and mothers of children under 2 years of age, during the COVID-19 pandemic.

Methods: This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) and registered in the International Prospective Register of Systematic Reviews (PROSPERO) (CRD42021278033). The descriptors "Pregnant Woman", "Postpartum Women", "Breastfeeding Women", "COVID-19", "Food Insecurity", "Food Security" were combined in Scopus (Elsevier), Medline/PubMed (via National Library of Medicine), Embase (Elsevier), Web of Science and Science Direct independently by two researchers in September 2022. Original articles about Food Insecurity in households with pregnant women and mothers of children under 2 years of age during the COVID-19 pandemic were included. The meta-analysis of the prevalence of Food Insecurity was conducted using the RStudio software (4.0.4).


Results: The initial search resulted in 539 records, and 10 articles met the proposed criteria and were included in this review. The prevalence of Food Insecurity ranged from 11.5 to 80.3% and in the meta-analysis it was 51% (IC: 30–71) (I² = 100.0%). The main socioeconomic and health determinants were ethnicity, domain language, low education, low income, informal employment, unemployment, occurrence of mental disorders, domestic violence, in addition to the unavailability of food in markets and lack of transport. The inclusion of studies with data collection by telephone stands out as a limitation, due to the non-inclusion of vulnerable groups without access to this means of communication.

Conclusion: It is necessary to implement and strengthen specific public policies for the maternal and child group with the objective of protecting and strengthening the rights of women to maintain the physical and mental integrity of this group and guarantee Food Security. (Author)


2023-02319

Cell-type specific distribution and activation of type I IFN pathway molecules at the placental maternal-fetal interface in response to COVID-19 infection. Wang Y, Gu Y, Lewis DF, et al (2023), Frontiers in Global Women's Health 20 January 2023, online

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Full URL: <https://doi.org/10.3389/fendo.2022.951388>

Background and objective: COVID-19 infection in pregnancy significantly increases risks of adverse pregnancy outcomes. However, little is known how the innate immunity at the placental maternal-fetal interface responds to COVID-19 infection. Type I IFN cytokines are recognized as a key component of the innate immune response against viral infection. In this study, we specifically evaluated expression of IFN antiviral signaling molecules in placentas from women infected with COVID-19 during pregnancy.

Methods: Expression of IFN activation signaling pathway molecules, including cyclic GMP–AMP synthase (cGAS), stimulator of interferon genes (STING), interferon regulatory factor 3 (IRF3), Toll-like receptor 7 (TLR7), mitochondrial antiviral-signaling protein (MAVS), and IFN β were determined in formalin-fixed paraffin embedded (FFPE) placental tissue sections (villous and fetal membrane) by immunostaining. A total of 20 placentas were examined, 12 from COVID-19 patients and 8 from non-COVID-19 controls. Patient demographics, clinical data, and placental pathology report were acquired via EPIC medical record review.

Results: Except BMI and placental weight, there was no statistical difference between COVID and non-COVID groups in maternal age, gestational age at delivery, gravity/parity, delivery mode, and newborn gender and weight. In COVID-exposed group, the main pathological characteristics in the placental disc are maternal and fetal vascular malperfusion and chronic inflammation. Compared to non-COVID controls, expression of IFN activation pathway molecules were all upregulated with distinct cell-type specific distribution in COVID-exposed placentas: STING in villous and decidual stromal cells; IRF3 in cytotrophoblasts (CTs) and extra-villous trophoblasts (EVTs); and TLR7 and MAVS in syncytiotrophoblasts (STs), CTs, and EVTs. Upregulation of STING, MAVS and TLR7 was also seen in fetal endothelial cells.

Conclusions: STING, IRF3, TLR7, and MAVS are key viral sensing molecules that regulate type I IFN production. Type I IFNs are potent antiviral cytokines to impair and eradicate viral replication in infected cells. The finding of cell-type specific distribution and activation of these innate antiviral molecules at the placental maternal-fetal interface provide plausible evidence that type I IFN pathway molecules may play critical roles against SARS-CoV-2 infection in the placenta. Our findings also suggest that placental maternal-fetal interface has a well-defined antiviral defense system to protect the developing fetus from SARS-CoV-2 infection. (Author)

2023-02266

Comparison of adverse pregnancy and birth outcomes using archival medical records before and during the first wave of the COVID-19 pandemic in Kinshasa, Democratic Republic of Congo: a facility-based, retrospective cohort study. Arena PJ, Dzogang C, Gadoth A, et al (2023), BMC Pregnancy and Childbirth vol 23, no 31, January 2023

Full URL: <https://doi.org/10.1186/s12884-022-05291-w>


Background

Little research has been conducted on the impact of the coronavirus disease 2019 (COVID-19) pandemic on either birth outcomes or the ability of archival medical records to accurately capture these outcomes. Our study objective is thus to compare the prevalence of preterm birth, stillbirth, low birth weight (LBW), small for gestational age (SGA), congenital microcephaly, and neonatal bloodstream infection (NBSI) before and during the first wave of the COVID-19 pandemic in Kinshasa, Democratic Republic of Congo (DRC).


Methods

We conducted a facility-based retrospective cohort study in which identified cases of birth outcomes were tabulated at initial screening and subcategorized according to level of diagnostic certainty using Global Alignment of Immunization Safety Assessment in pregnancy (GAIA) definitions. Documentation of any birth complications, delivery type, and maternal vaccination history were also evaluated. The prevalence of each birth outcome was compared in the pre-COVID-19 (i.e., July 2019 to February 2020) and intra-COVID-19 (i.e., March to August 2020) periods via two-sample z-test for equality of proportions.

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Results

In total, 14,300 birth records were abstracted. Adverse birth outcomes were identified among 22.0% and 14.3% of pregnancies in the pre-COVID-19 and intra-COVID-19 periods, respectively. For stillbirth, LBW, SGA, microcephaly, and NBSI, prevalence estimates were similar across study periods. However, the prevalence of preterm birth in the intra-COVID-19 period was significantly lower than that reported during the pre-COVID-19 period (8.6% vs. 11.5%, $p < 0.0001$). Furthermore, the level of diagnostic certainty declined slightly across all outcomes investigated from the pre-COVID-19 to the intra-COVID-19 period. Nonetheless, diagnostic certainty was especially low for certain outcomes (i.e., stillbirth and NBSI) regardless of period; still, other outcomes, such as preterm birth and LBW, had moderate to high levels of diagnostic certainty. Results were mostly consistent when the analysis was focused on the facilities designated for COVID-19 care.

