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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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P200 (2023) - Coronavirus (COVID-19) in pregnancy (2023)
(200)

2023-13233

Doubts about the COVID-19 vaccine against pregnancy: public trust and government issues in Indonesia. Saputra R, Lidyawati Y, Suhardita K, et al (2023), Journal of Public Health vol 45, no 4, December 2023, pp e832–e833

In response to an article on the topic of administering vaccines to children in the Philippines. The topic of this vaccine has also been discussed in Indonesia, but now we will discuss it related to pregnancy. The controversy surrounding the coronavirus disease 2019 (COVID-19) vaccine is whether to believe in it or be forced by the government to take it. Some people are hesitant to take vaccines, as shown by a survey conducted by Populi Center in December 2020, which found that 40% of Indonesians do not want to receive vaccines from the government. However, Amnesty International Indonesia researcher, Ari Pramuditya stated that everyone has the right to give consent without coercion in the vaccination program, and the government must strive for a voluntary vaccination process. This effort is very interesting because it talks about a person's psychology. In this case, the psychological factor is closely related to the health of pregnant women. The COVID-19 pandemic continues to affect the worldwide community, and efforts in vaccination are very important in curbing its spread. However, still, there are several doubts about vaccines among pregnant people, because of worries about potency effects and bad results in pregnancy and the development of the fetus. To overcome the problem, it is important to note that the American College of Obstetricians and Gynecologists and the Society for Maternal-Fetal Medicine recommend that individuals pregnant and breastfeeding offer COVID-19 vaccination. (Author)

2023-13231

Does SARS Cov-2 infection affect the IVF outcome – A systematic review and meta-analysis. Kaur H, Chauhan A, Mascarenhas M (2024), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 292, January 2024, pp 147-157

Study Question: What is the effect of SARS Cov-2 on IVF outcome?
Summary answer: Mild or asymptomatic Covid-19 infection does not appear to affect clinical or ongoing pregnancy rate after IVF.
What is already known: Covid-19 has been shown to affect female and male fertility and reproductive function. Studies have shown variable results regarding impact of Covid-19 on IVF outcome with few reporting impaired ovarian reserve, oocyte and embryo quality, semen parameters, clinical pregnancy rate (CPR) and live birth rate (LBR) while others reported no effect on IVF outcome.
Study Design, size, duration
An electronic database search of PubMed, EMBASE, SCOPUS, WHO Covid-19 database, Clinical trials.gov and Cochrane Central was performed for articles published in English language between 1st January 2020 and 15th October 2022 by two independent reviewers using predefined eligibility criteria We have included observational studies both prospective and retrospective, cohort studies, and case control studies and excluded narrative reviews, case studies, cost-effectiveness studies or diagnostic studies. Risk of bias was assessed using NOS and quality of evidence was graded by GRADE pro.
Participants, Settings, Methods
Studies comparing women undergoing IVF and comparing Covid-19 affected with those unaffected by Covid-19 were included. Also, studies comparing immune group (infected or vaccinated) in the study group and unaffected as controls (historical controls, IVF cycles done prior to Covid-19 outbreak but matched with study group) were included. Those with no comparison group or published in language other than English language or duplicate studies were

excluded.
Main Results and Role of chance
We identified 5046 records and after full text screening of 82 studies, 12 studies were selected for final review. For the clinical pregnancy rate, there was no difference in the CPR in covid recovered or control patients (OR 0.90, 95 % CI = 0.67 to1.21; I2 = 29 %). Similarly, there was no significant effect on implantation rate (RR 0.92, 95 % CI = 0.68 to1.23; I2 = 31 %) and ongoing pregnancy rate (RR 0.96, 95 % CI = 0.79 to 1.15;I2 = 21 %). The mean number of the oocyte retrieved per patient was not significantly different in both the groups (mean difference 0.52, 95 % CI = -1.45 to 2.49; I2 = 75 %). The certainty of the evidence was low.
Limitations: The meta-analysis is based on observational studies each involving small number of participants. Few studies reported outcomes as per patient while others reported as per cycle, for uniformity we have reported outcomes as per cycle. Sample size in most of studies was small.
Wider Implications of findings: This systematic review has not shown any significant effect on the outcome of IVF cycles in patients post Covid-19 recovery compared to controls. But given the sample size, the findings should be considered with caution.
Registration: The review protocol has been registered on PROSPERO (registration number CRD42022314515) (Author)

2023-13067

Comparison of Anti-SARS-CoV-2-Specific Antibody Signatures in Maternal and Infant Blood after COVID-19 Infection versus COVID-19 Vaccination during Pregnancy. Sabharwal V, Taglauer E, Demos R, et al (2023), American Journal of Perinatology 31 October 2023, online

Objective The Advisory Committee on Immunization Practices and The American College of Obstetricians and Gynecologists recommend coronavirus disease 2019 (COVID-19) vaccine for pregnant persons to prevent severe illness and death. The objective was to examine levels of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) IgG, IgM, and IgA against spike protein receptor binding domain (RBD) and nucleocapsid protein (NCP) in maternal and infant/cord blood at delivery after COVID 19 vaccination compared with SARS-CoV-2 infection at in mother–infant dyads at specified time points.

Study Design Mothers with SARS-CoV-2 infection (n = 31) or COVID-19 vaccination (n = 25) during pregnancy were enrolled between July 2020 and November 2021. Samples were collected at delivery and IgG, IgM, and IgA to RBD of spike and NCPs compared in the infected and vaccinated groups. Timing of infection/vaccination prior to delivery and correlation with antibody levels was performed.

Results The majority of participants received vaccination within 90 days of delivery and over half received the Pfizer BioNTech vaccine. There were no significant correlations between antibody levels and timing of infection or vaccination. Infant IgG levels to the RBD domain of spike protein were higher in the vaccinated group (n = 25) as compared with the infants born to mothers with infection (n = 31). Vaccination against COVID-19 during pregnancy was associated with detectable maternal and infant anti-RBD IgG levels at delivery irrespective of the timing of vaccination.

Conclusion Timing of vaccination had no correlation to the antibody levels suggesting that the timing of maternal vaccination in the cohort did not matter. There was no IgM detected in infants from vaccinated mothers. Infants from vaccinated mothers had robust IgG titers to RBD, which have a lasting protective effect in infants. (Author)

2023-13063

SARS-CoV-2 infection during pregnancy and perinatal outcomes in Estonia in 2020 and 2021: A register-based study. Veerus P, Nõmm O, Innos K, et al (2023), Acta Obstetricia et Gynecologica Scandinavica 16 November 2023, online
Full URL: https://doi.org/10.1111/aogs.14721
Introduction
Data from different countries show partly controversial impact of SARS-CoV-2 infection on pregnancy outcomes. A

nationwide register-based study was conducted in Estonia to assess the impact of SARS-CoV-2 infection at any time during pregnancy on stillbirth, perinatal mortality, Apgar score at 5 minutes, cesarean section rates, rates of preterm birth and preeclampsia.

Material and methods
Data on all newborns and their mothers were obtained from the Estonian Medical Birth Registry, and data on SARS-CoV-2 testing dates, test results and vaccination dates against SARS-CoV-2 from the Estonian Health Information System. Altogether, 26 211 births in 2020 and 2021 in Estonia were included. All analyses were performed per newborn. Odds ratios with 95% confidence intervals (CI) were analyzed for all outcomes, adjusted for mother's place of residence, body mass index, age of mother at delivery and hypertension and for all the aforementioned variables together with mother's vaccination status using data from 2021 when vaccinations against SARS-CoV-2 became available. For studying the effect of a positive SARS-CoV-2 test during pregnancy on preeclampsia, hypertension was omitted from the models to avoid overadjustment.

Results
SARS-CoV-2 infection during pregnancy was associated with an increased risk of stillbirth (adjusted odds ratio [aOR] 2.81; 95% CI 1.37–5.74) and perinatal mortality (aOR 2.34; 95% CI 1.20–4.56) but not with a lower Apgar score at 5 minutes, higher risk of cesarean section, preeclampsia or preterm birth. Vaccination slightly decreased the impact of SARS-CoV-2 infection during pregnancy on perinatal mortality.

Conclusions
A positive SARS-CoV-2 test during pregnancy was associated with higher rates of stillbirth and perinatal mortality in Estonia but was not associated with change in preeclampsia, cesarean section or preterm birth rates. (Author)

2023-12965

Provision and utilization of maternal health services during the COVID-19 pandemic in 16 hospitals in sub-Saharan Africa.

Semaan A, Annerstedt KS, Beňová L, et al (2023), Frontiers in Global Women's Health 31 October 2023, online

Full URL: https://doi.org/10.3389/fgwh.2023.1192473

Objective: Maintaining provision and utilization of maternal healthcare services is susceptible to external influences. This study describes how maternity care was provided during the COVID-19 pandemic and assesses patterns of service utilization and perinatal health outcomes in 16 referral hospitals (four each) in Benin, Malawi, Tanzania and Uganda.

Methods: We used an embedded case-study design and two data sources. Responses to open-ended questions in a health-facility assessment survey were analyzed with content analysis. We described categories of adaptations and care provision modalities during the pandemic at the hospital and maternity ward levels. Aggregate monthly service statistics on antenatal care, delivery, caesarean section, maternal deaths, and stillbirths covering 24 months (2019 and 2020; pre-COVID-19 and COVID-19) were examined.

Results: Declines in the number of antenatal care consultations were documented in Tanzania, Malawi, and Uganda in 2020 compared to 2019. Deliveries declined in 2020 compared to 2019 in Tanzania and Uganda. Caesarean section rates decreased in Benin and increased in Tanzania in 2020 compared to 2019. Increases in maternal mortality ratio and stillbirth rate were noted in some months of 2020 in Benin and Uganda, with variability noted between hospitals. At the hospital level, teams were assigned to respond to the COVID-19 pandemic, routine meetings were cancelled, and maternal death reviews and quality improvement initiatives were interrupted. In maternity wards, staff shortages were reported during lockdowns in Uganda. Clinical guidelines and protocols were not updated formally; the number of allowed companions and visitors was reduced.

Conclusion: Varying approaches within and between countries demonstrate the importance of a contextualized response to the COVID-19 pandemic. Maternal care utilization and the ability to provide quality care fluctuated with lockdowns and travel bans. Women's and maternal health workers' needs should be prioritized to avoid interruptions

in the continuum of care and prevent the deterioration of perinatal health outcomes. (Author)

2023-12684

Assisted reproduction after SARS-CoV-2-infection: results of a single-center cohort-study. Eckstein V, Glass K, Leßmann M-E, et al (2023), Archives of Gynecology and Obstetrics 10 October 2023, online

Full URL: https://doi.org/10.1007/s00404-023-07228-w

Purpose

The effects of SARS-CoV-2 infections on the outcome of assisted reproduction techniques (ART) were studied in a retrospective cohort study.

Methods

The outcome of 1581 treatment cycles with embryo transfer at a university fertility center in Germany was compared in years before and during the COVID-19 pandemic. For 335 treatment cycles in 2022 a detailed analysis was carried out depending on infection and immunization status of both partners.

Results

ART cycles did not differ in most of the parameters examined between 2018–2022. In spite of comparable clinical pregnancy rates, there was a significantly higher miscarriage rate at 34.6% (27/78) in 2022, compared to 19.7% (29/147) in the pre-pandemic years of 2018–2019 (p = 0.014). In 37.0% of the treatment cycles (124/335) 2022 at least one partner reported a SARS-CoV-2-Infection 6 months before ART, mostly with the virus variant Omicron. Clinical pregnancy rates were lower in cycles without infection. Comparing women with confirmed infection to no infection, a significantly higher risk of miscarriage was seen (62.5% vs. 26.2%, p = 0.009). In treatment cycles of partners with basic immunization against SARS-CoV-2 a statistically significant increase of pregnancy rates was seen comparing to cycles with both unvaccinated partners (p = 0.011).

Conclusion

The results indicate a negative impact of SARS-CoV-2-infections up to 6 months on ART treatment, in particular an increased risk of miscarriage. Vaccination was associated with a better outcome of ART treatment. (Author)

2023-11949

The risk of anxiety and depression among pregnant women during the COVID-19 pandemic in Turkey: A cross-sectional online survey. Keleş NÇ (2023), African Journal of Reproductive Health vol 27, no 4, April 2023, pp 65-72

Studies on perinatal mental health during the COVID-19 pandemic are limited. Maternal anxiety and depression during pregnancy can have negative effects on maternal and child health outcomes. I therefore aimed to determine the risk of anxiety and depression in pregnant women during the COVID-19 pandemic in Turkey. The data were collected from pregnant women during the COVID19 pandemic between May and July 2020. In total, 164 pregnant women were recruited via social media (Facebook and Instagram) to complete an online survey. A personal information form and the Hospital Anxiety and Depression Scale were used as data collection tools. The data were analyzed using descriptive statistics, the Mann–Whitney U test, and the Kruskal–Wallis H test. I determined that pregnant women were at risk of anxiety (36%) and depression (73.8%) during the COVID-19 pandemic. The risk of depression was higher among the pregnant women who had a postgraduate education, worked during pregnancy, and had migrated within the previous 10 years compared to the other groups, while the risk of anxiety was higher in the age group 26–35 years and among unemployed pregnant women compared to the other groups. The COVID-19 pandemic was associated with a significant risk of anxiety and depression among pregnant women. Reducing the dangerous effects of COVID-19 on mental health is a perinatal health priority. (Author)

2023-11923

Knowledge, attitudes and preventive practices towards COVID-19 among prenatal women in an antenatal clinic in

Sakaka City, Aljouf region: A cross-sectional study. AbdRabou MA (2023), African Journal of Reproductive Health vol 27, no 1, January 2023, pp 73-83

It is known that prenatal women with COVID-19 are more liable to severe disease and poor newborn outcomes. Understanding the effects of this pandemic on prenatal women is still not known. Studies have shown that gravid women are more liable to COVID19 infection because of changed physiology and immunological characters. So, this study aimed to investigate gravid women's knowledge, attitudes, and preventive practices to avoid COVID-19 in Sakaka city, Al jouf region, Saudi Arabia. A communitybased cross-sectional study was conducted with 150 gravid women in Sakaka City. The samples were achieved using a simple random sampling technique from February to March, 2022. The data were collected by face-to-face survey with a planned and pretested survey and analyzed by SPSS. The study tool consists of six sections including. The demographics of the prenatal women, knowledge about COVID-19, Participants' attitudes, symptom, practices of prenatal women toward COVID-19. The results showed that the percentage of score of good knowledge before awareness was (34.0%), and the percentage of score of good knowledge after awareness was (73.33%) and the score of practices of prenatal women of good practices before awareness was (33.33%), and the percentage of score of good practices after awareness increased to (91.33%).The percentage of change between score of knowledge and practices of prenatal women before awareness was - 0.67 but percentage of change between score of knowledge and practices of prenatal women after awareness increased to +18%. Although most study members had good knowledge about the preventative measures of COVID-19, they did not practice them, bur their practices increased after awareness. The study recommended that the awareness should be extended to rural areas where access to electronic media is limited. (Author)

2023-11855

Experiences Navigating the Pregnancy Care Continuum During the COVID-19 Pandemic. Jaffe EF, Spach NC, Sullivan KA, et al (2023), Women's Health Issues vol 33, no 3, May-June 2023, pp 235-241

Introduction: The COVID-19 pandemic led to unprecedented changes in care delivery across the pregnancy care continuum. Our primary objective with this research was to characterize the range of ways that the early months of the COVID-19 pandemic affected pregnancy, childbirth, and postpartum care experiences.

Methods: Pregnant and recently pregnant patients (n = 20) from obstetrics and gynecology clinical sites associated with Massachusetts General Hospital were interviewed about their experiences with prenatal care, childbirth, and postpartum care during the first wave of the COVID-19 pandemic. Interview transcripts were analyzed for emergent themes.

Results: This sample included 20 pregnant and postpartum people, including 11 individuals who tested positive for COVID-19 during pregnancy or postpartum and nine with suspected infection. The ways in which COVID-19 or suspected COVID-19 affected experiences of prenatal care, childbirth, and postpartum care were complex and varied. Three themes were identified across narratives of pregnancy, birth, and postpartum care: patient perceptions of diminished access to care, stigma due to COVID-19 infection, and limited capacity of providers to honor patient preferences.

Conclusions: A better understanding of pregnant and recently pregnant people's experiences during the early months of the COVID-19 pandemic can inform infection control policies and clinical care delivery practices that are more congruent with the needs and values of pregnant, birthing, and postpartum people as institutions craft responses to future pandemics. Approaches that maximize meaningful access across the pregnancy care continuum, center patients' priorities within adapted care models, and honor patient preferences as much as possible are important aspects of an appropriate response to future waves of COVID-19 and other pandemics.

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2023-11835

Twitter discussions on breastfeeding during the COVID-19 pandemic. Jagarapu J, Diaz MI, Lehmann CU, et al (2023), International Breastfeeding Journal vol 18, no 56, November 2023

Full URL: https://doi.org/10.1186/s13006-023-00593-x

Background

Breastfeeding is a critical health intervention in infants. Recent literature reported that the COVID-19 pandemic resulted in significant mental health issues in pregnant and breastfeeding women due to social isolation and lack of direct professional support. These maternal mental health issues affected infant nutrition and decreased breastfeeding rates during COVID-19. Twitter, a popular social media platform, can provide insight into public perceptions and sentiment about various health-related topics. With evidence of significant mental health issues among women during the COVID-19 pandemic, the perception of infant nutrition, specifically breastfeeding, remains unknown.

Methods

We aimed to understand public perceptions and sentiment regarding breastfeeding during the COVID-19 pandemic through Twitter analysis using natural language processing techniques. We collected and analyzed tweets related to breastfeeding and COVID-19 during the pandemic from January 2020 to May 2022. We used Python software (v3.9.0) for all data processing and analyses. We performed sentiment and emotion analysis of the tweets using natural language processing libraries and topic modeling using an unsupervised machine-learning algorithm.

Results

We analyzed 40,628 tweets related to breastfeeding and COVID-19 generated by 28,216 users. Emotion analysis revealed predominantly “Positive emotions” regarding breastfeeding, comprising 72% of tweets. The overall tweet sentiment was positive, with a mean weekly sentiment of 0.25 throughout, and was affected by external events. Topic modeling revealed six significant themes related to breastfeeding and COVID-19. Passive immunity through breastfeeding after maternal vaccination had the highest mean positive sentiment score of 0.32.

Conclusions

Our study provides insight into public perceptions and sentiment regarding breastfeeding during the COVID-19 pandemic. Contrary to other topics we explored in the context of COVID (e.g., ivermectin, disinformation), we found that breastfeeding had an overall positive sentiment during the pandemic despite the documented rise in mental health challenges in pregnant and breastfeeding mothers. The wide range of topics on Twitter related to breastfeeding provides an opportunity for active engagement by the medical community and timely dissemination of advice, support, and guidance. Future studies should leverage social media analysis to gain real-time insight into public health topics of importance in child health and apply targeted interventions. (Author)

2023-11804

Perinatal Telehealth: Meeting Patients Where They Are. Kissler K, Brie Thumm E, Smith DC, et al (2023), Journal of Midwifery & Women's Health 29 August 2023, online

Introduction

Prior to the coronavirus disease 2019 (COVID-19) pandemic, studies of innovative telehealth perinatal care models showed similar clinical outcomes and perceived quality of care between groups receiving a combination of virtual video and in-person visits. However, these studies included primarily White, English-speaking participants, excluding those who were economically disenfranchised or did not speak English. The purpose of this qualitative study was to describe perinatal patients’ and providers’ experiences with telehealth during and after the acute phase of the COVID-19 pandemic to inform future utilization of telehealth to drive the delivery of high-quality, accessible, and equitable perinatal care to diverse communities.

Methods

This descriptive qualitative study included a purposive sample of 14 patients and 17 providers who received or

provided perinatal care via telehealth in either a certified nurse-midwifery practice or the nurse-family partnership care model between March 2020 and April 2022. Maximum variation sampling offered a diverse population based on race, ethnicity, and rurality. Researchers conducted 2 rounds of semistructured interviews with a focus on understanding social and geographic context.

Results
Six themes were identified through inductive analysis: (1) unexpected advantages of telehealth, (2) patient empowerment, (3) providers' fear of adverse outcomes, (4) concern for equitable care, (5) strategies to enhance the telehealth experience, and (6) strategies to address access to perinatal telehealth. Patients appreciated the increased ease and reduced cost of accessing visits, which led to fewer missed appointments. Health care providers saw great opportunity in telehealth but expressed concerns about accessibility for patients with language barriers or limited resources.

Discussion
This study provides insight into priorities for continued telehealth utilization focused on providing equitable access to perinatal care. Rather than returning to practices from before the COVID-19 pandemic formed from longstanding routines and perceived limitations, providers are encouraged to capitalize on the rapid innovations in telehealth to build a more effective, equitable, and patient-centered approach to perinatal care. (Author)

2023-11791

Coronavirus Disease 2019 (COVID-19) and Venous Thromboembolism During Pregnancy and Postpartum. Bruno AM, Horns JJ, Metz TD (2023), Obstetrics & Gynecology 28 September 2023, online

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection is associated with increased risk for macro- and micro-thrombi. Consensus guidelines recommend use of thromboprophylaxis in nonobstetric patients with SARS-CoV-2 infection admitted to the hospital. National-level studies evaluating venous thromboembolism (VTE) among pregnant and postpartum individuals with and without SARS-CoV-2 infection have not been completed. We performed a retrospective cohort study of individuals aged 18 years or older delivering at more than 20 weeks of gestation with data in the MarketScan Commercial Insurance Database from 2016 through 2020. Of 811,008 deliveries, SARS-CoV-2 infection during pregnancy or through 6 weeks postpartum was associated with increased risk for VTE compared with no infection (1.0% vs 0.5%, adjusted hazard ratio 2.62, 95% CI 1.60–4.29). Findings support further consideration of thromboprophylaxis in the obstetric population with SARS-CoV-2 infection. (Author)

2023-11785

Obstetric Intervention and Perinatal Outcomes During the Coronavirus Disease 2019 (COVID-19) Pandemic. Simon S, John S, Lisonkova S, et al (2023), Obstetrics & Gynecology vol 142, no 6, December 2023, pp 1405-1415

Full URL: https://doi.org/10.1097/AOG.0000000000005412

OBJECTIVE:
To quantify pandemic-related changes in obstetric intervention and perinatal outcomes in the United States.

METHODS:
We carried out a retrospective study of all live births and fetal deaths in the United States, 2015–2021, with data obtained from the natality, fetal death, and linked live birth–infant death files of the National Center for Health Statistics. Analyses were carried out among all singletons; singletons of patients with prepregnancy diabetes, prepregnancy hypertension, and hypertensive disorders of pregnancy; and twins. Outcomes of interest included preterm birth, preterm labor induction or preterm cesarean delivery, macrosomia, postterm birth, and perinatal death. Interrupted time series analyses were used to estimate changes in the prepandemic period (January 2015–February 2020), at pandemic onset (March 2020), and in the pandemic period (March 2020–December 2021).

RESULTS:

The study population included 26,604,392 live births and 155,214 stillbirths. The prepandemic period was characterized by temporal increases in preterm birth and preterm labor induction or cesarean delivery rates and temporal reductions in macrosomia, postterm birth, and perinatal mortality. Pandemic onset was associated with absolute decreases in preterm birth (decrease of 0.322/100 live births, 95% CI 0.506–0.139) and preterm labor induction or cesarean delivery (decrease of 0.190/100 live births, 95% CI 0.334–0.047) and absolute increases in macrosomia (increase of 0.046/100 live births), postterm birth (increase of 0.015/100 live births), and perinatal death (increase of 0.501/1,000 total births, 95% CI 0.220–0.783). These changes were larger in subpopulations at high risk (eg, among singletons of patients with prepregnancy diabetes). Among singletons of patients with prepregnancy diabetes, pandemic onset was associated with a decrease in preterm birth (decrease of 1.634/100 live births) and preterm labor induction or cesarean delivery (decrease of 1.521/100 live births) and increases in macrosomia (increase of 0.328/100 live births) and perinatal death (increase of 9.840/1,000 total births, 95% CI 3.933–15.75). Most changes were reversed in the months after pandemic onset.

