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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).

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Created: 26/05/2023

P200 (2023) - Coronavirus (COVID-19) in pregnancy (2023) (99)

2023-05909

Risk factors and clinical manifestations of COVID-19 in pregnant women in Indonesia. Rahayu HSE, Wijayanti K, Anggraeni MD, et al (2023), British Journal of Midwifery vol 31, no 4, April 2023

Background/Aims

Pregnant women are at higher risk for severe illness from COVID-19 than non-pregnant women. Research investigating risk factors and clinical manifestations of COVID-19 in pregnant women is limited in Indonesia. Therefore, this study's aim was to investigate these clinical issues.

Methods

For this observational cross-sectional study, data were collected from Merah Putih Government Hospital. A total of 106 medical records were analysed using descriptive statistics and Pearson's Chi-squared test, to examine differences in risk factors or clinical manifestations in pregnant women with or without COVID-19.

Results

There were no significant differences between the two groups in terms of risk factors such as diabetes, bronchial asthma and cardiovascular disease. There were significant differences between the groups for clinical manifestations of fever, cough, dyspnea, ageusia, rapid antigen test and lymphocytopenia.

Conclusions

Coordinated care strategies should be initiated, particularly in the assessment of vulnerable pregnant women. Future pandemic preparedness studies should be considered to improve and protect maternal and child health in Indonesia. (Author)

2023-05878

Outpatient Use of Monoclonal Antibodies Casirivimab and Imdevimab in Pregnancy for Mild-to-Moderate Coronavirus Disease 2019. Buonomo AR, Filippo ID, Esposito N, et al (2023), American Journal of Perinatology 18 April 2023, online


Objective The aim of this study was to report the use casirivimab/imdevimab therapy in pregnant women with moderate coronavirus disease 2019 (COVID-19).

Study Design We report 12 cases of unvaccinated pregnant patients with mild-to-moderate COVID-19 treated with casirivimab/imdevimab.


Results Twelve unvaccinated pregnant patients with mild-to-moderate COVID-19 received casirivimab/imdevimab at the dose of 1200/1200 mg by intravenous infusion over 60 minutes. All women were managed outpatient. None experienced severe adverse drug reaction and none progressed to severe disease.

Conclusion Casirivimab/imdevimab should be considered for outpatient treatment of unvaccinated pregnant women with mild-to-moderate COVID-19 to decrease the risk of severe disease. (Author)

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2023-05732

Indirect effects of the COVID-19 pandemic on risk of gestational diabetes and factors contributing to increased risk in a multiethnic population: a retrospective cohort study. Rhou YJJ, Elhindi J, Melov SJ, et al (2023), BMC Pregnancy and Childbirth vol 23, no 341, May 2023

Full URL: <https://doi.org/10.1186/s12884-023-05659-6>

Background

The COVID-19 pandemic has had indirect effects on pregnancy outcomes. There is limited data on the impact on gestational diabetes (GDM) in diverse populations and the possible underlying mediators. This study aimed to assess the risk of GDM pre-COVID-19 and in two distinct pandemic exposure periods, and to determine the potential factors contributing to increased risk in a multiethnic population.

Methods

A multicentre, retrospective cohort study was performed of women with singleton pregnancy receiving antenatal care at three hospitals two years pre-COVID-19 (January 2018 – January 2020), first year of COVID-19 with limited pandemic-mitigating restrictions (February 2020 – January 2021) and second year of COVID-19 with stringent restrictions (February 2021 – January 2022). Baseline maternal characteristics and gestational weight gain (GWG) were compared between cohorts. The primary outcome was GDM, assessed using univariate and multivariate generalised estimating equations models.

Results

28,207 pregnancies met the inclusion criteria, 14,663 pregnancies two years pre-COVID-19, 6,890 in COVID-19 Year 1 and 6,654 in COVID-19 Year 2. Maternal age increased across exposure periods (30.7 ± 5.0 years pre-COVID-19 vs 31.0 ± 5.0 years COVID-19 Year 1 vs 31.3 ± 5 years COVID-19 Year 2; $p < 0.001$). There were increases in pre-pregnancy body mass index (BMI) (25.5 ± 5.7 kg/m² vs 25.7 ± 5.6 kg/m² vs 26.1 ± 5.7 kg/m²; $p < 0.001$), proportion who were obese (17.5% vs 18.1% vs 20.7%; $p < 0.001$) and proportion with other traditional risk factors for GDM including South Asian ethnicity and prior history of GDM. Rate of GWG and proportion exceeding recommended GWG increased with pandemic exposure (64.3% vs 66.0% vs 66.6%; $p = 0.009$). GDM diagnosis increased across exposure periods (21.2% vs 22.9% vs 24.8%; $p < 0.001$). Both pandemic exposure periods were associated with increased risk of GDM on univariate analysis, only COVID-19 Year 2 remaining significantly associated after adjusting for maternal baseline characteristics and GWG (OR 1.17 [1.06, 1.28], $p = 0.01$).

Conclusions

Diagnosis of GDM increased with pandemic exposure. Progressive sociodemographic changes and greater GWG may have contributed to increased risk. However, exposure to the second year of COVID-19 remained independently associated with GDM after adjusting for shifts in maternal characteristics and GWG. (Author)

2023-05712

Fetal death as an outcome of acute respiratory distress in pregnancy, during the COVID-19 pandemic: a population-based cohort study in Bahia, Brazil. Carvalho-Sauer R, Flores-Ortiz R, Costa MDCN, et al (2023), BMC Pregnancy and Childbirth vol 23, no 320, May 2023

Full URL: <https://doi.org/10.1186/s12884-023-05601-w>

Background

Fetal loss is one of the most serious adverse outcomes of pregnancy. Since the onset of the COVID-19 pandemic, Brazil has recorded an unprecedented number of hospitalizations of pregnant women due to acute respiratory distress (ARD), thereby, we aimed to assess the risk of fetal deaths associated to ARD during pregnancy in Bahia state, Brazil, in the context of the COVID-19 pandemic.

Methods

This is an observational population-based retrospective cohort study, developed with women at or after 20 weeks of pregnancy, residents in Bahia, Brazil. Women who had acute respiratory distress (ARD) in pregnancy during the

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COVID-19 pandemic (Jan 2020 to Jun 2021) were considered 'exposed'. Women who did not have ARD in pregnancy, and whose pregnancy occurred before the onset of the COVID-19 pandemic (Jan 2019 to Dec 2019) were considered 'non-exposed'. The main outcome was fetal death. We linked administrative data (under mandatory registration) on live births, fetal deaths, and acute respiratory syndrome, using a probabilistic linkage method, and analyzed them with multivariable logistic regression models.

Results

200,979 pregnant women participated in this study, 765 exposed and 200,214 unexposed. We found four times higher chance of fetal death in women with ARD during pregnancy, of all etiologies (adjusted odds ratio [aOR] 4.06 confidence interval [CI] 95% 2.66; 6.21), and due to SARS-CoV-2 (aOR 4.45 CI 95% 2.41; 8.20). The risk of fetal death increased more when ARD in pregnancy was accompanied by vaginal delivery (aOR 7.06 CI 95% 4.21; 11.83), or admission to Intensive Care Unit (aOR 8.79 CI 95% 4.96; 15.58), or use of invasive mechanical ventilation (aOR 21.22 CI 95% 9.93; 45.36).

Conclusion

Our findings can contribute to expanding the understanding of health professionals and managers about the harmful effects of SARS-CoV-2 on maternal–fetal health and alerts the need to prioritize pregnant women in preventive actions against SARS-CoV-2 and other respiratory viruses. It also suggests that pregnant women, infected with SARS-CoV-2, need to be monitored to prevent complications of ARD, including a careful assessment of the risks and benefits of early delivery to prevent fetal death. (Author)

2023-05702

The effect of COVID-19 on women's experiences of pregnancy, birth and postpartum in Indonesia: a rapid online survey.

McGowan L, Astuti A, Hafidz F, et al (2023), BMC Pregnancy and Childbirth vol 23, no 304, May 2023

Full URL: <https://doi.org/10.1186/s12884-023-05566-w>

Background

The interrelationship of psychological and social factors in the current COVID-19 pandemic has been highlighted in research mainly focused on the global north. The impact of lockdowns can exacerbate psychological distress and affect access to services. Less is known about the psychosocial impact on women in the context of lower-middle income countries (LMICs); the aim of this study was to capture the impact of COVID-19 on women's experiences of pregnancy, birth and postpartum in Indonesia.

Methods

We conducted a rapid cross-sectional online survey of women across all 34 provinces in Indonesia to capture participants' experiences. Data were collected between 10th July to 9th August 2020 including demographics, effects on general and mental health and impact on service use. Descriptive statistics and thematic analysis were used to analyse responses, including those women who self-identified with a pre-existing mental health problem.

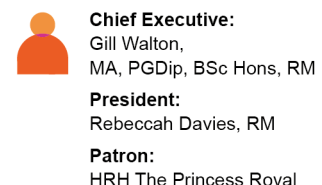
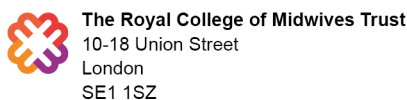
Results

Responses were obtained from 1137 women, this included pregnant women (n = 842) and postpartum women (n = 295). The majority of women (97%) had accessed antenatal care during their pregnancy, but 84% of women reporting feeling fearful and anxious about attending visits, resulting in some women not attending or changing provider. A small number (13%) were denied the presence of a birth companion, with 28% of women reporting that their babies had been removed at birth due to protocols or baby's health. Feeling anxious was a common experience among women (62%) during their pregnancy, birth or postnatal period, with a small number (9%) feeling depressed. Lockdown measures led to tensions within personal and family relationships.

Conclusions

Women in Indonesia reported that the pandemic added an increased burden in pregnancy, birth and post-partum period: physically, psychologically, spiritually and financially. Maternity services were disrupted and health insurance

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cover lacked responsiveness, which either directly or indirectly impacted on women's choices, and equal access to care. Given the longevity of the current pandemic there is a need to develop tailored supportive interventions for women and their families and develop bespoke training for midwives and other relevant health professionals. (Author)

2023-05674

Analysis of placental pathology after COVID-19 by timing and severity of infection. Corbetta-Rastelli CM, Altendahl M, Gasper C, et al (2023), American Journal of Obstetrics & Gynecology MFM 22 April 2023, online

Full URL: <https://doi.org/10.1016/j.ajogmf.2023.100981>

Background

COVID-19 infection during pregnancy can have serious effects on pregnancy outcomes. The placenta acts as an infectious barrier to the fetus and may mediate adverse outcomes. Increased frequency of maternal vascular malperfusion has been detected in placentas affected by COVID-19 compared to controls, but little is known how timing and severity of infection impact placental pathology.

Objective

To examine the effects of COVID-19 infection on placental pathology, specifically whether timing and severity of COVID-19 infection impacts pathological findings and associations with perinatal outcomes.

Study Design

This was a descriptive retrospective cohort study of pregnant people diagnosed with COVID-19 infection who delivered between April 2020 and September 2021 at three university hospitals. We collected demographic, placental, delivery and neonatal outcomes through chart review. We noted the timing of COVID-19 infection and categorized severity of COVID-19 infection based on National Institutes of Health guidelines. The placentas of all patients with positive nasopharyngeal RT-PCR COVID-19 testing were sent for gross and microscopic histopathologic examination at time of delivery. Non-blinded pathologists categorized histopathologic lesions according to the Amsterdam criteria. Univariate linear regression and chi-square analyses assessed how timing and severity of COVID-19 infection affected placental pathological findings.

Results

We included 131 pregnant patients and 138 placentas in this study, with the majority of patients delivered at the University of California Los Angeles (n=65) followed by the University of California San Francisco (n=38) and Zuckerberg San Francisco General Hospital (n=28). Most patients were diagnosed with COVID-19 in the 3rd trimester (69%) and most infections were mild (60%). We found no specific placental pathological features based on timing or severity of COVID-19 infection. There was a higher frequency of placental features associated with response to infection in placentas from infections before 20 weeks compared to infections after 20 weeks (p=0.001). There were no differences in maternal vascular malperfusion by timing of infection, however severe maternal vascular malperfusion features were only found in placentas from 2nd and 3rd trimester COVID-19 infections, not 1st trimester.

Conclusion

Placentas from COVID-19 infections showed no specific pathological features regardless of timing or severity of disease. There was a higher proportion of COVID-19 positive placentas in earlier gestations with evidence of placental infection-associated features. Future studies should focus on understanding how these placental features in COVID-19 infections go on to impact pregnancy outcomes. (Author)


2023-05669

Pregnancy inclusion in US statewide scarce resource allocation guidelines during COVID-19 pandemic. Gatta LA, Al-Shibli N, Hughes BL, et al (2023), American Journal of Obstetrics & Gynecology MFM 26 April 2023, online


Objective

On November 22, 2022, two hospitals in Oregon declared crisis standards of care (CSC) in response to the 'triple-demic', or rising rates of influenza, respiratory syncytial virus (RSV), and COVID-19.1 CSC guidelines direct the triage of limited resources when demands for health care exceed standard capacity, such as intensive care unit (ICU) beds. Hospital CSCs are adopted from statewide CSCs,2 and many states developed their CSC policies during the

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COVID-19 pandemic which placed a global strain on the health care infrastructure. A systematic review of allocation guidelines found that the Sequential Organ Failure Assessment (SOFA) score is used to determine priority for allocation of scarce resources among patients seeking the same resource.³ However, the SOFA score has not been validated in pregnancy when normal physiologic changes, such as platelet count and bilirubin level, are expected to affect score parameters compared to non-gravid physiology.⁴ In this report, we assess whether statewide CSC guidelines active during COVID-19 included pregnancy. Among those that do, we describe the ethical triage principles used in allocation guidelines when a pregnant patient was among potential recipients.

Study Design

We conducted a retrospective review of publicly available and state-level CSC guidelines, obtained through online search and communication with ethics consultants from state governments. CSC guidelines were systematically and independently reviewed by two authors for content including ethical framework, resource prioritization strategies, and any accommodations for pregnancy. We specifically searched for terms including “pregnancy”, “perinatal”, “gravid”, and “maternal”. Among included CSCs that mentioned the aforementioned terms, we read the accommodation and abstracted the text for review and classification. Reviewer discrepancies were adjudicated by discussion. Descriptive statistics were used to summarize CSC characteristics.

Results

A US state-level CSC was identified for 41/50 (82%) states (Figure 1). Among these, 34 CSC (82.9%) had a specific strategy for prioritizing patients for critical care resources, all of which incorporated the SOFA score. When SOFA score was used, thirteen (13/34, 38.2%) allocation strategies mentioned pregnancy (Table 1). Of these, 7/13 (53.8%) acknowledged pregnancy as a special circumstance requiring individualized decision-making, 3/13 (23.1%) reduced SOFA priority score by 2 points, 2/13 (15.4%) used pregnancy as a tiebreaker, and 1/13 (7.7%) created a separate tier system for pregnant patients. Of the state CSCs including pregnancy, the median (Quartile 1, Quartile 3) year published was 2020 (2017, 2020), the same if pregnancy was not included (2020 [2017, 2020]). (Author)

2023-05643

The COVID-19 pandemic and prevalence of gestational diabetes: Does gestational weight gain matter?. Mirsky EL, Mastronardi AM, Paudel A, et al (2023), American Journal of Obstetrics & Gynecology MFM vol 5, no 5, May 2023, 100899

OBJECTIVE


Previous European reports indicated an increased prevalence of gestational diabetes mellitus (GDM) among relatively lean cohorts during the COVID-19 pandemic.^{1,2} Less is known about how the pandemic affected the prevalence of GDM in the United States, specifically among those with morbid obesity. Pregnant people with obesity have been reported to be at increased risk of excessive gestational weight gain (GWG) during the COVID-19 pandemic,³ which may have further increased the risk of GDM among this group. The primary aim of our study was to investigate whether the prevalence of GDM increased among our delivering patients, with consideration of their weight status, during the COVID-19 pandemic. The secondary aim of our study was to determine whether GDM diagnosis was associated with increased GWG.

STUDY DESIGN


This retrospective cohort study included patients with a singleton, term birth who delivered before the COVID-19 pandemic (January 2019 to May 2020) and during the COVID-19 pandemic (July 2020 to November 2021) at a single academic institution. As recommended by the American College of Obstetricians and Gynecologists, prenatal patients at our institution are screened for GDM between 24 and 28 weeks of gestation.⁴ Patients that were screened before March 2020 (the declared start of the COVID-19 pandemic) would have been delivered, at term, by the end of May 2020. Therefore, the pre-COVID-19 period was defined as January 2019 to May 2020 to capture term deliveries where GDM screening occurred before March 2020. We included a 1-month “washout” period (June 2020) to ensure only those diagnosed with GDM during the COVID-19 period were captured (July 2020 to November 2021). This study was approved by the University of Tennessee Graduate School of Medicine Institutional Review Board (IRB#4907).