Conclusion

This study succeeded in providing prevalence estimates for key adverse birth outcomes using GAIA criteria during the COVID-19 pandemic in Kinshasa, DRC. Furthermore, our study adds crucial real-world data to the literature surrounding the impact of the COVID-19 pandemic on maternal and neonatal services and outcomes in Africa. (Author)

2023-02261

Tracking excess of maternal deaths associated with COVID-19 in Brazil: a nationwide analysis. Guimarães RM, Reis LGC, de Souza Mendes Gomes MA, et al (2023), BMC Pregnancy and Childbirth vol 23, no 22, January 2023

Full URL: <https://doi.org/10.1186/s12884-022-05338-y>

Background

The COVID-19 pandemic brought a new challenge to maternal mortality in Brazil. Throughout 2020, Brazil registered 549 maternal deaths, mainly in second and third-trimester pregnant women. The objective of this study was to estimate the excess maternal deaths in Brazil caused directly and indirectly by Covid-19 in the year 2020. In addition, we sought to identify clinical, social and health care factors associated with the direct maternal deaths caused by Covid-19.

Methods

We performed nationwide analyses based on data from the Mortality Information System (SIM) for general and maternal deaths and the Influenza Epidemiological Surveillance System (SIVEP-Influenza) for estimates of female and maternal deaths due to COVID-19. Two distinct techniques were adopted. First, we describe maternal deaths directly caused by covid-19 and compare them with the historical series of deaths from covid-19 among women of childbearing age (15 to 49 years). Next, we estimated the total excess maternal mortality. Then, we calculated odds ratios for symptoms, comorbidities, social determination proxies and hospital care aspects between COVID-19 maternal deaths and deaths of women of childbearing age who were not pregnant or no maternal deaths. We chose women of childbearing age (15 to 49 years) as a reference because sex and age introduce differentials in the risk of COVID-19 death.

Results

Most maternal deaths occurred during pregnancy compared to postpartum deaths month by month in 2020 ($\mu = 59.8\%$, $SD = 14.3\%$). The excess maternal mortality in 2020 in Brazil was 1.40 (95% CI 1.35–1.46). Even considering excess mortality due to COVID-19 for the childbearing age female population (MMR 1.14; 95% CI 1.13–1.15), maternal mortality exceeded the expected number. The odds of being a black woman, living in a rural area and being hospitalized outside the residence municipality among maternal deaths were 44, 61 and 28% higher than the control group. Odds of hospitalization (OR 4.37; 95% CI 3.39–5.37), ICU admission (OR 1.73; 95% CI 1.50–1.98) and invasive ventilatory support use (OR 1.64; CI 95% 1.42–1.86) among maternal deaths were higher than in the control group.

Conclusions

There was excess maternal mortality in 2020 in Brazil. Even with adjustment for the expected excess mortality from

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Covid-19 in women of childbearing age, the number of maternal deaths exceeds expectations, suggesting that there were deaths among pregnant and postpartum women indirectly caused by the pandemic, compromising access to prenatal care., adequate childbirth and puerperium. (Author)

2023-02258

Mechanical ventilation and death in pregnant patients admitted for COVID-19: a prognostic analysis from the Brazilian COVID-19 registry score. Reis ZSN, Pires MC, Ramos LEF, et al (2023), BMC Pregnancy and Childbirth vol 23, no 18, January 2023

Full URL: <https://doi.org/10.1186/s12884-022-05310-w>

Background

The assessment of clinical prognosis of pregnant COVID-19 patients at hospital presentation is challenging, due to physiological adaptations during pregnancy. Our aim was to assess the performance of the ABC2-SPH score to predict in-hospital mortality and mechanical ventilation support in pregnant patients with COVID-19, to assess the frequency of adverse pregnancy outcomes, and characteristics of pregnant women who died.

Methods

This multicenter cohort included consecutive pregnant patients with COVID-19 admitted to the participating hospitals, from April/2020 to March/2022. Primary outcomes were in-hospital mortality and the composite outcome of mechanical ventilation support and in-hospital mortality. Secondary endpoints were pregnancy outcomes. The overall discrimination of the model was presented as the area under the receiver operating characteristic curve (AUROC). Overall performance was assessed using the Brier score.

Results

From 350 pregnant patients (median age 30 [interquartile range (25.2, 35.0)] years-old), 11.1% had hypertensive disorders, 19.7% required mechanical ventilation support and 6.0% died. The AUROC for in-hospital mortality and for the composite outcome were 0.809 (95% IC: 0.641–0.944) and 0.704 (95% IC: 0.617–0.792), respectively, with good overall performance (Brier = 0.0384 and 0.1610, respectively). Calibration was good for the prediction of in-hospital mortality, but poor for the composite outcome. Women who died had a median age 4 years-old higher, higher frequency of hypertensive disorders (38.1% vs. 9.4%, $p < 0.001$) and obesity (28.6% vs. 10.6%, $p = 0.025$) than those who were discharged alive, and their newborns had lower birth weight (2000 vs. 2813, $p = 0.001$) and five-minute Apgar score (3.0 vs. 8.0, $p < 0.001$).

Conclusions

The ABC2-SPH score had good overall performance for in-hospital mortality and the composite outcome mechanical ventilation and in-hospital mortality. Calibration was good for the prediction of in-hospital mortality, but it was poor for the composite outcome. Therefore, the score may be useful to predict in-hospital mortality in pregnant patients with COVID-19, in addition to clinical judgment. Newborns from women who died had lower birth weight and Apgar score than those who were discharged alive. (Author)

2023-02137


Maternal mRNA covid-19 vaccination during pregnancy and delta or omicron infection or hospital admission in infants: test negative design study. Jorgensen SCJ, Hernandez A, Fell DB, et al (2023), British Medical Journal vol 380, no 8370, February 2023, e074035

Full URL: <https://doi.org/10.1136/bmj-2022-074035>


Objective To estimate the effectiveness of maternal mRNA covid-19 vaccination during pregnancy against delta and omicron severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection and hospital admission in infants.