CONCLUSION:
The onset of the coronavirus disease 2019 (COVID-19) pandemic was associated with a transient decrease in obstetric intervention (especially preterm labor induction or cesarean delivery) and a transient increase in perinatal mortality. (Author)

2023-11781

Use of Prenatal Telehealth in the First Year of the COVID-19 Pandemic. Gourevitch RA, Anyoha A, Ali MM, et al (2023), JAMA Network Open vol 6, no 10, October 2023, e2337978
Full URL: https://doi.org/10.1001/jamanetworkopen.2023.37978

This journal article is a research letter detailing a cross-sectional study that leveraged a multistate representative survey to describe variation in prenatal telehealth use and reasons for its non-use at the height of the COVID-19 pandemic. (JM2)

2023-11769

"Trauma, abandonment and isolation": experiences of pregnancy and maternity services in Scotland during COVID-19. Engender, Health and Social Care Alliance Scotland (2023), September 2023
Full URL: https://www.engender.org.uk/content/publications/MATFinalNEW.pdf

The report, '"Trauma, abandonment and isolation": Experiences of pregnancy and maternity services in Scotland during Covid-19', draws on survey responses from over 200 women across Scotland. It documents the profound and negative impact that public health restrictions had on access to vital healthcare across all aspects of these services from antenatal care, fertility treatment, to miscarriage and baby loss, birth and the postnatal period. (Author)

2023-11759

Cytokine responses to SARS-COV2 infection in mother-infant dyads: a systematic review and meta-analysis. Jain S, Allen IE, Song D, et al (2023), Frontiers in Pediatrics 17 October 2023, online
Full URL: https://doi.org/10.3389/fped.2023.1277697

Background: The COVID-19 pandemic has affected a significant number of pregnant women worldwide, but studies on immune responses have presented conflicting results. This study aims to systematically review cytokine profiles in pregnant women with SARS-CoV-2 infection and their infants to evaluate immune responses and potential transplacental transfer of cytokines.

Materials and methods: A comprehensive search of 4 databases was conducted to identify relevant studies. Inclusion criteria included studies measuring individual cytokines in pregnant women and/or their neonates. Studies were evaluated for quality, and data were extracted for analysis. Meta-analyses were performed using the random-effects model.

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Results: Seventeen studies met the inclusion criteria, including data from 748 pregnant women and 287 infants. More than three of these studies evaluated data of 20 cytokines in maternal serum, and data of 10 cytokines was available from cord blood samples. Only the serum level of CXCL10 was significantly up-regulated in SARS-CoV-2 positive pregnant women (n = 339) compared to SARS-CoV-2 negative pregnant women (n = 409). Subset analysis of maternal samples (n = 183) collected during the acute phase of COVID-19 infection showed elevated CXCL10 and IFN-γ. No significant differences in cytokine levels were found between cord blood samples collected from infants born to mothers with (n = 97) and without (n = 190) COVID-19 during gestation. Subset analysis of cord blood samples collected during the acute phase of maternal infection was limited by insufficient data. The heterogeneity among the studies was substantial.

Conclusion: The findings suggest that maternal cytokines responses to SARS-CoV-2 infection during pregnancy are not significantly dysregulated, except for CXCL10 and IFN-γ during the acute phase of illness. No evidence of increased cytokine levels in cord blood samples was observed, although this could be impacted by the time period between initial maternal infection and cord blood collection. These results provide some reassurance to parents and healthcare providers but should be interpreted cautiously due to study variations and limitations. (Author)

2023-11584

Transplacental passage of nirmatrelvir in pregnant women with COVID-19. Chuang M-T, Su M-T, Chou C-H, et al (2023), International Journal of Gynecology & Obstetrics 23 September 2023, online

The transplacental passage of nirmatrelvir in pregnant women with COVID-19 is limited and reinforces the safety of using Paxlovid in pregnancy. (Author)

2023-11516

Performance of glycated hemoglobin A1c for the diagnosis of gestational diabetes mellitus during the SARS-CoV-2 pandemic in Belgium (2020–2021). Negrea M-C, Oriot P, Courcelles A, et al (2023), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 289, October 2023, pp 36-41

Full URL: https://doi.org/10.1016/j.ejogrb.2023.08.368

Objectives

During the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic, health care access was restricted. To reduce the risk of maternal SARS-CoV-2 infection, simplified screening recommendations for gestational diabetes mellitus (GDM) have been suggested, leading to glycated hemoglobin A1c (HbA1c) being proposed as an alternative to the oral glucose tolerance test (OGTT). This study aimed to assess the optimal HbA1c cutoff to confirm GDM diagnosis according to IADPSG/WHO2013 guidelines.

Methods

In this retrospective study, 3361 pregnancies were followed at the hospital of Mouscron and the Cliniques Universitaires St Luc in Brussels (2020–2021). GDM was universally screened in the third trimester of gestation. The ROC curve was used to evaluate the diagnostic performance of HbA1c with OGTT as the reference. Sensitivity, specificity and likelihood ratios for different HbA1c thresholds were calculated.

Results

In total, 312 women were selected due to HbA1c analysis in addition to OGTT, and 149 had GDM. The area under the ROC curve for GDM detection by HbA1c was 0.73 (95% CI 0.68–0.79, $p < 0.0001$). The cutoff value chosen as a possible threshold was HbA1c 5.5% (37 mmol/mol). The sensitivity, specificity, positive and negative likelihood ratios for this cutoff were 12.0%, 99.4%, 20 and 0.88, respectively. The Fagan nomogram test showed a posttest GDM probability of approximately 70%, corresponding to a 10-fold higher pretest probability. An HbA1c ≥ 5.5% (37 mmol/mol) would have avoided OGTT in 18% of women with GDM. These women with an HbA1c ≥ 5.5% had significantly higher rates of family history of diabetes, older age, higher BMI and higher blood glucose levels (fasting, 1 h and 2 h) at OGTT.

Conclusion

Our results are consistent with the literature concerning the diagnostic ability of GDM through HbA1c ≥ 5.5%. (Author)

2023-11367

Hypoxia modifies levels of the SARS-CoV-2 cell entry proteins, angiotensin-converting enzyme 2, and furin in fetal human brain endothelial cells. Mughis H, Lye P, Matthews SG, et al (2023), American Journal of Obstetrics & Gynecology MFM vol 5, no 10, October 2023, 101126

Full URL: https://doi.org/10.1016/j.ajogmf.2023.101126

BACKGROUND
It is not known whether human fetal brain endothelial cells that form the blood-brain barrier express angiotensin-converting enzyme 2, transmembrane serine protease 2, and furin, which are SARS-CoV-2 cell entry proteins. Moreover, it is unclear whether hypoxia, commonly observed during severe maternal COVID-19, can modify their level of expression. We hypothesized that human fetal brain endothelial cells isolated from early- and midpregnancy brain microvessels express angiotensin-converting enzyme 2, transmembrane serine protease 2, and furin. Furthermore, we hypothesized that hypoxia modifies their expression levels in a gestational age– and time-of-exposure–dependent manner.
OBJECTIVE
This study aimed to investigate whether early- and midpregnancy human fetal brain endothelial cells express angiotensin-converting enzyme 2, transmembrane serine protease 2, and furin SARS-CoV-2–associated cell entry proteins and to determine the effects of hypoxia on angiotensin-converting enzyme 2, transmembrane serine protease 2, and furin expression levels in human fetal brain endothelial cells.
STUDY DESIGN
This was a prospective study where human fetal brain endothelial cells isolated from early-pregnancy (12.4±0.7 weeks of gestation) and midpregnancy (17.9±0.5 weeks of gestation) fetal brain microvessels (6 per group) were exposed to different oxygen tensions (20%, 5%, and 1% oxygen) for 6, 24, and 48 hours. Angiotensin-converting enzyme 2, transmembrane serine protease 2, and furin messenger RNA and protein levels and localization were assessed using quantitative polymerase chain reaction, Western blot testing, and immunofluorescence.
RESULTS
Angiotensin-converting enzyme 2, transmembrane serine protease 2, and furin co-localize with the endothelial cell marker von Willebrand factor in human fetal brain endothelial cells isolated from early pregnancy and midpregnancy. In early pregnancy, TMPRSS2 messenger RNA expression was decreased by 5% oxygen compared with 20% oxygen after 6 hours of exposure (P<.05). In midpregnancy, 5% oxygen down-regulated ACE2 messenger RNA compared with 20% oxygen after 24 hours (P<.05). Furin messenger RNA expression was decreased under 5% and 1% oxygen compared with 20% oxygen (P<.05) after 24 hours. In midpregnancy, angiotensin-converting enzyme 2 protein levels were decreased under 5% and 1% oxygen (P<.001) after 24 hours. In contrast, furin protein levels were increased under 1% oxygen compared with 20% oxygen after 24 hours (P<.05). At 48 hours, 1% oxygen increased angiotensin-converting enzyme 2 protein levels compared with 20% oxygen (P<.01).
CONCLUSION
Hypoxia modifies the expression of selected SARS-CoV-2 cell entry proteins in human fetal brain endothelial cells in a gestational age– and time-of-exposure–dependent manner. As severe COVID-19 may lead to maternal hypoxia, an altered expression of these proteins in the developing human blood-brain barrier could potentially lead to altered SARS-CoV-2 brain invasion and neurologic sequelae in neonates born to pregnancies complicated by SARS-CoV-2 infection. (Author)

2023-11343

LGBTQ+ new and expectant parents' experiences of perinatal services during the UK's first COVID-19 lockdown. Greenfield M, Darwin Z (2023), Birth 6 October 2023, online

Full URL: https://doi.org/10.1111/birt.12780

Background
COVID-19 created specific challenges for new and expectant parents and perinatal services. Services changed rapidly in the United Kingdom (UK), including the withdrawal of home birth services, birth center closures, and restrictions on the number of birth partners allowed in the birth room. The purpose of this study was to examine how these changes affected the experiences of LGBTQ+ parents in the UK.

Methods
An online survey was conducted in April 2020 to provide real-time data capture of new and expectant families' experiences. It was open to those in the third trimester, or to those who had given birth since the beginning of the first UK lockdown period, and their partners. The survey asked open-ended questions about perinatal experiences. Demographic data were also collected, including sexual orientation and gender. Responses were collected from 1754 participants, including 76 who self-identified as LGBTQ+.

Results
Thematic analysis identified that LGBTQ+ new and expectant parents faced similar issues to cisgendered, heterosexual expectant parents, though additional concerns were also noted relating to support and recognition. Heterocentric policies negatively affect lesbian families. Non-birthing co-mothers feared invalidation as parents. Sexual minority pregnant women were more likely than heterosexual pregnant women to consider additional birth supporters and to consider freebirthing.

Discussion
Service changes introduced in the pandemic were cisheteronormative, creating additional challenges for LGBTQ+ new and expectant parents and compounding existing inequalities. When planning, changing, or evaluating perinatal services, specific consideration is needed to include birthing parents who are not mothers and mothers who did not give birth. If appropriate care is not available, consequences may include impaired perinatal wellbeing and restricted birth choices. Including sexual orientation and gender in data collection enables different perspectives to be considered. (Author)

2023-11234

Influence of the COVID-19 pandemic on social determinants of health among an inner-city obstetrical population. Hefelfinger LM, DeFranco EA, Mendez C, et al (2023), AJOG Global Reports vol 3, no 3, August 2023, 100225
Full URL: https://doi.org/10.1016/j.xagr.2023.100225

BACKGROUND
Social determinants of health are a well-described influencer of pregnancy-related morbidity and mortality. It is unclear how societal changes secondary to the COVID-19 pandemic altered the social determinants of health among pregnant patients.

OBJECTIVE
This study aimed to investigate differences in the social determinants of health among patients who experienced pregnancy before and during the COVID-19 pandemic.

STUDY DESIGN
This was a secondary analysis of an ongoing prospective cohort study examining the social determinants of health in postpartum patients at a single inner-city academic medical center. The planned secondary analysis was to compare the social determinants of health between patients that experienced societal changes before the pandemic and patients that experienced societal changes during the pandemic. Patients were included in the pandemic group if they delivered on or after March 30, 2020; moreover, patients in the pandemic group were compared with those who delivered before March 30, 2020 (referent group). Medical records were used to collect sociodemographic, pregnancy, and infant outcome data. The study participants were interviewed to collect detailed information regarding their perceived social, emotional, and physical environment as indicators of social determinants of health. Generalized linear modeling estimated the influence of social determinants of health on births during the COVID-19 pandemic.

RESULTS
Overall, 577 patients were enrolled in the study, of which 452 (78%) delivered before the COVID-19 pandemic and 125 (22%) delivered during the pandemic. Patients who delivered during the pandemic were more likely to report limited

social or emotional support (relative risk, 1.62; 95% confidence interval, 1.02–2.59) and higher race-based discrimination (relative risk, 1.59; 95% confidence interval, 1.00–2.53). Mothers in the prepandemic group were more likely to have used federally funded programs, such as Medicaid, food stamps, and the Special Supplemental Nutrition Program for Women, Infants, and Children, during their pregnancy. Furthermore, the referent group reported more limited access to transportation. In addition, mothers in the prepandemic group were more likely to initiate prenatal care at a later gestational age and have fewer total prenatal care visits.

CONCLUSION
The COVID-19 pandemic created unprecedented changes in pregnancy care, and these were reflected in social determinants of health. It is imperative that we focus on the social determinants of health that were mitigated during this time and their effects on maternal and infant health. (Author)

2023-11215

Intrauterine transmission of SARS-CoV-2 to and prenatal ultrasound abnormal findings in the fetus of a pregnant woman with mild COVID-19. Zhang M, Hou L, Guo L, et al (2023), BMC Pregnancy and Childbirth vol 23, no 723, 2023

Full URL: https://doi.org/10.1186/s12884-023-06053-y

Background
Whether intrauterine transmission of COVID-19 occurs remains uncertain, and it remains unclear whether the disease affects fetuses. We present a case of intrauterine transmission of SARS-CoV-2 infection and the prenatal ultrasonographic findings of the fetus in a pregnant woman with mild COVID-19.

Case presentation
A 30-year-old woman was admitted to our hospital for ultrasound examination in January 2023 at 26+ 3 weeks' gestation. Twenty-one days prior, her COVID-19 nucleic acid test was positive, and she had mild symptoms, including fever (38.3 °C), headache, chills, ankle pain and cough. After receiving symptomatic treatment, she fully recovered. Prenatal ultrasound revealed that the placenta was diffusely distributed with punctate echogenic foci, hepatomegaly, and the volume of bilateral lungs decreased significantly, with enhanced echo. In addition, we found that the surface of the fetal brain demonstrated widened gyri with a flattened surface. The prenatal MRI confirmed these fetal abnormalities. Amniotic fluid was tested for SARS-CoV-2, and the sample tested was positive for the virus. After careful consideration, the pregnant woman decided to terminate the pregnancy.

Conclusion
The intrauterine transmission of COVID-19 is certain. Moreover, the intrauterine transmission of COVID-19 may cause abnormalities in various organs of the fetus. (Author)

2023-11183

Association of COVID-19 Vaccination During Early Pregnancy With Risk of Congenital Fetal Anomalies. Ruderman RS, Mormol J, Trawick E, et al (2023), Obstetrical and Gynecological Survey vol 78, no 1, January 2023, pp 5-6

COVID-19 infection increases the risk of maternal and neonatal morbidity in the pregnant population. While data suggest that COVID-19 vaccines are safe and effective during pregnancy, the risk to the fetus is unclear. (Abstracted from JAMA Pediatr 2022;176(7):717–719)(Author)

2023-11092

Racial disparities in adequacy of prenatal care during the COVID-19 pandemic in South Carolina, 2018–2021. Julceus EF, Olatosi B, Hung P, et al (2023), BMC Pregnancy and Childbirth vol 23, no 686, 2023

Full URL: https://doi.org/10.1186/s12884-023-05983-x

Background
During the COVID-19 pandemic, hospitals' decision of not admitting pregnant women's partner or support person, and pregnant women's fear of contracting COVID-19 in hospitals may disrupt prenatal care. We aimed to examine whether

prenatal care utilization in South Carolina varied before and during the COVID-19 pandemic, and whether the variation was different by race.

Methods
We utilized 2018–2021 statewide birth certificate data using a pre-post design, including all women who delivered a live birth in South Carolina. The Kotelchuck Index - incorporating the timing of prenatal care initiation and the frequency of gestational age-adjusted visits - was employed to categorize prenatal care into inadequate versus adequate care. Self-reported race includes White, Black, and other race groups. Multiple logistic regression models were used to calculate adjusted odds ratio of inadequate prenatal care and prenatal care initiation after first trimester by maternal race before and during the pandemic.

Results
A total of 118,925 women became pregnant before the pandemic (before March 2020) and 29,237 women during the COVID-19 pandemic (March 2020 – June 2021). Regarding race, 65.2% were White women, 32.0% were Black women and 2.8% were of other races. Lack of adequate prenatal care was more prevalent during the pandemic compared to pre-pandemic (24.1% vs. 21.6%, $p < 0.001$), so was the percentage of initiating prenatal care after the first trimester (27.2% vs. 25.0%, $p < 0.001$). The interaction of race and pandemic period on prenatal care adequacy and initiation was significant. The odds of not receiving adequate prenatal care were higher during the pandemic compared to before for Black women (OR 1.26, 95% CI 1.20–1.33) and White women (OR 1.10, 95% CI 1.06–1.15). The odds of initiating prenatal care after the first trimester were higher during the pandemic for Black women (OR 1.18, 95% CI 1.13–1.24) and White women (OR 1.09, 95% CI 1.04–1.13).

Conclusions
Compared to pre-pandemic, the odds of not receiving adequate prenatal care in South Carolina was increased by 10% for White women and 26% for Black women during the pandemic, highlighting the needs to develop individual tailored interventions to reverse this trend. (Author)

2023-11071

Clinical, epidemiological and laboratory characteristics of cases of Covid-19-related maternal near miss and death at referral units in northeastern Brazil: a cohort study. Cunha ACMC, Katz L, Amorim AFC, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 2, 2023, 2260056

Full URL: https://doi.org/10.1080/14767058.2023.2260056

Objective: Covid-19 poses a major risk during pregnancy and postpartum, resulting in an increase in maternal mortality worldwide, including in Brazil; however, little research has been conducted into cases of a near miss. This study aimed to describe the frequency of COVID-19-related near miss and deaths during pregnancy or in the postpartum in referral centers in northeastern Brazil, as well as the clinical, epidemiological, and laboratory characteristics of the women who experienced a severe maternal outcome.

Methods: A retrospective and prospective cohort study was performed between April 2020 and June 2021 with hospitalized pregnant and postpartum women with a diagnosis of COVID-19 confirmed by real-time polymerase chain reaction (RT-PCR). Data from five tertiary hospitals in northeastern Brazil were evaluated. Descriptive statistical analysis was performed using Epi Info, version 7.2.5.0.

Results: A total of 463 patients were included. Of these, 64 (14% of the sample) had a severe maternal outcome, with 42 cases of near miss (9%) and 22 maternal deaths (5%). Patients who had a severe maternal outcome were predominantly young (median age 30 years) and 65.6% were black or brown-skinned. The women had between 6 and 16 years of schooling; 45.3% had a stable partner; 81.3% were pregnant at the time of admission to the study; and 76.6% required a Cesarean section. The great majority (82.8%) had severe acute respiratory syndrome (SARS). Other complications included hypertensive syndromes (40.6%), pneumonia (37.5%), urinary tract infections (29.7%), acute renal failure (25.0%) and postpartum hemorrhage (21.9%). Sepsis developed in 18.8% of cases, neurological

dysfunction in 15.6%, and hepatic dysfunction and septic shock in 14.1% of cases each. The relative frequency of admission to an intensive care unit was 87.5%, while 67.2% of the patients required assisted mechanical ventilation, and 54.7% required noninvasive ventilation. Antibiotics were prescribed in 93.8% of cases and corticosteroids in 71.9%, while blood transfusion was required in 25.0% of cases and renal replacement therapy in 15.6%. Therapeutic anticoagulants were administered to 12.5% of the patients. Of the patients who had a severe maternal outcome, the frequency of respiratory dysfunction was 93.8%, with 50.0% developing neurological dysfunction and 37.5% cardiovascular dysfunction. Hematological dysfunction was found in 29.7%, renal dysfunction in 18.8%, and uterine dysfunction in 14.1%. Hepatic dysfunction occurred in 7.8% of the sample. The near-miss ratio for Covid-19 was 1.6/1000 live births and the maternal mortality ratio for Covid-19 was 84.8/100,000 live births, with a mortality index of 34.4% in the sample.

Conclusion: This study revealed a low Covid-19-related maternal near miss (MNM) ratio of 1.6/1000 live births and a high Covid-19-related maternal mortality ratio (MMR) of 84.81/100,000 live births. The mortality index was also high. Most of the patients were admitted while pregnant, were young, married and black or brown-skinned, and none had completed university education. The majority had SARS and required admission to an intensive care unit and mechanical ventilation. Most were submitted to a Cesarean section. (Author)

2023-10947

COVID-19 during pregnancy could potentially affect placental function. Magawa S, Nii M, Enomoto N, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 2, 2023, 2265021

Full URL: https://doi.org/10.1080/14767058.2023.2265021

Objective

COVID-19 is an ongoing pandemic and has been extensively studied. However, the effects of COVID-19 during pregnancy, particularly on placental function, have not been verified. In this study, we used blood oxygen level-dependent magnetic resonance imaging (BOLD-MRI) to evaluate whether COVID-19 incidence during pregnancy has any lasting effects with respect to placental oxygenation.

Methods

This is a case-control study, in which eight cases of singleton pregnancies before 30 weeks gestation with COVID-19 mothers were included. Placental oxygenation was evaluated using BOLD-MRI after 32 weeks of gestation. BOLD-MRI was consecutively performed under normoxia (21% O2), hyperoxia (100% O2), and normoxia for 4 min each. Individual placental time–activity curves were evaluated to calculate the peak score (peakΔR2*) and the time from the start of maternal oxygen administration to the time of peakΔR2* (time to peakΔR2*). Eighteen COVID-19-free normal pregnancies from a previous study were used as the control group.

Results

No significant differences were found between the two groups regarding maternal background, number of days of delivery, birth weight, and placental weight. The parameter peakΔR2* was significantly decreased in the COVID-19 group (8 ± 3 vs. 5 ± 1, $p < .001$); however, there was no significant difference in time to peakΔR2* (458 ± 74 s vs. 471 ± 33 s, $p = .644$).