Patients with a preexisting type 1 or 2 diabetes mellitus, a multigestation pregnancy, a preterm delivery, or an unknown gestational age at delivery were excluded. Data collected on delivery admission included height, prepregnancy weight, weight at delivery, maternal age, race and ethnicity, and diagnosis of GDM. Prepregnancy body mass index (BMI) was calculated using height and prepregnancy weight. To examine potential differences in patients

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with higher classes of obesity, standard weight status categories based on BMI were created. These included underweight (BMI of <18.5 kg/m²), healthy (BMI of 18.5 to <25.0 kg/m²), overweight (BMI of 25.0 to <30.0 kg/m²), obese class 1 (BMI of 30.0 to <35.0 kg/m²), obese class 2 (BMI of 35.0 to <40.0 kg/m²), and obese class 3 (BMI of ≥40.0 kg/m²). GWG was calculated by prepregnancy weight deducted from weight at delivery. This study followed the Strengthening the Reporting of Observational Studies in Epidemiology reporting guidelines. Binary and multiple regression analyses were used to identify potential differences in GDM diagnosis before the COVID-19 pandemic vs during the COVID-19 pandemic, controlling for potentially confounding factors (including weight status, maternal and gestational age, GWG, and race and ethnicity). Student t tests were used to assess the effect of the COVID-19 pandemic on GWG, stratified by weight status, among those with GDM. A P value of .05 was considered statistically significant. Data were analyzed using the SPSS (version 28; IBM Corporation, Armonk, NY).

RESULTS

During the COVID-19 pandemic, 12.2% of patients were diagnosed with GDM, compared with 9.9% of patients before the COVID-19 pandemic (P<.001). Those with GDM diagnosis had an associated lower GWG relative to those without GDM, in the unadjusted and adjusted models (P<.001) (Table). Among those diagnosed with GDM, there was no significant difference in GWG in the pre-COVID-19 or during-COVID-19 groups or when stratified by any weight status categories (data not shown) (P>.05). (Author)

2023-05469

Evaluation of pregnancy outcomes in mothers with COVID-19 infection: a systematic review and meta-analysis. Simbar M, Nazarpour S, Sheidaei A (2023), Journal of Obstetrics and Gynaecology vol 43, no 1, 2023, 2162867

Full URL: <https://doi.org/10.1080/01443615.2022.2162867>

Pregnant women are one of the endangered groups who need special attention in the COVID-19 epidemic. We conducted a systematic review and summarised the studies that reported adverse pregnancy outcomes in pregnant women with COVID-19 infection. A literature search was performed in PubMed and Scopus up to 1 September 2022, for retrieving original articles published in the English language assessing the association between COVID-19 infection and adverse pregnancy outcomes. Finally, in this review study, of 1790 articles obtained in the initial search, 141 eligible studies including 1,843,278 pregnant women were reviewed. We also performed a meta-analysis of a total of 74 cohort and case-control studies. In this meta-analysis, both fixed and random effect models were used. Publication bias was also assessed by Egger's test and the trim and fill method was conducted in case of a significant result, to adjust the bias. The result of the meta-analysis showed that the pooled prevalence of preterm delivery, maternal mortality, NICU admission and neonatal death in the group with COVID-19 infection was significantly more than those without COVID-19 infection (p<.01). A meta-regression was conducted using the income level of countries. COVID-19 infection during pregnancy may cause adverse pregnancy outcomes including of preterm delivery, maternal mortality, NICU admission and neonatal death. Pregnancy loss and SARS-CoV2 positive neonates in Lower middle income are higher than in High income. Vertical transmission from mother to foetus may occur, but its immediate and long-term effects on the newborn are unclear. (Author)

2023-05458

Accessibility and utilization of antenatal care services in sub-Saharan Africa during the COVID-19 pandemic: A rapid review.

Murewanhema G, Mpabuka E, Moyo E, et al (2023), Birth 6 March 2023, online

Full URL: <https://doi.org/10.1111/birt.12719>

Control measures for the COVID-19 pandemic brought unprecedented challenges to health care delivery. Some countries in sub-Saharan Africa (SSA) stopped the provision of essential health care except for those services that were deemed emergencies or life-threatening. A rapid review was conducted on March 18, 2022, on the accessibility and utilization of antenatal care services in sub-Saharan Africa during the COVID-19 pandemic. PubMed, Google Scholar, SCOPUS, and the World Health Organization library databases were searched for relevant studies. A modified Population, Intervention, Control, and Outcomes (PICO) framework informed the development of the search strategy. The review included studies conducted within Africa that described the availability, access, and utilization of antenatal services during the COVID-19 pandemic. Eighteen studies met the inclusion criteria. This review revealed a

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reduction in access to ANC services, an increase in the number of home deliveries, and a reduction in the number of women attending ANC visits during the COVID-19 pandemic. A decrease in ANC service utilization was reported in some studies in the review. Barriers to ANC access and utilization during the COVID-19 pandemic included movement restrictions, limited transport access, fear of contracting COVID-19 at the health facilities, and facility barriers. The use of telemedicine needs to be improved in African countries to allow for the continued provision of health services during pandemics. In addition, there should be strengthening of community involvement in the provision of maternal health services post-COVID-19 so that services may be able to better withstand future public health emergencies. (Author)

2023-05101

Global knowledge, attitude, and practice towards COVID-19 among pregnant women: a systematic review and meta-analysis. Jahromi AS, Jokar M, Sharifi N, et al (2023), BMC Pregnancy and Childbirth vol 23, no 278, April 2023

Full URL: <https://doi.org/10.1186/s12884-023-05560-2>

Background

Pregnant women form a specially vulnerable group due to unique changes in pregnancy, leading to a higher risk of getting a severe infection. As severe COVID-19 increases the risk of preeclampsia, preterm delivery, gestational diabetes, and low birth weight in pregnancy, there is a need to enhance pregnant women's knowledge, attitudes, and practices to prevent these complications. This systematic review and meta-analysis aimed to determine their levels of knowledge, attitudes, and practice (KAP) regarding COVID-19 at the global level.

Methods

The systematic literature search was conducted in the English language, including Google Scholar, Scopus, PubMed/MEDLINE, Science Direct, Web of Science, EMBASE, Springer, and ProQuest, from the occurrence of the pandemic until September 2022. We used The Newcastle Ottawa scale for cross-sectional studies checklist to evaluate the risk of bias in the studies. Data were extracted by a Microsoft Excel spreadsheet and analyzed by STATA software version 14. We also employed Cochran Q statistics to assess the heterogeneity of studies and utilized Inverse variance random-effects models to estimate the pooled level of pregnant women's KAP towards COVID-19 infection prevention.

Results

Based on the preferred reporting items for systematic reviews and meta-analyses (PRISMA) and inclusion criteria, 53 qualified studies were acquired from several countries. In total, 51 articles (17,319 participants) for knowledge, 15 articles (6,509 participants) for attitudes, and 24 articles (11,032 participants) for practice were included in this meta-analysis. The pooled good knowledge, positive attitude, and appropriate practice in pregnant women were estimated at 59%(95%CI: 52–66%), 57%(95%CI: 42–72%), and 53%(95%CI: 41–65%), respectively. According to subgroup analysis, the level of knowledge, attitude, and practice were 61%(95%CI: 49–72), 52%(95%CI: 30–74), and 50%(95%CI: 39–60), respectively, in Africa, and 58.8%(95%CI: 49.2–68.4), 60%(95%CI: 41–80) and 60% (95%CI: 41–78), respectively, in Asia.

Conclusion

The Knowledge, attitude, and practice towards COVID-19 infection prevention in pregnant women were low. It is suggested that health education programs and empowerment of communities, especially pregnant women, about COVID-19 continue with better planning. For future studies, we propose to investigate the KAP of COVID-19 in pregnant women in countries of other continents and geographical regions. (Author)

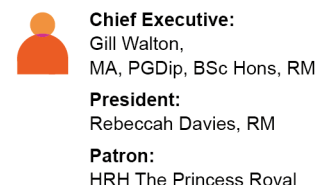
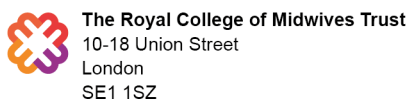
2023-05068

General approach to delivery and resuscitation of newborn infants from mothers at risk or proven COVID-19.

Aguar-Carrascosa M, Fernández-Colomer B, Renau MI, et al (2023), Seminars in Fetal and Neonatal Medicine 30 March 2023, online

This manuscript aims to present updated information on the comprehensive care to mother-newborn dyad at high risk

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2023-05067

Maternal and perinatal COVID-19 – The past, present and the future. Lakshminrusimha S, Hedriana HL (2023), Seminars in Fetal and Neonatal Medicine 1 April 2023, online

This editorial discusses the impact of COVID-19 on obstetric and perinatal care that has evolved over the past 3 years. (JM)

2023-05066

Multisystem inflammatory syndrome in neonates (MIS-N) associated with perinatal SARS CoV-2 infection: Does it exist?. Lakshminrusimha S, More K, Shah PS, et al (2023), Seminars in Fetal and Neonatal Medicine 1 April 2023, online

This article reviews various case reports, literature, systematic reviews and research to discuss the association between neonates with MIS-N and perinatal SARS CoV-2 infections. (JM)

2023-05065

Extracorporeal membrane oxygenation in pregnancy during the SARS-CoV-2 pandemic. Richley M, Rao R (2023), Seminars in Fetal and Neonatal Medicine 5 April 2023, online

Extracorporeal membrane oxygenation (ECMO) has been described in multiple case reports as an effective bridge to recovery for patients with severe respiratory distress syndrome in a COVID-19 setting. This review describes ECMO use in a pregnancy and COVID-19 setting. (JM)

2023-05064

Pregnancy and Severe ARDS with COVID-19: Epidemiology, Diagnosis, Outcomes and Treatment. Lim MJ, Lakshminrusimha S, Hedriana HL, et al (2023), Seminars in Fetal and Neonatal Medicine 7 March 2023, online

Full URL: <https://doi.org/10.1016/j.siny.2023.101426>

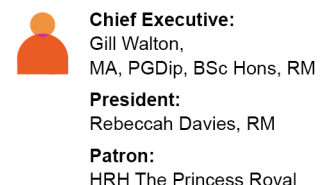
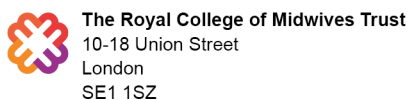
Pregnancy-related acute respiratory distress syndrome (ARDS) is fast becoming a growing and clinically relevant subgroup of ARDS amidst global outbreaks of various viral respiratory pathogens that include H1N1-influenza, severe acute respiratory syndrome (SARS), middle east respiratory syndrome (MERS), and the most recent COVID-19 pandemic. Pregnancy is a risk factor for severe viral-induced ARDS and commonly associated with poor maternal and fetal outcomes including fetal growth-restriction, preterm birth, and spontaneous abortion. Physiologic changes of pregnancy further compounded by mechanical and immunologic alterations are theorized to impact the development of ARDS from viral pneumonia. The COVID-19 sub-phenotype of ARDS share overlapping molecular features of maternal pathogenicity of pregnancy with respect to immune-dysregulation and endothelial/microvascular injury (i.e., preeclampsia) that may in part explain a trend toward poor maternal and fetal outcomes seen with severe COVID-19 maternal infections. To date, current ARDS diagnostic criteria and treatment management fail to include and consider physiologic adaptations that are unique to maternal physiology of pregnancy and consideration of maternal-fetal interactions. Treatment focused on lung-protective ventilation strategies have been shown to improve clinical outcomes in adults with ARDS but may have adverse maternal-fetal interactions when applied in pregnancy-related ARDS. No specific pharmacotherapy has been identified to improve outcomes in pregnancy with ARDS. Adjunctive therapies aimed at immune-modulation and anti-viral treatment with COVID-19 infection during pregnancy have been reported but data in regard to its efficacy and safety is currently lacking. (Author)

2023-05063

Impact of perinatal COVID on fetal and neonatal brain and neurodevelopmental outcomes. Brum AC, Vain NE (2023), Seminars in Fetal and Neonatal Medicine 8 March 2023, online

After three years of the COVID-19 pandemic, we have learned many aspects of the disease and the virus: its molecular structure, how it infects human cells, the clinical picture at different ages, potential therapies, and the effectiveness

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of prophylaxis. Research is currently focused on the short- and long-term consequences of COVID-19. We review the available information on the neurodevelopmental outcome of infants born during the pandemic from infected and non-infected mothers, as well as the neurological impact of neonatal SARS-CoV-2 infection. We also discuss the mechanisms that could potentially affect the fetal or neonatal brain including direct impact after vertical transmission, maternal immune activation with a proinflammatory cytokine storm, and finally the consequences of complications of pregnancy secondary to maternal infection that could affect the fetus. Several follow-up studies have noted a variety of neurodevelopmental sequelae among infants born during the pandemic. There is controversy as to the exact etiopathogenesis of these neurodevelopmental effects: from the infection itself or as a result of parental emotional stress during that period. We summarize case reports of acute neonatal SARS-CoV-2 infections associated with neurological signs and neuroimaging changes. Many infants born during previous pandemics caused by other respiratory viruses demonstrated serious neurodevelopmental and psychological sequelae that were only recognized after several years of follow-up. It is essential to warn health authorities about the need for very long-term continuous follow up of infants born during the SARS-CoV-2 pandemic for early detection and treatment that could help mitigate the neurodevelopmental consequences of perinatal COVID-19. (Author)

2023-05062

Maternal and neonatal outcomes following SARS-CoV-2 infection. Boettcher LB, Metz TD (2023), Seminars in Fetal and Neonatal Medicine 11 March 2023, online

Infection with SARS-CoV-2 causing COVID-19 in pregnancy is known to confer risks to both the pregnant patient and fetus. A review of the current literature demonstrates that pregnant individuals with SARS-CoV-2 infection are at risk for higher composite morbidity, intensive care unit admission, ventilatory support, pre-eclampsia, preterm birth, and neonatal intensive care unit admissions compared to pregnant individuals without SARS-CoV-2. Worse obstetric morbidity and mortality generally correlate with the severity of COVID-19. Comorbidities such as diabetes increase the risk of severe COVID-19. An increased risk of stillbirth appears to be predominantly confined to pregnancies affected in the Delta variant time period. Further, vaccination against SARS-CoV-2 has been demonstrated to be safe and effective in pregnancy and while breastfeeding. Therefore, continued counseling encouraging vaccination remains imperative. The long-term maternal and neonatal consequences of pregnancies affected by SARS-CoV-2 remain unknown, and therefore continued research in this regard is warranted. (Author)

2023-05061

Transmission of SARS-CoV-2 from mother to fetus or neonate: What to know and what to do?. De Luca D, Vauloup-Fellous C, Benachi A, et al (2023), Seminars in Fetal and Neonatal Medicine 13 March 2023, online

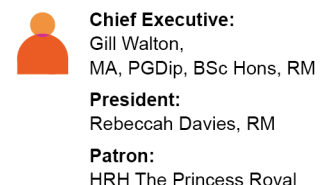
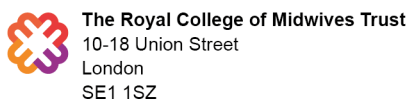
SARS-CoV-2 can be vertically transmitted from the mother to the fetus and the neonate. This transmission route is rare compared to the environmental or horizontal spread and therefore, the risk can be deemed inconsequential by some medical providers. However, severe, although just as rare, feto-neonatal consequences are possible: fetal demise, severe/critical neonatal COVID-19 and multi-inflammatory syndrome (MIS-N) have been described. Therefore, it is important for the clinicians to know the mechanism of vertical transmission, how to recognize this, and how to deal with neonatal COVID-19 and MIS-N. Our knowledge about this field has significantly increased in the last three years. This is a summary of the pathophysiology, diagnostics, and therapeutics of vertical SARS-CoV-2 transmission that clinicians apply in their clinical practice. (Author)

2023-05059

Multisystem inflammatory disease in neonates (MIS-N) due to maternal COVID-19. Ramaswamy VV, Abiramalatha T, Pullattayil AKS, et al (2023), Seminars in Fetal and Neonatal Medicine 30 March 2023, online

Multisystem inflammatory disease in neonates (MIS-N) is a disease of immune dysregulation presenting in the newborn period. Though its etiopathogenesis is proposed to be similar to multisystem inflammatory disease in Children (MIS-C), the exact pathophysiology is largely unknown as of present. The definition of MIS-N is contentious. The evidence for its incidence, the clinical features, profile of raised inflammatory markers, treatment strategies and outcomes stem from case reports, case series and cohort studies with small sample sizes. Though the incidence of

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MIS-N in severe acute respiratory syndrome caused by the coronavirus CoVID-2 (SARS-CoV-2) infected asymptomatic neonates is low, its incidence in symptomatic neonates is relatively higher. Further, amongst the neonates who are treated as MIS-N, the mortality rate is high. The review also evaluates the various other unresolved aspects of MIS-N from limited published literature and identifies knowledge gaps which could be areas of future research. (Author)

2023-05018

Humoral immune response to SARS-CoV-2 in pregnant and non-pregnant women following infection. Jacobs MB, Valentine HD, Adkins S, et al (2023), *AJOG Global Reports* 14 March 2023, online

Full URL: <https://doi.org/10.1016/j.xagr.2023.100192>

Background

Immune changes that occur during pregnancy may place pregnant women at an increased risk for severe disease following viral infections like SARS-CoV-2. Whether these immunological changes modify immune response to SARS-CoV-2 infection during pregnancy is not well understood.

Objective

The objective of the present study is to compare humoral immune response to SARS-CoV-2 infection in pregnant and non-pregnant women. Immune response following vaccination for SARS-CoV-2 was also explored.