Design Test negative design study.

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Setting Community and hospital testing in Ontario, Canada.

Participants Infants younger than six months of age, born between 7 May 2021 and 31 March 2022, who were tested for SARS-CoV-2 between 7 May 2021 and 5 September 2022.

Intervention Maternal mRNA covid-19 vaccination during pregnancy.

Main outcome measures Laboratory confirmed delta or omicron infection or hospital admission of the infant. Multivariable logistic regression estimated vaccine effectiveness, with adjustments for clinical and sociodemographic characteristics associated with vaccination and infection.

Results 8809 infants met eligibility criteria, including 99 delta cases (4365 controls) and 1501 omicron cases (4847 controls). Infant vaccine effectiveness from two maternal doses was 95% (95% confidence interval 88% to 98%) against delta infection and 97% (73% to 100%) against infant hospital admission due to delta and 45% (37% to 53%) against omicron infection and 53% (39% to 64%) against hospital admission due to omicron. Vaccine effectiveness for three doses was 73% (61% to 80%) against omicron infection and 80% (64% to 89%) against hospital admission due to omicron. Vaccine effectiveness for two doses against infant omicron infection was highest with the second dose in the third trimester (53% (42% to 62%)) compared with the first (47% (31% to 59%)) or second (37% (24% to 47%)) trimesters. Vaccine effectiveness for two doses against infant omicron infection decreased from 57% (44% to 66%) between birth and eight weeks to 40% (21% to 54%) after 16 weeks of age.

Conclusions Maternal covid-19 vaccination with a second dose during pregnancy was highly effective against delta and moderately effective against omicron infection and hospital admission in infants during the first six months of life. A third vaccine dose bolstered protection against omicron. Effectiveness for two doses was highest with maternal vaccination in the third trimester, and effectiveness decreased in infants beyond eight weeks of age. (Author)

2023-02073

Losing Connection: Experiences of Virtual Pregnancy and Postpartum Care During the COVID-19 Pandemic. Altman MR, Mohammed SA, Eagen-Torkko MK, et al (2023), The Journal of Perinatal and Neonatal Nursing vol 37, no 1, January 2023, pp 44-49

Introduction:

The rapid uptake of telehealth for perinatal care during the coronavirus disease-2019 (COVID-19) pandemic has led to mixed evidence as to its effectiveness, with limited research demonstrating satisfaction and appropriateness for communities at risk for poor birth outcomes. The purpose of this article is to describe the experiences of virtual care during pregnancy and postpartum among a diverse group of pregnant/birthing people in Washington State during the COVID-19 pandemic.

Methods:

We conducted a thematic analysis study exploring experiences of care during the COVID-19 pandemic for 15 pregnant and birthing people in Washington State. This secondary analysis utilized data specific to experiences receiving care via telehealth.


Results:

Three dominant themes were identified: loss of connection and relationships with providers; need for hands-on interactions for reassurance; and virtual care is good for some things but not all—desire for immediate, accessible care when appropriate. The majority of participants felt that it was subpar to in-person care due to a lack of connection and the inability to receive necessary tests and hands-on reassurance.


Discussion/Conclusions:

Our study findings encourage very judicious use of virtual care for communities that are at high risk for birth disparities to avoid impacting relationship building between patient and provider. (Author)

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2023-01964

Pregnancy during the pandemic: The psychological impact of COVID-19 on pregnant women in Greece. Diamanti A, Sarantaki A, Kalamata N, et al (2023), *European Journal of Midwifery* vol 7, January 2023, p 2

Full URL: <https://doi.org/10.18332/ejm/157463>

Introduction:

The COVID-19 outbreak has affected the overall health of people worldwide. Historically, pandemics pose a challenge to psychological resilience, causing heightened stress levels. This study aimed to investigate the impact of the COVID-19 pandemic on the psychological state of pregnant women in Greece.

Methods:

A survey study was conducted on a sample of 149 pregnant women in late 2020, including the 'fear of COVID-19' scale, a self-report instrument that assess fear of COVID-19 among the general population and the State-Trait Anxiety Inventory (STAI) scale which measures state and trait anxiety

Results:

Pregnant women with a mental health history tended to score higher on the 'fear of COVID-19' scale (mean \pm SD: 19.48 \pm 4.35) compared to pregnant women who had never had mental health problems before (17.12 \pm 5.27). Moreover, pregnant women with anxiety as part of their personality tended to also score higher on the 'fear of COVID-19' scale. In all, 48.3% of pregnant women reported that their psychological state had been severely affected by the COVID-19 outbreak.

Conclusions:

Pregnant women were highly affected by the COVID-19 pandemic. A significantly increased 'fear of COVID-19' scale score was associated with self-reported pre-existence mental health conditions. Pregnant women with higher levels of 'trait anxiety' tended to report higher scores on the 'fear of COVID-19' scale. (Author)

2023-01910

Impact of asymptomatic and mild COVID-19 infection on fetal growth during pregnancy. Narang K, Miller M, Trinidad C, et al (2023), *European Journal of Obstetrics & Gynecology and Reproductive Biology* vol 281, February 2023, pp 63-67

Full URL: <https://doi.org/10.1016/j.ejogrb.2022.12.020>

Background

During pregnancy, certain viral infections are known to significantly affect fetal development. Data regarding the impact of COVID-19 viral infection in pregnancy, specifically in asymptomatic or mild cases, remains limited. This presents a challenge in providing prenatal counseling and antepartum surveillance in pregnancies complicated by COVID-19 infection. Placenta studies have demonstrated that vascular malperfusion patterns attributed to COVID-19 appear to depend on the timing of infection. Given these placental changes, we aim to evaluate the impact of COVID-19 on fetal growth in pregnant patients with asymptomatic or mild disease, stratified by trimester of infection. We hypothesize that COVID-19 infection, especially early in pregnancy, increases the risk of fetal growth restriction (FGR).