Conclusions

In this study, BOLD-MRI was used to evaluate placental oxygenation during pregnancy in COVID-19-affected patients. COVID-19 during pregnancy decreased placental oxygenation even post-illness, but had no effect on fetal growth; further investigation of the possible effects of COVID-19 on the fetus and mother is warranted. (Author)

2023-10915

Adapting the 'First 2000 Days maternal and child healthcare framework' in the aftermath of the COVID-19 pandemic: ensuring equity in the new world. Diaz AM, Brooker R, Cibralic S, et al (2023), Australian Health Review vol 47, no 1, 2023, pp

72-76
Full URL: https://doi.org/10.1071/AH22228

The purpose of this perspective article is to emphasise the importance of the 'First 2000 Days' policy of life from conception to age five, and to propose new directions in which the policy's implementation could be extended for the benefit of children and families. The proposed approach highlights principles of responsiveness, integration, sustainability and equity, specifying initiatives that embody the kind of innovation each principle aspires to. The article also proposes innovations in data collection and linkages that would strengthen the implementation of first 2000 days policies and frameworks. This perspective proposes a framework that could improve health systems implementation of services in the first 5 years of life, by proposing a well-coordinated continuum of services with integrated physical and digital solutions. This has the potential to transform how the health system monitors and responds to children and families' needs in the critical early years of life during and beyond the current pandemic. (Author)

2023-10828

Effect of infection with severe acute respiratory syndrome coronavirus 2 on the fetus in pregnant women who recovered from infection. Hammad LF, Almutairi AN, Aldahlawi RH (2023), Annals of Saudi Medicine vol 43, no 4, July/August 2023, pp 213-218

Full URL: https://doi.org/10.5144/0256-4947.2023.213

BACKGROUND: The effect of maternal infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) on the fetus is unclear, and there is no data from Saudi Arabia.
OBJECTIVE: Assess the effect of maternal SARS-CoV-2 infection on fetal growth.
DESIGN: Retrospective case-control
SETTING: Tertiary care hospital, Riyadh, Saudi Arabia
PATIENTS AND METHODS: We selected pregnant women who underwent an obstetric growth scan and umbilical artery Doppler ultra-sound examination between 28 and 41 weeks of pregnancy. Women with multiple pregnancy, fetal abnormalities, maternal body mass index >30, maternal hypertension, any other chronic diseases that might affect fetal growth or pregnant women suffering from cancer were excluded. Fetal growth parameters assessed included fetal biometry (biparietal diameter, head circumference, abdominal circumference and femur length). We also did an umbilical artery Doppler assessment, which includes the umbilical artery pulsatility index, resistive index and the systolic/diastolic ratio.
MAIN OUTCOME MEASURE: Fetal biometry and biophysical profile
SAMPLE SIZE: 48 SARS-CoV-2; 98 non-SARS-CoV-2
RESULTS: More women who had recovered from SARS-CoV-2 infection had small for gestational age fetuses compared with the control group (P=.001).
CONCLUSION: Maternal SARS-CoV-2 infection during pregnancy was associated with a higher prevalence of small for gestational age (SGA) fetuses.
LIMITATIONS: Retrospective, middle cerebral artery and uterine artery Doppler data were not included nor were the effect of tobacco use and socioeconomic status, the relationship between the date of infection with the date of conceiving or the relationship between the severity of infection in the mother and fetal biometry and growth. (Author)

2023-10827

Evaluation of critically ill obstetric patients treated in an intensive care unit during the COVID-19 pandemic. Arslan K, Arslan HÇ, Şahin AS (2023), Annals of Saudi Medicine vol 43, no 1, January/February 2023, pp 10-16
Full URL: https://doi.org/10.5144/0256-4947.2023.10

BACKGROUND: Although obstetric morbidity and mortality have decreased recently, rates are still high enough to constitute a significant health problem. With the COVID-19 pandemic, many obstetric patients have required treatment in intensive care units (ICU).
OBJECTIVES: Evaluate critical obstetric patients who were treated in an ICU for COVID-19 and followed up for 90 days.
DESIGN: Medical record review

SETTING: Intensıve care unit
PATİENTS AND METHODS: Obstetric patients admitted to the ICU between 15 March 2020 and 15 March 2022 and followed up for at least 90 days were evaluated retrospectively. Patients with and without COVID-19 were compared by gestational week, indications, comorbidities, length of stay in the hospital and ICU, requirement for mechanical ventilation, blood transfusion, renal replacement therapy (RRT), plasmapheresis, ICU scores, and mortality.
MAIN OUTCOME MEASURES: Clinical outcomes and mortality.
SAMPLE SIZE AND CHARACTERISTICS: 102 patients with a mean (SD) maternal age of 29.1 (6.3) years, and median (IQR) length of gestation of 35.0 (7.8) weeks.
RESULTS: About 30% (n=31) of the patients were positive for COVID-19. Most (87.2%) were cesarean deliveries; 4.9% vaginal (8.7% did not deliver). COVID-19, eclampsia/preeclampsia, and postpartum hemorrhage were the most common ICU indications. While the 28-day mortality was 19.3% (n=6) in the COVID-19 group, it was 1.4% (n=1) in the non-COVID-19 group (P<.001). The gestational period was significantly shorter in the COVID-19 group (P=.01) while the duration of stay in ICU (P<.001) and mechanical ventilation (P=.03), lactate (P=.002), blood transfusions (P=.001), plasmapheresis requirements (P=.02), and 28-day mortality were significantly higher (P<.001). APACHE-2 scores (P=.007), duration of stay in ICU (P<.001) and mechanical ventilation (P<.001), RRT (P=.007), and plasmapheresis requirements (P=.005) were significantly higher in patients who died than in those who were discharged.
CONCLUSION: The most common indication for ICU admission was COVID-19. The APACHE-2 scoring was helpful in predicting mortality. We think multicenter studies with larger sample sizes are needed for COVID-19 obstetric patients. In addition to greater mortality and morbidity, the infection may affect newborn outcomes by causing premature birth. (Author)

2023-10824

Critical care, maternal and neonatal outcomes of pregnant women with COVID-19 admitted to eight intensive care units during the wildtype, alpha and delta waves of the pandemic across the North West of England—a retrospective review.

Bhatia K, Columb M, Narayan B, et al (2023), Acta Obstetricia et Gynecologica Scandinavica vol 102, no 12, December 2023, pp 1719-1729

Full URL: https://doi.org/10.1111/aogs.14681

Introduction
Few studies have described obstetric and critical care outcomes in pregnant women with COVID-19 needing intensive care unit (ICU) admission.

Material and methods
Obstetric and critical care outcomes of COVID-19 women admitted to eight ICUs from April 1, 2020 to September 15, 2021, in the North West of England were retrospectively analyzed. Women admitted to ICU were assigned to three groups: antepartum women discharged from ICU prior to delivery (antepartum ICU-discharged group), antepartum women who had expedited delivery (antepartum ICU-delivered group) and a postpartum group. Our aims were to describe maternal characteristics and assess how delivery influenced the obstetric and critical care outcomes in these women.

Results
During the study period, 615 women tested positive for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), of whom 62 (10.1%) needed ICU admission due to symptomatic COVID-19. Pregnancy loss (3.2%) was recorded in two women. Detailed obstetric and critical outcomes from 60 women are reported. Nine antepartum women (15%) admitted to ICU were discharged and continued their pregnancy, 13 antepartum women (21.7%) had expedited delivery by cesarean birth after ICU admission and 38 (63.3%) women were admitted to ICU during the postpartum period. Antepartum ICU-discharged women contracted the SARS-CoV-2 at an earlier median gestational age (23 weeks; p = 0.0003) and needed ICU admission at an earlier median gestational age (28 weeks, p = 0.03) compared with antepartum ICU-delivered (28 and 32 weeks) and postpartum women (35.5 and 36 weeks). Antepartum ICU-discharged women had the lowest rate of mechanical ventilation receipt (11.1%) compared with antepartum ICU-delivered women (52.3%) and postpartum women (44.3%) but the difference was not statistically significant (p =

0.13). No significant differences were observed in the frequency and severity of critical care complications in the antepartum ICU-discharged, antepartum-ICU delivered and postpartum women.

Conclusions
Of the women admitted to ICU antepartum, 40% were discharged while remaining pregnant and 60% had expedited delivery. Antepartum women who were discharged from ICU without giving birth may receive lower rates of mechanical ventilation than those who delivered in ICU or admitted postpartum; however, further studies are needed to confirm or refute this association. (Author)

2023-10768

Reduced maternal immunity and vertical transfer of immunity against SARS-CoV-2 variants of concern with COVID-19 exposure or initial vaccination in pregnancy. Boelig RC, Chaudhury S, Gromowski GD, et al (2023), Frontiers in Immunology 11 September 2023, online

Full URL: https://doi.org/10.3389/fimmu.2023.1216410

Introduction: As the SARS-CoV-2 pandemic continues to evolve, we face new variants of concern with a concurrent decline in vaccine booster uptake. We aimed to evaluate the difference in immunity gained from the original SARS-CoV-2 mRNA vaccine series in pregnancy versus SARS-CoV-2 exposure during pregnancy against recent variants of concern.

Study Design: This is a retrospective analysis of previously collected samples from 192 patients who delivered between February 2021 and August 2021. Participants were categorized as 1) COVID vaccine: mRNA vaccine in pregnancy, 2) COVID-exposed, and 3) controls. The primary outcome was neutralizing capacity against wild-type, Delta, and Omicron-B1 between cohorts. Secondary outcomes include a comparison of cord-blood ID50 as well as the efficiency of vertical transfer, measured by cord-blood:maternal blood ID50 for each variant.

Results: Pregnant women with COVID-19 vaccination had a greater spike in IgG titers compared to both those with COVID-19 disease exposure and controls. Both COVID exposure and vaccination resulted in immunity against Delta, but only COVID vaccination resulted in significantly greater Omicron ID-50 versus controls. The neutralizing capacity of serum from newborns was lower than that of their mothers, with COVID-vaccination demonstrating higher cord-blood ID50 vs wildtype and Delta variants compared to control or COVID-exposed, but neither COVID-exposure nor vaccination demonstrated significantly higher Omicron ID50 in cord-blood compared to controls. There was a 0.20 (0.07-0.33, p=0.004) and 0.12 (0.0-0.24, p=0.05) increase in cord-blood:maternal blood ID50 with COVID vaccination compared to COVID-19 exposure for wild-type and Delta respectively. In pair-wise comparison, vertical transfer of neutralization capacity (cord-blood:maternal blood ID50) was greatest for wild-type and progressively reduced for Delta and Omicron ID50.

Conclusion: Pregnant patients with either an initial mRNA vaccination series or COVID-exposure demonstrated reduced immunity against newer variants compared to wild-type as has been reported for non-pregnant individuals; however, the COVID-vaccination series afforded greater cross-variant immunity to pregnant women, specifically against Omicron, than COVID-disease. Vertical transfer of immunity is greater in those with COVID vaccination vs COVID disease exposure but is reduced with progressive variants. Our results reinforce the importance of bivalent booster vaccination in pregnancy for both maternal and infant protection and also provide a rationale for receiving updated vaccines as they become available. (Author)

2023-10552

Differences in delivery hospitalization experiences during the COVID-19 pandemic by maternal race and ethnicity, Pregnancy Risk Assessment Monitoring System, 2020. Simeone RM, Meghani M, Meeker JR, et al (2023), Journal of Perinatology 2 September 2023, online

Objective

We investigated maternal COVID-19 related experiences during delivery hospitalizations, and whether experiences differed by maternal race and ethnicity.

Study design
Data from the Pregnancy Risk Assessment Monitoring System among women with live births between April–December 2020 were used. Adjusted prevalence ratios (aPR) and 95% confidence intervals (CI) estimated associations between maternal race and ethnicity and COVID-19 related delivery experiences.

Results
Among 12,879 women, 3.6% reported infant separation and 1.8% reported not being allowed support persons. Compared with non-Hispanic White women, American Indian/Alaska Native (AI/AN) (aPR = 2.7; CI: 1.2–6.2), Hispanic (aPR = 2.2; CI: 1.5–3.1), non-Hispanic Black (aPR = 2.4; CI: 1.7–3.6), and non-Hispanic Asian (aPR = 2.8; CI: 1.6–4.9) women reported more infant separation due to COVID-19. Not being allowed support persons was more common among AI/AN (aPR = 5.2; CI: 1.8–14.8) and non-Hispanic Black (aPR = 2.3; CI: 1.3–4.1) women.

Conclusions
COVID-19 related delivery hospitalization experiences were unequally distributed among racial and ethnic minorities. (Author)

2023-10407

Maternal COVID-19 causing intrauterine foetal demise with microthrombotic placental insufficiency: a case report. Nonn O, Bonstingl L, Sallinger K, et al (2023), BMC Pregnancy and Childbirth vol 23, no 653, September 2023
Full URL: https://doi.org/10.1186/s12884-023-05942-6

Background
Pregnant women have an increased risk of getting infected with SARS-CoV-2 and are more prone to severe illness. Data on foetal demise in affected pregnancies and its underlying aetiology is scarce and pathomechanisms remain largely unclear.

Case
Herein we present the case of a pregnant woman with COVID-19 and intrauterine foetal demise. She had no previous obstetric or gynaecological history, and presented with mild symptoms at 34 + 3 weeks and no signs of foetal distress. At 35 + 6 weeks intrauterine foetal death was diagnosed. In the placental histopathology evaluation, we found inter- and perivillous fibrin depositions including viral particles in areas of degraded placental anatomy without presence of viral entry receptors and SARS-CoV-2 infection of the placenta.

Conclusion
This case demonstrates that maternal SARS-CoV-2 infection in the third trimester may lead to an unfavourable outcome for the foetus due to placental fibrin deposition in maternal COVID-19 disease possibly via a thrombogenic microenvironment, even when the foetus itself is not infected. (Author)

2023-10342

Severe Maternal Morbidity and the Impact of the Covid Pandemic. Al Sayegh K, Dakin A, Clinton S, et al (2023), Irish Medical Journal vol 116, no 8, September 2023, p 832
Full URL: https://imj.ie/severe-maternal-morbidity-and-the-impact-of-the-covid-pandemic/

Aims
The COVID-19 pandemic has affected day to day operations of our entire society including the health sector. From early in the pandemic, it became apparent that pregnant and recently pregnant women were more susceptible to severe COVID infection resulting in severe maternal morbidity (SMM). Our objective was to assess and analyse any impact that the COVID-19 pandemic may have had on rates of SMM in a stand-alone tertiary referral obstetric hospital.

Methods
An audit of patients that met the criteria for SMM during 2020 and 2021 was conducted and the incidence and causes of SMM were compared with data previously accrued from 2018 and 2019.

Results
The rate of SMM significantly decreased from 9 (2018-2019) to 5.3 (2020-2021) per 1000 deliveries: p=0.0001. While most of the categories for SMM decreased, Major Obstetric Haemorrhage (MOH) showed a statistically significant decrease from 5.7 to 3.4 per 1000 deliveries; p= 0.001 and renal/liver dysfunction decreased from 1.3 to 0.2 per 1000; p= 0.0004.

Discussion
SMM rates decreased by almost 50% in the initial two years of the Covid pandemic. Possible explanations for this include less effective capture of cases, the reproductive impact of the
pandemic (including avoidance of pregnancy in women with co-morbidities) and potential benefits of lockdowns and social distancing in pregnancy. (Author)

2023-09876

Vlogging Pregnancy and Laboring During the Pandemic on YouTube. Dai Z, Meindl M, Tetteh D (2023), The Journal of Perinatal Education vol 32, no 3, Autumn 2023

Since early 2020, the world has been dealing with the COVID-19 pandemic. The rapid changing situation led to unforeseeable challenges and questions for many people, including pregnant women. Through a textual analysis of personal narratives told via pregnancy and/or laboring vlogs during COVID-19, this present study aims to understand how women from China who live in another country during pregnancy have utilized YouTube vlogs to share their experiences. Through this analysis, we identify various challenges that these women experienced during their pregnancy. The COVID-19 pandemic exaggerated the normal difficulties of these issues and also created additional problems for these women, including regular pregnancy tests, choice of birthing locations, and the support and caring that were normal during this time period. (Author)

2023-09875

COVID-19 Impact on Group Prenatal Education: A Comparison of Virtual and In-Person Formats. Ahlers-Schmidt CR, Hervey AM (2023), The Journal of Perinatal Education vol 32, no 3, Autumn 2023

This retrospective study compared knowledge, intention, and satisfaction outcomes between pregnant women who attended prenatal education in person (n = 202; 55%) prior to the COVID-19 pandemic or virtually (n = 166; 45%) during the pandemic. Results identified increases in knowledge and intention for a healthy pregnancy and safe infant care for both groups. Virtual participants were less likely to endorse developing a birth plan (p = 0.035), knowledge of breastfeeding resources (p = 0.006), confidence in the ability to breastfeed (p = 0.033), and plans to use only a safe infant sleep location (p = 0.045). Important education was provided by continuing Baby Talk during the pandemic. However, topics with activities/demonstrations during in-person learning that were discontinued for virtual learning had significantly lower increases for virtual participants. Virtual education should incorporate more demonstrations/activities. (Author)

2023-09854

In uncharted territory "together each achieves more": a United Nations interagency collaboration for continuity of maternal and newborn health services during the coronavirus pandemic in the Eastern and Southern Africa region. Bergh A-M, Gohar F, Kidula NA, et al (2023), Frontiers in Global Women's Health 31 August 2023, online

Full URL: https://doi.org/10.3389/frhs.2023.1230414

The frangible collaboration between three United Nations agencies (UNICEF, UNFPA and WHO) in the Eastern and Southern Africa Region was strengthened by the outbreak of the coronavirus pandemic. The aim was to combine

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existing resources and expertise to support countries to respond to the pandemic more effectively and efficiently regarding the provision of maternal and newborn health services. Three kinds of activities were conducted: 15 webinars on a variety of topics and issues impacted by the pandemic; virtual training on maternal and perinatal death surveillance and response as well as on quality improvement; and the development of online e-learning modules for continuous professional development. Key dimensions of the collaboration included: a common vision; commitment to the process; dialogue; building relationships and trust; communication and information sharing; sharing of technical and financial resources and expertise; mobilization of additional resources; celebration of intermediate outcomes; facilitative leadership; and institutional design. Start-up lessons revolved around shared risk taking, while retaining agency autonomy. Collaboration lessons included forming a “united front”, harnessing technology to accelerate results, and mitigating adverse structural and contextual factors. There are widespread perceptions that collaborative initiatives tend to yield minimum results in terms of increased efficiency or effectiveness. This particular collaborative effort demonstrated elements of feasibility, value addition, synergy, cost effectiveness and demonstrable results where UN agencies delivered as one. The emergency in healthcare as a ripple effect of the coronavirus pandemic has caused a rethink of collaboration models and levels of engagement. (Author)

2023-09822

Serologic evolution and follow-up to IgG antibodies of infants born to mothers with gestational COVID. Vigil-Vázquez S, Manzanares Á, Hernanz-Lobo A, et al (2023), BMC Pregnancy and Childbirth vol 23, no 623, August 2023

Full URL: https://doi.org/10.1186/s12884-023-05926-6

Background

It is known that SARS-CoV-2 antibodies from pregnant women with SARS-CoV-2 infection during pregnancy cross the placenta but the duration and the protective effect of these antibodies in infants is scarce.

Methods

This prospective study included mothers with SARS-COV-2 infection during pregnancy and their infants from April 2020 to March 2021. IgG antibodies to SARS-CoV-2 spike protein were performed on women and infants at birth and at two and six months during follow-up. Anthropometrical measures and physical and neurological examinations and a clinical history of symptoms and COVID-19 diagnosis were collected. Simple linear regression was performed to compare categorical and continuous variables. To compare the mother’s and infant’s antibody titers evolution, a mixed linear regression model was used. A predictive model of newborn antibody titers at birth has been established by means of simple stepwise linear regression.

Results

51 mother-infant couples were included. 45 (90%) of the mothers and 44 (86.3%) of the newborns had a positive serology al birth. These antibodies were progressively decreasing and were positive in 34 (66.7%) and 7 (13.7%) of infants at 2 and 6 months, respectively. IgG titers of newborns at birth were related to mothers’ titers, with a positive moderate correlation (Pearson’s correlation coefficient: 0.82, $p < 0,001$). Fetal/maternal antibodies placental transference rate was 1.3 (IQR: 0.7–2.2). The maternal IgG titers at delivery and the type of maternal infection (acute, recent, or past infection) was significantly related with infants’ antibody titers at birth. No other epidemiological or clinical factors were related to antibodies titers. Neurodevelopment, psychomotor development, and growth were normal in 94.2% of infants in the third follow-up visit. No infants had a COVID-19 diagnosis during the follow-up period.

Conclusions

Transplacental transfer of maternal antibodies is high in newborns from mothers with recent or past infection at delivery, but these antibodies decrease after the first months of life. Infant’s IgG titers were related to maternal IgG titers at delivery. Further studies are needed to learn about the protective role of maternal antibodies in infants. (Author)

2023-09760

Variations across Europe in hospitalization and management of pregnant women with SARS-CoV-2 during the initial phase of the pandemic: Multi-national population-based cohort study using the International Network of Obstetric Survey Systems (INOSS). de Bruin O, Engjom H, Vousden N, et al (2023), Acta Obstetricia et Gynecologica Scandinavica vol 102, no 11, November 2023, pp 1521-1530

Full URL: https://doi.org/10.1111/aogs.14643

Introduction
The majority of data on COVID-19 in pregnancy are not from sound population-based active surveillance systems.

Material and methods
We conducted a multi-national study of population-based national or regional prospective cohorts using standardized definitions within the International Network of Obstetric Survey systems (INOSS). From a source population of women giving birth between March 1 and August 31, 2020, we included pregnant women admitted to hospital with a positive SARS-CoV-2 PCR test ≤7 days prior to or during admission and up to 2 days after birth. The admissions were further categorized as COVID-19-related or non-COVID-19-related. The primary outcome of interest was incidence of COVID-19-related hospital admission. Secondary outcomes included severe maternal disease (ICU admission and mechanical ventilation) and COVID-19-directed medical treatment.

Results
In a source population of 816 628 maternities, a total of 2338 pregnant women were admitted with SARS-CoV-2; among them 940 (40%) were COVID-19-related admissions. The pooled incidence estimate for COVID-19-related admission was 0.59 (95% confidence interval 0.27–1.02) per 1000 maternities, with notable heterogeneity across countries (I2 = 97.3%, P = 0.00). In the COVID-19 admission group, between 8% and 17% of the women were admitted to intensive care, and 5%–13% needed mechanical ventilation. Thromboprophylaxis was the most frequent treatment given during COVID-19-related admission (range 14%–55%). Among 908 infants born to women in the COVID-19-related admission group, 5 (0.6%) stillbirths were reported.

Conclusions
During the initial months of the pandemic, we found substantial variations in incidence of COVID-19-related admissions in nine European countries. Few pregnant women received COVID-19-directed medical treatment. Several barriers to rapid surveillance were identified. Investment in robust surveillance should be prioritized to prepare for future pandemics. (Author)

2023-09753

Maternal health during the COVID-19 pandemic: Experiences of health workers in three Brazilian municipalities. Carvalho RHSBF, Alves MTSSBE, Silva-Junior AGD, et al (2023), PLoS ONE vol 18, no 8, 29 August 2023, e0290068

Full URL: https://doi.org/10.1371/journal.pone.0290068

Objective: To analyze the experiences of maternal health workers in three Brazilian cities, located in the Northeast (São Luís), Southeast (Niterói), and South (Pelotas) regions during the first year of the COVID-19 pandemic.

Methods: Qualitative research carried out between December 2020 and February 2021. Interviews were conducted, in person or remotely, with 30 health workers, doctors and nurses, working in maternity hospitals of different degrees of complexity.

Results: Sociodemographic characteristics, employment relationships and professional qualification of the interviewees were described. Two thematic axes were identified: 1) changes in hospital organization and dynamics in the pandemic; 2) Illness and suffering of health workers. The majority of respondents were women. Most physicians had work relationships in the public and private sectors. In Niterói, health workers had better professional qualifications and more precarious work relationships (as temporary hires), compared to São Luís and Pelotas. In the context of the uncertainties resulting from the pandemic, this situation generated even more insecurity for those

workers. The statements at the beginning of the pandemic covered topics such as changes in the organizational dynamics of services, healthcare, telemedicine, and interaction between health workers and users. In the health workers' perception, the initial period of the health emergency, which resulted in intense changes in the provision of services, was marked by an increase in preterm births, perinatal mortality, and fetal losses. Work overload, fear of contamination, concern for family members and uncertainties regarding the new disease caused intense suffering in health workers who had little institutional support in the cities studied. The suffering experienced by health workers went beyond the work dimension, reaching their private life.