Study Design

In the present cohort study, 24 serum samples from 20 patients infected with SARS-CoV-2 during pregnancy were matched on number of days post positive test to 46 samples from 40 non-pregnant women of reproductive age. Samples from nine patients vaccinated during pregnancy were also examined. Immunoglobulin G (IgG) and immunoglobulin M (IgM) antibody levels were measured. Trends in log antibody levels over time and mean antibody levels were assessed using generalized estimating equations.

Results

Median number of days from first positive test to sampling was 6.5 in the pregnant group (range 3-97) and 6.0 among non-pregnant participants (range 2-97). No significant differences in demographic or sampling characteristics were noted between groups. No differences in IgG or IgM levels over time or mean antibody levels were noted in pregnant and non-pregnant participants following SARS-CoV-2 infection for any of the SARS-CoV-2 antigens targets examined [Spike, Spike Receptor Binding Domain (RBD), Spike N-Terminal Domain (NTD), and Nucleocapsid]. Participants vaccinated during pregnancy had higher IgG levels than pregnant positive patients for all SARS-CoV-2 targets except Nucleocapsid (all $p < 0.001$), as well as lower IgM Spike ($p < 0.05$) and RBD ($p < 0.01$) antibody levels.

Conclusions

The present study suggests that humoral response following SARS-CoV-2 infection does not appear to differ in pregnant women compared to their non-pregnant counterparts. These findings should reassure patients and healthcare providers that pregnant patients appear to mount a non-differential immune response to SARS-CoV-2. (Author)

2023-05017


Placental and Doppler ultrasound findings in SARS-CoV-2-positive pregnant women. Soto-Sánchez EM, López-Gorosabel C, Ibáñez-Santamaría AB, et al (2023), *AJOG Global Reports* 15 March 2023, online

Full URL: <https://doi.org/10.1016/j.xagr.2023.100190>


Background

Several viral infections cause changes in the placenta: CMV, herpes viruses and HIV cause increased placental thickness; Zika virus induces focal regions of necrosis; Parvovirus B19 causes a structural injury. Umbilical flow can be considered a direct measurement of vascular placental function.

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Objectives

We aimed to compare placental ultrasound and umbilical Doppler findings in pregnant women who tested positive or negative for SARS-CoV-2 (severe acute respiratory syndrome coronavirus-2). Our work aimed to confirm the suspicion of placental infection and the consequence in fetal physiopathology.

Study design

Fifty-seven (57) pregnant women who tested positive for SARS-CoV-2 at the time of or one month prior to the ultrasound scan (US) were evaluated. Cases included 9-first trimester, 16-second trimester and 32- third trimester US. For comparison, 110 pregnant women (controls) were evaluated. They included 19-first trimester, 43-second trimester and 48-third trimester. Controls were asymptomatic and tested negative for SARS-CoV-2 infection in the last 72 hours before the ultrasound scan. Fetal biometry, placental thickness (PT), placental lakes (PL) and Doppler umbilical vein parameters including venous cross-sectional area (mean transverse diameter, radius umbilical vein, mean velocity umbilical vein [MVUV]) and umbilical vein blood flow (UVBF) were evaluated.

Results

PT in mm was significantly higher in the group of SARS-CoV-2-positive pregnant women (53.82 [10-115]) than in the control group (33.82 [12-66]; $p < 0.001$) in second and third trimesters. The frequency of greater than 4 PL was significantly higher in the group of SARS-CoV-2-positive pregnant women (28/57 [50.91%]) than in the control (7/110 [6.36]; $p < 0.001$) in all three trimesters. The MVUV was significantly higher in the group of SARS-CoV-2-positive pregnant women (12.45 [5.73-21]) than in the control (10.81 [6.31-18.80]; $p = 0.001$) in all three trimesters. UVBF (in ml/min) was significantly higher in the group of SARS-CoV-2-positive pregnant women (389.9 [6.52-1,496.1]) than in the control group (305.05 [3.11-1,441]; $p = 0.05$) in all three trimesters.

Conclusion

Significant differences in placental and venous Doppler ultrasound were documented: placental thickness, placental venous lakes, mean velocity umbilical vein and umbilical vein flow were significantly higher in the group of SARS-CoV-2-positive pregnant women in all three trimesters. (Author)

2023-04956

The impact of COVID-19 variant 501Y.V2 on maternal and perinatal mortality among pregnant South African women. Basu JK, Chauke L, Magoro T (2023), African Journal of Midwifery and Women's Health vol 17, no 1, January 2023

Background/Aims

The COVID-19 variant SARS COV 501Y.V2 was responsible for the second wave of COVID-19 in South Africa from October 2020 to March 2021. There are no studies that report on maternal mortality from this variant globally. This study's aim was to determine the impact of the variant on maternal deaths in the Ekurhuleni health district, South Africa.

Methods

A retrospective record review of all maternal deaths in COVID-19 positive cases in the Ekurhuleni health district from October 2020 to March 2021 was conducted. Demographic details, comorbidities and obstetric data were assessed.

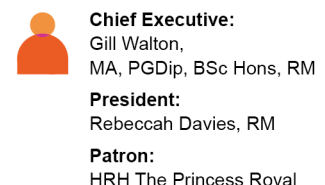
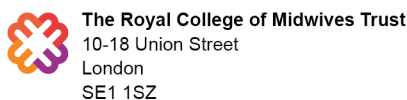
Results

A total of 11 women who tested positive for COVID-19 died. In these cases, there were high rates of hypertension (67%), stillbirth (50%) and preterm caesarean section (67%). Laboratory abnormalities, including anaemia (64%) and high levels of lactic dehydrogenase (100%), aspartate transaminase (67%) and D-dimer (80%), were observed.

Conclusions

This study adds to the growing global knowledge of COVID-19 infections. Routine COVID-19 testing of all comorbid pregnant women at each antenatal visit is recommended. All pregnant women should be counselled to follow strict COVID-19 prevention protocols. (Author)

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2023-04939

Early effects of COVID-19 on maternal and child health service disruption in Mozambique. Augusto O, Robertson T, Fernandes Q, et al (2023), *Frontiers in Global Women's Health* 17 April 2023, online

Full URL: <https://doi.org/10.3389/fpubh.2023.1075691>

Introduction: After the World Health Organization declared COVID-19 a pandemic, more than 184 million cases and 4 million deaths had been recorded worldwide by July 2021. These are likely to be underestimates and do not distinguish between direct and indirect deaths resulting from disruptions in health care services. The purpose of our research was to assess the early impact of COVID-19 in 2020 and early 2021 on maternal and child healthcare service delivery at the district level in Mozambique using routine health information system data, and estimate associated excess maternal and child deaths.

Methods: Using data from Mozambique's routine health information system (SISMA, Sistema de Informação em Saúde para Monitoria e Avaliação), we conducted a time-series analysis to assess changes in nine selected indicators representing the continuum of maternal and child health care service provision in 159 districts in Mozambique. The dataset was extracted as counts of services provided from January 2017 to March 2021. Descriptive statistics were used for district comparisons, and district-specific time-series plots were produced. We used absolute differences or ratios for comparisons between observed data and modeled predictions as a measure of the magnitude of loss in service provision. Mortality estimates were performed using the Lives Saved Tool (LiST).

Results: All maternal and child health care service indicators that we assessed demonstrated service delivery disruptions (below 10% of the expected counts), with the number of new users of family planning and malaria treatment with Coartem (number of children under five treated) experiencing the largest disruptions. Immediate losses were observed in April 2020 for all indicators, with the exception of treatment of malaria with Coartem. The number of excess deaths estimated in 2020 due to loss of health service delivery were 11,337 (12.8%) children under five, 5,705 (11.3%) neonates, and 387 (7.6%) mothers.

Conclusion: Findings from our study support existing research showing the negative impact of COVID-19 on maternal and child health services utilization in sub-Saharan Africa. This study offers subnational and granular estimates of service loss that can be useful for health system recovery planning. To our knowledge, it is the first study on the early impacts of COVID-19 on maternal and child health care service utilization conducted in an African Portuguese-speaking country. (Author)

2023-04925

Panoramic snapshot of serum soluble mediator interplay in pregnant women with convalescent COVID-19: an exploratory study. Fernandes GM, Sasaki LMP, Jardim-Santos GP, et al (2023), *Frontiers in Global Women's Health* 12 April 2023, online


Full URL: <https://doi.org/10.3389/fimmu.2023.1176898>

Introduction: SARS-CoV-2 infection during pregnancy can induce changes in the maternal immune response, with effects on pregnancy outcome and offspring. This is a cross-sectional observational study designed to characterize the immunological status of pregnant women with convalescent COVID-19 at distinct pregnancy trimesters. The study focused on providing a clear snapshot of the interplay among serum soluble mediators.


Methods: A sample of 141 pregnant women from all prenatal periods (1st, 2nd and 3rd trimesters) comprised patients with convalescent SARS-CoV-2 infection at 3-20 weeks after symptoms onset (COVID, n=89) and a control group of pre-pandemic non-infected pregnant women (HC, n=52). Chemokine, pro-inflammatory/regulatory cytokine and growth factor levels were quantified by a high-throughput microbeads array.

Results: In the HC group, most serum soluble mediators progressively decreased towards the 2nd and 3rd trimesters

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of pregnancy, while higher chemokine, cytokine and growth factor levels were observed in the COVID patient group. Serum soluble mediator signatures and heatmap analysis pointed out that the major increase observed in the COVID group related to pro-inflammatory cytokines (IL-6, TNF- α , IL-12, IFN- γ and IL-17). A larger set of biomarkers displayed an increased COVID/HC ratio towards the 2nd (3x increase) and the 3rd (3x to 15x increase) trimesters. Integrative network analysis demonstrated that HC pregnancy evolves with decreasing connectivity between pairs of serum soluble mediators towards the 3rd trimester. Although the COVID group exhibited a similar profile, the number of connections was remarkably lower throughout the pregnancy. Meanwhile, IL-1Ra, IL-10 and GM-CSF presented a preserved number of correlations (≥ 5 strong correlations in HC and COVID), IL-17, FGF-basic and VEGF lost connectivity throughout the pregnancy. IL-6 and CXCL8 were included in a set of acquired attributes, named COVID-selective (≥ 5 strong correlations in COVID and < 5 in HC) observed at the 3rd pregnancy trimester.

Discussion and conclusion: From an overall perspective, a pronounced increase in serum levels of soluble mediators with decreased network interplay between them demonstrated an imbalanced immune response in convalescent COVID-19 infection during pregnancy that may contribute to the management of, or indeed recovery from, late complications in the post-symptomatic phase of the SARS-CoV-2 infection in pregnant women. (Author)

2023-04824

Developmental screening of full-term infants at 16 to 18 months of age after in-utero exposure to maternal SARS-CoV-2 infection. Shah AV, Howell HB, Kazmi SH, et al (2023), Journal of Perinatology 17 March 2023, online

Objective

To screen for neurodevelopmental delays in a cohort of full-term infants born to mothers with SARS-CoV-2.

Study design

This was a prospective, descriptive cohort study of full-term infants born to mothers with SARS-CoV-2 during pregnancy. Subjects underwent neurodevelopmental screening using the Ages and Stages Questionnaires[®]-Third Edition (ASQ[®]-3) at 16 to 18 months age.

Results

Of 51 subjects, twelve (24%) were below cutoff, and twenty-seven (53%) were either below or close to the cutoff in at least one developmental domain. Communication (29%), fine motor (31%), and problem-solving (24%) were the most affected domains. There were no differences in outcomes between infants born to asymptomatic and mildly symptomatic mothers.

Conclusion

We observed increased risk of neurodevelopmental delays during screening of infants born at full-term to mothers with SARS-CoV-2 at 16 to 18 months age. These results highlight the urgent need for follow-up studies of infants born to mothers with SARS-CoV-2. (Author)

2023-04809

Heterogeneity of emotional distress in pregnancy during COVID-19 pandemic: a latent profile analysis. Li X, Wang X, Zhou G (2023), Journal of Reproductive and Infant Psychology 20 March 2023, online

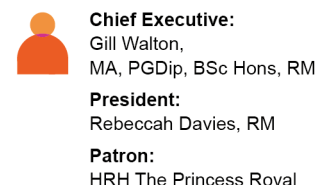
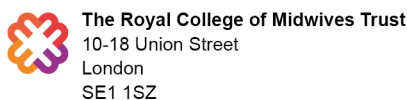
Background

Emotional distress, including depressive and anxiety symptoms, is a common concern among pregnant individuals and has negative impacts on maternal and offspring's health. Previous studies indicated the heterogeneity of perinatal emotional distress. Moreover, during the pandemic of COVID-19, expectant mothers are faced with more tough challenges, which could exacerbate their emotional distress.

Objective

The aim of present study is to examine potential subgroups with distinct profiles on emotional distress and

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relationship resources during the pandemic.

Methods

A total of 187 pregnant people in China were recruited from April 22 to May 16 in 2020. Latent profile analysis was applied based on prenatal depressive and anxiety symptoms, COVID-19-related negative emotions, prenatal attachment, marital satisfaction and family sense of coherence.

Results

Four subgroups were identified. Group 1 and Group 2 shared with low levels of emotional distress and COVID-19-related negative emotions, among which Group 1 had plenty of relationship resources, while Group 2 had insufficient support. Group 3 had moderate levels of emotional distress but above-average prenatal attachment. Group 4 was a highly distressed subtype with severe emotional distress and poor states across all domains.

Conclusion

Our findings support that emotion distress among expecting mothers is heterogeneous, highlighting the need for tailored interventions to address the specific needs of subgroups during pregnancy. (Author)

2023-04807

Perinatal meaning-making and meaning-focused coping in the COVID-19 pandemic. Weinstock MW, Moyer S, Jallo N, et al (2023), Journal of Reproductive and Infant Psychology 16 April 2023, online

Introduction

The COVID-19 pandemic caused unprecedented levels of stress amongst pregnant women and new mothers. The current qualitative study explored the ways in which perinatal women made meaning of their experiences during the COVID-19 pandemic.

Methods

Data came from a parent study in which 54 perinatal (pregnant and postpartum) women in the United States completed semi-structured interviews from October 2021 to January 2022 describing their experiences during the COVID-19 pandemic. The data was interpreted using a hermeneutic, phenomenological approach to delve deeply into the concept of meaning-making.

Results

Despite high levels of stress and challenging circumstances, participants reported engaging in meaning-making through finding connection, focusing on gratitude, and identifying openings for change. Unique forms of meaning-making amongst this population include a sense of connection to women throughout history, connection to their baby, and recognition of the need for systemic change for perinatal women.

Conclusions

Perinatal women coped with the stress of the COVID-19 pandemic by making meaning from their experiences. Future research should further explore the importance of these aspects of meaning-making to perinatal women and implement these findings to adapt prevention and treatment approaches to address perinatal stress, especially during times of crisis. (Author)

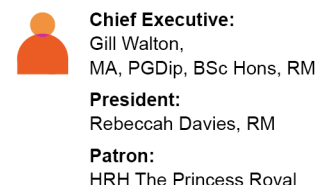
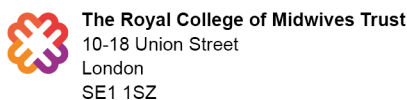
2023-04801

The influence of being pregnant during the COVID-19 pandemic on birth expectations and antenatal bonding. Schaal NK, Hagenbeck C, Helbig M, et al (2023), Journal of Reproductive and Infant Psychology vol 41, no 1, 2023, pp. 15-25

Purpose

The aim of the present study was to compare birth expectations and antenatal bonding of women pregnant prior to and during the COVID-19 pandemic.

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Materials and methods

In total, 74 pregnant women (mean age: 33.9 ± 4.1 years, gestational age: 36 ± 2 weeks) participated in the study, who were pregnant either during the the COVID-19 pandemic (corona group, N = 35, April–July 2020) or before the pandemic (control group, N = 39, October 2017–January 2019). Birth expectations were measured using the Wijma Delivery Expectancy Questionnaire (WDEQ) and Salmon's Item List (SIL) and antenatal bonding with the Maternal Antenatal Attachment Scale (MAAS). Additionally, the corona group indicated their level of worry regarding different pandemic-related aspects using visual analogue scales.

Results

The corona group displayed significantly elevated fear of childbirth measured by the WDEQ and lower antenatal bonding quality compared to the control group. The additional items regarding COVID-19 burdens highlighted that the aspects that the partner may not be present during labour and that no visitors will be allowed in hospital were associated with the highest worries.

Conclusions

Midwives and gynaecologists should be aware of the negative impact of the COVID-19 pandemic on fear of childbirth and antenatal bonding. (Author)

2023-04794

Fetal Diaphragmatic Excursion Is Decreased in Hospitalized Pregnant Women Infected with COVID-19 during the Second and Third Trimesters. Sahin ME, Sahin E, Kirilangic MM, et al (2023), American Journal of Perinatology 9 March 2023, online

Objective In the present study, we aimed to evaluate coronavirus disease 2019 (COVID-19) infection effects on fetal diaphragm thickness and diaphragmatic excursion, which together show the quality of diaphragmatic contractions.