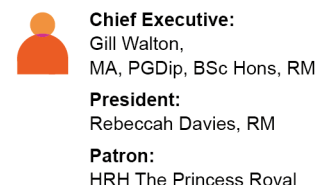
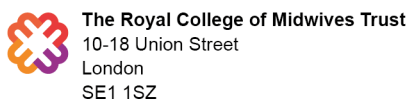
Study design.

This is a single institution, retrospective cohort study of patients ages 16–55 years old with a singleton delivery between December 10, 2020, and April 19, 2021 who had not received a COVID-19 vaccination prior to delivery. COVID-19 infection during pregnancy was defined as a positive SARS-CoV-2 RT-PCR test. FGR was defined as an estimated fetal weight less than the 10th percentile for gestational age or abdominal circumference less than the 10th percentile for gestational age. Maternal and fetal characteristics, including FGR, were compared between women with versus without COVID-19 infection during pregnancy.

Results

Among 1971 women with a singleton delivery, 208 (10.6 %) had a prior asymptomatic or mild COVID-19 infection

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during pregnancy. With the exception in the median prenatal BMI being significantly higher in the COVID-19 group (median, 27.5 vs 26.3, $p = 0.04$), there were no significant differences in demographics, baseline maternal comorbidities or gestational age between those with versus without COVID-19 infection during pregnancy, or in the proportion of their offspring with FGR (3.4 % (7/208) vs 4.8 % (84/1763), $p = 0.36$). When the 208 women were stratified by the timing of their COVID-19 infection, the proportion with an offspring with FGR was 8.7 % (2/23), 1.2 % (1/84), and 4.0 % (4/101), for those first diagnosed with COVID-19 during the 1st, 2nd, and 3rd trimesters, respectively ($p = 0.72$ Cochran-Armitage test for trend).

Conclusion

Asymptomatic or mild COVID-19 infection in pregnancy, regardless of timing of infection, does not appear to be associated with FGR. Routine serial fetal growth assessment may not be warranted solely for history of COVID-19 infection. (Author)

2023-01904

Pregnancy in the time of COVID-19: towards Fetal monitoring 4.0. Kahankova R, Barnova K, Jaros R, et al (2023), BMC Pregnancy and Childbirth vol 23, no 33, January 2023

Full URL: <https://doi.org/10.1186/s12884-023-05349-3>

On the outbreak of the global COVID-19 pandemic, high-risk and vulnerable groups in the population were at particular risk of severe disease progression. Pregnant women were one of these groups. The infectious disease endangered not only the physical health of pregnant women, but also their mental well-being. Improving the mental health of pregnant women and reducing their risk of an infectious disease could be achieved by using remote home monitoring solutions. These would allow the health of the mother and fetus to be monitored from the comfort of their home, a reduction in the number of physical visits to the doctor and thereby eliminate the need for the mother to venture into high-risk public places. The most commonly used technique in clinical practice, cardiotocography, suffers from low specificity and requires skilled personnel for the examination. For that and due to the intermittent and active nature of its measurements, it is inappropriate for continuous home monitoring. The pandemic has demonstrated that the future lies in accurate remote monitoring and it is therefore vital to search for an option for fetal monitoring based on state-of-the-art technology that would provide a safe, accurate, and reliable information regarding fetal and maternal health state. In this paper, we thus provide a technical and critical review of the latest literature and on this topic to provide the readers the insights to the applications and future directions in fetal monitoring. We extensively discuss the remaining challenges and obstacles in future research and in developing the fetal monitoring in the new era of Fetal monitoring 4.0, based on the pillars of Healthcare 4.0. (Author)

2023-01747

Influence of the COVID-19 pandemic on self-reported urinary incontinence during pregnancy and postpartum: A prospective study. Ferrari A, Corazza I, Mannella P, et al (2023), International Journal of Gynecology & Obstetrics vol 160, suppl 1, January 2023, pp 187-194

Full URL: <https://doi.org/10.1002/ijgo.14522>

Objective


To explore how the COVID-19 pandemic influenced self-reported occurrence and severity of pregnancy-related urinary incontinence (UI) in the maternity pathways of Tuscany, Italy.

Methods


In this prospective pre-post cohort study, we selected a pre-pandemic ($n = 1018$) and a post-pandemic ($n = 3911$) cohorts of women that completed, from the first trimester until 3 months postpartum, three surveys including validated patient-reported outcome measures for UI. Data were obtained from systematic surveys on the maternity pathways of Tuscany from March 2019 to June 2021. We performed panel regression models to explore how UI risk differed between COVID-19 groups.

Results

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UI occurred less frequently and less severely in post-pandemic patients—especially stress/mixed UI in women never performing pelvic floor muscle training (PFMT)—whereas no difference emerged in women performing during-pregnancy PFMT. During COVID-19, obese women had higher risk of UI, whereas women undergoing operative delivery had lower risk. The post-pandemic group reported more severe UI symptoms at the third trimester, but less severe UI postpartum in women suffering from UI during pregnancy.

Conclusions

During the COVID-19 pandemic, women reported fewer UI symptoms because they might have lacked chances to identify UI symptoms as a result of pandemic-related sedentarism and inactivity. The risk in women performing during-pregnancy PFMT was not increased, but just six of 26 health districts organized remote PFMT sessions, thus revealing limited resilience to the pandemic in Tuscany. (Author)

2023-01643

Neuromotor repertoires in infants exposed to maternal COVID-19 during pregnancy: a cohort study. Martinez VF, Zhang D, Paiola S, et al (2023), *BMJ Open* vol 13, no 1, January 2023, 069194

Full URL: <http://dx.doi.org/10.1136/bmjopen-2022-069194>

Objective To evaluate neuromotor repertoires and developmental milestones in infants exposed to antenatal COVID-19.

Design Longitudinal cohort study.

Setting Hospital-based study in Los Angeles, USA and Rio de Janeiro, Brazil between March 2020 and December 2021.