Conclusion: Changes caused by the pandemic required immediate adjustments in professional practices, generating insecurities in healthcare regardless of the location studied. The method of hiring health workers remained the same as the previously practiced one in each city. Due to the risk of disease transmission, measures contrary to humanization practices, and more restrictive in São Luís, were reported as harmful to obstetric care. The Covid-19 pandemic was a huge challenge for the Brazilian health system, aggravating the working conditions experienced by health workers. In addition to the work environment, it was possible to briefly glimpse its effects on private life.

Conflict of interest statement
The authors declare that they have no conflict of interest (Author)

2023-09746

Associations between COVID-19 State Policies and Maternal Mortality and Morbidity. Williams AM, Chaturvedi R, Abramovitz S, et al (2023), American Journal of Perinatology 24 August 2023, online

This journal article is research correspondence to an Editor. The research that the correspondence discusses is a retrospective study that aims to better understand the potential effects of state-level health care policy during the COVID-19 pandemic on maternal morbidity and mortality. (JM2)

2023-09743

The impact of COVID-19 on maternal death and fetal death, a cohort study in Brazil. Brioschi Dos Santos AP, Vicente CR, Cola JP, et al (2023), PLoS ONE vol 18, no 8, 17 August 2023, e0290343

Full URL: https://doi.org/10.1371/journal.pone.0290343

Objective: The study aimed to evaluate the risk of maternal death and fetal death among pregnant women infected with SARS-CoV-2.

Methods: This is a retrospective cohort study among pregnant women with secondary data from the National Live Births System (Sistema Nacional de Nascidos Vivos), National Mortality System (Sistema Nacional de Mortalidade), and e-SUS Health Surveillance System (Sistema e-SUS Vigilância em Saúde). Pregnant women confirmed for COVID-19 had positive RT-PCR between March 2020 and May 2021, pregnant women without COVID-19 were those without notification for disease. Maternal death, fetal death, and stillbirth were assessed as primary outcomes.

Results: We included 68,673 pregnant women not notified as suspected of COVID-19 and 1,386 with a confirmed diagnosis of COVID-19. Among pregnant women with COVID-19, 1013 (73.0%) were aged 20 to 34 years, 655 (47.2%) were brown, 907 (65.4%) had ≥ 8 years of education, in the third trimester of pregnancy (41.5%), undergoing cesarean section (64.5%). In adjusted analyses, COVID-19 in pregnancy had a higher risk of maternal death (relative risk [RR] 18.73-95% confidence interval [95%CI] 11.07-31.69), fetal death/stillbirth (RR 1.96-95%CI 1.18-3.25), preterm birth [RR 1.18-95%CI 1.01-1.39], cesarean delivery (RR 1.07-95%CI 1.02-1.11), and cesarean delivery occurring before the onset of labor (RR 1.33-95%CI 1.23-1.44).

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Conclusion: COVID-19 may contribute to unfavorable pregnancy outcomes. Results showed that pregnant women infected with SARS-CoV-2 had a higher risk of maternal death, fetal death/stillbirth, preterm birth, cesarean delivery, and cesarean section occurring before the onset of labor.

Conflict of interest statement
The authors have declared that no competing interests exist. (Author)

2023-09684

Social Drivers of COVID-19 Disease Severity in Pregnant Patients. Mckinney J, Salmanian B, Grace R, et al (2023), American Journal of Perinatology 20 July 2023, online

Objective While coronavirus disease 2019 (COVID-19), the disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has had global impact in all populations, certain groups of patients have experienced disproportionate rates of morbidity and mortality. The purpose of this study was to assess the relationship between COVID-19 disease severity, demographic variables, race and ethnicity, and social determinants of health among pregnant patients in a diverse urban population.

Study Design A retrospective analysis was performed of all pregnant patients diagnosed with COVID-19 at two urban tertiary care centers in Houston, TX between March and August 2020. Maternal demographic, COVID-19 illness criteria, and delivery characteristics were collected. The Centers for Disease Control and Prevention Social Vulnerability Index (SVI) and COVID-19 Community Vulnerability Index (CCVI) were obtained based on a patients' census tract of residence. Analyses compared persons with asymptomatic, mild, or severe-critical disease at diagnosis.

Results A total of 317 persons tested positive for COVID-19 during this time period. Asymptomatic persons were more likely to be diagnosed at later gestational ages, but there were no other differences in baseline maternal characteristics. Persons with more severe disease had greater social vulnerability specifically for housing and transportation than those with mild disease (mean SVI [standard error]: 0.72 [0.06] vs. 0.58 [0.2], p = 0.03). Total SVI, total CCVI, and other themed SVI and CCVI indices were not significantly different between groups.

Conclusion In this cohort of pregnant persons infected with SARS-CoV-2, an association was shown between disease severity and increased vulnerability in living conditions and transportation. Drivers of the pandemic and COVID-19 outcomes are complex and multifactorial, and likely change over time. However, continued efforts to accurately identify and measure social determinants of health in medicine will likely help identify geographic areas and patient populations that are at risk of higher disease burden. This could facilitate preventative and mitigation measures in these areas in future disaster or pandemic situations. (Author)

2023-09638

Severe Acute Respiratory Syndrome-Coronavirus-2 Antibody Status at the Time of Delivery and the Risk of Preeclampsia. Portmann-Baracco AS, Alcorta-Proaño RG, Nuñez-Mochizaki C, et al (2023), American Journal of Perinatology 26 June 2023, online

Objective Our objective was to evaluate the association between severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) serologic status in immunologically naive patients and the risk of preeclampsia at the time of delivery.

Study Design We conducted a retrospective cohort study of pregnant patients admitted to our institution from August 1 to September 30, 2020. We recorded maternal medical and obstetric characteristics and SARS-CoV-2 serologic

status. Our primary outcome was the incidence of preeclampsia. Antibody testing was performed, and patients were classified into seropositive groups: immunoglobulin (Ig)G + , IgM + , or both IgG+ and IgM + . Bivariate and multivariable analyses were performed.

Results We included 275 patients that were negative for SARS-CoV-2 antibodies, and 165 that were positive. Seropositivity was not associated with higher rates of preeclampsia (p = 0.183) or with preeclampsia with severe features (p = 0.916) even after adjusting for maternal age >35, BMI ≥ 30, nulliparity, and previous history of preeclampsia, and type of serologic status. Previous preeclampsia had the greatest association with the development of preeclampsia (odds ratio [OR] = 13.40; 95% confidence interval [CI]: 4.98–36.09; p < 0.05) and with preeclampsia with severe features (OR = 5.46; 95% CI: 1.65–18.02; p < 0.05).

Conclusion We found that in an obstetric population, there was no association between SARS-CoV-2 antibody status and the risk of preeclampsia. (Author)

2023-09627

Maternal and Cord Anti-SARS-CoV-2-Spike IgG following COVID-19 Vaccination versus Infection during Pregnancy: A Prospective Study, Israel October 2021–March 2022. Abu Shqara R, Frank Wolf M, Mikhail Mustafa S, et al (2023), American Journal of Perinatology 19 June 2023, online

Objective Defining how pregnant women respond to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection and vaccination is critical to optimize vaccination strategies that protect mother and infant at the epidemic. This study aimed to compare anti-SARS-CoV-2-spike immunoglobulin G (IgG) of vaccinated versus infected women and to determine the optimal timing of maternal vaccination during pregnancy at the time of epidemic.

Study Design We collected maternal/cord blood at delivery (October 2021–March 2022) and measured anti-SARS-CoV-2-spike IgG geometric mean concentrations (IgG-GMCs) using a quantitative immunoassay. We compared groups according to timing and number of doses and correlated maternal and fetal IgG levels. We described the proportion of women with IgG levels above the 150 AU/mL positivity threshold according to the timing of infection/vaccination and performed a subanalysis for maternal IgG-GMC levels pre- and during the Omicron wave.

Results We included 238 vaccinated women, 125 who received two doses and 113 three doses, and 48 unvaccinated infected women. All groups infected/vaccinated in the second or third trimester had an IgG-GMC above the positivity threshold. Third-trimester vaccination (second/third dose) resulted in higher maternal and cord-blood IgG-GMC compared to the second trimester (maternal-IgG: 102,32 vs. 4,325 AU/mL, p < 0.001; cord-IgG: 12,113 vs. 8,112 AU/mL, p < 0.001). Compared with infected-only women, a higher proportion of vaccinated women with ≥2 doses and their newborns had IgG levels above the positivity threshold at all time points. In vaccinated women, there were higher maternal IgG-GMC levels during the Omicron wave than pre-Omicron.

Conclusion At the time of epidemic, receiving an additional COVID-19 vaccine dose in the third trimester resulted in a higher IgG-GMC compared to the second trimester. Relatively higher levels of maternal and cord IgG-GMC were achieved following vaccination than infection. Women infected during or before the first trimester might benefit from an additional third-trimester dose to prevent peripartum infection and to passively immunize their newborn. The higher levels of maternal IgG-GMC in the Omicron period are suggestive of hybrid immunity. (Author)

2023-09626

Maternal–Fetal Results of COVID-19-Infected Pregnant Women Treated with Extracorporeal Membrane Oxygenation: A Descriptive Report. Alvarado-Socarras JL, Quintero-Lesmes DC, Martin DT, et al (2023), American Journal of Perinatology 19 June 2023, online

Objective COVID-19 infection may produce severe pneumonia, mainly in the adult population. Pregnant women with severe pneumonia are at high risk of developing complications, and conventional therapy sometimes fails to

reverse hypoxemia. Therefore, extracorporeal membrane oxygenation (ECMO) is an option in cases with refractory hypoxemic respiratory failure. This study aims to evaluate the maternal–fetal risk factors, clinical characteristics, complications, and outcomes of 11 pregnant or peripartum patients with COVID-19 treated with ECMO.

Study Design This is a retrospective descriptive study of 11 pregnant women undergoing ECMO therapy during the COVID-19 pandemic.

Results In our cohort, four patients underwent ECMO during pregnancy (36.3%) and 7 during the postpartum period. Initially, they started on venovenous ECMO, and three patients were required to change modality due to clinical conditions. In total, 4/11 pregnant women (36.3%) died. We established two periods that differed in the implementation of a standardized care model for reducing associated morbidities and mortality. Neurological complications were responsible for most deaths. Regarding fetal outcomes at early-stage pregnancies on ECMO (4), we report three stillbirths (75%), and one newborn (twin pregnancy) survived and had a favorable evolution.

Conclusion At later-stage pregnancies, all newborns survived, and we did not identify any vertical infection. ECMO therapy is an alternative for pregnant women with severe hypoxemic respiratory failure due to COVID-19, and may improve maternal and neonatal results. Regarding fetal outcomes, the gestational age played a definitive role. However, the main complications reported in our series and others are neurological. It is essential to develop novel, future interventions to prevent these complications. (Author)

2023-09584

Monoclonal Antibody Therapy of Breastfeeding Patient Infected with SARS-CoV-2: A Case Report. Marshall NE, Blanton MB, Doratt BM, et al (2023), Breastfeeding Medicine vol 18, no 8, August 2023

Introduction: Although safety data demonstrated the efficacy and effectiveness of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccination for all individuals over 6 months of age, including pregnant and breastfeeding individuals, optimal treatment courses for symptomatic pregnant and lactating individuals infected with SARS-CoV-2 remain to be defined.

Case Description: A coronavirus disease 2019 (COVID-19)-vaccinated breastfeeding woman received anti-SARS-CoV-2 monoclonal antibody treatment casirivimab–imdevimab 5 days after diagnosis of a symptomatic breakthrough SARS-CoV-2 infection.

Results and Conclusions: The patient did not present with obvious defects in innate or adaptive cellular subsets, but compared with controls had minimal maternal antibody response to recommended pregnancy vaccinations including SARS-CoV-2 and tetanus, diphtheria, pertussis (TDaP). The outcome of the monoclonal antibody infusion treatment was favorable as it transiently increased SARS-CoV-2 antibody titers in plasma and human milk compartments. (Author)

2023-09571

Association of continuity of carer and women's experiences of maternity care during the COVID-19 pandemic: A cross-sectional survey. Cummins A, Sheehy A, Taylor J, et al (2023), Midwifery vol 124, September 2023, 103761

Full URL: https://doi.org/10.1016/j.midw.2023.103761

Background

Recent research highlights the impact of the COVID-19 pandemic on maternity services, although none to date have analysed the association between continuity of carer and how women felt about the changes to pregnancy care and birth plans.

Aim

To describe pregnant women's self-reported changes to their planned pregnancy care and associations between

continuity of carer and how women feel about changes to their planned care.

Methods
A cross-sectional online survey of pregnant women aged over 18 years in their final trimester of pregnancy in Australia.

Findings
1668 women completed the survey. Most women reported at least one change to pregnancy care and birthing plans. Women receiving full continuity of carer were more likely to rate the changes to care as neutral/positive (p<.001) when compared with women who received partial or no continuity.

Discussion
Pregnant women experienced many changes to their planned pregnancy and birth care during the COVID-19 pandemic. Women who received full continuity of carer experienced fewer changes to care and were more likely to feel neutral/positive about the changes than women who did not receive full continuity of carer. (Author)

2023-09500

PRECORSE study: Seroprevalence of severe acute respiratory syndrome coronavirus 2 in the first trimester of pregnancy during the first wave of the COVID-19 pandemic and subsequent pregnancy complications—A cohort study. Aquise A, Rayo N, Fernández-Buhigas I, et al (2023), International Journal of Gynecology & Obstetrics vol 163, no 1, October 2023, pp 326-328

The seroprevalence of severe acute respiratory syndrome coronavirus 2 among first-trimester pregnant women January 1 to May 15, 2020, was 8.2%. There were no significant differences in complications in seropositive women. (Author)

2023-09480

The Global Network COVID-19 studies: a review. Naqvi S, Saleem S, Billah SM, et al (2023), BJOG: An International Journal of Obstetrics and Gynaecology 2 August 2023, online
Full URL: https://doi.org/10.1111/1471-0528.17610

With the paucity of data available regarding COVID-19 in pregnancy in low- and middle-income countries (LMICs), near the start of the pandemic, the Global Network for Women's and Children's Health Research, funded by the National Institute of Child Health and Human Development (NICHD), initiated four separate studies to better understand the impact of the COVID-19 pandemic in eight LMIC sites. These sites included: four in Asia, in Bangladesh, India (two sites) and Pakistan; three in Africa, in the Democratic Republic of the Congo (DRC), Kenya and Zambia; and one in Central America, in Guatemala. The first study evaluated changes in health service utilisation; the second study evaluated knowledge, attitudes and practices of pregnant women in relationship to COVID-19 in pregnancy; the third study evaluated knowledge, attitude and practices related to COVID-19 vaccination in pregnancy; and the fourth study, using antibody status at delivery, evaluated changes in antibody status over time in each of the sites and the relationship of antibody positivity with various pregnancy outcomes. Across the Global Network, in the first year of the study there was little reduction in health care utilisation and no apparent change in pregnancy outcomes. Knowledge related to COVID-19 was highly variable across the sites but was generally poor. Vaccination rates among pregnant women in the Global Network were very low, and were considerably lower than the vaccination rates reported for the countries as a whole. Knowledge regarding vaccines was generally poor and varied widely. Most women did not believe the vaccines were safe or effective, but slightly more than half would accept the vaccine if offered. Based on antibody positivity, the rates of COVID-19 infection increased substantially in each of the sites over the course of the pandemic. Most pregnancy outcomes were not worse in women who were infected with COVID-19 during their pregnancies. We interpret the absence of an increase in adverse outcomes in women infected with COVID-19 to the fact that in the populations studied, most COVID-19 infections were either asymptomatic or were relatively mild. (Author)

2023-09467

Trends over time in the knowledge, attitude and practices of pregnant women related to COVID-19: A cross-sectional survey from seven low- and middle-income countries. Jessani S, Saleem S, Fogleman E, et al (2023), BJOG: An International Journal of Obstetrics and Gynaecology 15 August 2023, online

Full URL: https://doi.org/10.1111/1471-0528.17630

Objective
To understand trends in the knowledge, attitudes and practices (KAP) of pregnant women related to COVID-19 in seven low- and middle-income countries.

Design
Multi-country population-based prospective observational study.

Setting
Study sites in Bangladesh, the Demographic Republic of Congo (DRC), Guatemala, India (two sites), Kenya, Pakistan and Zambia.

Population
Pregnant women in the Global Network's Maternal and Neonatal Health Registry (MNHR).

Methods
Pregnant women enrolled in the MNHR were interviewed to assess their KAP related to COVID-19 from September 2020 through July 2022 across all study sites.

Main outcome measures
Trends of COVID-19 KAP were assessed using the Cochran–Armitage test for trend.

Results
A total of 52 297 women participated in this study. There were wide inter-country differences in COVID-19-related knowledge. The level of knowledge of women in the DRC was much lower than that of women in the other sites. The ability to name COVID-19 symptoms increased over time in the African sites, whereas no such change was observed in Bangladesh, Belagavi and Guatemala. All sites observed decreasing trends over time in women avoiding antenatal care visits.

Conclusions
The knowledge and attitudes of pregnant women related to COVID-19 varied substantially among the Global Network sites over a period of 2 years; however, there was very little change in knowledge related to COVID-19 over time across these sites. The major change observed was that fewer women reported avoiding medical care because of COVID-19 across all sites over time. (Author)

2023-09357

Knowledge, attitudes, and practices toward COVID-19 among pregnant women in Jordan during the COVID-19 outbreak. Mrayan L, Abujilban S, Tanash M, et al (2023), Birth 22 June 2023, online

Background
COVID-19 is highly infectious and can cause harmful effects in pregnant women. As COVID-19 is a relatively new disease, there is a continuing need to assess the knowledge, attitudes, and practices (KAP) toward this virus among pregnant women globally in order to identify any gaps and suggest ways to address them. Little is known about how pregnant Jordanian women responded to the pandemic.

Objective

The purpose of this study was to investigate the level of KAP toward COVID-19 among pregnant women in Jordan and to detect the variables associated with a satisfactory KAP level.

Methods
A cross-sectional online survey based on a predesigned KAP survey was modified for use among pregnant women in Jordan. The data obtained from 574 participants were analyzed using the Statistical Package for the Social Sciences, version 23.

Results
Overall, pregnant women in Jordan were found to be knowledgeable, to have a positive attitude, and to exhibit good practices in relation to COVID-19. Some demographic factors were significantly associated with high levels of knowledge, positive attitudes, and safer practices.

Conclusions
Results suggest that special attention should be given by the government to pregnant women with respect to any future emergent situations such as additional COVID-19 surges or other novel respiratory conditions in order to ensure that they are fully informed and prepared. (Author)

2023-09247

Influenza Vaccination Among Pregnant People Before and During the Coronavirus Disease 2019 (COVID-19) Pandemic. Irving SA, Crane B, Weintraub E, et al (2023), Obstetrics & Gynecology vol 142, no 3, September 2023, pp 636-639

There are limited data on influenza vaccination coverage among pregnant people in the United States during the coronavirus disease 2019 (COVID-19) pandemic. Within the Vaccine Safety Datalink, we conducted a retrospective cohort study to examine influenza vaccination coverage during the 2016–2017 through the 2021–2022 influenza seasons among pregnant people aged 18–49 years. Using influenza vaccines administered through March each season, we assessed crude coverage by demographic and clinical characteristics. Annual influenza vaccination coverage increased from the 2016–2017 season (63.0%) to a high of 71.0% in the 2019–2020 season. After the start of the COVID-19 pandemic, it decreased to a low of 56.4% (2021–2022). In each of the six seasons, coverage was lowest among pregnant people aged 18–24 years and among non-Hispanic Black pregnant people. The 2021–2022 season had the lowest coverage across all age and race and ethnicity groups. The recent decreases highlight the need for continued efforts to improve coverage among pregnant people. (Author)

2023-09236

The time of motherhood in a time of crisis: a longitudinal qualitative study. Caffieri A, Margherita G (2023), Journal of Reproductive and Infant Psychology 2 August 2023, online

Aims/Background
The impact of the COVID-19 pandemic on the health of women in the perinatal period has been widely shown in literature. Although longitudinal quantitative studies investigated the long-term effects of the COVID-19 pandemic on both women and children's health, no longitudinal qualitative study can be found within literature. The study aimed at an in-depth exploration of the longitudinal trajectories, from pregnancy to postpartum, lived by women through the waves of the COVID-19 pandemic in Italy.

Design/Methods
As a method, the qualitative approach of Longitudinal Interpretative Phenomenological Analysis was used. A total of 14 women were interviewed for the first time during pregnancy (March-May 2021/second wave of the COVID-19 spread). Among the total, 8 completed a second interview, one year later, during postpartum (March-May 2022/end of the COVID-19 public emergency) and were included in the analysis.

Results

Three superordinated themes emerged: (1) Maternal functions during the COVID-19 pandemic; (2) 'Care' needs of women in maternal services; (3) Unspeakable: obstetric violence and gender inequality in the working field. Themes were organised considering women's experience, showing continuity and discontinuity paths overtime.

Conclusion
Women in their perinatal period during the COVID-19 pandemic felt like 'living incubators', both isolated and invested in individual and social responsibilities of 'caring'.

The study confirms the need to re-centre maternal care services' praxis on women's needs as an act of collective repair against the consequences of collective trauma of the COVID-19 pandemic. (Author)

2023-09218

"This is not what I imagined motherhood would look like": pregnancy, postpartum, and parenting during COVID-19 – a qualitative analysis of the first year since birth. Saleh L, Canclini S, Mathison C, et al (2023), BMC Pregnancy and Childbirth vol 23, no 578, August 2023

Full URL: https://doi.org/10.1186/s12884-023-05872-3

Background
Childbearing is one of the most emotional and transformative events in a woman's life. This study aims to explore the impact COVID-19 had on childbirth, postpartum, and the first year since giving birth.

Methods
This was a qualitative study using data previously collected for a larger study of women who had given birth during the COVID-19 pandemic in the United States. The findings presented here are from an analysis of a subset of open-ended questions. Sixty-six participants completed questions about how COVID-19 affected childbearing and postpartum experiences. Data was analyzed using inductive thematic analysis.

Results
Thematic analysis of the data identified five major themes and several subthemes, including: (1) amplification of new mother typical emotions (positive emotions and negative emotions), (2) financial impact on mothers and their families, (3) persistent impact of COVID-19, (4) new mom paradigm crash (first time mothers and experienced mothers faced different issues such as lack of education and support, adding a layer to the day-to-day, and negotiating time with others) and (5) validating the importance of maternal health. On the whole, participants were overwhelmed, isolated, and did not have enough physical and emotional support. There was a lack of supportive maternal healthcare both in the short-term and long-term, with an emphasis on poor postpartum support.

Conclusions
This study supports previous findings that women who gave birth and entered motherhood during the COVID-19 pandemic were impacted in many ways. These findings contribute to the understanding of women's experiences not just in the immediate postpartum period, but in their daily lives one year after childbirth. The results highlight that our nation's traditional maternal healthcare model may be insufficient, especially when facing a national crisis. Strain placed on the healthcare system by COVID-19 impacted both the physical and mental health of mothers who were often left with inadequate care, education, and support. Our findings point to the need for more supportive maternal health both during childbirth and postpartum. (Author)

2023-09197

Predicting adverse outcomes in pregnant patients positive for SARS-CoV-2: a machine learning approach- a retrospective cohort study. Young D, Houshmand B, Tan CC, et al (2023), BMC Pregnancy and Childbirth vol 23, no 553, August 2023

Full URL: https://doi.org/10.1186/s12884-023-05679-2

Background
Pregnant people are particularly vulnerable to SARS-CoV-2 infection and to ensuing severe illness. Predicting adverse maternal and perinatal outcomes could aid clinicians in deciding on hospital admission and early initiation of treatment in affected individuals, streamlining the triaging processes.