Study Design One hundred and ninety-two pregnant women were included in this prospective case–control study. Patients were divided into four groups according to their COVID-19 infection history in their second or third trimester: hospitalized COVID-19-infected pregnant women group (n = 48), outpatient COVID-19-infected pregnant women group (n = 48), common cold (COVID-19 polymerase chain reaction negative) pregnant women group (n = 48), and noninfected healthy controls (n = 48). The number of patients was determined by power analysis following the pilot study. All participants underwent an ultrasound examination to determine fetal diaphragm parameters at 32 to 37 weeks of gestation.

Results Demographic characteristics were similar among the four groups. The gestational age at ultrasound examination and gestational age at delivery were similar among the groups. Neonatal intensive care unit (NICU) admission rate was significantly higher in the hospitalized COVID-19-infected pregnant women group than the other groups. The fetal diaphragm thickness during inspiration and expiration, and fetal costophrenic angles at inspiration and expiration were similar among the groups. Fetal diaphragmatic excursion was significantly decreased in the hospitalized COVID-19-infected pregnant women group compared with the other groups.

Conclusion Our results indicated that moderate maternal COVID-19 infection decreased fetal diaphragmatic excursion, and ultrasonographic evaluation of fetal diaphragmatic excursion before delivery can provide critical information to predict whether infants will require NICU admission. (Author)

2023-04790

Perinatal Outcomes during versus Prior to the COVID-19 Pandemic and the Role of Maternal Depression and Perceived Stress: A Report from the ECHO Program. McKee KS, Tang X, Tung I, et al (2023), American Journal of Perinatology 23 March 2023, online

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Objective We sought to evaluate the impact of the coronavirus disease 2019 (COVID-19) pandemic on perinatal outcomes while accounting for maternal depression or perceived stress and to describe COVID-specific stressors, including changes in prenatal care, across specific time periods of the pandemic.

Study Design Data of dyads from 41 cohorts from the National Institutes of Health Environmental influences on Child Health Outcomes Program (N = 2,983) were used to compare birth outcomes before and during the pandemic (n = 2,355), and a partially overlapping sample (n = 1,490) responded to a COVID-19 questionnaire. Psychosocial stress was defined using prenatal screening for depression and perceived stress. Propensity-score matching and general estimating equations with robust variance estimation were used to estimate the pandemic's effect on birth outcomes.

Results Symptoms of depression and perceived stress during pregnancy were similar prior to and during the pandemic, with nearly 40% of participants reporting mild to severe stress, and 24% reporting mild depression to severe depression. Gestations were shorter during the pandemic (B = -0.33 weeks, p = 0.025), and depression was significantly associated with shortened gestation (B = -0.02 weeks, p = 0.015) after adjustment. Birth weights were similar (B = -28.14 g, p = 0.568), but infants born during the pandemic had slightly larger birth weights for gestational age at delivery than those born before the pandemic (B = 0.15 z-score units, p = 0.041). More women who gave birth early in the pandemic reported being moderately or extremely distressed about changes to their prenatal care and delivery (45%) compared with those who delivered later in the pandemic. A majority (72%) reported somewhat to extremely negative views of the impact of COVID-19 on their life.

Conclusion In this national cohort, we detected no effect of COVID-19 on prenatal depression or perceived stress. However, experiencing the COVID-19 pandemic in pregnancy was associated with decreases in gestational age at birth, as well as distress about changes in prenatal care early in the pandemic. (Author)

2023-04749

Trends in Telehealth Visits During Pregnancy, 2018 to 2021. Acharya M, Ali MM, Hayes CJ, et al (2023), JAMA Network Open vol 6, no 4, April 2023, e236630

Full URL: <https://doi.org/10.1001/jamanetworkopen.2023.6630>

This research letter discusses a cross-sectional study that assessed trends of prenatal telehealth visits in pregnancy and explored patient characteristics associated with the number of prenatal telehealth visits. (JM)

2023-04746

Severe Maternal Morbidity and Mortality of Pregnant Patients With COVID-19 Infection During the Early Pandemic Period in the US. Matsuo K, Green JM, Herrman SA, et al (2023), JAMA Network Open vol 6, no 4, April 2023, e237149

Full URL: <https://doi.org/10.1001/jamanetworkopen.2023.7149>

This research letter discusses a cohort study that noted increasing evidence that pregnant patients with COVID-19 infection are at high risk for adverse pregnancy outcomes. This national-level analysis, utilizing public data, found substantial adverse maternal outcomes among pregnant patients with COVID-19 infection at delivery during the early pandemic in the US. Among other findings, the odds of severe respiratory complications were increased among pregnant patients with a COVID-19 at delivery. Key limitations are highlighted in the study and research letter that include information limitations on COVID-19 infection status, neonatal outcomes, delivery indication, and cause of death. (JM)

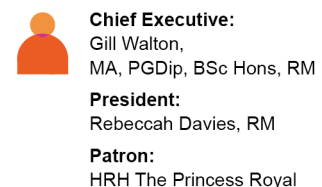
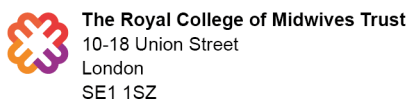
2023-04745

Assessment of Neurodevelopment in Infants With and Without Exposure to Asymptomatic or Mild Maternal SARS-CoV-2 Infection During Pregnancy. Firestein MR, Shuffrey LC, Hu Y, et al (2023), JAMA Network Open vol 6, no 4, April 2023, e237396

Full URL: <http://dx.doi.org/10.1001/jamanetworkopen.2023.7396>

Importance Associations between prenatal SARS-CoV-2 exposure and neurodevelopmental outcomes have

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substantial public health relevance. A previous study found no association between prenatal SARS-CoV-2 infection and parent-reported infant neurodevelopmental outcomes, but standardized observational assessments are needed to confirm this finding.

Objective To assess whether mild or asymptomatic maternal SARS-CoV-2 infection vs no infection during pregnancy is associated with infant neurodevelopmental differences at ages 5 to 11 months.

Design, Setting, and Participants This cohort study included infants of mothers from a single-site prospective cross-sectional study (COVID-19 Mother Baby Outcomes [COMBO] Initiative) of mother-infant dyads and a multisite prospective cohort study (Epidemiology of Severe Acute Respiratory Syndrome Coronavirus 2 in Pregnancy and Infancy [ESPI]) of pregnant individuals. A subset of ESPI participants was subsequently enrolled in the ESPI COMBO substudy. Participants in the ongoing COMBO study were enrolled beginning on May 26, 2020; participants in the ESPI study were enrolled from May 7 to November 3, 2021; and participants in the ESPI COMBO substudy were enrolled from August 2020 to March 2021. For the current analysis, infant neurodevelopment was assessed between March 2021 and June 2022. A total of 407 infants born to 403 mothers were enrolled (204 from Columbia University Irving Medical Center in New York, New York; 167 from the University of Utah in Salt Lake City; and 36 from the University of Alabama in Birmingham). Mothers of unexposed infants were approached for participation based on similar infant gestational age at birth, date of birth, sex, and mode of delivery to exposed infants.

Exposures Maternal symptomatic or asymptomatic SARS-CoV-2 infection.

Main Outcomes and Measures Infant neurodevelopment was assessed using the Developmental Assessment of Young Children, second edition (DAYC-2), adapted for telehealth assessment. The primary outcome was age-adjusted standard scores on 5 DAYC-2 subdomains: cognitive, gross motor, fine motor, expressive language, and receptive language.

Results Among 403 mothers, the mean (SD) maternal age at delivery was 32.1 (5.4) years; most mothers were of White race (240 [59.6%]) and non-Hispanic ethnicity (253 [62.8%]). Among 407 infants, 367 (90.2%) were born full term and 212 (52.1%) were male. Overall, 258 infants (63.4%) had no documented prenatal exposure to SARS-CoV-2 infection, 112 (27.5%) had confirmed prenatal exposure, and 37 (9.1%) had exposure before pregnancy or at an indeterminate time. In adjusted models, maternal SARS-CoV-2 infection during pregnancy was not associated with differences in cognitive ($\beta = 0.31$; 95% CI, -2.97 to 3.58), gross motor ($\beta = 0.82$; 95% CI, -1.34 to 2.99), fine motor ($\beta = 0.36$; 95% CI, -0.74 to 1.47), expressive language ($\beta = -1.00$; 95% CI, -4.02 to 2.02), or receptive language ($\beta = 0.45$; 95% CI, -2.15 to 3.04) DAYC-2 subdomain scores. Trimester of exposure and maternal symptom status were not associated with DAYC-2 subdomain scores.

Conclusions and Relevance In this study, results of a novel telehealth-adapted observational neurodevelopmental assessment extended a previous finding of no association between prenatal exposure to maternal SARS-CoV-2 infection and infant neurodevelopment. Given the widespread and continued high prevalence of COVID-19, these data offer information that may be helpful for pregnant individuals who experience asymptomatic or mild SARS-CoV-2 infections. (Author)

2023-04726

Development of placental lesions after recovery from COVID-19 during pregnancy: case-control study. Milot C, Koch A, Averous G, et al (2023), BJOG: An International Journal of Obstetrics and Gynaecology 2 April 2023, online
Full URL: <https://doi.org/10.1111/1471-0528.17458>

Objective

To study whether the occurrence and type of placental lesions vary according to the time of onset of COVID-19 in pregnant women.

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Design
Case-control study.

Setting
Departments of Gynaecology-Obstetrics and Pathology, Strasbourg University Hospital, France.

Population
Cases were 49 placentas of women with COVID-19. Controls were 50 placentas from women who had a past history of molar pregnancy. COVID-19 placentas were categorised based on whether birth occurred at more or less than 14 days post-infection.

Methods
Comparison between case and controls.

Main outcome measures
Maternal and neonatal outcomes were recorded. Macroscopic and microscopic examination of the placentas was performed.

Results
The rate of vascular complications was higher in the COVID groups than in the controls (8 [16.3%] versus 1 [2%], $p = 0.02$). Signs of fetal (22[44.9%] versus 13 [26%], $p = 0.05$) and maternal (44 [89.8%] versus 36 [72.0%], $p = 0.02$) vascular malperfusion and signs of inflammation (11 [22.4%] versus 3 [6.0%], $p = 0.019$) were significantly more common in the COVID-19 groups than in the control group. Fetal malperfusion lesions (9 [39.1%] versus 13 [50.0%], $p = 0.45$) and placental inflammation (4 [17.4%] versus 7 [26.9%], $p = 0.42$) rates were not significantly different between the two COVID-19 groups. Chronic villitis was significantly more common when the delivery occurred >14 days after infection than in the group that delivered <14 days after infection (7 [26.9%] versus 1 [4.4%], $p = 0.05$).

Conclusions
Our study suggests that SARS-COV-2 induces placental lesions that evolve after disease recovery, especially with the development of inflammatory lesions, such as chronic villitis. (Author)

2023-04598

The Ohio Maternal Safety Quality Improvement Project: Initial Results of a Statewide Perinatal Hypertension Quality Improvement Initiative Implemented During the COVID-19 Pandemic. Schneider P, Lorenz AM, Menegay MC, et al (2023), American Journal of Obstetrics & Gynecology MFM 29 March 2023, online

Background

Hypertensive disorders of pregnancy are a leading cause of severe maternal morbidity (SMM) and mortality and studies have shown that more than 60% of cases are preventable. As part of a state-wide quality maternal safety quality improvement project (MSQIP), we adapted the Alliance for Innovation on Maternal Health (AIM) Severe Hypertension in Pregnancy bundle in a consortium of maternity hospitals in [REDACTED] to improve care processes and outcomes for patients with a severe hypertensive event during pregnancy or postpartum period.


Objectives

To report the first year of data from this MSQIP, including an assessment of the process measures by hospital level of maternal care designation, and provide perspective on the unique challenges of implementing a large-scale MSQIP during a global pandemic.


Study Design

This MSQIP engaged [REDACTED] Level I-IV maternity hospitals and provided multimodal QI support. Participating hospitals submitted monthly patient level data, which included all cases of new onset sustained severe hypertension. The primary process measure was the proportion of birthing persons in [REDACTED] with sustained severe hypertension who received treatment with appropriate acute antihypertensive therapy within 60 minutes. Secondary

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process measures included receipt of: a follow-up appointment after hospital discharge within 72 hours (if discharged on medication) or 10 days (if discharged without medication), a blood pressure cuff on hospital discharge, and education about urgent maternal warning signs. Data for primary and secondary process measures were plotted on a biweekly basis and statistical process control methods were used to identify special cause variation over time. Data were stratified by various demographic variables, including race/ethnicity, insurance status, and maternal level of care. To assess the impact of the COVID-19 pandemic on this MSQIP, process measure data was compared to COVID-19 case volume in [REDACTED] across the study epoch.

Results
Twenty-nine hospitals participated in the project from July 2020 through September 2021. Data was collected on 4,948 hypertensive events representing 4,678 unique patients. In aggregate, the primary process measure (timely and appropriate treatment) demonstrated a 19.3% increase (from baseline of 56.5% to 67.4%, $p < 0.001$). The secondary process measures demonstrated significant increases ranging 26.1% to 166.8% (all $p < 0.001$). Both non-Hispanic Black and White pregnant or postpartum people demonstrated shifts and sustained improvements in the treatment of severe hypertension, which did not differ by race across the study period. Notably, process measure improvements were achieved and sustained across peaks in the COVID-19 pandemic.

Conclusion
This [REDACTED] MSQIP demonstrated meaningful changes in project process measures in the identification and treatment of severe hypertension in pregnancy and the postpartum period. Process measures improvements were achieved across all hospital levels of maternal care and differences were not observed by race or ethnicity. Our findings suggest that a robust and comprehensive QI initiative with appropriate support and resources can achieve meaningful gains in the setting of a global pandemic. (Author)

2023-04489

SARS-CoV-2 placentitis and severe pregnancy outcome after maternal infection: A Danish case series. Nielsen SY, Hvidman LE, Aabakke AJM, et al (2023), *Acta Obstetrica et Gynecologica Scandinavica* vol 102, no 5, May 2023, pp. 567-576

Full URL: <https://doi.org/10.1111/aogs.14541>

Introduction

SARS-CoV-2 infection during pregnancy may cause viral inflammation of the placenta, resulting in fetal demise even without fetal or newborn infection. The impact of timing of the infection and the mechanisms that cause fetal morbidity and mortality are not well understood.

Material and methods

To describe placental pathology from women with confirmed SARS-CoV-2 infection during pregnancy, a SARS-CoV-2 immunohistochemistry-positive placenta and late miscarriage, stillbirth, neonatal death, or medically indicated birth due to fetal distress.

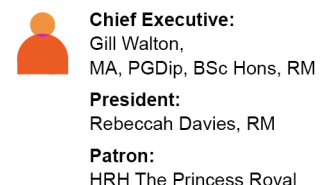
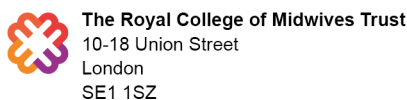
Results

The triad of trophoblastic necrosis, inflammatory intervillous infiltrates, and increased perivillous fibrinoid deposition was present in all 17 placentas; the pregnancies resulted in eight stillbirths, two late miscarriages (19 and 21 weeks' gestation), and seven liveborn children, two of which died shortly after delivery. The severity of maternal COVID-19 was not reflected by the extent of the placental lesions. In only one case, SARS-CoV-2 was detected in lung tissue samples from the fetus. The majority events (miscarriage, stillbirth, fetal distress resulting in indicated birth, or livebirth, but neonatal death) happened shortly after maternal SARS-CoV-2 infection was diagnosed. Seven of eight sequenced cases were infected with the Delta (B.1.617.2) virus strain.

Conclusion

We consolidate findings from previous case series describing extensive SARS-CoV-2 placentitis and placental insufficiency leading to fetal hypoxia. We found sparse evidence to support the notion that SARS-CoV-2 virus had infected the fetus or newborn. (Author)

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2023-04409

Maternity care a 'postcode lottery' in London. Warren J (2023), BBC News 14 April 2023

Full URL: https://www.bbc.co.uk/news/uk-england-london-65263610?at_medium=RSS&at_campaign=KARANGA

Londoners were subjected to a "postcode lottery" in the provision of maternal health services during the pandemic, a report found. (Author)

2023-04293

The Impact of the COVID-19 Pandemic on Pregnant Women: A Qualitative Approach. Uludağ E, Türkcü SG, Serçekuş P, et al (2022), International Journal of Childbirth vol 13, no 1, 2022

BACKGROUND: Pregnant women are one of the special groups most affected by the COVID-19 pandemic. The aim of this study was to analyze how the COVID-19 pandemic influenced the feelings, thoughts, and behaviors of pregnant women.

METHOD: A descriptive phenomenological approach was employed to explore the experiences of 15 pregnant women. Data were gathered by using semi-structured interviews focusing on pregnant women's feelings, thoughts and behaviors. Word cloud analysis and content analysis were performed.

FINDINGS: Data analysis revealed three main themes: emotions, hardships, and coping. Emotions were grouped into five categories: fear, anxiety, disappointment, loneliness, and regret. Hardships were grouped into two categories: physical and financial. Coping was grouped into four categories: social support, normalization, religious practices, and positive thinking. According to word cloud analysis, the most frequently mentioned words were pregnant, COVID-19, anxiety, fear, positive thinking, hardships, regret, stress, affect, and alone.