Participants Infants born to mothers with COVID-19 during pregnancy and prepandemic control infants from the Graz University Database.

Interventions General movement assessment (GMA) videos between 3 and 5 months post-term age were collected and clinical assessments/developmental milestones evaluated at 6–8 months of age. Cases were matched by gestational age, gender and post-term age to prepandemic neurotypical unexposed controls from the database.

Main outcome measures Motor Optimality Scores Revised (MOS-R) at 3–5 months. Presence of developmental delay (DD) at 6–8 months.

Results 239 infants were enrolled; 124 cases (83 in the USA/41 in Brazil) and 115 controls. GMA was assessed in 115 cases and 115 controls; 25% were preterm. Median MOS-R in cases was 23 (IQR 21–24, range 9–28) vs 25 (IQR 24–26, range 20–28) in controls, $p < 0.001$. Sixteen infants (14%) had MOS-R scores < 20 vs zero controls, $p < 0.001$. At 6–8 months, 13 of 109 case infants (12%) failed to attain developmental milestones; all 115 control infants had normal development. The timing of maternal infection in pregnancy (first, second or third trimester) or COVID-19 disease severity (NIH categories asymptomatic, mild/moderate or severe/critical) was not associated with suboptimal MOS-R or DD. Maternal fever in pregnancy was associated with DD (OR 3.7; 95% CI 1.12 to 12.60) but not suboptimal MOS-R (OR 0.25; 95% CI 0.04 to 0.96).


Conclusions Compared with prepandemic controls, infants exposed to antenatal COVID-19 more frequently had suboptimal neuromotor development. (Author)

2023-01554


The perinatal health challenges of emerging and re-emerging infectious diseases: A narrative review. Malange VNE, Hedermann G, Lausten-Thomsen U, et al (2023), 5 January 2023, online

Full URL: <https://doi.org/10.3389/fpubh.2022.1039779>

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The world has seen numerous infectious disease outbreaks in the past decade. In many cases these outbreaks have had considerable perinatal health consequences including increased risk of preterm delivery (e.g., influenza, measles, and COVID-19), and the delivery of low birth weight or small for gestational age babies (e.g., influenza, COVID-19). Furthermore, severe perinatal outcomes including perinatal and infant death are a known consequence of multiple infectious diseases (e.g., Ebola virus disease, Zika virus disease, pertussis, and measles). In addition to vaccination during pregnancy (where possible), pregnant women, are provided some level of protection from the adverse effects of infection through community-level application of evidence-based transmission-control methods. This review demonstrates that it takes almost 2 years for the perinatal impacts of an infectious disease outbreak to be reported. However, many infectious disease outbreaks between 2010 and 2020 have no associated pregnancy data reported in the scientific literature, or pregnancy data is reported in the form of case-studies only. This lack of systematic data collection and reporting has a negative impact on our understanding of these diseases and the implications they may have for pregnant women and their unborn infants. Monitoring perinatal health is an essential aspect of national and global healthcare strategies as perinatal life has a critical impact on early life mortality as well as possible effects on later life health. The unpredictable nature of emerging infections and the potential for adverse perinatal outcomes necessitate that we thoroughly assess pregnancy and perinatal health implications of disease outbreaks and their public health interventions in tandem with outbreak response efforts. Disease surveillance programs should incorporate perinatal health monitoring and health systems around the world should endeavor to continuously collect perinatal health data in order to quickly update pregnancy care protocols as needed. (Author)

2023-01468

Single-center serological surveillance of SARS-CoV-2 in pregnant patients presenting to labor and delivery. Boggess KA, Stringer EM, Robinson WR, et al (2023), *International Journal of Gynecology & Obstetrics* vol 160, no 3, March 2023, pp 874-879

Objective

To measure maternal/fetal SARS-CoV-2 antibody levels.

Methods

A prospective observational study of eligible parturients admitted to the hospital for infant delivery was conducted between April and September 2020. SARS-CoV-2 antibody levels were measured in maternal and umbilical cord specimens using an in-house ELISA based on the receptor-binding domain (RBD) of the spike protein. Among SARS-CoV-2 seropositive patients, spike RBD antibody isotypes (IgG, IgM, and IgA) and ACE2 inhibiting antibodies were measured.

Results

In total, 402 mothers were enrolled and spike RBD antibodies in 388 pregnancies were measured (336 maternal and 52 cord specimens). Of them, 19 were positive (15 maternal, 4 cord) resulting in a seroprevalence estimate of 4.8% (95% confidence interval 2.9–7.4). Of the 15 positive maternal specimens, all had cord blood tested. Of the 15 paired specimens, 14 (93.3%) were concordant. Four of the 15 pairs were from symptomatic mothers, and all four showed high spike-ACE2 blocking antibody levels, compared to only 3 of 11 (27.3%) from asymptomatic mothers.

Conclusion

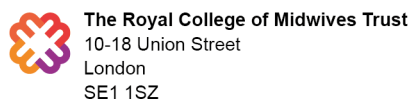
A variable antibody response to SARS-CoV-2 in pregnancy among asymptomatic infections compared to symptomatic infections was found, the significance of which is unknown. Although transfer of transplacental neutralizing antibodies occurred, additional research is needed to determine how long maternal antibodies can protect the infant against SARS-CoV-2 infection. (Author)

2023-01448

Quality of prenatal and postpartum telehealth visits during COVID-19 and preferences for future care. Marshall C, Gutierrez S, Hecht H, et al (2023), *AJOG Global Reports* vol 3, no 1, January 2023

Full URL: <https://doi.org/10.1016/j.xagr.2022.100139>

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BACKGROUND

At the start of the COVID-19 pandemic, telehealth practices for pregnancy-related care were rapidly implemented. Telehealth for pregnancy-related care is likely to continue after the pandemic. In order for health systems and clinicians to provide person-centered pregnancy-related care via telehealth, it is critical to understand patients' telehealth experiences and their preferences regarding the use of telehealth moving forward.

OBJECTIVE

This study aimed to describe perceived quality of prenatal and postpartum telehealth visits during COVID-19 and to examine the association between telehealth quality during the pandemic and future telehealth preferences.