Methods
An international repository of 1501 SARS-CoV-2-positive cases in pregnancy was created, consisting of demographic variables, patient comorbidities, laboratory markers, respiratory parameters, and COVID-19-related symptoms. Data were filtered, preprocessed, and feature selection methods were used to obtain the optimal feature subset for training a variety of machine learning models to predict maternal or fetal/neonatal death or critical illness.

Results
The Random Forest model demonstrated the best performance among the trained models, correctly identifying 83.3% of the high-risk patients and 92.5% of the low-risk patients, with an overall accuracy of 89.0%, an AUC of 0.90 (95% Confidence Interval 0.83 to 0.95), and a recall, precision, and F1 score of 0.85, 0.94, and 0.89, respectively. This was achieved using a feature subset of 25 features containing patient characteristics, symptoms, clinical signs, and laboratory markers. These included maternal BMI, gravidity, parity, existence of pre-existing conditions, nicotine exposure, anti-hypertensive medication administration, fetal malformations, antenatal corticosteroid administration, presence of dyspnea, sore throat, fever, fatigue, duration of symptom phase, existence of COVID-19-related pneumonia, need for maternal oxygen administration, disease-related inpatient treatment, and lab markers including sFLT-1/PlGF ratio, platelet count, and LDH.

Conclusions
We present the first COVID-19 prognostication pipeline specifically for pregnant patients while utilizing a large SARS-CoV-2 in pregnancy data repository. Our model accurately identifies those at risk of severe illness or clinical deterioration, presenting a promising tool for advancing personalized medicine in pregnant patients with COVID-19. (Author)

2023-09186

Chest CT scan predictors of intensive care unit admission in hospitalized pregnant women with COVID-19: a case–control study. Badr DA, De Lucia F, Carlin A, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 2, 2241107

Full URL: https://doi.org/10.1080/14767058.2023.2241107

Purpose
To investigate the role of chest computed tomography (CT) scan in the prediction of admission of pregnant women with COVID-19 into intensive care unit (ICU).

Methods
This was a single-center retrospective case–control study. We included pregnant women diagnosed with COVID-19 by reverse transcriptase polymerase chain reaction between February 2020 and July 2021, requiring hospital admission due to symptoms, who also had a CT chest scan at presentation. Patients admitted to the ICU (case group) were compared with patients who did not require ICU admission (control group). The CT scans were reported by an experienced radiologist, blinded to the patient's course and outcome, aided by an artificial intelligence software. Total CT scan score, chest CT severity score (CT-SS), total lung volume (TLV), infected lung volume (ILV), and infected-to-total lung volume ratio (ILV/TLV) were calculated. Receiver operating characteristic curves were constructed to test the sensitivity and specificity of each parameter.

Results
8/28 patients (28.6%) required ICU admission. These also had lower TLV, higher ILV, and ILV/TLV. The area under the curve (AUC) for these three parameters was 0.789, 0.775, and 0.763, respectively. TLV, ILV, and ILV/TLV had good

sensitivity (62.5%, 87.5%, and 87.5%, respectively) and specificity (84.2%, 70%, and 73.7%, respectively) for predicting ICU admission at the following selected thresholds: 2255 mL, 319 mL, and 14%, respectively. The performance of CT-SS, CT scan score, and ILV/TLV in predicting ICU admission was comparable.

Conclusion
TLV, ILV, and ILV/TLV as measured by an artificial intelligence software on chest CT, may predict ICU admission in hospitalized pregnant women, symptomatic for COVID-19. (Author)

2023-09041

Prenatal Health Care Outcomes Before and During the COVID-19 Pandemic Among Pregnant Individuals and Their Newborns in an Integrated US Health System. Ferrara A, Greenberg M, Zhu Y, et al (2023), JAMA Network Open vol 6, no 7, July 2023, e2324011

Full URL: https://doi.org/10.1001/jamanetworkopen.2023.24011

Importance The COVID-19 pandemic accelerated the use of telemedicine. However, data on the integration of telemedicine in prenatal health care and health outcomes are sparse.

Objective To evaluate a multimodal model of in-office and telemedicine prenatal health care implemented during the COVID-19 pandemic and its association with maternal and newborn health outcomes.

Design, Setting, and Participants This cohort study of pregnant individuals using longitudinal electronic health record data was conducted at Kaiser Permanente Northern California, an integrated health care system serving a population of 4.5 million people. Individuals who delivered a live birth or stillbirth between July 1, 2018, and October 21, 2021, were included in the study. Data were analyzed from January 2022 to May 2023.

Exposure Exposure levels to the multimodal prenatal health care model were separated into 3 intervals: unexposed (T1, birth delivery between July 1, 2018, and February 29, 2020), partially exposed (T2, birth delivery between March 1, 2020, and December 5, 2020), and fully exposed (T3, birth delivery between December 6, 2020, and October 31, 2021).

Main Outcomes and Measures Primary outcomes included rates of preeclampsia and eclampsia, severe maternal morbidity, cesarean delivery, preterm birth, and neonatal intensive care unit (NICU) admission. The distributions of demographic and clinical characteristics, care processes, and health outcomes for birth deliveries within each of the 3 intervals of interest were assessed with standardized mean differences calculated for between-interval contrasts. Interrupted time series analyses were used to examine changes in rates of perinatal outcomes and its association with the multimodal prenatal health care model. Secondary outcomes included gestational hypertension, gestational diabetes, depression, venous thromboembolism, newborn Apgar score, transient tachypnea, and birth weight.

Results The cohort included 151 464 individuals (mean [SD] age, 31.3 [5.3] years) who delivered a live birth or stillbirth. The mean (SD) number of total prenatal visits was similar in T1 (9.41 [4.75] visits), T2 (9.17 [4.50] visits), and T3 (9.15 [4.66] visits), whereas the proportion of telemedicine visits increased from 11.1% (79 214 visits) in T1 to 20.9% (66 726 visits) in T2 and 21.3% (79 518 visits) in T3. NICU admission rates were 9.2% (7014 admissions) in T1, 8.3% (2905 admissions) in T2, and 8.6% (3615 admissions) in T3. Interrupted time series analysis showed no change in NICU admission risk during T1 (change per 4-week interval, −0.22%; 95% CI, −0.53% to 0.09%), a decrease in risk during T2 (change per 4-week interval, −0.91%; 95% CI, −1.77% to −0.03%), and an increase in risk during T3 (change per 4-week interval, 1.75%; 95% CI, 0.49% to 3.02%). There were no clinically relevant changes between T1, T2, and T3 in the rates of risk of preeclampsia and eclampsia (change per 4-week interval, 0.76% [95% CI, 0.39% to 1.14%] for T1; −0.19% [95% CI, −1.19% to 0.81%] for T2; and −0.80% [95% CI, −2.13% to 0.55%] for T3), severe maternal morbidity (change per 4-week interval , 0.12% [95% CI, 0.40% to 0.63%] for T1; −0.39% [95% CI, −1.00% to 1.80%] for T2; and 0.99% [95% CI, −0.88% to 2.90%] for T3), cesarean delivery (change per 4-week interval, 0.06% [95% CI, −0.11% to 0.23%] for T1; −0.03% [95% CI, −0.49% to 0.44%] for T2; and −0.05% [95% CI, −0.68% to 0.59%] for T3), preterm birth (change per 4-week interval, 0.23% [95% CI, −0.11% to 0.57%] for T1; −0.37% [95% CI, −1.29% to 0.55%] for T2; and −0.15% [95% CI, −1.41% to

1.13%] for T3), or secondary outcomes.

Conclusions and Relevance These findings suggest that a multimodal prenatal health care model combining in-office and telemedicine visits performed adequately compared with in-office only prenatal health care, supporting its continued use after the pandemic. (Author)

2023-09033

The effect of the COVID-19 pandemic on UK parent experiences of pregnancy ultrasound scans and parent-fetal bonding: A mixed methods analysis. Skelton E, Smith A, Harrison G, et al (2023), PLoS ONE vol 18, no 6, 2 June 2023, e0286578

Full URL: https://doi.org/10.1371/journal.pone.0286578

Introduction: Companionship in antenatal care is important for facilitating positive parental experiences. During the COVID-19 pandemic, restrictions on partner attendance at fetal ultrasound scans were introduced nationally to minimise transmission of the virus. This study aimed to explore the effect of these restrictions on maternal and paternal experiences of pregnancy scans and evaluate their potential effect on parent-fetal bonding.

Methods: A UK-wide, anonymous cross-sectional survey was completed by new and expectant parents (n = 714) who had, or were awaiting a pregnancy scan during the COVID-19 pandemic. The CORE-10 and an adapted version of the Prenatal Attachment Inventory were used to evaluate psychological distress and prenatal bonding. Additional survey questions captured parental experiences of scans. Separate statistical and thematic analyses of the data were undertaken. A joint display matrix was used to facilitate integration of quantitative and qualitative claims to generate a comprehensive interpretation of study findings.

Findings: When fathers did not attend the scan, feelings of excitement and satisfaction were significantly reduced ($p<0.001$) and feelings of anxiety increased ($p<0.001$) in both parents. Mothers were concerned about receiving unexpected news alone and fathers felt excluded from the scan. Mean paternal bonding (38.22, SD 10.73) was significantly lower compared to mothers (47.01, SD 7.67) although no difference was demonstrated between those who had attended the scan and those who had not. CORE-10 scores suggested low-to-mild levels of psychological distress, although the mean difference between mothers and fathers was not significant. Key themes described both parents' sense of loss for their desired pregnancy scan experience and reflected on sonographers' central role in providing parent-centred care during scans.

Conclusion: Restrictions on partner attendance at scans during the COVID-19 pandemic had a negative effect on parental experiences of antenatal imaging. Provision of parent-centred care, which is inclusive of partners, is essential for improved parental experiences.

Conflict of interest statement
The authors have declared that no competing interests exist. (Author)

2023-09031

The antenatal psychological experiences of women during two phases of the COVID-19 pandemic: A recurrent, cross-sectional, thematic analysis. Jackson L, Davies SM, Podkujko A, et al (2023), PLoS ONE vol 18, no 6, 8 June 2023, e0285270

Full URL: https://doi.org/10.1371/journal.pone.0285270

Initial COVID-19-related social distancing restrictions, imposed in the UK in March 2020, and the subsequent lifting of restrictions in May 2020 caused antenatal disruption and stress which exceeded expected vulnerabilities associated with this lifecourse transition. The current study aimed to explore the antenatal psychological experiences of women

during different phases of pandemic-related lockdown restrictions in the UK. Semi-structured interviews were held with 24 women about their antenatal experiences: twelve were interviewed after the initial lockdown restrictions (Timepoint 1; T1), and a separate twelve women were interviewed after the subsequent lifting of those restrictions (Timepoint 2; T2). Interviews were transcribed and a recurrent, cross-sectional thematic analysis was conducted. Two themes were identified for each timepoint, and each theme contained sub-themes. T1 themes were: 'A Mindful Pregnancy' and 'It's a Grieving Process', and T2 themes were: 'Coping with Lockdown Restrictions' and 'Robbed of Our Pregnancy'. COVID-19 related social distancing restrictions had an adverse effect on women's mental health during the antenatal period. Feeling trapped, anxious, and abandoned were common at both timepoints. Actively encouraging conversations about mental wellbeing during routine care and adopting a prevention opposed to cure attitude toward implementing additional support provisions may serve to improve antenatal psychological wellbeing during health crises.

Conflict of interest statement
The authors have declared that no competing interests exist. (Author)

2023-08997

Social support for postpartum women and associated factors including online support to reduce stress and depression amidst COVID-19: Results of an online survey in Thailand. Kim SJ, Aye YM, Panyarachun D, et al (2023), PLoS ONE vol 18, no 7, 27 July 2023, e0289250

Full URL: https://doi.org/10.1371/journal.pone.0289250

Background: Social support for postpartum women helps mothers to recover from childbirth and fosters healthy infant development. However, the impacts of reduced interpersonal interactions inflicted by the COVID-19 outbreak on available social support for postpartum women have received little attention. Therefore, this study aimed to examine the levels of social support provided to postpartum women and associated factors in Thailand during the COVID-19 pandemic.

Methods: A cross-sectional study was conducted from July to October 2021 using an anonymous online questionnaire. The responses of 840 eligible women up to six months postpartum in Thailand were obtained. The maternity social support scale was used to measure social support. Multivariate logistic regression was used to analyse the factors associated with social support among postpartum women.

Results: About 57% of women reported to receive high support. Women in the high social support group were more likely to be married (aOR:2.70; 95% CI:1.57-4.66), have a university education or above (1.88; 1.35-2.64), have an intended pregnancy (2.06; 1.34-3.16), good health (2.01; 1.44-2.81), good sleep quality (1.62; 1.14-2.31), receive counsel from peers or family (1.56; 1.13-2.16), and use internet or social media to reduce stress and depression (1.51; 1.08-2.11). Meanwhile, women in the high social support group were significantly less likely to feed complementary foods to infants within 24 hours of completing the survey (0.28; 0.15-0.52).

Conclusions: The results of this study indicated that more than half of the women reported high support and illustrated the important role played by family, peers, and professionals as well as online and remote channels in providing postpartum informational and emotional support during the pandemic. Online platforms and remote support may be considered to provide social support to postpartum women during a pandemic such as COVID-19.

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Conflict of interest statement
The authors have declared that no competing interests exist. (Author)

2023-08994

Pregnant women with mild COVID-19 followed in community setting by telemedicine, and factors associated with unfavorable outcome. Dinh A, Drouet F, Dechartres A, et al (2023), PLoS ONE vol 18, no 8, 3 August 2023, e0288845

Full URL: https://doi.org/10.1371/journal.pone.0288845

Objectives: Few is known on pregnant women with mild COVID-19 managed in a community setting with a telemedicine solution, including their outcomes. The objective of this study is to evaluate the adverse fetal outcomes and hospitalization rates of pregnant COVID-19 outpatients who were monitored with the Covidom© telemedicine solution.

Methods: A nested study was conducted on pregnant outpatients with confirmed COVID-19, who were managed with Covidom© between March and November 2020. The patients were required to complete a standard medical questionnaire on co-morbidities and symptoms at inclusion, and were then monitored daily for 30 days after symptom onset. Adverse fetal outcome was defined as a composite of preterm birth, low birthweight, or stillbirth, and was collected retrospectively through phone contact with a standardized questionnaire.

Results: The study included 714 pregnant women, with a median age of 32.0 [29.0-35.0] and a median BMI of 23.8 [21.3-27.0]. The main comorbidities observed were smoking (53%), hypertension (19%). The most common symptoms were asthenia (45.6%), cough (40.3%) and headache (25.7%), as well as anosmia (28.4%) and agueusia (32.3%). Adverse fetal outcomes occurred in 64 (9%) cases, including 38 (5%) preterm births, 33 (5%) low birthweights, and 6 (1%) stillbirths. Hospitalization occurred in 102 (14%) cases and was associated with adverse fetal outcomes (OR 2.4, 95% CI 1.3-4.4).

Conclusions: Our study suggests that adverse fetal outcomes are rare in pregnant women with mild COVID-19 who are monitored at home with telemedicine. However, hospitalization for COVID-19 and pregnancy-induced hypertension are associated with a higher risk of adverse fetal outcome.

Conflict of interest statement
The authors have declared that no competing interests exist. (Author)

2023-08991

Relationship between aging population, birth rate and disposable income per capita in the context of COVID-19. Yang G, Zhang L (2023), PLoS ONE vol 18, no 8, 10 August 2023, e0289781

Full URL: https://doi.org/10.1371/journal.pone.0289781

The outbreak of the COVID-19 in early 2020 and the recurring epidemic in later years have disturbed China's economy. Moreover, China's demographic dividend has been disappearing due to its fastest aging population and declining birth rate. The birth rates in eastern provinces of China are much lower than those of the western provinces. Considering the impacts of the COVID-19 and aging population, this paper focused on the relationship between birth rate and the disposable income and tried to find effective measures to raise China's birth rate. We discovered through regression analysis that the link between per capita disposable income and birth rate is initially "reverse J" and later "inverted J", indicating that per capita disposable income will influence the birth rate. Women's employment rate and educational level are negatively correlated with the birth rate. To raise the fertility rate in China, it is necessary to increase the

marriage rate and the willingness to have children by raising the per capita disposable income and introducing effective tax relief policies.

Conflict of interest statement
The authors have declared that no competing interests exist. (Author)

Conflict of interest statement
The authors have declared that no competing interests exist. (Author)

2023-08830

Hereditary angioedema and COVID-19 during pregnancy: Two case reports. Salih A, Chin A, Gandhi M, et al (2023), Journal of Allergy and Clinical Immunology: In Practice vol 11, no 3, March 2023, pp 961-962
Full URL: https://doi.org/10.1016/j.jaip.2022.11.045

Data regarding outcomes for pregnant women with hereditary angioedema and coronavirus disease 2019 (COVID-19) are unknown. However, pregnancy is potentially a risk factor in triggering severe disease in COVID-19 and hereditary angioedema. Implications for C1 esterase inhibition in patients with COVID-19 are discussed. (Author)

2023-08436

Pregnancy loss following miscarriage and termination of pregnancy for medical reasons during the COVID-19 pandemic: a thematic analysis of women's experiences of healthcare on the island of Ireland. Heaney S, Galeotti M, Aventin Á (2023), BMC Pregnancy and Childbirth vol 23, no 529, July 2023
Full URL: https://doi.org/10.1186/s12884-023-05839-4

Background
Losing a baby during pregnancy can be a devastating experience for expectant parents. Many report dedicated, compassionate healthcare provision as a facilitator of positive mental health outcomes, however, healthcare services have been severely impacted during the COVID-19 pandemic.

Aim
To explore women's experiences of healthcare service provision for miscarriage and termination of pregnancy for medical reasons (TFMR) on the island of Ireland during the COVID-19 pandemic.

Methods
Findings combine data from elements of two separate studies. Study 1 used a mixed methods approach with women who experienced miscarriage and attended a hospital in Northern Ireland. Study 2 was qualitative and examined experiences of TFMR in Northern Ireland and Ireland. Data analysed for this paper includes open-ended responses from 145 women to one survey question from Study 1, and semi-structured interview data with 12 women from Study 2. Data were analysed separately using Thematic Analysis and combined for presentation in this paper.

Results
Combined analysis of results indicated three themes, (1) Lonely and anxiety-provoking experiences; (2) Waiting for inadequate healthcare; and (3) The comfort of compassionate healthcare professionals.

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Conclusions
Women's experiences of healthcare provision were negatively impacted by COVID-19, with the exclusion of their partner in hospital, and delayed services highlighted as particularly distressing. Limited in-person interactions with health professionals appeared to compound difficulties. The lived experience of service users will be helpful in developing policies, guidelines, and training that balance both the need to minimise the risk of infection spread, with the emotional, psychological, and physical needs and wishes of parents. Further research is needed to explore the long-term impact of pregnancy loss during a pandemic on both parents and health professionals delivering care. (Author)

2023-08303

Different impact of COVID-19 on symptomatic pregnant and postpartum women in low-income countries and low- and middle-income countries. Mahajan NN, Ansari M, Munshi H, et al (2023), International Journal of Gynecology & Obstetrics vol 162, no 3, September 2023, pp 1110-1113

The adverse outcomes of COVID-19 among pregnant women have been pronounced in the low-income countries compared with low- and middle-income countries. (Author)

2023-08295

Evaluation of long-COVID symptoms in women infected with SARS-CoV-2 during pregnancy. Kandemir H, Bülbül GA, Kirtiş E, et al (2023), International Journal of Gynecology & Obstetrics 30 June 2023, online

Objective
To evaluate the symptoms of Long COVID (LC), frequency of symptoms, and possible risk factors in women diagnosed with coronavirus disease 2019 (COVID-19) during pregnancy.

Methods
We conducted a single-center, cross-sectional, retrospective study in 99 pregnant women who were polymerase chain reaction-positive (PCR+) for COVID-19 between March 1, 2020 and April 30, 2022. The control group consisted of 99 women who gave birth between these dates and did not have COVID-19. We evaluated the clinical manifestations, symptom prevalence, and symptom characteristics of acute COVID-19 and the LC in the PCR+ group as well as questioned the control group for LC symptoms.

Results
Of the women in the PCR+ group, 74 (74.7%) had at least one LC symptom, and the most common symptoms were fatigue (54; 72.9%), myalgia/arthralgia (49; 66.2%), and anosmia/ageusia (31; 41.9%). The rate of LC symptoms in the control group was 14 (14.1%). The prevalence of LC symptoms was higher in severely/critically symptomatic patients (23; 100%) in the acute period of disease than in asymptomatic/mildly symptomatic (51; 67.1%) (P = 0.005). Hospitalization during acute infection (adjusted odds ratio [aOR] = 13.30), having one or more symptoms (aOR = 4.75), and having symptoms such as cough (aOR = 6.27) and myalgia/arthralgia (aOR = 12.93) increased the likelihood of LC.

Conclusion
Many women experienced LC after suffering acute COVID-19 in pregnancy, but LC prevalence was similar to the general population. LC correlates with severity, type, and number of symptoms of acute COVID-19. (Author)

2023-08261

Vertical transmission of SARS-CoV-2 – are there differences in rates of neonatal SARS-CoV-2 infection in two classification systems?. Mand N, Hutten M, Maier RF, et al (2023), Archives of Disease in Childhood: Fetal and Neonatal Edition 7 July 2023, online

Neonatal SARS-CoV-2 infection due to vertical transmission has been summarised in recent reviews.1 2 However, the comparability of the underlying case reports and case series might be limited because of the often inconsistent use of

different classification systems.1

COVID-19-Related Obstetric and Neonatal Outcome Study (CRONOS) was a prospective German registry enrolling pregnant women with confirmed SARS-CoV-2 infection during their pregnancy.3 4 The registry collected data between 3 April 2020 and 10 February 2023 with 130 of 686 (18.9%) German obstetric hospitals actively participating.4 To classify the timing and the probability of mother-to-child transmission of SARS-CoV-2-positive newborns in the CRONOS cohort we used the classification systems of the Nordic Federation of Societies of Obstetrics and Gynecology (NFSOG)5 and WHO. (Author)

2023-08216

COVID-19 symptoms and antibody positivity among unvaccinated pregnant women: An observational study in seven countries from the Global Network. Kavi A, Goudar SS, Somannavar MS, et al (2023), BJOG: An International Journal of Obstetrics and Gynaecology 20 July 2023, online

Full URL: https://doi.org/10.1111/1471-0528.17604

Objective
To determine the relation of COVID-19 symptoms to COVID-19 antibody positivity among unvaccinated pregnant women in low- and middle-income countries (LMIC).

Design
COVID-19 infection status measured by antibody positivity at delivery was compared with the symptoms of COVID-19 in the current pregnancy in a prospective, observational cohort study in seven LMICs.

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 (Belagavi and Nagpur sites) and Guatemala.

Population
Pregnant women enrolled in the ongoing pregnancy registry at study sites.

Methods
Data on COVID-19 symptoms during the current pregnancy were collected by trained staff between October 2020 and June 2022. COVID-19 antibody testing was performed on samples collected at delivery. The relation between COVID-19 antibody positivity and symptoms was assessed using generalised linear models with a binomial distribution adjusting for site and symptoms.

Main outcome measures
COVID-19 antibody status and symptoms of COVID-19 among pregnant women.