CONCLUSIONS: Women experienced feelings of fear, anxiety, disappointment, loneliness, and regret in the prenatal period. They also faced physical and financial hardships and benefited from social support, normalization, religious practices, and positive thinking to cope with these hardships. (Author)

2023-04099

"It was just one moment that I felt like I was being judged": Pregnant and postpartum black Women's experiences of personal and group-based racism during the COVID-19 pandemic. Chambers BD, Fontenot J, McKenzie-Sampson S, et al (2023), Social Science and Medicine vol 322, April 2023, 115813

Full URL: <https://doi.org/10.1016/j.socscimed.2023.115813>

Background

Racial inequities in maternal and child health outcomes persist: Black women and birthing people experience higher rates of adverse outcomes than their white counterparts. Similar inequities are seen in coronavirus disease (COVID-19) mortality rates. In response, we sought to explore the intersections of racism and the COVID-19 pandemic impact on the daily lives and perinatal care experiences of Black birthing people.


Methods

We used an intrinsic case study approach grounded in an intersectional lens to collect stories from Black pregnant and postpartum people residing in Fresno County (July–September 2020). All interviews were conducted on Zoom without video and were audio recorded and transcribed. Thematic analysis was used to group codes into larger themes.


Results

Of the 34 participants included in this analysis, 76.5% identified as Black only, and 23.5% identified as multiracial including Black. Their mean age was 27.2 years [SD, 5.8]. Nearly half (47%) reported being married or living with their partner; all were eligible for Medi-Cal insurance. Interview times ranged from 23 to 96 min. Five themes emerged: (1) Tensions about Heightened Exposure of Black Lives Matter Movement during the pandemic; (2) Fear for Black Son's

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Safety; (3) Lack of Communication from Health Care Professionals; (4) Disrespect from Health Care Professionals; and (5) Misunderstood or Judged by Health Care Professionals. Participants stressed that the Black Lives Matter Movement is necessary and highlighted that society views their Black sons as a threat. They also reported experiencing unfair treatment and harassment while seeking perinatal care.

Conclusions

Black women and birthing people shared that exposure to racism has heightened during the COVID-19 pandemic, increasing their levels of stress and anxiety. Understanding how racism impacts Black birthing people's lives and care experiences is critical to reforming the police force and revising enhanced prenatal care models to better address their needs. (Author)

2023-04065

Strategies to Address COVID-19 Vaccine and Pregnancy Myths. Berkowitz HE, Jacobson Vann JC (2023), MCN - American Journal of Maternal/Child Nursing 21 March 2023, online

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) poses risks to pregnant women and their infants. The spread of misinformation about COVID-19 vaccination is a barrier to optimizing vaccination rates among women of childbearing age. We conducted an environmental scan to identify misinformation about COVID-19 vaccination, pregnancy, and fertility, and a review to identify evidence to refute misinformation and strategies to correct and prevent the spread of misinformation. Seven identified themes of misinformation are: the vaccine causes female infertility, can cause miscarriage, and can decrease male fertility; mRNA vaccines attack the placenta; pregnant and breastfeeding persons should not get the vaccine; the vaccine can change menstrual cycles; and vaccinated people can spread infertility symptoms to unvaccinated people. Strategies that can be implemented by social media platforms to help prevent misinformation spread and correct existing health misinformation include improving information regulation by modifying community standards, implementing surveillance algorithms, and applying warning labels to potentially misleading posts. Health services organizations and clinicians can implement health misinformation policies, directly recommend vaccinations, provide credible explanations and resources to debunk misinformation, educate patients and populations on spotting misinformation, and apply effective communication strategies. More research is needed to assess longer-term effects of vaccination among women of childbearing age to strengthen the defense against misinformation and to evaluate strategies that aim to prevent and correct misinformation spread about COVID-19 vaccinations. (Author)

2023-03981

COVID-19 and obstetric outcomes: a single-center retrospective experience in a predominantly Black population. Kuriloff M, Patel E, Mueller A, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 1, 2023, 2196364


Full URL: <https://doi.org/10.1080/14767058.2023.2196364>

Objective: This retrospective, single-center case series was designed to characterize the effects of perinatal COVID-19 diagnosis on obstetric and neonatal outcomes in a predominantly high-risk, urban Black population.


Study Design: Data were collected via retrospective chart review on all COVID-19-positive obstetric patients and their neonates who presented to the University of Chicago Medical Center between March 2020 and November 2020, before the availability of the COVID-19 vaccine. Patient demographics, delivery outcomes, COVID-19 symptoms, treatment, and outcomes were analyzed.

Results: A total of 56 COVID-19-positive obstetric patients were included in the study, of which four were lost to follow-up before delivery. The median age of patients was 27 years (IQR 23, 32), with 73.2% publicly insured and 66.1% Black. Patients had a median body mass index (BMI) of 31.6 kg/m² (IQR 25.9, 35.5). 3.6% of patients had chronic hypertension, 12.5% had diabetes, and 16.1% had asthma. Perinatal complications were common. Twenty-six patients (50.0%) had a diagnosis of a hypertensive disorder of pregnancy (HDP). 28.8% had gestational hypertension, and 21.2% had preeclampsia (with and without severe features). The rate of maternal ICU admission was 3.6%. Furthermore,

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23.5% of patients delivered preterm (<37 weeks gestation), and 50.9% of infants were admitted to the Neonatal Intensive Care Unit (NICU).

Conclusion: In our study of a predominantly Black, publicly-insured, unvaccinated group of COVID-19-positive pregnant patients, we found high rates of hypertensive disorders of pregnancy, preterm delivery, and NICU admission compared to rates reported in existing literature before widespread vaccine availability. Our findings suggest that SARS-CoV-2 infection during pregnancy, irrespective of maternal disease severity, may exacerbate existing obstetric health disparities by disproportionately impacting Black, publicly insured patients. Larger comparative studies are needed to better characterize possible racial and socioeconomic disparities in obstetric outcomes in the setting of SARS-CoV-2 infection during pregnancy. These studies should examine the pathophysiology of SARS-CoV-2 infection during pregnancy, as well as potential associations between adverse perinatal outcomes and disparities in access to care, COVID-19 vaccination, and other social determinants of health amongst more vulnerable populations infected with SARS-CoV-2 during pregnancy. (Author)

2023-03976

Effects of COVID-19 home quarantine on pregnancy outcomes of patients with gestational diabetes mellitus: a retrospective cohort study. Cai Q-Y, Yang Y, Ruan L-L, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 1, 2023, 2193284

Full URL: <https://doi.org/10.1080/14767058.2023.2193284>

Objective

This study aimed to evaluate the effects of the home quarantine on pregnancy outcomes of gestational diabetes mellitus (GDM) patients during the COVID-19 outbreak.

Methods

The complete electronic medical records of patients with GDM with home quarantine history were collected and classified into the home quarantine group from 24 February 2020 to 24 November 2020. The same period of patients with GDM without home quarantine history were included in the control group from 2018 to 2019. The pregnant outcomes of the home quarantine and control groups were systematically compared, such as neonatal weight, head circumference, body length, one-minute Apgar score, fetal macrosomia, and pre-term delivery.

Results

A total of 1358 patients with GDM were included in the analysis, including 484 in 2018, 468 in 2019, and 406 in 2020. Patients with GDM with home quarantine in 2020 had higher glycemic levels and adverse pregnancy outcomes than in 2018 and 2019, including higher cesarean section rates, lower Apgar scores, and higher incidence of macrosomia and umbilical cord around the neck. More importantly, the second trimester of home quarantine had brought a broader impact on pregnant women and fetuses.

Conclusion

Home quarantine has aggravated the condition of GDM pregnant women and brought more adverse pregnancy outcomes during the COVID-19 outbreak. Therefore, we suggested governments and hospitals strengthen lifestyle guidance, glucose management, and antenatal care for patients with GDM with home quarantine during public health emergencies. (Author)


2023-03964

The impact of COVID-19 pandemic on obstetrics and gynecology hospitalization rate and on reasons for seeking emergency care: a systematic review and meta-analysis. Carbone L, Raffone A, Travaglino A, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 1, 2023, 2187254


Full URL: <https://doi.org/10.1080/14767058.2023.2187254>

Background

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During the lockdown due to COVID-19 pandemic, utilization of emergency care units has been reported to be reduced for obstetrical and gynaecological reasons. The aim of this systematic review is to assess if this phenomenon reduced the rate of hospitalizations for any reason and to evaluate the main reasons for seeking care in this subset of the population.

Methods

The search was conducted using the main electronic databases from January 2020 to May 2021. The studies were identified with the use of a combination of: "emergency department" OR "A&E" OR "emergency service" OR "emergency unit" OR "maternity service" AND "COVID-19" OR "COVID-19 pandemic" OR "SARS-COV-2" and "admission" OR "hospitalization". All the studies that evaluated women going to obstetrics & gynecology emergency department (ED) during the COVID-19 pandemic for any reason were included.

Results

The pooled proportion (PP) of hospitalizations increased from 22.7 to 30.6% during the lockdown periods, in particular from 48.0 to 53.9% for delivery. The PP of pregnant women suffering from hypertensive disorders increased (2.6 vs 1.2%), as well as women having contractions (52 vs 43%) and rupture of membranes (12.0 vs 9.1%). Oppositely, the PP of women having pelvic pain (12.4 vs 14.4%), suspected ectopic pregnancy (1.8 vs 2.0), reduced fetal movements (3.0 vs 3.3%), vaginal bleeding both for obstetrical (11.7 vs 12.8%) and gynecological issues (7.4 vs 9.2%) slightly reduced.

Conclusion

During the lockdown, an increase in the proportion of hospitalizations for obstetrical and gynecological reasons has been registered, especially for labor symptoms and hypertensive disorders. (Author)

2023-03953

From pandemic to syndemic: microbiota, pregnancy, and environment at a crossroad. Giovannini N, Lattuada D, Danusso R, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 1, 2023, 2183738


Full URL: <https://doi.org/10.1080/14767058.2023.2183738>

Aim: SARS-CoV2 is the latest pandemic that have plagued the socio-health system as an epiphenomenon resulting from planetary resources abuse, crucial for biodiversity. The Anthropocene best defines the present epoch in which human activity irreversibly manipulates intricate and delicate geological and biological balances established over eons. The devastating ecological and socio-economic implications of COVID-19, underline the importance of updating the present pandemic framework to a syndemic. This paper stems from the need to suggest to scientists, doctors, and patients a mission that integrates responsibility from individual to collective health, from present to trans-generational, from human to the entire biotic network. Today's choices are crucial for the perspective on all levels: political, economic, and health as well as cultural.


Methods: Research on PubMed and other specific web-sites journal was performed on the topic "Microbiota", "Covid-19", "Pandemic", "Zoonosis", "SARS-CoV-2", "Environmental Pollutants", "Epigenetics", "Fetal Programming", "Human Extinction". Data collected were analysed for an integrative model of interconnection between environment, pregnancy, SARS-CoV-2 infection, and microbiota. Moreover, systematic literature review allowed to summarise in a table information about the worst pandemics that afflicted the human species recently.

Results: This paper offers a broad view of the current pandemic starting with pregnancy, the moment when a new life begins and the health trajectories of the unborn child are defined, which will inevitably have repercussions on his well-being. The fundamental role of the biodiversity-rich microbiota in avoiding the development of severe infectious diseases, is therefore highlighted. It is imperative to adjust the current reductionist paradigm based on mostly immediate symptom management towards a broader understanding of the spatial interconnection of ecological niches with human health and the impacts of today's choices on the future. Health and healthcare are elitist rather than egalitarian, therefore focusing on environmental health forces us to make a concerted and systemic effort that challenges political and economic barriers, which are biologically senseless. A healthy microbiota is essential to

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well-being, both by preventing chronic degenerative conditions, the infectiousness and pathogenicity of bacterial and viral diseases. SARS-CoV-2 should not be an exception. The human microbiota, forged by the first 1,000 days of life, is fundamental in shaping the health-disease trajectories, and by the everlasting exposome that is dramatically affected by the ecological disaster. Individual health is one world health whereas single and global well-being are interdependent in a space-time perspective.

Conclusions: Is it not a convenient reductionism not to consider the COVID-19 emergency as a bio-social epiphenomenon of a far more devastating and multi-faceted crisis whose common denominator is the global biotic network loss of which humans are still part? (Author)

2023-03830

Impact of COVID-19 during pregnancy on placental pathology, maternal and neonatal outcome – A cross-sectional study on anemic term pregnant women from a tertiary care hospital in southern India. Surekha MV, Suneetha N, Balakrishna N, et al (2023), *Frontiers in Global Women's Health* 21 March 2023, online

Full URL: <https://doi.org/10.3389/fendo.2023.1092104>

Background: SARS-CoV-2 infection during pregnancy may cause adverse maternal, neonatal and placental outcomes. While tissue hypoxia is often reported in COVID-19 patients, pregnant women with anemia are suspected to be more prone to placental hypoxia-related injuries.

Methods: This hospital-based cross-sectional study was conducted between August–November 2021, during COVID-19 second wave in India. Term pregnant women (N=212) admitted to hospital for delivery were enrolled consecutively. Since hospital admission mandated negative RT-PCR test for SARS-CoV-2 virus, none had active infection. Data on socio-demography, COVID-19 history, maternal, obstetric, and neonatal outcomes were recorded. Pre-delivery maternal and post-delivery cord blood samples were tested for hematological parameters and SARS-CoV-2 IgG. Placentae were studied for histology.

Results: Of 212 women, 122 (58%) were seropositive for SARS-CoV-2 IgG, but none reported COVID-19 history; 134 (63.2%) were anemic. In seropositive women, hemoglobin ($p=0.04$), total WBC ($p=0.009$), lymphocytes ($p=0.005$) and neutrophils ($p=0.02$) were significantly higher, while ferritin was high, but not significant and neutrophils to lymphocytes ($p=0.12$) and platelets to lymphocytes ratios ($p=0.03$) were lower. Neonatal outcomes were similar. All RBC parameters and serum ferritin were significantly lower in anemic mothers but not in cord blood, except RDW that was significantly higher in both, maternal ($p=0.007$) and cord ($p=0.008$) blood from seropositive anemic group compared to other groups. Placental histology showed significant increase in villous hypervascularity ($p=0.000$), dilated villous capillaries ($p=0.000$), and syncytiotrophoblasts ($p=0.02$) in seropositive group, typically suggesting placental hypoxia. Maternal anemia was not associated with any histological parameters. Univariate and multivariate logistic regression analyses of placental histopathological adverse outcomes showed strong association with SARS-CoV-2 seropositivity but not with maternal anemia. When adjusted for several covariates, including anemia, SARS-CoV-2 seropositivity emerged as independent risk factor for severe chorangiosis (AOR 8.74, 95% CI 3.51-21.76, $p<0.000$), dilated blood vessels (AOR 12.74, 95% CI 5.46-29.75, $p<0.000$), syncytiotrophoblasts (AOR 2.86, 95% CI 1.36-5.99, $p=0.005$) and villus agglutination (AOR 9.27, 95% CI 3.68-23.32, $p<0.000$).


Conclusion: Asymptomatic COVID-19 during pregnancy seemed to be associated with various abnormal placental histopathologic changes related to placental hypoxia independent of maternal anemia status. Our data supports an independent role of SARS-CoV-2 in causing placental hypoxia in pregnant women. (Author)

2023-03708


Risk for stillbirth among pregnant individuals with SARS-CoV-2 infection varied by gestational age. Lyu T, Liang C, Liu J, et al (2023), *American Journal of Obstetrics & Gynecology (AJOG)* 27 February 2023, online

Background

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Despite previous research findings on higher risks of stillbirth among pregnant individuals with SARS-CoV-2 infection, it is unclear whether the gestational timing of viral infection modulates this risk.

Objective

This study aimed to examine the association between timing of SARS-CoV-2 infection during pregnancy and risk of stillbirth.

Study Design

This retrospective cohort study used multilevel logistic regression analyses of nationwide electronic health records in the United States. Data were from 75 healthcare systems and institutes across 50 states. A total of 191,403 pregnancies of 190,738 individuals of reproductive age (15–49 years) who had childbirth between March 1, 2020 and May 31, 2021 were identified and included. The main outcome was stillbirth at ≥ 20 weeks of gestation. Exposures were the timing of SARS-CoV-2 infection: early pregnancy (< 20 weeks), midpregnancy (21–27 weeks), the third trimester (28–43 weeks), any time before delivery, and never infected (reference).

Results

We identified 2342 (1.3%) pregnancies with COVID-19 in early pregnancy, 2075 (1.2%) in midpregnancy, and 12,697 (6.9%) in the third trimester. After adjusting for maternal and clinical characteristics, increased odds of stillbirth were observed among pregnant individuals with SARS-CoV-2 infection only in early pregnancy (odds ratio, 1.75, 95% confidence interval, 1.25–2.46) and midpregnancy (odds ratio, 2.09; 95% confidence interval, 1.49–2.93), as opposed to pregnant individuals who were never infected. Older age, Black race, hypertension, acute respiratory distress syndrome or acute respiratory failure, and placental abruption were found to be consistently associated with stillbirth across different trimesters.

Conclusion

Increased risk of stillbirth was associated with COVID-19 only when pregnant individuals were infected during early and midpregnancy, and not at any time before the delivery or during the third trimester, suggesting the potential vulnerability of the fetus to SARS-CoV-2 infection in early pregnancy. Our findings underscore the importance of proactive COVID-19 prevention and timely medical intervention for individuals infected with SARS-CoV-2 during early and midpregnancy. (Author)

2023-03540

Neonatal outcomes and indirect consequences following maternal SARS-CoV-2 infection in pregnancy: a systematic review.