STUDY DESIGN

We used data from an online sample of US women aged 18 to 45 years seeking reproductive health care during COVID-19. Two cross-sections of survey data were collected in July 2020 and January 2021. This analysis included those who sought prenatal (n=1496) or postpartum (n=482) care during the pandemic. Among those who had a prenatal or postpartum telehealth visit, we used multivariable logistic regression to examine the association between a measure of perceived telehealth quality and openness to future telehealth visits, adjusting for sociodemographic characteristics.

RESULTS

A total of 57.5% of prenatal and 52.9% of postpartum respondents had a telehealth appointment. Respondents agreed with most statements about the quality of their telehealth appointments, with $\geq 80\%$ reporting that they were convenient, easy, safe, and provided good information. Lower-ranked quality items were related to visits feeling personal and the patient feeling cared for. A total of 35.2% of prenatal (n=816) and 43.3% of postpartum (n=231) respondents expressed openness to telehealth visits in the future. Prenatal and postpartum respondents reporting higher telehealth quality had increased odds of being open to telehealth in the future (prenatal: adjusted odds ratio, 1.2; 95% confidence interval, 1.2–1.3; postpartum: adjusted odds ratio, 1.2; 95% confidence interval, 1.1–1.3).

CONCLUSION

Prenatal and postpartum respondents with better telehealth experiences were more likely to express openness to telehealth in the future, although most preferred future in-person visits. As pregnancy-related telehealth continues, it is important to offer appointment options that match patient preferences, especially populations that face barriers in access to care, and to explore ways to personalize care and support positive patient–provider relationships. (Author)

2023-01288

COVID-19 antibody positivity over time and pregnancy outcomes in seven low-and-middle-income countries: A prospective, observational study of the Global Network for Women's and Children's Health Research. Goldenberg RL, Saleem S, Billah SM, et al (2023), BJOG: An International Journal of Obstetrics and Gynaecology vol 130, no 4, March 2023, pp 366-376

Full URL: <https://doi.org/10.1111/1471-0528.17366>

Objectives

To determine COVID-19 antibody positivity rates over time and relationships to pregnancy outcomes in low- and middle-income countries (LMICs).


Design

With COVID-19 antibody positivity at delivery as the exposure, we performed a prospective, observational cohort study in seven LMICs during the early COVID-19 pandemic.


Setting

The study was conducted among women in the Global Network for Women's and Children's Health's Maternal and

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Newborn Health Registry (MNHR), a prospective, population-based study in Kenya, Zambia, the Democratic Republic of the Congo (DRC), Bangladesh, Pakistan, India (two sites), and Guatemala.

Population

Pregnant women enrolled in an ongoing pregnancy registry at study sites.

Methods

From October 2020 to October 2021, standardised COVID-19 antibody testing was performed at delivery among women enrolled in MNHR. Trained staff masked to COVID-19 status obtained pregnancy outcomes, which were then compared with COVID-19 antibody results.

Main Outcome Measures

Antibody status, stillbirth, neonatal mortality, maternal mortality and morbidity.

Results

At delivery, 26.0% of women were COVID-19 antibody positive. Positivity increased over the four time periods across all sites: 13.8%, 15.4%, 21.0% and 40.9%. In the final period, positivity rates were: DRC 27.0%, Kenya 33.1%, Pakistan 32.8%, Guatemala 37.0%, Zambia 37.8%, Bangladesh 47.2%, Nagpur, India 57.4% and Belagavi, India 62.4%. Adjusting for site and maternal characteristics, stillbirth, neonatal mortality, low birthweight and preterm birth were not significantly associated with COVID-19. The adjusted relative risk (aRR) for stillbirth was 1.27 (95% CI 0.95–1.69). Postpartum haemorrhage was associated with antibody positivity (aRR 1.44; 95% CI 1.01–2.07).

Conclusions

In pregnant populations in LMICs, COVID-19 antibody positivity has increased. However, most adverse pregnancy outcomes were not significantly associated with antibody positivity. (Author)

2023-01146

Coronavirus Disease 2019 (COVID-19) Perinatal Outcomes Across the Pandemic at an Academic Medical Center in New York City. Seaton CL, Cohen A, Henninger EM, et al (2023), *Obstetrics & Gynecology* vol 141, no 1, pp 144-151, January 2023

Full URL: https://journals.lww.com/greenjournal/Fulltext/2023/01000/Coronavirus_Disease_2019_COVID_19_Perinatal.15.aspx

OBJECTIVE:

To investigate perinatal complications associated with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection during pregnancy in the four major waves of the coronavirus disease 2019 (COVID-19) pandemic in the Bronx, New York.


METHODS:

This retrospective cohort study included all patients who delivered at a single academic medical center between March 1, 2020, and February 13, 2022. SARS-CoV-2 positivity was defined as a positive SARS-CoV-2 test result during pregnancy. Primary outcomes were preterm birth, low birth weight, stillbirth, cesarean delivery, and preeclampsia associated with SARS-CoV-2 infection. Secondary analyses examined outcomes by predominant variant at the time of infection. Group differences in categorical variables were tested using χ^2 tests.


RESULTS:

Of the 8,983 patients who delivered, 638 (7.1%) tested positive for SARS-CoV-2 infection during pregnancy. Age, race, ethnicity, and major comorbidities did not differ significantly between the SARS-CoV-2–positive and SARS-CoV-2–negative cohorts ($P>.05$). Primary outcomes did not differ between the SARS-CoV-2–positive and SARS-CoV-2–negative cohorts ($P>.05$). There was a marked increase in positive SARS-CoV-2 test results in individuals who gave birth during the Omicron wave (140/449, 31.2%). However, among patients who tested positive for SARS-CoV-2 infection, the preterm birth rate during the Omicron wave (9.9%) was significantly lower than during the original wave (20.3%) and the Alpha (18.4%) wave ($P<.05$). Vaccination rates were low before the Omicron wave and

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rose to 47.2% during the Omicron wave among individuals hospitalized with SARS-CoV-2 infection. Finally, second-trimester infection was significantly associated with worse perinatal outcomes compared with third-trimester infection ($P < .05$).