Results
Among 19 218 non-vaccinated pregnant women who were evaluated, 14.1% of antibody-positive women had one or more symptoms compared with 13.4% in antibody-negative women. Overall, 85.3% of antibody-positive women reported no COVID-19 symptoms during the present pregnancy. Reported fever was significantly associated with antibody status (relative risk [RR] 1.10, 95% CI 1.03–11.18; P = 0.008). A multiple variable model adjusting for site and all eight symptoms during pregnancy showed similar results (RR 1.13, 95% CI 1.04–1.23; P = 0.012). None of the other symptoms was significantly related to antibody positivity.

Conclusions
In a population-based cohort in LMICs, unvaccinated pregnant women who were antibody-positive had slightly more symptoms during their pregnancy and a small but significantly greater increase in fever. However, for prevalence

studies, evaluating COVID-19-related symptoms does not appear to be useful in differentiating pregnant women who have had a COVID-19 infection. (Author)

2023-08200

Placental damage comparison between preeclampsia with COVID-19, COVID-19, and preeclampsia: analysis of caspase-3, caspase-1, and TNF-alpha expression. Bachnas MA, Putri AO, Rahmi E, et al (2023), AJOG Global Reports vol 3, no 3, August 2023, 100234

Full URL: https://doi.org/10.1016/j.xagr.2023.100234

Background
Some studies have reported that preeclampsia with coronavirus disease 2019 (COVID-19) significantly increases the risk of adverse perinatal outcome until near to three-fold over the normal pregnancy. Preeclampsia pathophysiology in theory, increases the perinatal mortality and morbidity starting from placental injury which is also believed to share the common pathway with COVID-19 infection. Major typical placental injuries for these matters could be apoptotic, necrotic, or pyroptotic.

Objective
This study aimed to compare placental damage between those three conditions above in those three typical injuries.

Study Design
This was an observational analytic study with cross-sectional setting. Seventy-two pregnant women admitted to hospital consecutively with diagnosis of preeclampsia with COVID-19, Preeclampsia only and COVID-19 only. Diagnosis for preeclampsia was following FIGO criteria with at least one of the severe features. COVID-19 eligible for this study was PCR test confirmative with moderate to severe clinical degree. Placenta were taken after the delivery, and parameters were quantified with immunohistochemistry test for caspase-3, caspase-1, and TNF-alpha representing apoptotic, pyroptotic, and necrotic pathway respectively.

Results
Pregnancy with double complications, preeclampsia, and COVID-19, significantly has the highest placental damage on apoptotic, pyroptotic, and necrotic pathway shown from the caspase-3, caspase-1, and TNF-alpha expression in placenta ($p < 0.05$). Moderate to severe degree of COVID-19 resulting higher placental damage compared to preeclampsia in all the three forms ($p < 0.05$). Apoptotic process was the most prominent among other pathways.

Conclusion
Preeclampsia with COVID-19 infection showed significant placental damage, with major changes related were apoptosis, inflammation, and necrosis. This data support poor perinatal outcome of pregnancy having preeclampsia and COVID-19 at the same time. (Author)

2023-08157

Prayer and meditation practices in the early COVID-19 pandemic: A nationwide survey among Danish pregnant women. The COVIDPregDK study. Prinds C, Hvidt NC, Schrøder K, et al (2023), Midwifery vol 123, August 2023, 103716

Full URL: https://doi.org/10.1016/j.midw.2023.103716

Background
The emergence of the COVID-19 pandemic and the derived changes in maternity care have created stress and anxiety among pregnant women in different parts of the world. In times of stress and crisis, spirituality, including spiritual and religious practices, may increase.

Objective
To describe if the COVID-19 pandemic influenced pregnant women's considerations and practises of existential meaning-making and to investigate such considerations and practices during the early pandemic in a large nationwide

sample.

Methods
We used survey data from a nationwide cross-sectional study sent to all registered pregnant women in Denmark during April and May 2020. We used questions from four core items on prayer and meditation practices.

Results
A total of 30,995 women were invited, of whom 16,380 participated (53%). Among respondents, we found that 44% considered themselves believers, 29% confirmed a specific form of prayer, and 18% confirmed a specific form of meditation. In addition, most respondents (88%) reported that the COVID-19 pandemic had not influenced their responses.

Conclusion
In a nationwide Danish cohort of pregnant women, existential meaning-making considerations and practices were not changed due to the COVID-19 pandemic. Nearly one in two study participants described themselves as believers, and many practised prayer and/or meditation. (Author)

2023-08145

Barriers and facilitators to the provision of maternal health services at community health centers during the COVID-19 pandemic: Experiences of midwives in Indonesia. Herwansyah H, Czabanowska K, Schröder-Bäck P, et al (2023), Midwifery vol 123, August 2023, 103713

Full URL: https://doi.org/10.1016/j.midw.2023.103713

Objective
To explore the experiences of midwives in Indonesia on the provision of maternal health services during the COVID-19 pandemic.

Design and methods
A qualitative descriptive study using focus group discussions was undertaken. A conventional content analysis was used to analyze the data. Coding categories were generated from the transcripts.

Setting and participants
Twenty-two midwives from five community health centers of three regions in the Province of Jambi, Indonesia were included.

Findings
The interviewees shared similar barriers and facilitators in delivering the services, including the unavailability of adequate protective equipment, the limitation of the number of services, and dealing with the new public health measures related to the COVID-19. Overall, midwives demonstrated a continued commitment to provide maternal health services during the pandemic.

Key conclusions and implications for practice
Significant changes in service delivery have been made to comply with pandemic related restrictions. Despite the unprecedentedly difficult working environment, the midwives continue to provide adequate services to the community by implementing a strict health protocol. Findings from this study contribute to a better understanding of how the quality of the services changed, as well as how new challenges can be addressed and positive changes can be reinforced. (Author)

2023-08108

Effects of dynamic zero COVID-19 policy on anxiety status and lifestyle changes of pregnant women in rural South

China: a survey-based analysis by propensity score matching method. Ding Y, Shi X, Li G, et al (2023), Frontiers in Public Health 22 June 2023, online

Full URL: https://doi.org/10.3389/fpubh.2023.1182619

Introduction: The coronavirus disease 2019 (COVID-19) pandemic triggered a global public health crisis and has brought an unprecedented impact on pregnant women. The problems faced by pregnant women in the rural areas of China during the epidemic are different from those in urban areas. Although the epidemic situation in China has gradually improved, studying the impact of the previous dynamic zero COVID-19 policy on the anxiety status and lifestyle of pregnant women in rural areas of China, is still necessary.

Methods: A cross-sectional survey of pregnant women in rural South China was conducted from September 2021 to June 2022.Using questionnaires, sociodemographic characteristics, anxiety status, physical activity, sleep quality, and dietary status of the population were collected. Using the propensity score matching method, the effect of the dynamic zero COVID-19 strategy on the anxiety status and lifestyle of pregnant women was analyzed.

Results: Among the pregnant women in the policy group (n = 136) and the control group (n = 680), 25.7 and 22.4% had anxiety disorders, 83.1 and 84.7% had low or medium levels of physical activity, and 28.7 and 29.1% had sleep disorders, respectively. However, no significant difference ($p > 0.05$) was observed between the two groups. Compared with control group, the intake of fruit in the policy group increased significantly ($p = 0.019$), whereas that of aquatic products and eggs decreased significantly ($p = 0.027$). Both groups exhibited an unreasonable dietary structure and poor compliance with the Chinese dietary guidelines for pregnant women ($p > 0.05$). The proportion of pregnant women in the policy group, whose intake of stable food ($p = 0.002$), soybean, and nuts ($p = 0.004$) was less than the recommended amount, was significantly higher than that in the control group.

Discussion: The dynamic zero COVID-19 strategy had little impact on the anxiety status, physical activity, and sleep disorders of pregnant women in the rural areas of South China. However, it affected their intake of certain food groups. Improving corresponding food supply and organized nutritional support should be addressed as a strategic approach to improve the health of pregnant women in rural South China during the pandemic. (Author)

2023-08006

A unique maternal and placental galectin signature upon SARS-CoV-2 infection suggests galectin-1 as a key alarmin at the maternal–fetal interface. Zhao F, Tallarek A-C, Wang Y, et al (2023), Frontiers in Immunology 5 July 2023, online

Full URL: https://doi.org/10.3389/fimmu.2023.1196395

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic imposed a risk of infection and disease in pregnant women and neonates. Successful pregnancy requires a fine-tuned regulation of the maternal immune system to accommodate the growing fetus and to protect the mother from infection. Galectins, a family of β-galactoside–binding proteins, modulate immune and inflammatory processes and have been recognized as critical factors in reproductive orchestration, including maternal immune adaptation in pregnancy. Pregnancy-specific glycoprotein 1 (PSG1) is a recently identified gal-1 ligand at the maternal–fetal interface, which may facilitate a successful pregnancy. Several studies suggest that galectins are involved in the immune response in SARS-CoV-2–infected patients. However, the galectins and PSG1 signature upon SARS-CoV-2 infection and vaccination during pregnancy remain unclear. In the present study, we examined the maternal circulating levels of galectins (gal-1, gal-3, gal-7, and gal-9) and PSG1 in pregnant women infected with SARS-CoV-2 before vaccination or uninfected women who were vaccinated against SARS-CoV-2 and correlated their expression with different pregnancy parameters. SARS-CoV-2 infection or vaccination during pregnancy provoked an increase in maternal gal-1 circulating levels. On the other hand, levels of PSG1 were only augmented upon SARS-CoV-2 infection. A healthy pregnancy is associated with a positive correlation between gal-1 concentrations and gal-3 or gal-9; however, no correlation was observed between these lectins during SARS-CoV-2 infection. Transcriptome analysis of the placenta showed that gal-1, gal-3, and several PSG and glycoenzymes responsible for the synthesis of gal-1-binding glycotopes (such as linkage-specific N-acetyl-glucosaminyltransferases (MGATs)) are upregulated in pregnant women infected with SARS-CoV-2. Collectively, our findings identify a dynamically regulated “galectin-specific signature” that accompanies

the SARS-CoV-2 infection and vaccination in pregnancy, and they highlight a potentially significant role for gal-1 as a key pregnancy protective alarmin during virus infection. (Author)

2023-07870

Being pregnant and becoming a parent during the COVID-19 pandemic: a longitudinal qualitative study with women in the Born in Bradford COVID-19 research study. Jackson C, Brawner J, Ball M, et al (2023), BMC Pregnancy and Childbirth vol 23, no 494, July 2023

Full URL: https://doi.org/10.1186/s12884-023-05774-4

Background
Uncertainty around the risk of COVID-19 to pregnant women and their babies prompted precautionary restrictions on their health and care during the pandemic. Maternity services had to adapt to changing Government guidance. Coupled with the imposition of national lockdowns in England and restrictions on daily activities, women's experiences of pregnancy, childbirth and the postpartum period, and their access to services, changed rapidly. This study was designed to understand women's experiences of pregnancy, labour and childbirth and caring for a baby during this time.

Methods
This was an inductive longitudinal qualitative study, using in-depth interviews by telephone with women in Bradford, UK, at three timepoints during their maternity journey (18 women at timepoint one, 13 at timepoint two and 14 at timepoint three). Key topics explored were physical and mental wellbeing, experience of healthcare services, relationships with partners and general impact of the pandemic. Data were analysed using the Framework approach. A longitudinal synthesis identified over-arching themes.

Results
Three longitudinal themes captured what was important to women: (1) women feared being alone at critical points in their maternity journey, (2) the pandemic created new norms for maternity services and women's care, and (3) finding ways to navigate the COVID-19 pandemic in pregnancy and with a baby.

Conclusions
Modifications to maternity services impacted significantly on women's experiences. The findings have informed national and local decisions about how best to direct resources to reduce the impact of COVID-19 restrictions and the longer-term psychological impact on women during pregnancy and postnatally. (Author)

2023-07854

Associations of stress, anxiety, and partner satisfaction with maternal-fetal attachment in women pregnant during the COVID-19 pandemic: an online study. Schaal NK, La Marca-Ghaemmaghami P, Märthesheimer S, et al (2023), BMC Pregnancy and Childbirth vol 23, no 483, June 2023

Full URL: https://doi.org/10.1186/s12884-023-05804-1

Background
The COVID-19 pandemic has led to exceptional stress in pregnant women. The aim of the present study was to investigate associations of maternal stress (pandemic-related and -unrelated), anxiety, and relationship satisfaction experienced during the COVID-19 pandemic with prenatal mother-infant attachment.

Methods
An online study was conducted evaluating pandemic-related stress, pregnancy-specific stress (unrelated to the pandemic), anxiety, partnership satisfaction, and maternal-fetal attachment in German-speaking women during the second COVID-19 lockdown between January and March 2021. In total, 431 pregnant women (349 lived in Germany and 82 in Switzerland) filled in the questionnaires and gave information on demographic and pregnancy-related variables (i.e. age, gestational age, parity). Bivariate correlations were calculated in order to investigate associations between

the different variables and additionally, a hierarchical regression model was conducted in order to evaluate the influence of the independent variables on prenatal attachment.

Results
The hierarchical regression analysis revealed that after controlling for age, gestational age, and parity higher pandemic-related stress, namely stress associated with feeling unprepared for birth, higher partnership satisfaction as well as higher positive appraisal (considered as a way of coping with pandemic-related stress) was associated with stronger maternal-fetal attachment, whereas associations of anxiety and other forms of stress were non-significant.

Conclusions
The study highlights interesting associations between maternal pandemic-related preparedness stress and positive appraisal of the pregnancy as well as partnership satisfaction and prenatal attachment in women pregnant during the COVID-19 pandemic. (Author)

2023-07739

False-Positive Human Immunodeficiency Virus Screening Results in Pregnancy During the Coronavirus Disease 2019 (COVID-19) Pandemic. Miller M, Cevigney R, Ayyash M, et al (2023), Obstetrics & Gynecology vol 142, no 2, August 2023, pp 381-383

False-positive human immunodeficiency virus (HIV) test results are rare but have been documented in the setting of certain underlying conditions such as Epstein-Barr virus, metastatic cancer, and certain autoimmune conditions. A retrospective cohort study in a large hospital system was conducted to compare the occurrence of false-positive HIV fourth-generation test results before and after the coronavirus disease 2019 (COVID-19) pandemic in a population of pregnant patients (N=44,187; 22,073 pre-COVID and 22,114 during COVID). The COVID cohort had a significantly higher frequency of false-positive HIV test results compared with the pre-COVID cohort (0.381 vs 0.676, P=.002). Within the COVID cohort, 25% of patients had a positive polymerase chain reaction test result for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) preceding their false-positive HIV test results. When this subgroup was excluded, the difference in frequency of false-positive HIV test results between the cohorts was no longer significant (0.381 vs 0.507, P=.348). Our findings suggest that SARS-CoV-2 seropositivity was associated with an increased frequency of false-positive HIV test results in the pregnant population. (Author)

2023-07731

Ethical Considerations for the Delivery of Obstetric and Gynecologic Care During a Pandemic: ACOG Committee Statement No. 6. ACOG Committee on Ethics (2023), Obstetrics & Gynecology vol 142, no 1, July 2023, pp 225-230

Obstetrician–gynecologists (ob-gyns) are essential to providing high-quality health care, and this duty remains unchanged during pandemics. This Committee Statement discusses ethics related to the provision of obstetric and gynecologic care during a pandemic caused by a highly transmissible pathogen. As health care guidelines related to pandemics are created by institutions, ob-gyns have a responsibility to advocate for obstetric and gynecologic health priorities. Additionally, many clinical practice decisions made to reduce the spread of the infectious agent and maximize physicians' ability to care for those who need help will have ramifications on patient satisfaction, the patient–physician relationship, and equity in health outcomes. Obstetrician–gynecologists are obligated to protect themselves, their patients, and others by using appropriate protective measures (such as personal protective equipment and diagnostic testing) and observing institutional, state, and federal guidelines for the appropriate isolation and care of patients with suspected or confirmed disease. (Author)

2023-07690

Assessment of D-dimer levels in pregnant women diagnosed with COVID-19: A case-control study. Talmac MA, Bahat PY, Bestel A, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 2, 2023, 2231123

Full URL: https://doi.org/10.1080/14767058.2023.2231123

Objective

We aimed to evaluate D-dimer levels in pregnant women diagnosed with COVID-19.

Methods
This single-center study was carried out in a tertiary center hospital serving as a pandemic hospital. 151 pregnant women with COVID-19 diagnosis were included as the study group, and 70 healthy pregnant women as the control group. The data were analyzed separately in 3 different trimesters of pregnancy.

Results
Of the 221 pregnant women included in the study, 151 had a diagnosis of COVID-19. 70 healthy pregnant women were taken as the control group. It was observed that D-dimer values in pregnancy increased as the trimesters progressed. No significant difference was observed when this was compared with pregnant women with COVID-19 (p = .428, .75, .927 according to the 1st, 2nd and 3rd trimesters, respectively).

Conclusion
The diagnosis of pulmonary embolism is difficult due to the lack of reliable alternative D-dimer thresholds for pregnant patients. On the other hand, D-dimer elevation continues to be a sign of poor prognosis in patients with COVID-19. The situation remains uncertain in patients who are pregnant and have COVID-19. Maybe D-dimer value should be removed from being a poor prognosis criterion in pregnant women. (Author)

2023-07553

Can Prenatal Ultrasound Predict Adverse Neonatal Outcomes in SARS-CoV-2 Affected Pregnancies?. Mei JY, Mok T, Cambou MC, et al (2023), American Journal of Obstetrics & Gynecology MFM vol 5, no 9, September 2023, 101028
Full URL: https://doi.org/10.1016/j.ajogmf.2023.101028

Background
Based on available data, at least one ultrasound assessment of pregnancies recovering from SARS-CoV-2 infection is recommended. Reports, however, on prenatal imaging findings and potential associations with neonatal outcomes following SARS-CoV-2 infection in pregnancy have been inconclusive.
Objective
We aim to describe the sonographic characteristics of pregnancies after confirmed SARS-CoV-2 infection and assess the association of prenatal ultrasound (US) findings with adverse neonatal outcomes (ANO).
Study Design
This is an observational prospective cohort study of pregnancies diagnosed with SARS-CoV-2 by reverse transcription polymerase chain reaction between March 2020 and May 2021. Prenatal US evaluation was performed at least once after diagnosis of infection with the following parameters measured: standard fetal biometric measurements, umbilical and middle cerebral artery Dopplers, placental thickness, amniotic fluid volume, and anatomic survey for infection-associated findings. The primary outcome was composite ANO, defined as one or more of the following: preterm birth, NICU admission, small for gestational age (SGA), respiratory distress, intrauterine fetal demise, neonatal demise, or other neonatal complications. Secondary outcomes were sonographic findings stratified by trimester of infection and severity of SARS-CoV-2 infection. Prenatal US findings were compared with neonatal outcomes, severity of infection, and trimester of infection.
Results
A total 103 SARS-CoV-2 affected mother-infant pairs with prenatal US evaluation were identified; 3 cases were excluded due to known major fetal anomalies. Of the 100 included cases, neonatal outcomes were available in 92 pregnancies (97 infants); of these, 28 (29%) had a composite ANO. Twenty-three (23%) had at least one abnormal prenatal US finding. The most common abnormalities seen on US were placentomegaly (11/23, 47.8%) and fetal growth restriction (FGR) (8/23, 34.8%). FGR was associated with a higher rate of a composite ANO (25% vs 1.5%; aOR: 22.67; 95% 95% CI, 2.63-194.91; p<0.001), even when SGA was removed from the composite ANO. Cochran-Mantel Haensel test controlling for possible FGR confounders continued to show this association (relative risk, 3.7; 95% confidence interval, 2.6-5.9; p<0.001). Median estimated fetal weight (EFW) and birthweight were lower in patients with a composite ANO (p<0.001). Infection in the third trimester was associated with lower median percentile of EFW

(p=0.019). An association between placentomegaly and third trimester SARS CoV-2 infection was noted (p=0.045).
Conclusion
In our study of SARS-CoV-2 affected maternal-infant pairs, rates of FGR were comparable to the general population. However, composite ANO rates were high. Pregnancies with FGR after SARS-CoV-2 infection were associated with an increased risk for ANO and may require close surveillance. (Author)

2023-07537

Delivery Outcomes in a Cohort of Pregnant Patients with COVID-19 With and Without Viral Pneumonia. DuBose B, Tembunde Y, Goodman KE, et al (2023), American Journal of Obstetrics & Gynecology MFM vol 5, no 10, October 2023, 101077
Full URL: https://doi.org/10.1016/j.ajogmf.2023.101077

Background
Among pregnant people, coronavirus disease 2019 (COVID-19) can lead to adverse outcomes, but the specific pregnancy outcomes that are affected by the disease are unclear. In addition, the effect of the severity of COVID-19 on pregnancy outcomes has not been clearly identified.
Objective
To evaluate the associations between COVID-19 with and without viral pneumonia and cesarean delivery, preterm delivery, preeclampsia, and stillbirth.
Study Design
We conducted a retrospective cohort study (April 2020 – May 2021) of deliveries between 20 and 42 weeks of gestation from U.S. hospitals in the Premier Healthcare Database. The primary outcomes were cesarean delivery, preterm delivery, preeclampsia, and stillbirth. We used a viral pneumonia diagnosis (ICD-10-CM codes J12.8 and J12.9) to categorize patients by severity of COVID-19. Pregnancies were categorized into three groups, NOCOVID: No COVID-19, COVID: COVID-19 without viral pneumonia, and PNA: COVID-19 with viral pneumonia. Groups were balanced for risk factors by propensity score matching.
Results
814,649 deliveries from 853 U.S. hospitals were included (NOCOVID: n=799,132, COVID: n=14,744, PNA: n=773). After propensity score matching, the risks of cesarean delivery and preeclampsia were similar in the COVID group compared to the NOCOVID group (matched risk ratio [mRR] 0.97, 95% confidence interval [CI] 0.94-1.00, and mRR 1.02, 95% CI 0.96-1.07, respectively). The risks of preterm delivery and stillbirth were greater in the COVID group compared to the NOCOVID group (mRR 1.11, 95% CI 1.05-1.19, and mRR 1.30, 95% CI 1.01-1.66, respectively). The risks of cesarean delivery, preeclampsia, and preterm delivery were higher in the PNA group compared to COVID (mRR 1.76, 95% CI 1.53-2.03, mRR 1.37, 95% CI 1.08-1.74, and mRR 3.33, 95% CI 2.56-4.33, respectively). The risk of stillbirth was similar in the PNA group and COVID (mRR 1.17, 95% CI 0.40-3.44).
Conclusions
Within a large national cohort of hospitalized pregnant people, we found that the risk of some adverse delivery outcomes was elevated in people with COVID-19 with and without viral pneumonia, with much higher risks in the group with viral pneumonia. (Author)

2023-07498

Clinical characterisation and management outcome of obstetric patients following intensive care unit admission for COVID-19 pneumonia. Bıçak EA, Oğlak SC (2023), Journal of Obstetrics and Gynaecology vol 43, no 2, 2023, 2218915
Full URL: https://doi.org/10.1080/01443615.2023.2218915

This study aims to examine the clinical characteristics and mortality-related factors of obstetric patients, who were taken to the intensive care unit due to Coronavirus Disease 2019 (COVID-19). This study included 31 patients in the peripartum period with COVID-19 pneumonia, followed up in the intensive care unit (ICU) from March 2020 to December 2020. Symptoms, laboratory values, intensive care unit duration of stay, complications, the requirement of non-invasive and invasive mechanical ventilation, and mortality were recorded. The mean age was 30.7 ± 6.2 years and the mean gestational age was 31.1 ± 6.4 weeks. Among the patients, 25.8% had a fever, 87.1% had a cough, 96.8% had dyspnoea and 77.4% had tachypnoea. Seventeen patients (54.8%) had mild, 6 (19.4%) had moderate and 8 (25.8%) had

severe pulmonary involvement on computed tomography. Sixteen (51.6%) patients required high-frequency oscillatory ventilation, 6 (19.3%) patients required continuous positive airway pressure, and 5 (16.1%) patients required invasive mechanical ventilation. Sepsis complicated by septic shock and multiorgan failure occurred in 4 patients and all of them died. The ICU duration of stay was 4.9 ± 4.3 days. We have found that older maternal age, obesity, high LDH, AST, ALT, ferritin, leukocyte, CRP, and procalcitonin values, and severe lung involvement were mortality-related factors.