Sturrock S, Ali S, Gale C, et al (2023), *BMJ Open* vol 13, no 3, February 2023, 063052

Full URL: <http://dx.doi.org/10.1136/bmjopen-2022-063052>

Objectives To identify the association between maternal SARS-CoV-2 infection in pregnancy and individual neonatal morbidities and outcomes, particularly longer-term outcomes such as neurodevelopment.

Design Systematic review of outcomes of neonates born to pregnant women diagnosed with a SARS-CoV-2 infection at any stage during pregnancy, including asymptomatic women.


Data sources MEDLINE, Embase, Global Health, WHOLIS and LILACS databases, last searched on 28 July 2021.

Eligibility criteria Case–control and cohort studies published after 1 January 2020, including preprint articles were included. **Study outcomes** included neonatal mortality and morbidity, preterm birth, caesarean delivery, small for gestational age, admission to neonatal intensive care unit, level of respiratory support required, diagnosis of culture-positive sepsis, evidence of brain injury, necrotising enterocolitis, visual or hearing impairment, neurodevelopmental outcomes and feeding method. These were selected according to a core outcome set.


Data extraction and synthesis Data were extracted into Microsoft Excel by two researchers, with statistical analysis completed using IBM SPSS (Version 27). Risk of bias was assessed using a modified Newcastle–Ottawa Scale.

Results The search returned 3234 papers, from which 204 were included with a total of 45 646 infants born to mothers with SARS-CoV-2 infection during pregnancy across 36 countries. We found limited evidence of an increased risk of

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some neonatal morbidities, including respiratory disease. There was minimal evidence from low-income settings (1 study) and for neonatal outcomes following first trimester infection (17 studies). Neonatal mortality was very rare. Preterm birth, neonatal unit admission and small for gestational age status were more common in infants born following maternal SARS-CoV-2 infection in pregnancy in most larger studies.

Conclusions There are limited data on neonatal morbidity and mortality following maternal SARS-CoV-2 infection, particularly from low-income countries and following early pregnancy infections. Large, representative studies addressing these outcomes are needed to understand the consequences for babies born to women with SARS-CoV-2. (Author)

2023-03529

Pregnant Women's Concerns Regarding COVID-19 and Their Willingness to Be Vaccinated. Mitchell SL, Strassberg E, Rhoades C, et al (2023), *Journal of Women's Health* 10 March 2023, online

Objectives: We investigated coronavirus disease 2019 (COVID-19) opinions, experiences, and willingness to accept COVID-19 vaccination during pregnancy at two prenatal clinics in early 2021 and early 2022.

Materials and Methods: Paper questionnaires were distributed to pregnant women at prenatal care facilities in Virginia and Florida between January and April 2021 and January and April 2022. Questions regarding acceptance and opinions of the influenza vaccine served as a baseline to assess COVID-19 vaccine opinions. Associations between demographic parameters and vaccine opinions and acceptance were examined using Chi-square. A COVID-19 concern score was constructed by principal component analysis with differences between groups assessed by analysis of variance (ANOVA) and analysis of covariance (ANCOVA).

Results: Many participants (40.6%) reported that the COVID pandemic had affected their pregnancy. Main themes were problems with social networks, increased stress/anxiety, and being more cautious. In 2021, 19.5% reported they would accept a COVID-19 vaccination during their pregnancy, which increased to 45.8% in 2022. Vaccine hesitancy did not vary by race or between sites, but educational attainment was significant ($p < 0.001$). Women with a higher concern score were more likely to report they would accept a COVID-19 vaccine. Women who would accept COVID vaccination had a positive opinion regarding the influenza vaccine. Main themes for refusing COVID-19 vaccination were concerns about side effects, lack of research/data, and mistrust of vaccines.

Conclusions: The proportion of women willing to accept COVID-19 vaccination increased but remained below 50%. Willingness to accept vaccination during pregnancy was associated with higher education, higher concern about COVID-19, and a positive opinion of the influenza vaccine. (Author)

2023-03508

Pregnancy during the pandemic: the impact of COVID-19-related stress on risk for prenatal depression. King LS, Feddoes DE, Kirshenbaum JS, et al (2023), *Psychological Medicine* vol 53, no 1, January 2023, pp 170-180

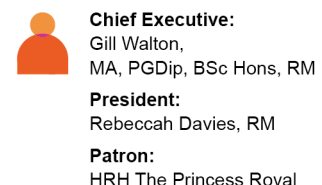
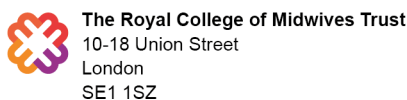
Background

Pregnant women may be especially susceptible to negative events (i.e. adversity) related to the coronavirus disease 2019 (COVID-19) pandemic and negative affective responses to these events (i.e. stress). We examined the latent structure of stress and adversity related to the COVID-19 pandemic among pregnant women, potential antecedents of COVID-19-related stress and adversity in this population, and associations with prenatal depressive symptoms.

Method

We surveyed 725 pregnant women residing in the San Francisco Bay Area in March–May 2020, 343 of whom provided addresses that were geocoded and matched by census tract to measures of community-level risk. We compared their self-reported depressive symptoms to women matched on demographic factors and history of mental health difficulties who were pregnant prior to the pandemic.

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Results

Women who were pregnant during the pandemic were nearly twice as likely to have possible depression than were matched women who were pregnant prior to the pandemic. Individual- and community-level factors tied to socioeconomic inequality were associated with latent factors of COVID-19-related stress and adversity. Beyond objective adversity, subjective stress responses were strongly associated with depressive symptoms during the pandemic.

Conclusions

Highlighting the role of subjective responses in vulnerability to prenatal depression and factors that influence susceptibility to COVID-19-related stress, these findings inform the allocation of resources to support recovery from this pandemic and future disease outbreaks. In addition to policies that mitigate disruptions to the environment due to the pandemic, treatments that focus on cognitions about the self and the environment may help to alleviate depressive symptoms in pregnant women.

(Author)

2023-03456

Fetal neurosonography in pregnant women recovering from COVID-19 disease. Akgün Aktas B, Kaya E, Laleli Koc B, et al (2023), International Journal of Gynecology & Obstetrics 23 February 2023, online

Objective

To investigate the effect of severe acute respiratory virus 2 (SARS-CoV-2) on fetal neurodevelopment in pregnant women.

Methods

This prospective cohort study included 54 pregnant women at least 4 weeks after the SARS-CoV-2 infection and 58 controls. In the third trimester, the depths of the fetal insula, Sylvian, parieto-occipital, and calcarine fissures, the length of cavum septum pellucidum (CSP), and the thickness of the corpus callosum (CC) were measured. Sylvian fissure operculization and cortical development were graded. The correlation analysis between fetal cortical development and Sylvian fissure operculization was performed with the Pearson test.

Results

The calcarine fissure depth and CC thickness were reduced in the study group ($P < 0.001$, $P = 0.004$). The fetal CSP length and ratio were increased in the study group ($P = 0.016$, $P = 0.039$). Approximately half of the study group fetuses had grade 4 or less Sylvian fissure operculization. The study group had a significantly higher rate of fetuses with grade 2 (31.5% vs. 13.8%) and significantly lower rate of fetuses with grade 4 cortical development (14.8% vs. 31.0%), compared with the controls. There was a moderate negative significant correlation between pregnant women recovering from COVID-19 and fetal cortical development and Sylvian fissure operculization ($P = 0.001$).

Conclusion

This is the first study to investigate fetal cortical development in pregnant women recovering from COVID-19. The results indicate that COVID-19 disease may affect fetal neurodevelopment. (Author)

2023-03441

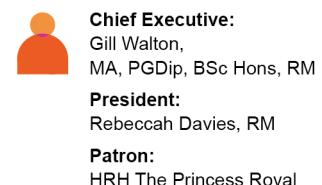
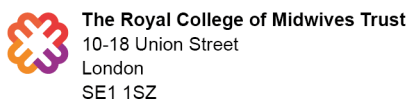
Lessons from digital technology-enabled health interventions implemented during the coronavirus pandemic to improve maternal and birth outcomes: a global scoping review. Moise IK, Ivanova N, Wilson C, et al (2023), BMC Pregnancy and Childbirth vol 23, no 195, March 2023

Full URL: <https://doi.org/10.1186/s12884-023-05454-3>

Background

Timely access to essential obstetric and gynecologic healthcare is an effective method for improving maternal and neonatal outcomes; however, the COVID-19 pandemic impacted pregnancy care globally. In this global scoping

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review, we select and investigate peer-reviewed empirical studies related to mHealth and telehealth implemented during the pandemic to support pregnancy care and to improve birth outcomes.

Methods

We searched MEDLINE and PubMed, Scopus, CINAHL and Web of Science for this Review because they include peer-reviewed literature in the disciplines of behavioral sciences, medicine, clinical sciences, health-care systems, and psychology. Because our investigative searches revealed that there is considerable 'grey literature' in this area; we did not restrict our review to any study design, methods, or place of publication. In this Review, peer-reviewed preprints were comparable to published peer-reviewed articles, with relevant articles screened accordingly.

Results

The search identified 1851 peer reviewed articles, and after removal of duplicates, using inclusion and exclusion criteria, only 22 studies were eligible for inclusion in the review published from January 2020 to May 2022. mHealth interventions accounted for 72.7% (16 of 22 studies) and only 27.3% (6 of 22 studies) were telehealth studies. There were only 3 example studies that integrated digital technologies into healthcare systems and only 3 studies that developed and evaluated the feasibility of mobile apps. Experimental studies accounted 68.8% of mHealth studies and only 33.3% studies of telehealth studies. Key functionalities of the pregnancy apps and telehealth platforms focused on mental and physical wellness, health promotion, patient tracking, health education, and parenting support. Implemented interventions ranged from breastfeeding and selfcare to behavioral health. Facilitators of uptake included perceived benefits, user satisfaction and convenience. Mobile apps and short messaging services were the primary technologies employed in the implemented mHealth interventions.

Conclusion

Although our Review emphasizes a lack of studies on mHealth interventions and data from pregnant women during the COVID-19 crisis, the review shows that implementation of digital health interventions during emergencies are inevitable given their potential for supporting pregnancy care. There is also a need for more randomized clinical trials and longitudinal studies to better understand the effectiveness and feasibility of implementing such interventions during disease outbreaks and emergencies. (Author)

2023-03427

Exploring the antenatal care challenges faced during the COVID-19 pandemic in rural areas of Indonesia: a qualitative study.

Anggraeni MD, Setiyani R, Triyanto E, et al (2023), BMC Pregnancy and Childbirth vol 23, no 179, March 2023

Full URL: <https://doi.org/10.1186/s12884-023-05495-8>

Introduction

The COVID-19 pandemic affected almost all healthcare services in Indonesia, including antenatal care (ANC). Pregnant women were a vulnerable group during the pandemic since the Indonesian government's policies at the time influenced the delivery of ANC services, particularly in rural areas. Investigating the ANC challenges faced during the pandemic from the perspectives of pregnant women and healthcare providers is important for our understanding of ANC provision. This study, therefore explores barriers to ANC appointments faced during the COVID-19 pandemic in rural areas of Indonesia from the perspectives of pregnant women and health care providers.

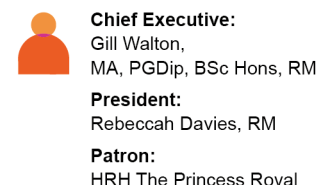
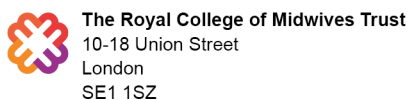
Methods

This was a qualitative exploratory descriptive study involving 31 participants, consisting of 25 pregnant women and six healthcare providers who were selected via a purposive sampling method. Thaddeus and Maine's Three Delays Model was used as the theoretical framework. Data were collected between March and August 2021, through two focus group discussions (FGDs), ten in-depth interviews, and field notes. Data were analyzed using a thematic analysis method.

Results

Three themes describing barriers to ANC during the COVID-19 pandemic in rural areas of Indonesia emerged from this

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study. Those themes were: (1) The fear of being infected with COVID-19, related to anxiety, perceived vulnerability, and the desire to protect oneself and loved ones; (2) The stay-at-home policy, related to transport barriers and restricted social activity; and (3) Re-designed ANC services, related to ANC adjustments, high-risk pregnancies, insufficient information, and adherence to COVID-19 preventive behaviors.

Conclusion

Based on the Three Delays Model, several challenges to carrying out ANC during the COVID-19 pandemic in rural areas of Indonesia were identified. These findings demonstrate the need to formulate and implement ANC packages to facilitate pregnant women's access to health care services. (Author)

2023-03346

Did everyone change their childbirth plans due to the COVID-19 pandemic? A web-based cross-sectional survey of Polish pregnant women. Feduniw S, Kajdy A, Sys D, et al (2023), *Journal of Advanced Nursing* 9 March 2023, online

Background and Aim

With the worldwide outbreak of coronavirus, a significant impact has been observed on the functioning of healthcare systems and the process of childbirth. Women probably did not even have a choice to adjust their plans accordingly to the current situation. The aim of the study was to examine how the outbreak of the SARS CoV-2 pandemic state affected the decisions of pregnant women about their childbirth plan.

Design

This cross-sectional study was performed using a web-based survey published on social media in Poland.

Methods

The cross-sectional study was performed using web-based questionnaires. The study group included Polish women who changed their childbirth plans, compared to a group of women not sure about delivery plan change and those whose plans had not changed. The data were collected from 4 March 2020 to 2 May 2020, when the first rising count of new infections was observed in Poland and worldwide. Statistical analysis was performed using STATISTICA Software, Inc., 13.3 (2020).

Results

Of 969 women who completed the questionnaire and were enrolled into the study, 57.2% had not changed their childbirth plans (group I), 28.4% had changed their plans (group II), and 14.4% of respondents answered "not sure" to this question (group III). The majority of women changed their birth plans during the pandemic because of the potential absence of their partner during labour (56% of women who had changed their plans and 48% of those whose answer was "I am not sure", $p < .001$). Another reason was the fear of separation from the child after delivery (33% of women who had changed their plans and 30% of those whose answer was "I am not sure", $p < .001$).

Conclusion

Restrictions due to the COVID-19 outbreak have influenced the childbirth plans of pregnant women. The changes were independent of women's vision of birth before the pandemic.

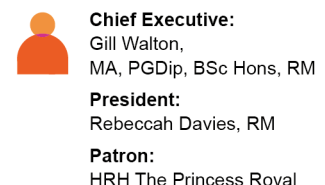
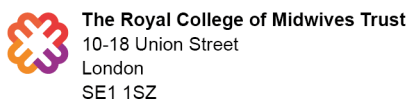
Impact

The restriction on births with accompanying person and the risk of separation from their infant after childbirth significantly influenced the decision-making process. As a result, some women were more likely to opt for a home birth with or even without medical assistance.

Patient or Public Contribution

The study participants were women who were pregnant at the time of completing the questionnaire, were over 18 years old and spoke Polish. (Author)

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2023-03280

Changes in Pregnancy-Related Mortality Associated With the Coronavirus Disease 2019 (COVID-19) Pandemic in the United States. Thoma ME, Declercq ER (2023), *Obstetrics & Gynecology* 16 March 2023, online

Full URL: <https://doi.org/10.1097/AOG.00000000000005182>

OBJECTIVE:

To examine pregnancy-related mortality ratios before (January 2019–March 2020) and during (April 2020–December 2020 and 2021) the coronavirus disease 2019 (COVID-19) pandemic overall, by race and ethnicity, and by rural–urban classifications using vital records data.

METHODS:

Mortality and natality data (2019–2021) were obtained from the Centers for Disease Control and Prevention’s WONDER database to estimate pregnancy-related mortality ratios, which correspond to any death during pregnancy or up to 1 year after the end of a pregnancy from causes related to the pregnancy per 100,000 live births. Pregnancy-related mortality ratios were determined from International Classification of Diseases, Tenth Revision codes A34, O00–O96, and O98–O99. Overall pregnancy-related mortality ratios were partitioned by whether COVID-19 was listed as a contributory cause, and quarterly estimates were compared between 2019 and 2021. Pregnancy-related mortality ratios were compared by race and ethnicity and rural–urban residence before (2019–March 2020) and during (April 2020–December 2020 and 2021) the COVID-19 pandemic.

RESULTS:

Pregnancy-related mortality was significantly higher in 2021 (45.5/100,000 live births) compared with during the pandemic in 2020 (36.7/100,000 live births) and before the pandemic (29.0/100,000 live births). Pregnancy-related mortality ratios increased across all race and ethnicity and rural–urban residence categories in 2021. The largest increase occurred among American Indian/Alaska Native people during 2021 compared with April–December of 2020 (pregnancy-related mortality ratio 160.8 vs 79.0/100,000 live births, 104% relative change, $P=.017$). Medium–small metropolitan (52.4 vs 37.7/100,000 live births, 39.0% relative change, $P<.001$) and rural (56.2 vs 46.5/100,000 live births, 21.0% relative change, $P=.05$) areas had a larger increase in 2021 compared with April–December 2020 compared with large urban areas (39.1 vs 33.7/100,000 live births, 15.9% relative change, $P=.009$).