CONCLUSION:

There was a general trend toward improvement in preterm birth rates across the pandemic among pregnant patients with SARS-CoV-2 infection. The Omicron variant was more infectious, but the preterm birth rate during the Omicron wave was low compared with that during the original wave and the Alpha wave. (Author)

2023-00992

An integrative literature review on the impact of COVID-19 on maternal and child health in Africa. Senkyire EK, Ewetan O, Azuh D, et al (2023), BMC Pregnancy and Childbirth vol 23, no 6, January 2023

Full URL: <https://doi.org/10.1186/s12884-022-05339-x>

Africa has the highest rates of maternal deaths globally which have been linked to poorly functioning health care systems. The pandemic revealed already known weaknesses in the health systems in Africa, such as workforce shortages, lack of equipment and resources. The aim of this paper is to review the published literature on the impact of the COVID-19 pandemic on maternal and child health in Africa. The integrative review process delineated by Whittemore and Knafl (2005) was used to meet the study aims. The literature search of Ovid Medline, CINAHL, PubMed, WHO, Google and Google scholar, Africa journals online, MIDIRS was limited to publications between March 2020 and May 2022. All the studies went through the PRISMA stages, and 179 full text papers screened for eligibility, 36 papers met inclusion criteria. Of the studies, 6 were qualitative, 25 quantitative studies, and 5 mixed methods. Thematic analysis according to the methods of Braun and Clark (2006) were used to synthesize the data. From the search the six themes that emerged include: effects of lockdown measures, COVID concerns and psychological stress, reduced attendance at antenatal care, childhood vaccination, reduced facility-based births, and increase maternal and child mortality. A review of the literature revealed the following policy issues: The need for government to develop robust response mechanism to public health emergencies that negatively affect maternal and child health issues and devise health policies to mitigate negative effects of lockdown. In times of pandemic there is need to maintain special access for both antenatal care and child delivery services and limit a shift to use of untrained birth attendants to reduce maternal and neonatal deaths. These could be achieved by soliciting investments from various sectors to provide high-quality care that ensures sustainability to all layers of the population. (Author)

2023-00405

Pregnancy outcomes and vaccine effectiveness during the period of omicron as the variant of concern, INTERCOVID-2022: a multinational, observational study. Villar J, Conti CPS, Gunier RB, et al (2023), Lancet vol 401, no 10375, February 2023, pp 447-457

Full URL: [https://doi.org/10.1016/S0140-6736\(22\)02467-9](https://doi.org/10.1016/S0140-6736(22)02467-9)

Background

In 2021, we showed an increased risk associated with COVID-19 in pregnancy. Since then, the SARS-CoV-2 virus has undergone genetic mutations. We aimed to examine the effects on maternal and perinatal outcomes of COVID-19 during pregnancy, and evaluate vaccine effectiveness, when omicron (B.1.1.529) was the variant of concern.

Methods

INTERCOVID-2022 is a large, prospective, observational study, involving 41 hospitals across 18 countries. Each woman with real-time PCR or rapid test, laboratory-confirmed COVID-19 in pregnancy was compared with two unmatched women without a COVID-19 diagnosis who were recruited concomitantly and consecutively in pregnancy or at delivery. Mother and neonate dyads were followed until hospital discharge. Primary outcomes were maternal morbidity and mortality index (MMMI), severe neonatal morbidity index (SNMI), and severe perinatal morbidity and mortality index (SPMMI). Vaccine effectiveness was estimated, adjusted by maternal risk profile.

Findings

We enrolled 4618 pregnant women from Nov 27, 2021 (the day after WHO declared omicron a variant of concern), to

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June 30, 2022: 1545 (33%) women had a COVID-19 diagnosis (median gestation 36.7 weeks [IQR 29.0–38.9]) and 3073 (67%) women, with similar demographic characteristics, did not have a COVID-19 diagnosis. Overall, women with a diagnosis had an increased risk for MMMI (relative risk [RR] 1.16 [95% CI 1.03–1.31]) and SPMMI (RR 1.21 [95% CI 1.00–1.46]). Women with a diagnosis, compared with those without a diagnosis, also had increased risks of SNMI (RR 1.23 [95% CI 0.88–1.71]), although the lower bounds of the 95% CI crossed unity. Unvaccinated women with a COVID-19 diagnosis had a greater risk of MMMI (RR 1.36 [95% CI 1.12–1.65]). Severe COVID-19 symptoms in the total sample increased the risk of severe maternal complications (RR 2.51 [95% CI 1.84–3.43]), perinatal complications (RR 1.84 [95% CI 1.02–3.34]), and referral, intensive care unit (ICU) admission, or death (RR 11.83 [95% CI 6.67–20.97]). Severe COVID-19 symptoms in unvaccinated women increased the risk of MMMI (RR 2.88 [95% CI 2.02–4.12]) and referral, ICU admission, or death (RR 20.82 [95% CI 10.44–41.54]). 2886 (63%) of 4618 total participants had at least a single dose of any vaccine, and 2476 (54%) of 4618 had either complete or booster doses. Vaccine effectiveness (all vaccines combined) for severe complications of COVID-19 for all women with a complete regimen was 48% (95% CI 22–65) and 76% (47–89) after a booster dose. For women with a COVID-19 diagnosis, vaccine effectiveness of all vaccines combined for women with a complete regimen was 74% (95% CI 48–87) and 91% (65–98) after a booster dose.

Interpretation

COVID-19 in pregnancy, during the first 6 months of omicron as the variant of concern, was associated with increased risk of severe maternal morbidity and mortality, especially among symptomatic and unvaccinated women. Women with complete or boosted vaccine doses had reduced risk for severe symptoms, complications, and death. Vaccination coverage among pregnant women remains a priority. (Author)

2022-10083

Pregnancy outcomes after administration of monoclonal antibody therapy for COVID-19. Martinez-Baladejo MT, Graul AB, Gifford T, et al (2023), American Journal of Obstetrics & Gynecology MFM vol 5, no 1, January 2023, 100761

Full URL: <https://doi.org/10.1016/j.ajogmf.2022.100761>

OBJECTIVE: SARS-CoV-2 was initially identified in Wuhan, China, and was discovered to be the causative agent of COVID-19. Since then, it has spread throughout the world and was declared a pandemic in March 2020.