Impact statement
What is already known on this subject? Pregnant women are in the high-risk group for Covid-19 disease and its complications. Although most pregnant women are asymptomatic, severe infection-related hypoxia can cause serious foetal and maternal problems.

What do the results of this study add? When we examined the literature, we found that the number of studies on pregnant women with severe Covid-19 infection was limited. For this reason, with our study results, we aim to contribute to the literature by determining the biochemical parameters and patient-related factors associated with severe infection and mortality in pregnant patients with severe Covid-19 infection.

What are the implications of these findings for clinical practice and/or further research? With our study results, predisposing factors for the development of severe Covid-19 infection in the pregnant patient population and biochemical parameters that are early indicators of severe infection were determined. In this way, pregnant women in the high-risk group can be followed closely and the necessary treatments can be started quickly so disease-related complications and mortality can be reduced. (Author)

2023-07469

Stalled global progress on preventable maternal deaths needs renewed focus and action. Menendez C, Nhampossa T, Gbeasor-Komlanvi DF, et al (2023), British Medical Journal 28 June 2023, online

Full URL: https://doi.org/10.1136/bmj.p1473

Pandemic setbacks have compounded underinvestment as an obstacle to meeting the sustainable development goal on preventable maternal mortality, write Clara Menendez and colleagues. (Author)

2023-07466

The impact of the COVID-19 pandemic on contraceptive methods, abortion, and unintended pregnancy: a cross-sectional study. Rezaei F, Amiri-Farahani L, Haghani S, et al (2023), BMC Women's Health vol 23, no 357, July 2023

Full URL: https://doi.org/10.1186/s12905-023-02512-y

Background and Aim
By creating an international emergency, the COVID-19 pandemic may have led to compromised reproductive health care, including family planning services, and thus increased unintended pregnancies and unsafe abortions. This study was conducted to compare methods of contraception, abortion, and unintended pregnancies in those served by the health centers of Babol city in Iran, both before and during the COVID-19 pandemic.

Methods
A cross-sectional study was conducted including 425 participants registered to the health centers of Babol city, Mazandaran province, Iran. Using a multi-stage method, 6 urban health centers and 10 rural centers were selected for inclusion. Proportional allocation method was used for sampling those who met the inclusion criteria. A questionnaire was used to collect data in relation to individual characteristics and reproductive behaviors via 6 questions focused upon methods and preparation of contraception, number and type of abortions, and number and causes of unintended pregnancy from July to November 2021. The data were analyzed using SPSS software version 26. Significance level was considered to be $p < 0.05$ in all tests.

Results
Most participants aged between 20 and 29 years old had a diploma level of education, were housewives and lived in the city. Prior to the pandemic, 32.0% used modern contraceptive methods and 31.6% used these during the pandemic. No change in the combination of contraceptive methods used was observed between these two periods. Approximately two-thirds used the withdrawal method in both periods. The majority of participants in both periods purchased their contraceptives from a pharmacy. Unintended pregnancy increased from 20.4% prior to the pandemic to 25.4% during the pandemic. Abortions increased from 19.1% prior to the pandemic to 20.9% during the pandemic, although these findings were not found to be statistically significant. Contraceptive methods had a statistically significant relationship with age, education, spouse's education, spouse's occupation, and place of residence. The number of unintended pregnancies had a significant relationship with age, the educational level of both participants and their spouses and socio-economic status, and the number of abortions had a statistically significant relationship with the age and education level of the spouse ($p > 0.05$).

Conclusion
Despite there being no change in contraceptive methods compared to the pre-pandemic period, an increase in the number of unintended pregnancies, abortions and illegal abortions was observed. This may be indicative of an unmet need for family planning services during the COVID-19 pandemic. (Author)

2023-07167

Effect of Maternal Coronavirus Disease on Preterm Morbidities. Çıplak G, Becerir C, Sarı FN, et al (2023), American Journal of Perinatology 31 May 2023, online

Objective Coronavirus disease (COVID-19) during pregnancy may have an impact on preterm morbidities due to the inflammatory nature of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. Exposure to intrauterine inflammation could result in adverse consequences in preterm infants. We aimed to determine the effect of maternal coronavirus disease on preterm morbidities at a tertiary neonatal intensive care unit.

Study Design This observational cohort study compared the clinical outcomes of preterm infants < 37 gestational weeks with and without maternal COVID-19. The study was conducted in a tertiary-level neonatal intensive care unit between March 2020 and December 2021. Demographics and clinical data of the study groups were collected from the medical files.

Results A total of 254 infants (127 in the maternal COVID-19 group and 127 in the control group) were included in the study. Respiratory distress syndrome, early and late neonatal sepsis, intraventricular hemorrhage, patent ductus arteriosus (PDA), necrotizing enterocolitis, bronchopulmonary dysplasia, and retinopathy of prematurity rates were similar between groups. In the subgroup analysis, the rate of PDA was significantly higher in preterm infants ≤1,500 g with maternal SARS-CoV-2 infection (38 vs. 15% p = 0.023). Presence of maternal COVID-19 was found to be an independent predictor for PDA in very low birthweight infants, as revealed by multivariate analyses (odds ratio: 3.4; 95% confidence interval: 1.12–10.4; p = 0.031). Mortality rates and duration of hospitalization were similar in both groups.

Conclusion Our results suggest that COVID-19 infection during pregnancy seems to have no adverse effect on preterm morbidities and mortality. However, maternal COVID-19 was found to be a risk factor for PDA in preterm infants ≤1,500 g. (Author)

2023-07050

A critical review of COVID-19 course and vaccination in dermatology patients on immunomodulatory/biologic therapy: recommendations should not differ between non-pregnant and pregnant individuals. Messas T, Lim RK, Burns L, et al (2023), Frontiers in Medicine 2 June 2023, online

Full URL: https://doi.org/10.3389/fmed.2023.1121025

COVID-19 can have detrimental effects on immunosuppressed patients. Here, we evaluate the evidence regarding continuing immunomodulatory/biologic (IMBI) therapy in pregnant dermatology patients during the COVID-19 pandemic. Also, we discuss the risks of COVID-19 vaccination in pregnant dermatology patients on IMBI therapy. As indicated in this review, regarding continuing IMBI therapy in pregnant dermatology patients during the pandemic, there is no compelling reason for treating them differently than non-pregnant. The body of evidence indicates that mRNA COVID-19 vaccines are safe during pregnancy. Studies on rheumatology patients, a group that overlaps significantly with the dermatology group, provided essential findings. IMBI in a non-pregnant rheumatology patient was not associated with COVID-19 mortality (except for rituximab), and vaccination of the rheumatology patient during pregnancy improved the obstetric outcomes compared to the unvaccinated patient. Based on this data, it can be stated that after weighing the benefit–risk profile of the available COVID-19 vaccines, the recommendation for the pregnant dermatology patient speaks in favor of the COVID-19 vaccination. COVID-19 vaccine recommendations in pregnant dermatology patients on IMBI should not differ from those for their non-pregnant counterparts. (Author)

2023-06819

Women's experience of perinatal support in a high migrant Australian population during the COVID-19 pandemic: a mixed methods study. Melov SJ, Galas N, Swain J, et al (2023), BMC Pregnancy and Childbirth vol 23, no 429, June 2023

Full URL: https://doi.org/10.1186/s12884-023-05745-9

Background

As a COVID-19 risk mitigation measure, Australia closed its international borders for two years with significant socioeconomic disruption including impacting approximately 30% of the Australian population who are migrants. Migrant populations during the peripartum often rely on overseas relatives visiting for social support. High quality social support is known to lead to improved health outcomes with disruption to support a recognised health risk.

Aim

To explore women's experience of peripartum social support during the COVID-19 pandemic in a high migrant population. To quantify type and frequency of support to identify characteristics of vulnerable perinatal populations for future pandemic preparedness.

Methods

A mixed methods study with semi-structured interviews and a quantitative survey was conducted from October 2020 to April 2021. A thematic approach was used for analysis.

Results

There were 24 participants interviewed both antenatally and postnatally (22 antenatal; 18 postnatal). Fourteen women were migrants and 10 Australian born. Main themes included; 'Significant disruption and loss of peripartum support during the COVID-19 pandemic and ongoing impact for migrant women'; 'Husbands/partners filling the support gap' and 'Holding on by a virtual thread'. Half of the participants felt unsupported antenatally. For Australian born women, this dissipated postnatally, but migrants continued to feel unsupported. Migrant women discussed partners stepped into traditional roles and duties of absent mothers and mothers-in-law who were only available virtually.

Conclusion

This study identified disrupted social support for migrant women during the pandemic, providing further evidence that the pandemic has disproportionately impacted migrant populations. However, the benefits identified in this study included high use of virtual support, which could be leveraged for improving clinical care in the present and in future pandemics. The COVID-19 pandemic impacted most women's peripartum social support with migrant families having ongoing disruption. Gains in the pandemic included greater gender equity for domestic work as husbands/partners increased their contribution to domestic work and childcare. (Author)

2023-06722

Influence of maternal psychological distress during COVID-19 pandemic on placental morphometry and texture. Saeed H, Lu Y-C, Andescavage N, et al (2023), Scientific Reports 10 May 2023, online

Full URL: https://doi.org/10.1038/s41598-023-33343-4

The Coronavirus Disease 2019 (COVID-19) pandemic has been accompanied by increased prenatal maternal distress (PMD). PMD is associated with adverse pregnancy outcomes which may be mediated by the placenta. However, the potential impact of the pandemic on in vivo placental development remains unknown. To examine the impact of the pandemic and PMD on in vivo structural placental development using advanced magnetic resonance imaging (MRI), acquired anatomic images of the placenta from 63 pregnant women without known COVID-19 exposure during the pandemic and 165 pre-pandemic controls. Measures of placental morphometry and texture were extracted. PMD was determined from validated questionnaires. Generalized estimating equations were utilized to compare differences in PMD placental features between COVID-era and pre-pandemic cohorts. Maternal stress and depression scores were significantly higher in the pandemic cohort. Placental volume, thickness, gray level kurtosis, skewness and run length non-uniformity were increased in the pandemic cohort, while placental elongation, mean gray level and long run emphasis were decreased. PMD was a mediator of the association between pandemic status and placental features. Altered in vivo placental structure during the pandemic suggests an underappreciated link between disturbances in maternal environment and perturbed placental development. The long-term impact on offspring is currently under investigation. (Author, edited)

2023-06513

Pregnancy outcomes in patients with suspected SARS-CoV-2 infection prior to delivery. Berry M, Wang AM, Moutos CP, et al (2023), American Journal of Obstetrics & Gynecology MFM vol 5, no 8, August 2023, 101044

Full URL: https://doi.org/10.1016/j.ajogmf.2023.101044

This is a research letter detailing original research. This retrospective cohort study aimed to evaluate outcomes in patients with prior COVID-`9 infection, as evidence by positive antibody screening, that usual testing eligibility criteria would not have detected. (JM)

2023-06506

Statewide assessment of telehealth use for obstetrical care during the COVID-19 pandemic. Mallampati DP, Talati AN, Fitzhugh C, et al (2023), American Journal of Obstetrics & Gynecology MFM vol 5, no 6, June 2023, 100941

BACKGROUND

The COVID-19 pandemic started a period of rapid transition to telehealth in obstetrical care delivery to maintain social distancing and curb the spread of the virus. The use of telehealth, such as telephone and video visits, remote imaging interpretation, and provider-to-provider consultations, increased in the early months of the pandemic to maintain access to prenatal and postpartum care. Although there is considerable literature on the use of telehealth in obstetrical care, there are limited data on widespread telehealth use among different practice types and patient populations during the pandemic and whether these are preferred technologies.

OBJECTIVE

This study aimed to describe variations in telehealth use for obstetrical care among practices in North Carolina during the COVID-19 pandemic and to outline future preferences and needs for continued telehealth use. This study also aimed to delineate telehealth use among rural and micropolitan and metropolitan practices to better understand if telehealth use varied by practice location.

STUDY DESIGN

A web-based survey was distributed to practice managers of obstetrical practices in North Carolina from June 14, 2020 to September 14, 2020. Practice managers were contacted through assistance of the Community Care of North Carolina Pregnancy Medical Home program. Practice location was defined as rural, micropolitan, or metropolitan based on the county population. The survey assessed telehealth use before and during the COVID-19 pandemic, types of modalities used, and preferences for future use. Descriptive statistics were performed to describe survey responses and compare them by practice location.

RESULTS
A total of 295 practice managers were sent a web-based survey and 98 practice managers responded. Responding practices represented 66 of 100 counties in North Carolina with 50 practices from rural and micropolitan counties and 48 practices from metropolitan counties. The most common type of provider reported by practice managers were general obstetrician and gynecologists (85%), and the most common practice type was county health departments (38%). Overall, 9% of practices reported telehealth use before the pandemic and 60% reported telehealth use during the pandemic. The most common type of telehealth modality was telephone visits. There were no significant differences in the uptake of telehealth or in the modalities used by practice location.
A total of 40% of practices endorsed a preference for continued telehealth use beyond the COVID-19 pandemic. The most commonly reported need for continuation of telehealth use was assistance with patient access to telehealth technologies (54%). There were no significant differences in the preferences for telehealth continuation or future needs by practice location.
CONCLUSION
Telehealth use increased among a variety of practice types during the pandemic with no variation observed by practice location in terms of modalities used, future preferences, or needs. This study assessed statewide uptake of and differences in obstetrical telehealth use during the early COVID-19 pandemic. With telehealth becoming an integral part of obstetrical care delivery, this survey has implications for anticipating the needs of practices and designing innovative solutions for providers and pregnant people beyond the COVID-19 pandemic. (Author)

2023-06415

Medically Attended Acute Adverse Events in Pregnant People After Coronavirus Disease 2019 (COVID-19) Booster Vaccination. DeSilva MB, Haapala J, Vazquez-Benitez G, et al (2023), Obstetrics & Gynecology vol 142, no 1, July 2023, pp 125-129

In this multisite, observational, matched cohort study of more than 80,000 pregnant people, receipt of an mRNA monovalent coronavirus disease 2019 (COVID-19) booster vaccination in pregnancy was not associated with increased risk for thrombocytopenia, myocarditis, venous thromboembolism, ischemic stroke, or other serious adverse events within 21 or 42 days after booster vaccination. The mRNA monovalent COVID-19 booster in pregnancy was associated with an increased risk for medically attended malaise or fatigue within 7 days of vaccination (adjusted rate ratio [aRR] 3.64, 95% CI 2.42–5.48) and lymphadenopathy or lymphadenitis within 21 days (aRR 3.25, 95% CI 1.67–6.30) or 42 days (aRR 2.18, 95% CI 1.33–3.58) of vaccination. Our findings are consistent with prior evaluations of the primary COVID-19 vaccine series and are reassuring with respect to COVID-19 booster vaccination in pregnancy. (Author)

2023-06407

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Antibody Titer Levels in Pregnant Individuals After Infection, Vaccination, or Both. Marshall CL, Kaplowitz E, Ibroci E, et al (2023), Obstetrics & Gynecology vol 141, no 6, June 2023, pp. 1199-1202

We examined differences in severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) antibody responses in pregnant individuals with natural, vaccine-induced, or combined immunity. Participants had live or nonlive births between 2020 and 2022, were seropositive (SARS-CoV-2 spike protein, anti-S), and had available mRNA vaccination and infection information (n=260). We compared titer levels among three immunity profiles: 1) natural immunity (n=191), 2) vaccine-induced immunity (n=37), and 3) combined immunity (ie, natural and vaccine-induced immunity; n=32). We applied linear regression to compare anti-S titers between the groups, controlling for age, race and ethnicity, and time between vaccination or infection (whichever came last) and sample collection. Anti-S titers were 57.3% and 94.4% lower among those with vaccine-induced and natural immunity, respectively, compared with those with combined immunity (P<.001, P=.005). (Author)

2023-06404

The Temporal Relationship Between the Coronavirus Disease 2019 (COVID-19) Pandemic and Preterm Birth. Grobman WA, Sandoval GJ, Metz TD, et al (2023), Obstetrics & Gynecology vol 141, no 6, June 2023, pp. 1171-1180

OBJECTIVE:
To evaluate whether preterm birth rates changed in relation to the onset of the coronavirus disease 2019 (COVID-19) pandemic and whether any change depended on socioeconomic status.

METHODS:
This is an observational cohort study of pregnant individuals with a singleton gestation who delivered in the years 2019 and 2020 at 1 of 16 U.S. hospitals of the Maternal-Fetal Medicine Units Network. The frequency of preterm birth for those who delivered before the onset of the COVID-19 pandemic (ie, in 2019) was compared with that of those who delivered after its onset (ie, in 2020). Interaction analyses were performed for people of different individual- and community-level socioeconomic characteristics (ie, race and ethnicity, insurance status, Social Vulnerability Index (SVI) of a person's residence).

RESULTS:
During 2019 and 2020, 18,526 individuals met inclusion criteria. The chance of preterm birth before the COVID-19 pandemic was similar to that after the onset of the pandemic (11.7% vs 12.5%, adjusted relative risk 0.94, 95% CI 0.86–1.03). In interaction analyses, race and ethnicity, insurance status, and the SVI did not modify the association between the epoch and the chance of preterm birth before 37 weeks of gestation (all interaction P>.05).

CONCLUSION:
There was no statistically significant difference in preterm birth rates in relation to the COVID-19 pandemic onset. This lack of association was largely independent of socioeconomic indicators such as race and ethnicity, insurance status, or SVI of the residential community in which an individual lived. (Author)

2023-06197

Impact of COVID-19 mandatory lockdown on maternal gestational weight gain and neonatal macrosomia rate at an academic medical center in Israel. Benyamini Raischer H, Garmi G, Malchi D, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 1, 2023, 2204391

Full URL: https://doi.org/10.1080/14767058.2023.2204391

Background
In an effort to prevent the spread of coronavirus disease 2019 (COVID-19), governments restricted outdoor activities and imposed lockdown quarantine. This change in lifestyle probably affected individuals' eating habits and physical activity.

Objective
To examine the effect of lockdown due to the COVID-19 pandemic on maternal antenatal weight gain, neonatal macrosomia, and other maternal and neonatal outcomes of women delivering at an academic medical center in Israel.

Method
A retrospective, two-period cohort study conducted at a university teaching medical center in Afula, Israel. The study period was between April and September 2020. This period signifies worsening in pandemic situations, during which citizens experienced strict prolonged lockdown measures. The parallel unexposed period (control period) was between April and September 2019. Singleton pregnancies delivered at >24 weeks were eligible. Primary outcome was incidence of macrosomia. Secondary outcomes included gestational weight gain, body mass index (BMI) at delivery, rates of gestational diabetes mellitus (GDM), mode of delivery, postpartum hemorrhage (PPH), and neonatal outcomes reflecting neonatal birth weight and condition at delivery.

Results
A total of 4,765 women were included, 2,442 in the study group and 2,323 in the control group. The incidence of macrosomia was significantly higher in 2020 (6.2%) than in 2019 (4.9%), (p = .048; OR: 1.29; 95% CI: 1.002– 1.65). Women gained significantly more weight (median 1 kg more), weighed more at delivery (median 1 kg), and had higher BMI at

delivery in 2020 compared with those in 2019 (p < .01). The incidence of GDM was 9.5% and 8.5% in the study and control groups respectively (p = .26; OR: 1.12; 95% CI: 0.92–1.37). Greater percentage of women did not perform the glucose challenge test in 2020 (9.9%) compared with those in 2019 (7.5%) (p = .003, OR: 1.36; 95% CI: 1.11–1.67). The incidence of any hypertension related to pregnancy was significantly higher in 2020 compared to 2019 (5.8% vs 4.4% respectively, (p = .042; OR: 1.32; 95% CI: 1.02–1.71). The proportion of women who smoked during pregnancy was also significantly higher in 2020 than in 2019 (5.1% vs 3.7%, respectively, p = .02; OR: 1.40; 95% CI: 1.06–1.86). Delivery mode did not differ, while the incidence of PPH was significantly higher in 2020 than in 2019 (5.6% vs 3.4%, respectively, p = .001; OR: 1.65; 95% CI: 1.25–2.19). Neonatal condition at delivery was comparable.

Conclusion
COVID-19-related lockdown was associated with the increased rate of macrosomic infants. This indirect effect of the pandemic is probably related to poorer maternal antenatal metabolic health status. Long-term consequences should be further examined. (Author)

2023-06185

Maternal SARS-COV-2 infection and prematurity: the Southern Michigan COVID-19 collaborative. Bahado-Singh R, Tarca AL, Hasbini YG, et al (2023), Journal of Maternal-Fetal and Neonatal Medicine vol 36, no 1, 2023, 2199343
Full URL: https://doi.org/10.1080/14767058.2023.2199343

Objective
COVID-19 has been reported to increase the risk of prematurity, however, due to the frequent absence of unaffected controls as well as inadequate accounting for confounders in many studies, the question requires further investigation. We sought to determine the impact of COVID-19 disease on preterm birth (PTB) overall, as well as related subcategories such as early prematurity, spontaneous, medically indicated preterm birth, and preterm labor (PTL). We assessed the impact of confounders such as COVID-19 risk factors, a-priori risk factors for PTB, symptomatology, and disease severity on rates of prematurity.

Methods
This was a retrospective cohort study of pregnant women from March 2020 till October 1st, 2020. The study included patients from 14 obstetric centers in Michigan, USA. Cases were defined as women diagnosed with COVID-19 at any point during their pregnancy. Cases were matched with uninfected women who delivered in the same unit, within 30 d of the delivery of the index case. Outcomes of interest were frequencies of prematurity overall and subcategories of preterm birth (early, spontaneous/medically indicated, preterm labor, and premature preterm rupture of membranes) in cases compared to controls. The impact of modifiers of these outcomes was documented with extensive control for potential confounders. A p value <.05 was used to infer significance.

Results
The rate of prematurity was 8.9% in controls, 9.4% in asymptomatic cases, 26.5% in symptomatic COVID-19 cases, and 58.8% among cases admitted to the ICU. Gestational age at delivery was noted to decrease with disease severity. Cases were at an increased risk of prematurity overall [adjusted relative risk (aRR) = 1.62 (1.2–2.18)] and of early prematurity (<34 weeks) [aRR = 1.8 (1.02–3.16)] when compared to controls. Medically indicated prematurity related to preeclampsia [aRR = 2.46 (1.47–4.12)] or other indications [aRR = 2.32 (1.12–4.79)], were the primary drivers of overall prematurity risk. Symptomatic cases were at an increased risk of preterm labor [aRR = 1.74 (1.04–2.8)] and spontaneous preterm birth due to premature preterm rupture of membranes [aRR = 2.2(1.05–4.55)] when compared to controls and asymptomatic cases combined. The gestational age at delivery followed a dose-response relation with disease severity, as more severe cases tended to deliver earlier (Wilcoxon p < .05).

Conclusions
COVID-19 is an independent risk factor for preterm birth. The increased preterm birth rate in COVID-19 was primarily driven by medically indicated delivery, with preeclampsia as the principal risk factor. Symptomatic status and disease severity were significant drivers of preterm birth. (Author)

2023-06127

Comparison between the demographic shift clinical severity and outcome of the first two waves of COVID-19 in pregnancy in a tertiary hospital in India. Lenin A, Abraham K, David LS, et al (2023), International Journal of Gynecology & Obstetrics vol 163, no 2, November 2023, pp 586-593

Objective
To study and compare the maternal and neonatal outcomes of COVID-19 in pregnancy during the two waves of the pandemic in India.