CONCLUSION:

Pregnancy-related mortality ratios increased more rapidly in 2021 than in 2020, consistent with rising rates of COVID-19–associated mortality among women of reproductive age. This further exacerbated racial and ethnic disparities, especially among American Indian/Alaska Native birthing people.


In 2020, the United States reported a pandemic-specific rate of 25.1 maternal deaths and 11.6 late maternal deaths per 100,000 live births, a 33% and 41% relative increase over prepandemic years, respectively.¹ Studies indicate that unvaccinated pregnant people are more likely to develop severe coronavirus disease 2019 (COVID-19) illness.^{2–4} During the early period of the COVID-19 pandemic, the health of birthing and postpartum people may also have been indirectly affected, because this period of transition resulted in changes in prenatal care delivery and utilization,^{5,6} access to a birthing partner at delivery,^{7,8} and general isolation from traditional sources of postpartum health care and social support.^{9,10}

However, questions remained regarding the continued effect of the pandemic on pregnant and postpartum people in 2021, when vaccines became widely available.^{11,12} The latter part of 2021 also saw the emergence of more transmissible severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) variants.¹¹ Using 2019–2021 mortality data, we compared pregnancy-related mortality ratios between 2019 and 2021. We further compared detailed race and ethnicity and rural–urban residence categories before (January 2019–March 2020) and during (April 2020–December 2020 and 2021) the COVID-19 pandemic. (Author)

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2023-03278

Nirmatrelvir–ritonavir (Paxlovid) for Mild Coronavirus Disease 2019 (COVID-19) in Pregnancy and Lactation. Lin C, Cassidy AG, Li L, et al (2023), *Obstetrics & Gynecology* 16 March 2023, online

Full URL: <https://doi.org/10.1097/AOG.0000000000005152>

Nirmatrelvir–ritonavir (Paxlovid) is recommended to reduce the risk of hospitalization from coronavirus disease 2019 (COVID-19) in pregnancy. Data on use in pregnancy, including prescribing patterns and patient experience (adverse effects, incidence of rebound), are limited. We performed a cross-sectional study in which we surveyed a cohort of vaccinated pregnant or lactating individuals with breakthrough COVID-19. Of 35 pregnant respondents, 51.4% were prescribed and 34.3% took nirmatrelvir–ritonavir; of these, 91.7% experienced dysgeusia and 50.0% had rebound (50.0% positive test result, 33.3% return of symptoms). Three of five lactating respondents were prescribed and two took nirmatrelvir–ritonavir. There were no significant adverse outcomes. Unknown risk was the most common reason for declining nirmatrelvir–ritonavir. More research is needed to establish the safety of nirmatrelvir–ritonavir in pregnancy and lactation, to improve public health messaging, and to increase uptake of this treatment.

Nirmatrelvir–ritonavir (Paxlovid) reduces the risk of hospitalization and death resulting from coronavirus disease 2019 (COVID-19) in populations at high risk,¹ but data in pregnancy and lactation are lacking. Leading professional societies support its use in pregnancy.^{2,3} Patient experience, such as adverse effects and incidence of rebound symptoms, has not been reported in these groups.

We surveyed a vaccinated cohort of pregnant or lactating individuals about their experience with nirmatrelvir–ritonavir for COVID-19. We aimed to assess the patient clinical experience after treatment, including the rate of rebound symptoms.
(Author)

2023-03174

Clinical outcome in newborns of perinatally COVID-19 infected women. Syridou G, Kapsabeli E, Mavridi A, et al (2023), *Journal of Maternal-Fetal and Neonatal Medicine* vol 36, no 1, 2023, 2183752

Full URL: <https://doi.org/10.1080/14767058.2023.2183752>

Objective

Maternal COVID-19 infection during pregnancy has been associated with adverse neonatal outcomes, such as prematurity and neonatal morbidity. Those adverse events are mainly attributed to maternal factors, rather than to the neonatal infection itself. Our aim is to add our experience and present the neonatal outcome of neonates born to mothers with perinatal SARS-CoV-2 infection.

Methods

This is a prospective case-control study with data from two Academic Tertiary Referral Hospitals in Greece. Electronic records of all births from SARS-CoV-2 positive mothers between March 2020 and April 2021 were analyzed. Demographic data, the severity of maternal COVID-19 disease, gestational age (GA), mode of delivery, birth weight (BW), need for resuscitation and/or supplemental oxygen and duration of hospitalization were recorded. A comparison with 2:1 matched neonates according to sex, GA, and BW born to SARS-CoV-2 negative mothers during the same period was performed. Chi-square and Mann–Whitney U test were used for categorical and non-categorical variables respectively.

Results

A total of eighty-one neonates were born to SARS-CoV-2 positive mothers during this period. Forty-three percent of pregnant mothers were asymptomatic. Median GA and median BW were 38 weeks (Interquartile range (IQR): 36–39 weeks) and 2940 gr (IQR: 2560–3340 gr) respectively. Prematurity was observed in 24.7% of the cases. Only 2 (2.4%) neonates were PCR positive after delivery. SARS-CoV-2 positive women were more likely to undergo Cesarean section. APGAR score at 5 min and the need for resuscitation did not differ between the two groups. In comparison with the control group, neonates born to SARS-CoV-2 positive mothers presented with gastrointestinal symptoms (53.6% vs 5.1%, p-value= <.001) and hospitalization was longer, mostly due to maternal factors.

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Conclusion

In our study neonatal positivity was limited and no vertical transmission was noted. Neonatal outcomes were comparable to the control group. However, the presence of gastrointestinal symptoms in neonates born to PCR-positive women compared to controls needs further investigation. (Author)

2023-03160

Covid-19: US maternal mortality rose during pandemic. Tanne JH (2023), British Medical Journal 20 March 2023, online

Two studies show that maternal mortality in the US dramatically increased during the covid-19 pandemic and was especially severe among racial and ethnic minorities and in rural areas and small cities. (Author)

2023-03149

Anxiety, stress, and depression in Australian pregnant women during the COVID-19 pandemic: A cross sectional study. Davis D, Sheehy A, Nightingale H, et al (2023), Midwifery vol 119, April 2023, 103619

Background

The COVID-19 pandemic necessitated rapid responses by health services to suppress transmission of the virus.

Aim

This study aimed to investigate predictors of anxiety, stress and depression in Australian pregnant women during the COVID-19 pandemic including continuity of carer and the role of social support.

Methods

Women aged 18 years and over in their third trimester of pregnancy were invited to complete an online survey between July 2020 and January 2021. The survey included validated tools for anxiety, stress, and depression. Regression modelling was used to identify associations between a range of factors including continuity of carer, and mental health measures.

Findings

1668 women completed the survey. One quarter screened positive for depression, 19% for moderate or higher range anxiety, and 15.5% for stress. The most significant contribution to higher anxiety, stress, and depression scores was a pre-existing mental health condition, followed by financial strain and a current complex pregnancy. Protective factors included age, social support, and parity.

Discussion

Maternity care strategies to reduce COVID-19 transmission restricted women's access to their customary pregnancy supports and increased their psychological morbidity.

Conclusion

Factors associated with anxiety, stress and depression scores during the COVID-19 pandemic were identified. Maternity care during the pandemic compromised pregnant women's support systems. (Author)

2023-03134

Social support and mental health in maternity: Effects of the COVID-19 pandemic. Tania AT, Natalia AR, Verónica VB, et al (2023), Midwifery vol 118, March 2023, 103580

Full URL: <https://doi.org/10.1016/j.midw.2022.103580>

Background

Motherhood involves a process of adaptation and the perception of social support influences mental health, breastfeeding or newborn care among others. The COVID-19 pandemic has generated a distancing from family, friends

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and health professionals.

Methods

Quantitative, descriptive, cross-sectional study. The present study aims to describe and analyze the social support and mental health of mothers during this period.

Methods

The sample were 179 women with children older than 6 months. The questionnaires used were the DUKE-UNC-11 and GHQ-12. Data analysis was carried out with Spearman's Rho and Mann Whitney U test.

Results

75.8% of the sample perceived normal social support during the pandemic. Within the dimensions of social support, women reported perceiving satisfactory confidential support, while affective support was perceived as low. Correlational analysis reported a significant relationship between mental health, confidential support and affective support. Group comparison noted greater confidential support in primiparous.

Conclusions

The sample is sensitive to changes originated by COVID-19 constraints influencing perceived social support and mental health. Affective and confidential support as well as the involvement of health professionals and the environment are fundamental for mental health during the first year of maternity.

Relevance to clinical practice

Mothers' mental health is sensitive and vulnerable to social changes, in this case, those that occurred as a consequence of the COVID-19 outbreak. (Author)

2023-03112

First do no harm overlooked: Analysis of COVID-19 clinical guidance for maternal and newborn care from 101 countries shows breastfeeding widely undermined. Gribble K, Cashin J, Marinelli K, et al (2023), *Frontiers in Global Women's Health* 17 January 2023, online

Full URL: <https://doi.org/10.3389/fnut.2022.1049610>


Background: In March 2020, the World Health Organization (WHO) published clinical guidance for the care of newborns of mothers with COVID-19. Weighing the available evidence on SARS-CoV-2 infection against the well-established harms of maternal-infant separation, the WHO recommended maternal-infant proximity and breastfeeding even in the presence of maternal infection. Since then, the WHO's approach has been validated by further research. However, early in the pandemic there was poor global alignment with the WHO recommendations.

Methods: We assessed guidance documents collected in November and December 2020 from 101 countries and two regional agencies on the care of newborns of mothers with COVID-19 for alignment with the WHO recommendations.


Recommendations considered were: (1) skin-to-skin contact; (2) early initiation of breastfeeding; (3) rooming-in; (4) direct breastfeeding; (5) provision of expressed breastmilk; (6) provision of donor human milk; (7) wet nursing; (8) provision of breastmilk substitutes; (9) relactation; (10) psychological support for separated mothers; and (11) psychological support for separated infants.

Results: In less than one-quarter of country guidance were the three key breastfeeding facilitation practices of skin-to-skin contact, rooming-in, and direct breastfeeding recommended. Donor human milk was recommended in under one-quarter of guidance. Psychological support for mothers separated from their infants was recommended in 38%. Few countries recommended relactation, wet nursing, or psychological support for infants separated from mothers. In three-quarters of country guidance, expressed breastmilk for infants unable to directly breastfeed was recommended. The WHO and the United Kingdom's Royal College of Obstetricians and Gynecologists were each cited by half of country guidance documents with the United States Centers for Disease Control and Prevention directly or

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indirectly cited by 40%.

Conclusion: Despite the WHO recommendations, many COVID-19 maternal and newborn care guidelines failed to recommend skin-to-skin contact, rooming-in, and breastfeeding as the standard of care. Irregular guidance updates and the discordant, but influential, guidance from the United States Centers for Disease Control may have been contributory. It appeared that once recommendations were made for separation or against breastfeeding they were difficult to reverse. In the absence of quality evidence on necessity, recommendations against breastfeeding should not be made in disease epidemics. (Author) [Erratum: *Frontiers in Global Women's Health*, 2 March 2023, Fig 6. <https://doi.org/10.3389/fnut.2023.1166221>]

2023-03086

Severe COVID-19 during pregnancy in Sweden, Norway, and Denmark. Örtqvist AK, Magnus MC, Aabakke AJM, et al (2023), *Acta Obstetrica et Gynecologica Scandinavica* 17 March 2023, online

Full URL: <https://doi.org/10.1111/aogs.14552>

Introduction

Pregnancy is a risk factor for severe coronavirus disease 2019 (COVID-19) and adverse pregnancy outcomes. We aimed to explore maternal characteristics, pregnancy outcomes, vaccination status, and virus variants among pregnant women admitted to intensive care units (ICU) with severe COVID-19.

Material and methods

We identified pregnant women admitted to ICU in Sweden (n = 96), Norway (n = 31), and Denmark (n = 16) because of severe COVID-19, from national registers and clinical databases between March 2020 and February 2022 (Denmark), August 2022 (Sweden), or December 2022 (Norway). Their background characteristics, pregnancy outcome, and vaccination status were compared with all birthing women and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) test-positive pregnant women during the same time period. We calculated the number admitted to ICU per 10 000 birthing and per 1000 SARS-CoV-2 test-positive women during the Index, Alpha, Delta, and Omicron periods.

Results

Women admitted to ICU had a higher mean body mass index, were more often of non-Scandinavian origin, had on average lower education and income levels, had a higher proportion of chronic and pregnancy-related conditions, delivered preterm, had neonates with low Apgar scores, and had more infants admitted to neonatal care, compared with all birthing and test-positive pregnant women. Of those admitted to ICU, only 7% had been vaccinated before admission. Overall, the highest proportion of women admitted to ICU per birthing was during the Delta period (4.1 per 10 000 birthing women). In Norway, the highest proportion admitted to ICU per test-positive pregnant women was during the Delta period (17.8 per 1000 test-positive), whereas the highest proportion of admitted per test-positive in Sweden and Denmark was seen during the Index period (15.4 and 8.9 per 1000 test-positive, respectively).

Conclusions


Admission to ICU because of COVID-19 in pregnancy was a rare event in the Scandinavian countries, but women who were unvaccinated, of non-Scandinavian origin, and with lower socio-economic status were at higher risk of admission to ICU. In addition, women admitted to ICU for COVID-19 had higher risk of adverse pregnancy outcomes. (Author)

2023-03020


Early Discharge of Newborns Born to Mothers with COVID-19: A Possible Safe Strategy. Costa S, Coppola M, Fattore S, et al (2023), *American Journal of Perinatology* 24 January 2023, online

Objective In this study, we evaluated the safety of early discharge (ED) of newborns born to coronavirus disease 2019 (COVID-19)-positive mothers.

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Study Design All ED newborns from the postpartum wards of the Fondazione Policlinico Gemelli between January 1, 2022, and February 28, 2022, were retrospectively analyzed. Newborns from mothers with COVID-19 and those from uninfected mothers were considered. The primary outcome was to evaluate whether the rate of the composite outcome, which was the percentage of rehospitalization/access in emergency room (RH/ER) within the first week from discharge, differed between neonates born to mother with COVID-19 (COVID-19 group) and those born to uninfected mothers (no COVID-19 group). The secondary outcomes were to assess the quality of feeding and number of outpatient visits in the follow-up clinic between the two cohorts of patients.

Results One hundred and thirty-four newborns in the no COVID-19 group and 26 in the COVID-19 group were analyzed. The rate of RH/ER in the no COVID-19 group was of 6 over 134 newborns (0.045, 95% confidence interval [CI]: 0.017–0.095), while in COVID-19 group, it was of 2 over 26 newborns (0.077), which does not differ from the expected rate (1.17 over 26 newborns, 0.045, 95% CI: 0.017–0.095).

Conclusion ED for newborns from mothers with COVID-19 could be an actionable safe strategy. (Author)

2023-03000

Patterns of Prenatal Care Delivery and Obstetric Outcomes before and during the COVID-19 Pandemic. Kern-Goldberger AR, Sheils NE, Ventura MEM, et al (2023), American Journal of Perinatology vol 40, no 6, April 2023, pp 582-588

Objective Health care providers and health systems confronted new challenges to deliver timely, high-quality prenatal care during the coronavirus disease 2019 (COVID-19) pandemic as the pandemic raised concerns that care would be delayed or substantively changed. This study describes trends in prenatal care delivery in 2020 compared with 2018 to 2019 in a large, commercially insured population and investigates changes in obstetric care processes and outcomes.

Study Design This retrospective cohort study uses de-identified administrative claims for commercially insured patients. Patients whose entire pregnancy took place from March 1 to December 31 in years 2018, 2019, and 2020 were included. Trends in prenatal care, including in-person, virtual, and emergency department visits, were evaluated, as were prenatal ultrasounds. The primary outcome was severe maternal morbidity (SMM). Secondary outcomes included preterm birth and stillbirth. To determine whether COVID-19 pandemic-related changes in prenatal care had an impact on maternal outcomes, we compared the outcome rates during the pandemic period in 2020 to equivalent periods in 2018 and 2019.

Results In total, 35,112 patients were included in the study. There was a significant increase in the prevalence of telehealth visits, from 1.1 to 1.2% prior to the pandemic to 17.2% in 2020, as well as a significant decrease in patients who had at least one emergency department visit during 2020. Overall prenatal care and ultrasound utilization were unchanged. The rate of SMM across this period was stable (2.3–2.8%) with a statistically significant decrease in the preterm birth rate in 2020 (7.4%) compared with previous years (8.2–8.6%; $p < 0.05$) and an unchanged stillbirth rate was observed.