Novel treatments have been used in an attempt to reduce the severity, morbidity, and mortality of the disease. It has been shown that pregnant patients are at significantly higher risk of requiring hospital admission, mortality, and presenting perinatal complications because of COVID-19.^{1,2} An update from the Centers for Disease Control and Prevention found that pregnant patients were 4 times more likely to require invasive ventilation than nonpregnant patients of the same age. In addition, they uncovered significant health disparities. Pregnant Asian and Native Hawaiian or Pacific Islander women had higher intensive care unit admissions. Hispanics and African Americans also had disproportionate rates of SARS-CoV-2 infection and a higher risk of hospitalization.^{1,3}

Based on results from randomized controlled trials, several antispikes monoclonal antibodies (mAbs) received Emergency Use Authorization (EUA) from the US Food and Drug Administration (FDA) in 2021.^{4, 5, 6} However, pregnant patients were not included in the clinical trials, and the effects on pregnancy outcomes are unknown. In this case series, we described the outcomes of 47 pregnant patients who had confirmed COVID-19 and who received antispikes mAb therapy. To the best of our knowledge, our study is the second largest report of this kind and includes the use of sotrovimab in 10 pregnant patients.

STUDY DESIGN: After institutional review board approval, we performed a retrospective cohort study of 47 pregnant patients aged ≥18 years who received mAb infusion for the treatment of mild-to-moderate COVID-19 between April 2021 to January 2022. We extracted the data from St. Luke's University Health Network electronic medical record system. Mild disease was characterized by fever, change of taste or smell, and cough. Moderate disease was characterized by dyspnea, evidence of disease on imaging, or oxygen saturation of ≥94%. Severe disease was characterized by viral symptoms (mentioned in the definitions of mild and moderate diseases) with additional shortness of breath, and very severe disease was characterized by respiratory failure or shock. All patients had a confirmed positive result of direct SARS-CoV-2 testing. Patients were selected for mAb therapy if they met the eligibility criteria based on EUA guidelines released by the FDA and additional criteria defined by our institutional protocol (Figure). Pregnant patients were monitored for adverse reactions at the injection site, headache, dizziness, fever, weakness, nausea, vomiting, pruritus, rashes, anaphylaxis, diarrhea, and low blood pressure. We defined

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tolerability as a low rate of side effects and low admission rates. Data analysis was completed using SPSS (version 28; International Business Machines Corporation, Armonk, NY). RESULTS: A total of 47 pregnant patients were included in the study. The characteristics of the patient population are displayed in Table 1. The patients' mean age was 30 years with most patients being White (85.1%). Most patients were obese (63.8%) and in their third trimester of pregnancy (57.4%). Most patients (46.8%) received bamlanivimab and etesevimab treatment, and 10 patients (21.3%) received sotrovimab. (Author)

2022-10082

Confirmation of preeclampsia-like syndrome induced by severe COVID-19: an observational study. Serrano B, Bonacina E, Garcia-Ruiz I, et al (2023), American Journal of Obstetrics & Gynecology MFM vol 5, no 1, January 2023, 100760

Full URL: <https://doi.org/10.1016/j.ajogmf.2022.100760>

BACKGROUND

Since the outbreak of the COVID-19 pandemic, some studies have reported an increased preeclampsia incidence in pregnant women with SARS-CoV-2 infection. Several explanations for this association have been proposed, including a preeclampsia-like syndrome induced by severe COVID-19. This syndrome was described in a small case series and has not been confirmed in larger studies, and its effect on perinatal outcomes has not been studied.

OBJECTIVE

This study aimed to confirm the preeclampsia-like syndrome because of COVID-19 and to investigate its implications on pregnancy outcomes and prognosis.

STUDY DESIGN

This was a prospective, observational study conducted in a tertiary referral hospital. The inclusion criteria were pregnant women admitted to the intensive care unit for severe pneumonia because of COVID-19. They were classified into 3 groups based on clinical and laboratory findings: preeclampsia, preeclampsia-like syndrome, and women without preeclampsia features. The 3 cohorts were analyzed and compared at 3 different times: before, during, and after severe pneumonia. The main outcomes were incidence of adverse perinatal outcomes and signs and symptoms of PE, such as hypertension, proteinuria, thrombocytopenia, elevated liver enzymes, and increased angiogenic factors (soluble fms-like tyrosine kinase 1-to-placental growth factor ratio).

RESULTS

A total of 106 women were admitted to the intensive care unit because of severe pneumonia, and 68 women were included in the study. Of those, 53 (50.0%) did not meet the diagnostic criteria for preeclampsia and remained pregnant after pneumonia (non-preeclampsia); 7 (6.6%) met the diagnostic criteria for preeclampsia, had abnormal (>38) soluble fms-like tyrosine kinase 1-to-placental growth factor ratio (preeclampsia), and delivered during severe pneumonia, and 8 (7.5%) met the diagnostic criteria for preeclampsia, had normal (≤ 38) soluble fms-like tyrosine kinase 1-to-placental growth factor ratio (preeclampsia like), and did not deliver during pneumonia. Despite not having delivered, most preeclampsia-related features improved after severe pneumonia in women with preeclampsia-like syndrome. Women with preeclampsia had significantly poorer outcomes than women with preeclampsia-like syndrome or without preeclampsia.


CONCLUSION

More than 50% of women with severe COVID-19 and diagnostic criteria for preeclampsia may not be preeclampsia but a preeclampsia-like syndrome, which may affect up to 7.5% of women with severe COVID-19. Preeclampsia-like syndrome might have similar perinatal outcomes to those of normotensive women with severe pneumonia because of COVID-19. For these reasons, preeclampsia-like syndrome should be excluded by using soluble fms-like tyrosine kinase 1-to-placental growth factor ratio in future research and before making clinical decisions. (Author)


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