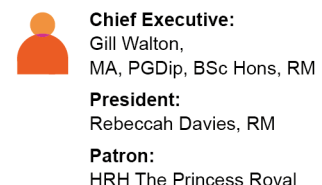
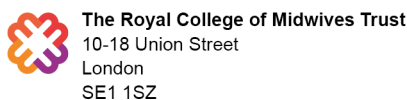
Conclusion At a time when many fields of health care were reshaped during the pandemic, these observations reveal considerable resiliency in both the processes and outcomes of obstetric care. (Author)

2023-02976

Bilious Emesis and Failure to Pass Meconium in the Nursery: A Case Study. Bencze JM, Crotteau JA, Urbina TM, et al (2023), Neonatal Network: the Journal of Neonatal Nursing vol 42, no 1, January 2023, pp 31-36

We present a case of an infant born to a mother with COVID-19, who at 24 hours of life was treated with a glycerin suppository for failure to pass meconium and went on to develop bilious emesis and abdominal distention as feeding continued over the next several hours. After a barium enema identified the distal obstruction, the pediatric surgical

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team used rectal irrigation to remove a large meconium plug, which mimicked the appearance of the descending colon on plain film, in a case of small left colon syndrome. Although intestinal obstruction in the newborn is rare, it is imperative that it is promptly diagnosed and treated appropriately to avoid negative outcomes; which, even in perhaps the mildest form of functional distal obstruction, meconium plug syndrome, can lead to an impressive clinical illness with risk of intestinal perforation and subsequent meconium peritonitis if the obstruction is not relieved. (Author)

2023-02971

Association of disrespectful care after childbirth and COVID-19 exposure with postpartum depression symptoms- a longitudinal cohort study in Nepal. Kc A, Acharya A, Bhattarai P, et al (2023), BMC Pregnancy and Childbirth vol 23, no 145, March 2023

Full URL: <https://doi.org/10.1186/s12884-023-05457-0>

Background

The COVID-19 pandemic has led to unprecedented mental stress to women after childbirth. In this study, we assessed the association of disrespectful care after childbirth and COVID-19 exposure before/during labour with postpartum depression symptoms assessed at 7 and 45 days in Nepal.

Methods

A longitudinal cohort study was conducted in 9 hospitals of Nepal among 898 women. The independent data collection system was established in each hospital to collection information on disrespectful care after birth via observation, exposure to COVID-19 infection before/during labour and other socio-demographic via interview. The information on depressive symptoms at 7 and 45 days was collected using the validated Edinburg Postnatal Depression Scale (EPDS) tool. Multi-level regression was performed to assess the association of disrespectful care after birth and COVID-19 exposure with postpartum depression.

Result

In the study, 16.5% were exposed to COVID-19 before/during labour and 41.8% of them received disrespectful care after childbirth. At 7 and 45 days postpartum, 21.3% and 22.4% of women reported depressive symptoms respectively. In the multi-level analysis, at the 7th postpartum day, women who had disrespectful care and no COVID-19 exposure still had 1.78 higher odds of having depressive symptom (aOR, 1.78; 95% CI; 1.16, 2.72). In the multi-level analysis, at 45th postpartum day, women who had disrespectful care and no COVID-19 exposure had 1.37 higher odds of having depressive symptoms (aOR, 1.37; 95% CI; 0.82, 2.30), but not statistically significant.

Conclusion

Disrespectful care after childbirth was strongly associated with postpartum depression symptoms irrespective of COVID-19 exposure during pregnancy. Caregivers, even during the global pandemic, should continue to focus their attention for immediate breast feeding and skin-to-skin contact, as this might reduce the risk for depressive symptoms postpartum. (Author)

2023-02964

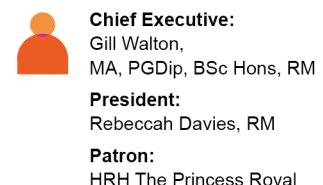
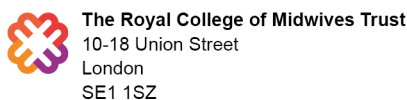
Adopting international recommendations to design a model for maternal health service to cope with pandemic disruption for Indonesian primary care. Ekawati FM, Muchlis M, Tuteja A (2023), BMC Pregnancy and Childbirth vol 23, no 132, March 2023

Full URL: <https://doi.org/10.1186/s12884-023-05433-8>

Background

Limited evidence is available as the reference for the model of care on providing maternity care in low-and-middle-income countries (LMICs) to cope with pandemic disruption. This study aimed to adopt international recommendations to develop the model of care with the context of Indonesian settings.

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Methods

Four codesign workshops and substitute interviews with stakeholders, covering the (i) exploration of service provision during the pandemic, (ii) adoption of international recommendations, (iii) designing and (iv) finalising model of care for maternal health services in primary care under the COVID-19 pandemic. The study took place in Yogyakarta Province Indonesia from July–November 2021. The participants were general practitioners, midwives, nurses, patients, and obstetricians. The data were analysed thematically.

Results

Twenty-three participants were recruited. As many as 23, 16, 14 and 16 participants participated in the first to fourth codesign workshops or substitute interviews. Key recommendations agreed upon in the workshop were health screening, maintaining antenatal-postnatal breastfeeding care, limiting visitors, using telemedicine, and creating a multidisciplinary team to provide the care. A model of care for improving maternal service was also agreed and received suggestions from the participants. Identified barriers to the recommendation implementation, such as the available clinical resources and negotiating providers' authority in practice.

Conclusion

Recommendations and the model of care for improving maternity care in Indonesia are beneficial to be implemented in Indonesian primary care during the COVID-19 pandemic. Further research includes pilot studies to explore the acceptability of the model and recommendation implementation in practice. (Author)

2023-02918

Is it possible to reduce the rate of vertical transmission and improve perinatal outcomes by inclusion of remdesivir in treatment regimen of pregnant women with COVID-19? Tavakoli N, Chaichian S, Sadraei JS, et al (2023), BMC Pregnancy and Childbirth vol 23, no 110, February 2023

Full URL: <https://doi.org/10.1186/s12884-023-05405-y>

Background

Coronavirus disease 2019 (COVID-19) is currently one of the world's most critical health issues so far. Given the importance of appropriate treatment in pregnancy and the controversies about Remdesivir effectiveness and complications, the present study aimed to evaluate the impact of Remdesivir on maternal, fetal, and perinatal outcomes in pregnant women with COVID-19 diseases.

Methods

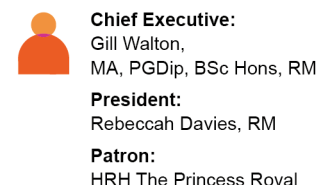
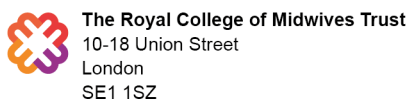
A total of 189 pregnant women with positive polymerase chain reaction (PCR) results for SARS-COV-2, and oxygen saturation [SpO₂] of < 95% were admitted to 12 hospitals affiliated with the Iran University of Medical Sciences from March 1st, 2020 to June 7th, 2021, namely the first four COVID-19 Picks in Iran. They were enrolled in this retrospective cohort study by census method and categorized into case and control groups, based on the inclusion of Remdesivir in their treatment protocol. Demographics, clinical outcomes, and pregnancy-related complications of the mothers and the neonates were compared between the two study groups.

Results

A comparison of 54 mothers in the case and 135 in the control group showed no demographic and clinical characteristics difference. Neonates whose mothers did not receive Remdesivir had a higher rate of positive PCR (10.2%), compared to the Remdesivir group (1.9%) with a relative risk of 0.91 reported for Remdesivir (95% CI: 0.85–0.98, P = 0.04); besides, Remdesivir resulted in fewer neonatal intensive care unit admission rates in mild/moderate COVID-19 group (RR = 0.32, 95% CI: 0.105–1.02, P = 0.03). Although neonatal death between the two groups was not statistically significant, from the clinical point seems important; 1(1.9%) in the case vs. 9(7.2%) in the control group. Interestingly LOS (Length of Stay) in the hospital was longer in the case group (median of 7 vs. 3 days; P < 0.0001).

Conclusion

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The inclusion of Remdesivir in the treatment protocol of pregnant women with COVID-19 may reduce vertical transmission and improve perinatal outcomes, thus being suggested to be considered. (Author)

2023-02826

Risk factors for and pregnancy outcomes after SARS-CoV-2 in pregnancy according to disease severity: A nationwide cohort study with validation of the SARS-CoV-2 diagnosis. Aabakke AJM, Petersen TG, Wøjdemann KR, et al (2023), *Acta Obstetrica et Gynecologica Scandinavica* vol 102, no 3, March 2023, pp 282-293

Full URL: <https://doi.org/10.1111/aogs.14512>

Introduction

We identified risk factors and outcomes associated with SARS-CoV-2 infection in pregnancy in a universally tested population according to disease severity and validated information on SARS-CoV-2 during pregnancy in national health registers in Denmark.

Material and methods

Cohort study using data from national registers and medical records including all pregnancies between March 1, 2020 and February 28, 2021. We compared women with a validated positive SARS-CoV-2 test during pregnancy with non-infected pregnant women. Risk factors and pregnancy outcomes were assessed by Poisson and Cox regression models and stratified according to disease severity defined by hospital admission status and admission reason (COVID-19 symptoms or other). Using medical record data on actual period of pregnancy, we calculated predictive values of the SARS-CoV-2 diagnosis in pregnancy in the registers.

Results

SARS-CoV-2 infection was detected in 1819 (1.6%) of 111 185 pregnancies. Asthma was associated with infection (relative risk [RR] 1.63, 95% confidence interval [CI] 1.28–2.07). Risk factors for severe COVID-19 disease requiring hospital admission were high body mass index (median ratio 1.06, 95% CI 1.04–1.09), asthma (RR 7.47, 95% CI 3.51–15.90) and gestational age at the time of infection (gestational age 28–36 vs < 22: RR 3.53, 95% CI 1.75–7.10). SARS-CoV-2-infected women more frequently had hypertensive disorders in pregnancy (adjusted hazard ratio [aHR] 1.31, 95% CI 1.04–1.64), early pregnancy loss (aHR 1.37, 95% CI 1.00–1.88), preterm delivery before gestational age 28 (aHR 2.31, 95% CI 1.01–5.26), iatrogenically preterm delivery before gestational age 37 (aHR 1.49, 95% CI 1.01–2.19) and small-for-gestational age children (aHR 1.28, 95% CI 1.05–1.54). The associations were stronger among women admitted to hospital for any reason. The validity of the SARS-CoV-2 diagnosis in relation to pregnancy in the registers compared with medical records showed a negative predictive value of 99.9 (95% CI 99.9–100.0) and a positive predictive value of 82.1 (95% CI 80.4–83.7).

Conclusions

Women infected with SARS-CoV-2 during pregnancy were at increased risk of hypertensive disorders in pregnancy, early pregnancy loss, preterm delivery and having children small for gestational age. The validity of Danish national registers was acceptable for identification of SARS-CoV-2 infection during pregnancy. (Author)

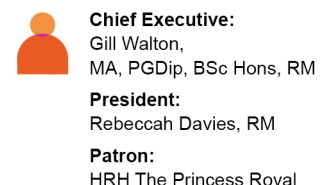
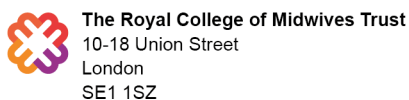
2023-02814

Is the risk of still and preterm birth affected by the timing of symptomatic SARS-CoV-2 infection during pregnancy? Data from the COVID-19 Related Obstetrics and Neonatal Outcome Study Network, Germany. Iannaccone A, Mand N, Schmidt B, et al (2023), *American Journal of Obstetrics & Gynecology (AJOG)* vol 228, no 3, March 2023, pp. 351-352

SARS-CoV-2 infections during pregnancy increases the risk for preterm birth (PTB). This study aimed to analyze the association of the timing of symptomatic SARS-CoV-2 infection during pregnancy with PTB and stillbirth risk. 17.8% of Women with symptomatic infections delivered preterm (double the rate of general German preterm birth rate of 9%). (JM)

2023-02796

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Changes in Pregnancy-Associated Deaths in the US During the COVID-19 Pandemic in 2020. Margerison CE, Wang X, Gemmill A, et al (2023), JAMA Network Open vol 6, no 2, February 2023, 2254287

Full URL: <https://doi.org/10.1001/jamanetworkopen.2022.54287>

COVID-19 had unique effects on pregnant and postpartum people with maternal deaths from obstetric causes increasing by 33% in 2020 compared to previous years. This study seeks to examine changes in pregnancy-associated mortality from drugs, homicide, suicide, and other causes from 2018 through 2020. It uses a cross-sectional approach and utilises US Death certificates using restricted search criteria's. The study finds an increase in pregnancy-associated drug-related deaths and homicide but a slight decrease in pregnancy-associated suicide deaths in 2020 compared with 2018/2019. The study suggests there is a need for prevention and intervention efforts. (JM)

2023-02640

Antibody response, neutralizing potency, and transplacental antibody transfer following SARS-CoV-2 infection versus mRNA-1273, BNT162b2 COVID-19 vaccination in pregnancy. Dude CM, Joseph NT, Forrest AD, et al (2023), International Journal of Gynecology & Obstetrics 4 January 2023, online

Objective

To improve our understanding of the immune response, including the neutralization antibody response, following COVID-19 vaccination in pregnancy.

Methods

This was a prospective cohort study comprising patients with PCR-confirmed SARS-CoV-2 infection and patients who received both doses of mRNA COVID-19 vaccine (mRNA-1273, BNT162b2) in pregnancy recruited from two hospitals in Atlanta, GA, USA. Maternal blood and cord blood at delivery were assayed for anti-receptor binding domain (RBD) IgG, IgA and IgM, and neutralizing antibody. The detection of antibodies, titers, and maternal to fetal transfer ratios were compared.

Results

Nearly all patients had detectable RBD-binding IgG in maternal and cord samples. The vaccinated versus infected cohort had a significantly greater proportion of cord samples with detectable neutralizing antibody (94% vs. 28%, $P < 0.001$) and significantly higher transfer ratios for RBD-specific IgG and neutralizing antibodies with a transfer efficiency of 105% (vs. 80%, $P < 0.001$) and 110% (vs. 90%, $P < 0.001$), respectively. There was a significant linear decline in maternal and cord blood RBD-specific IgG and neutralizing antibody titers as time from vaccination to delivery increased.

Conclusions

Those who receive the mRNA COVID-19 vaccine mount an immune response that is equivalent to—if not greater than—those naturally infected by SARS-CoV-2 during pregnancy. (Author)

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.

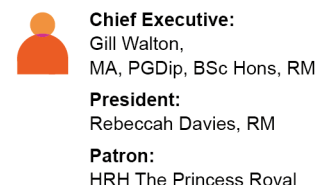
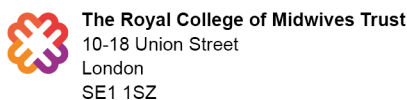
Data Sources

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

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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 (≈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 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>

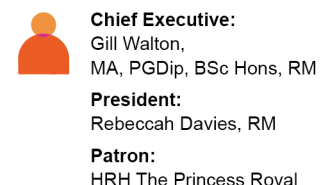
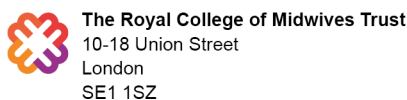
Background

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.

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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).

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

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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.

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 Morais 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

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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


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.

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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.

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

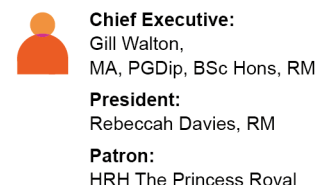
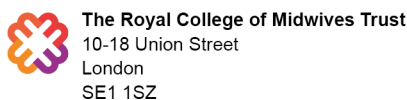
This study succeeded in providing prevalence estimates for key adverse birth outcomes using GAIA criteria during the COVID-19 pandemic in Kinshasa, DRC. Furthermore, our study adds crucial real-world data to the literature surrounding the impact of the COVID-19 pandemic on maternal and neonatal services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

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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 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>

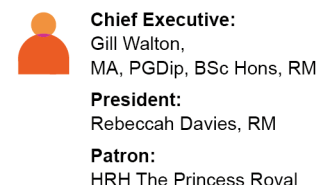
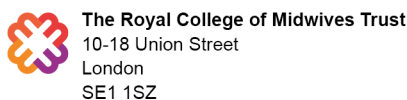
Background

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.

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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.

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

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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)

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.

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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 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

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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

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.

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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>

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,

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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, February 2023, 100139

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

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.

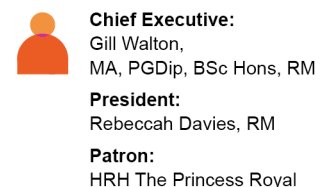
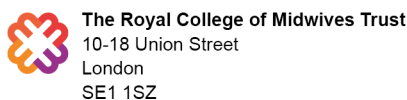
STUDY DESIGN

We used data from of 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 ≥80% reporting that they were convenient, easy, safe, and provided good information. Lower-ranked quality items were related to visits feeling

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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 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.

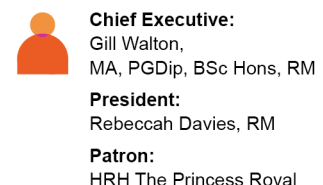
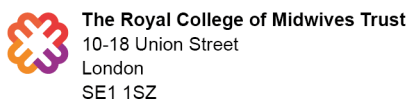
Main Outcome Measures

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).

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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 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)

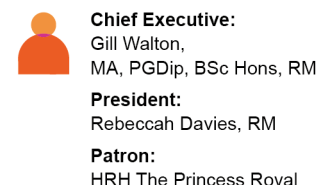
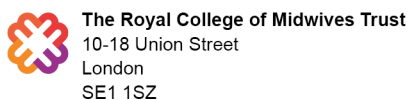
2023-00992

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.

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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

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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 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

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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 $\geq 94\%$. 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 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

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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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