Methods
This observational, retrospective cohort study on pregnant women with SARS-CoV-2 infection was conducted in a 2700-bed tertiary referral center in South India from March 1, 2020 to June 30 2021. The clinical presentation, severity, and maternal and neonatal outcomes of COVID-19 were compared between the two waves.

Results
A total of 623 pregnant women tested positive for SARS-CoV-2 infection in our institute; 379 (60.8%) were diagnosed during the first wave and 244 (39.2%) in the second wave. Most of the affected women (81.1%) were in their third trimester. Maternal mortality rate was 823 per 100 000 live births. Composite maternal outcome (increasing requirement for ventilation, pulmonary embolism, disease progression) were more pronounced during the second wave (2.1% vs 6.1%). Between the two waves, both maternal (1 vs 3; P = 0.162) and perinatal (3.2% vs 6.7%; P = 0.065) deaths were higher during the second wave. The cesarean section rate was high during the first wave (48% vs 32.4%; P < 0.001). Preterm births were comparable between the two waves (19.5% vs 22%; P < 0.500).

Conclusion
The women presented with more severe illness during the second wave of COVID-19. There was higher perinatal mortality, but the maternal mortality was similar between the two waves. (Author)

2023-06080

Routine placental histopathology findings from women testing positive for SARS-CoV-2 during pregnancy: Retrospective cohort comparative study. Colley CS, Hutchinson JC, Whitten SM, et al (2023), BJOG: An International Journal of Obstetrics and Gynaecology vol 130, no 8, July 2023, pp 959-967

Full URL: https://doi.org/10.1111/1471-0528.17476

Objective
To assess the impact of maternal Coronavirus disease 2019 (COVID-19) infection on placental histopathological findings in an unselected population and evaluate the potential effect on the fetus, including the possibility of vertical transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

Design
Retrospective cohort comparative study of placental histopathological findings in patients with COVID-19, compared with controls.

Setting
During the COVID-19 pandemic, placentas were studied from women at University College Hospital London who reported and/or tested positive for COVID-19.

Population
Of 10 508 deliveries, 369 (3.5%) women had COVID-19 during pregnancy, with placental histopathology available for 244 women.

Methods
Retrospective review of maternal and neonatal characteristics, where placental analysis had been performed. This was compared with available, previously published, histopathological findings from placentas of unselected women.

Main outcome measures
Frequency of placental histopathological findings and relevant clinical outcomes.

Results
Histological abnormalities were reported in 117 of 244 (47.95%) cases, with the most common diagnosis being ascending maternal genital tract infection. There was no statistically significant difference in the frequency of most abnormalities compared with controls. There were four cases of COVID-19 placentitis (1.52%, 95% CI 0.04%–3.00%) and one possible congenital infection, with placental findings of acute maternal genital tract infection. The rate of fetal vascular malperfusion (FVM), at 4.5%, was higher compared with controls (p = 0.00044).

Conclusions
In most cases, placentas from pregnant women infected with SARS-CoV-2 virus do not show a significantly increased frequency of pathology. Evidence for transplacental transmission of SARS-CoV-2 is lacking from this cohort. There is a need for further study into the association between FVM, infection and diabetes. (Author)

2023-06073

Trends in Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infection and vaccine antibody prevalence in a multi-ethnic inner-city antenatal population: A cross-sectional surveillance study. Andreeva D, Gill C, Brockbank A, et al (2023), BJOG: An International Journal of Obstetrics and Gynaecology vol 130, no 9, August 2023, pp 1135-1144

Full URL: https://doi.org/10.1111/1471-0528.17508

Objective
To determine severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) seroprevalence in pregnancy in an inner-city setting and assess associations with demographic factors and vaccination timing.

Design
Repeated cross-sectional surveillance study.

Setting
London maternity centre.

Sample
A total of 906 pregnant women attending nuchal scans, July 2020–January 2022.

Methods
Blood samples were tested for IgG antibodies against SARS-CoV-2 nucleocapsid (N) and spike (S) proteins. Self-reported vaccination status and coronavirus disease 2019 (COVID-19) infection were recorded. Multivariable regression models determined demographic factors associated with seroprevalence and antibody titres.

Main outcome measures
Immunoglobulin G N- and S-protein antibody titres.

Results
Of the 960 women, 196 (20.4%) were SARS-CoV-2 seropositive from previous infection. Of these, 70 (35.7%) self-reported previous infection. Among unvaccinated women, women of black ethnic backgrounds were most likely to be SARS-CoV-2 seropositive (versus white adjusted risk ratio [aRR] 1.88, 95% CI 1.35–2.61, p < 0.001). Women from black and mixed ethnic backgrounds were least likely to have a history of vaccination with seropositivity to S-protein

(versus white aRR 0.58, 95% CI 0.40–0.84, p = 0.004; aRR 0.56, 95% CI 0.34–0.92, p = 0.021, respectively). Double vaccinated, previously infected women had higher IgG S-protein antibody titres than unvaccinated, previously infected women (mean difference 4.76 fold-change, 95% CI 2.65–6.86, p < 0.001). Vaccination timing before versus during pregnancy did not affect IgG S-antibody titres (mean difference −0.28 fold-change, 95% CI −2.61 to 2.04, p = 0.785).

Conclusions
This cross-sectional study demonstrates high rates of asymptomatic SARS-CoV-2 infection with women of black ethnic backgrounds having higher infection risk and lower vaccine uptake. SARS-CoV-2 antibody titres were highest among double-vaccinated, infected women. (Author)

2023-06022

Outcomes Following Extracorporeal Membrane Oxygenation for Severe COVID-19 in Pregnancy or Post Partum. Byrne JJ, Shamshirsaz AA, Cahill AG, et al (2023), JAMA Network Open vol 6, no 5, May 2023, e2314678
Full URL: https://doi.org/10.1001/jamanetworkopen.2023.14678

Importance Existing reports of pregnant patients with COVID-19 disease who require extracorporeal membrane oxygenation (ECMO) are limited, with variable outcomes noted for the maternal-fetal dyad.

Objective To examine maternal and perinatal outcomes associated with ECMO used for COVID-19 with respiratory failure during pregnancy.

Design, Setting, and Participants This retrospective multicenter cohort study examined pregnant and postpartum patients who required ECMO for COVID-19 respiratory failure at 25 hospitals across the US. Eligible patients included individuals who received care at one of the study sites, were diagnosed with SARS-CoV-2 infection during pregnancy or up to 6 weeks post partum by positive nucleic acid or antigen test, and for whom ECMO was initiated for respiratory failure from March 1, 2020, to October 1, 2022.

Exposures ECMO in the setting of COVID-19 respiratory failure.

Main outcome and measures The primary outcome was maternal mortality. Secondary outcomes included serious maternal morbidity, obstetrical outcomes, and neonatal outcomes. Outcomes were compared by timing of infection during pregnancy or post partum, timing of ECMO initiation during pregnancy or post partum, and periods of circulation of SARS-CoV-2 variants.

Results From March 1, 2020, to October 1, 2022, 100 pregnant or postpartum individuals were started on ECMO (29 [29.0%] Hispanic, 25 [25.0%] non-Hispanic Black, 34 [34.0%] non-Hispanic White; mean [SD] age: 31.1 [5.5] years), including 47 (47.0%) during pregnancy, 21 (21.0%) within 24 hours post partum, and 32 (32.0%) between 24 hours and 6 weeks post partum; 79 (79.0%) had obesity, 61 (61.0%) had public or no insurance, and 67 (67.0%) did not have an immunocompromising condition. The median (IQR) ECMO run was 20 (9-49) days. There were 16 maternal deaths (16.0%; 95% CI, 8.2%-23.8%) in the study cohort, and 76 patients (76.0%; 95% CI, 58.9%-93.1%) had 1 or more serious maternal morbidity events. The largest serious maternal morbidity was venous thromboembolism and occurred in 39 patients (39.0%), which was similar across ECMO timing (40.4% pregnant [19 of 47] vs 38.1% [8 of 21] immediately postpartum vs 37.5% postpartum [12 of 32]; P > .99).

Conclusions and Relevance In this multicenter US cohort study of pregnant and postpartum patients who required ECMO for COVID-19–associated respiratory failure, most survived but experienced a high frequency of serious maternal morbidity. (Author)

2023-05989

Fertility and contraceptive dynamics amidst COVID-19: who is at greatest risk for unintended pregnancy among a cohort of adolescents and young adults in Nairobi, Kenya?. Wood SN, Byrne ME, Thiongo M, et al (2023), BMJ Open vol 13, no 5, May 2023

Full URL: http://dx.doi.org/10.1136/bmjopen-2022-068689

Objectives Among youth in Nairobi, we (1) characterised fertility and contraceptive use dynamics by gender; (2) estimated pregnancy prevalence over the pandemic; and (3) assessed factors associated with unintended pandemic pregnancy for young women.

Design Longitudinal analyses use cohort data collected at three timepoints prior to and during the COVID-19 pandemic: June to August 2019 (pre-pandemic), August to October 2020 (12-month follow-up) and April to May 2021 (18-month follow-up).

Setting Nairobi, Kenya.

Participants At initial cohort recruitment, eligible youth were aged 15–24 years, unmarried and residing in Nairobi for at least 1 year. Within-timepoint analyses were restricted to participants with survey data per round; trend and prospective analyses were restricted to those with complete data at all three timepoints (n=586 young men, n=589 young women).

Primary and secondary outcome measures Primary outcomes comprised fertility and contraceptive use for both genders, and pregnancy for young women. Unintended pandemic pregnancy (assessed at 18-month follow-up) was defined as a current or past 6-month pregnancy with intent to delay pregnancy for more than 1 year at 2020 survey.

Results While fertility intentions remained stable, contraceptive dynamics varied by gender—young men both adopted and discontinued coital-dependent methods, whereas young women adopted coital-dependent or short-acting methods at 12-month follow-up (2020). Current pregnancy was highest at 2020 (4.8%), and approximately 2% at 2019 and 2021. Unintended pandemic pregnancy prevalence was 6.1%, with increased odds for young women recently married (adjusted OR (aOR)=3.79; 95% confidence interval (CI) 1.83–7.86); recent contraceptive use was protective against unintended pandemic pregnancy (aOR=0.23; 95% CI 0.11–0.47).

Conclusions Current pregnancy in Nairobi was highest at the height of the COVID-19 pandemic (2020), and subsided to pre-pandemic levels by 2021 data collection; however, requires further monitoring. New marriages posed considerable risk for unintended pandemic pregnancy. Contraceptive use remains a crucial preventive strategy to averting unintended pregnancy, particularly for married young women. (Author)

2023-05965

Factors associated with having COVID-19 among unvaccinated pregnant and non-pregnant women in Metro Manila, Philippines: a multicentre longitudinal cohort study. Llamas-Clark EF, Heralde FM, Lumandas MU, et al (2023), BMJ Open vol 13, no 4, April 2023

Full URL: http://dx.doi.org/10.1136/bmjopen-2022-070688

Objective To determine the potential risk factors associated with having COVID-19 among unvaccinated pregnant and non-pregnant women.

Design A multicentre prospective cohort study among eligible women in Metro Manila, Philippines, from 2020 to 2022.

Setting Five national and local hospital research sites altogether recruited and screened 500 consenting eligible individuals.

Participants Pregnant and non-pregnant participants meeting the eligibility criteria were admitted for a reverse-transcription PCR determination of SARS-CoV-2, pregnancy testing and ultrasound, and an interview with an

administered questionnaire.

Exposures Primary exposure was pregnancy; secondary exposures involve sociodemographic, lifestyle and obstetric-gynaecologic factors.

Outcome measure Outcome being measured was COVID-19 status.

Results The significant COVID-19 risk factors were: pregnancy (PR=1.184, 95% CI 1.096, 1.279), having a white-collar job (PR=1.123, 95% CI 1.02, 1.235), travelling abroad (PR=1.369, 95% CI 1.083, 1.173) and being infected by at least one vaccine-preventable disease (VPD) (PR=1.208, 95% CI 1.113, 1.310). Protective factors included having graduate-level education (PR=0.787, 95% CI 0.649, 0.954), immunisation against a VPD (PR=0.795, 95% CI 0.733, 0.862) and practising contraception (PR=0.889, 95% CI 0.824, 0.960).

Conclusion This study is the first in the country to determine the risks influencing COVID-19 infection among unvaccinated pregnant and non-pregnant women. Pregnancy is a significant risk for COVID-19 among women in Metro Manila. Educational attainment and positive health behaviours seem to confer protection. Occupations and activities that increase the frequency of interactions, as well as history of communicable diseases may predispose women to COVID-19. Further studies are needed to elucidate the development of the disease in pregnant women, including the maternal and neonatal effects of COVID-19 via potential vertical mechanisms of transmission. (Author)

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)

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 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)

2023-05674
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 vol 5, no 7, July 2023, 100981
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 vol 5, no 7, July 2023, 100984
Full URL: https://doi.org/10.1016/j.ajogmf.2023.100984
Objective
On November 22, 2022, two hospitals in Oregon declared crisis standards of care (CSC) in response to the 'tripledemic', 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 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 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 vol 50, no 3, September 2023, pp 496-503

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 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 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 vol 28, no 2, April 2023, 101432

Full URL: https://doi.org/10.1016/j.siny.2023.101432

This manuscript aims to present updated information on the comprehensive care to mother-newborn dyad at high risk of COVID-19 in the delivery room and during immediate postnatal care. (JM)

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 vol 28, no 2, April 2023, 101433

Full URL: https://doi.org/10.1016/j.siny.2023.101433

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 vol 28, no 1, February 2023, 101435

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 vol 28, no 1, February 2023, 101426

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 vol 28, no 2, April 2023, 101427

Full URL: https://doi.org/10.1016/j.siny.2023.101427

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 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 vol 28, no 1, February 2023, 101428

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 vol 28, no 1, February 2023, 101429

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 vol 28, no 2, April 2023, 101431

Full URL: https://doi.org/10.1016/j.siny.2023.101431

Multisystem inflammatory disease in neonates (MIS-N) is a disease of immune dysregulation presenting in the newborn period. Thouvgh 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 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 vol 3, no 2, May 2023, 100192

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.

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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 vol 3, no 2, May 2023, 100190
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.

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)

2023-04939

Early effects of COVID-19 on maternal and child health service disruption in Mozambique. Augusto O, Roberton T, Fernandes Q, et al (2023), Frontiers in Public 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 planing 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 Immunology 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 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 vol 43, no 5, May 2023, pp 659–663

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 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 tailed 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.

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)

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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, Kirlangic 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

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.

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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 amount 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 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 (β = 0.31; 95% CI, −2.97 to 3.58), gross motor (β = 0.82; 95% CI, −1.34 to 2.99), fine motor (β = 0.36; 95% CI, −0.74 to 1.47), expressive language (β = −1.00; 95% CI, −4.02 to 2.02), or receptive language (β = 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 vol 130, no 8, July 2023, pp 949-958

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.

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 vol 5, no 6, June 2023, 100912

Full URL: https://doi.org/10.1016/j.ajogmf.2023.100912

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 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 Obstetricia 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)

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 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 vol 48, no 4, July/August 2023, pp 215-223

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, 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
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 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 Endocrinology 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) vol 229, no 3, September 2023, pp 288.e1-288.e13
Full URL: https://doi.org/10.1016/j.ajog.2023.02.022

Background
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 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 vol 32, no 5, May 2023, pp 513–520

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.

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 vol 162, no 2, August 2023, pp 737-743
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 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 reviewed 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. Thadeus 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 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 vol 79, no 7, July 2023, pp 2664-2674

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)

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 vol 141, no 5, May 2023, pp 911-917

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)

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 vol 141, no 5, May 2023, pp 957-960

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 (Interquantile 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.

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 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 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 Obstetricia et Gynecologica Scandinavica vol 102, no 6, June 2023, pp 681-689

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.

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 image [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 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.

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

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 Obstetricia 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

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 vol 162, no 1, July 2023, pp 154-162

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, Regiroli G, Benachi A, et al (2023), American Journal of Obstetrics & Gynecology (AJOG) vol 229, no 2, August 2023, pp 118-128

Objective
To describe the characteristics of fetal demises following SARS-CoV-2 infections and clarify if they are associated with clinical severity, placental lesions or malformations or due to actual fetal infections.
Data Sources
PubMed and Web of Science databases (searched between December 1, 2019 and April 30, 2022).
Study eligibility criteria
Cohort, cross-sectional and case-control studies, as well as case series or case reports describing stillbirths or late miscarriages (i.e. pregnancy loss occurring between 14 and 22 weeks, before and after the onset of labor, respectively) from mothers infected by SARS-CoV-2 during pregnancy (demonstrated by at least one positive real-time reverse transcription polymerase chain reaction on nasopharyngeal swabs, and/or placental infection with SARS-CoV-2). No language restrictions were applied; cases with other causes possibly explaining the fetal demise were excluded.
Study appraisal and synthesis methods
PRISMA and MOOSE guidelines were followed. Quality of case series/reports was evaluated with the specific Mayo Clinic Evidence-Based Practice Center tool. Maternal and clinical fetal data were collected as well as placental and fetal virology and histology findings. Data were summarized with descriptive statistics using World Health Organization criteria to classify disease severity and fetal-neonatal infections.
Results
Data from 184 mothers and 190 fetuses were analyzed. No clear link with maternal clinical severity or fetal malformation was evident. Approximately 78% of fetal demises occurred during the second and third trimester, ≈6 and 13 days after diagnosis of SARS-CoV-2 infection or the beginning of symptoms, respectively. Most (88%) placentas were positive for SARS-CoV-2 or presented the histological features of placentitis (massive fibrin deposition and chronic intervillositis) 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)

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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.

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, Supriyatiningsih 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 Pediatrics 2 February 2023, online

Full URL: https://doi.org/10.3389/fped.2023.992908

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

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

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

Conclusion: This study indicated a significant increase in the risk of term PROM, significant decreases in the risk of

PPH, fetal malformation and LGA, and a marked decline in the rate of admission to the NICU during Shanghai Lockdown. (Author)

2023-02406

Comparing maternal substance use and perinatal outcomes before and during the COVID-19 pandemic. Lien J, Hayes T, Liu-Smith F, et al (2023), Journal of Perinatology vol 43, no 5, May 2023, pp 664–669

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 Public Health 24 January 2023, online

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

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

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

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

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

2023-02319

Cell-type specific distribution and activation of type I IFN pathway molecules at the placental maternal-fetal interface in response to COVID-19 infection. Wang Y, Gu Y, Lewis DF, et al (2023), Frontiers in Endocrinology 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 IFNβ were determined in formalin-fixed paraffin embedded (FFPE) placental tissue sections (villous and fetal membrane) by immunostaining. A total of 20 placentas were examined, 12 from COVID-19 patients and 8 from non-COVID-19 controls. Patient demographics, clinical data, and placental pathology report were acquired via EPIC medical record review.

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

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

2023-02266

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

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

Background

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

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

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

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

2023-02261

Tracking excess of maternal deaths associated with COVID-19 in Brazil: a nationwide analysis. Guimarães RM, Reis LGC, de Souza Mendes Gomes MA, et al (2023), BMC Pregnancy and Childbirth vol 23, no 22, January 2023
Full URL: https://doi.org/10.1186/s12884-022-05338-y

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

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

Results
Most maternal deaths occurred during pregnancy compared to postpartum deaths month by month in 2020 ($\mu = 59.8\%$,

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

Conclusions
There was excess maternal mortality in 2020 in Brazil. Even with adjustment for the expected excess mortality from Covid-19 in women of childbearing age, the number of maternal deaths exceeds expectations, suggesting that there were deaths among pregnant and postpartum women indirectly caused by the pandemic, compromising access to prenatal care., adequate childbirth and puerperium. (Author)

2023-02258

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

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

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

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

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

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

2023-02137

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

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

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

Design Test negative design study.

Setting Community and hospital testing in Ontario, Canada.

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

Intervention Maternal mRNA covid-19 vaccination during pregnancy.

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

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

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

2023-02073

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

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

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

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

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

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

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

2023-01910

Impact of asymptomatic and mild COVID-19 infection on fetal growth during pregnancy. Narang K, Miller M, Trinidad C, et al (2023), European Journal of Obstetrics & Gynecology and Reproductive Biology vol 281, February 2023, pp 63-67
Full URL: https://doi.org/10.1016/j.ejogrb.2022.12.020

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

Study design.
This is a single institution, retrospective cohort study of patients ages 16–55 years old with a singleton delivery between December 10, 2020, and April 19, 2021 who had not received a COVID-19 vaccination prior to delivery. COVID-19 infection during pregnancy was defined as a positive SARS-CoV-2 RT-PCR test. FGR was defined as an estimated fetal weight less than the 10th percentile for gestational age or abdominal circumference less than the 10th percentile for gestational age. Maternal and fetal characteristics, including FGR, were compared between women with versus without COVID-19 infection during pregnancy.
Results
Among 1971 women with a singleton delivery, 208 (10.6 %) had a prior asymptomatic or mild COVID-19 infection during pregnancy. With the exception in the median prenatal BMI being significantly higher in the COVID-19 group (median, 27.5 vs 26.3, p = 0.04), there were no significant differences in demographics, baseline maternal comorbidities or gestational age between those with versus without COVID-19 infection during pregnancy, or in the proportion of their offspring with FGR (3.4 % (7/208) vs 4.8 % (84/1763), p = 0.36). When the 208 women were stratified by the timing of their COVID-19 infection, the proportion with an offspring with FGR was 8.7 % (2/23), 1.2 % (1/84), and 4.0 % (4/101), for those first diagnosed with COVID-19 during the 1st, 2nd, and 3rd trimesters, respectively (p = 0.72 Cochran-Armitage test for trend).
Conclusion
Asymptomatic or mild COVID-19 infection in pregnancy, regardless of timing of infection, does not appear to be associated with FGR. Routine serial fetal growth assessment may not be warranted solely for history of COVID-19 infection. (Author)

2023-01904

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

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

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

2023-01747

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

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

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

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

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

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

2023-01643

Neuromotor repertoires in infants exposed to maternal COVID-19 during pregnancy: a cohort study. Martinez VF, Zhang D, Paiola S, et al (2023), BMJ Open vol 13, no 1, January 2023, 069194
Full URL: http://dx.doi.org/10.1136/bmjopen-2022-069194
Objective To evaluate neuromotor repertoires and developmental milestones in infants exposed to antenatal COVID-19.

Design Longitudinal cohort study.

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

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

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

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

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

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

2023-01554

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

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

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

2023-01468

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

Objective

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

Methods

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

Results

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

Conclusion

A variable antibody response to SARS-CoV-2 in pregnancy among asymptomatic infections compared to symptomatic

infections was found, the significance of which is unknown. Although transfer of transplacental neutralizing antibodies occurred, additional research is needed to determine how long maternal antibodies can protect the infant against SARS-CoV-2 infection. (Author)

2023-01448

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

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 $\chi 2$ 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. Thematic analysis according to the methods of Braun and Clark (2006) were used to synthesize the data. From the search the six themes that emerged include: effects of lockdown measures, COVID concerns and psychological stress, reduced attendance at antenatal care, childhood vaccination, reduced facility-based births, and increase maternal and child mortality. A review of the literature revealed the following policy issues: The need for government to develop robust response mechanism to public health emergencies that negatively affect maternal and child health issues and devise health policies to mitigate negative effects of lockdown. In times of pandemic there is need to maintain special access for both antenatal care and child delivery services and limit a shift to use of untrained birth attendants to reduce maternal and neonatal deaths. These could be achieved by soliciting investments from various sectors to provide high-quality care that ensures sustainability to all layers of the population. (Author)

2023-00405

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

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

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

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 antispike 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 antispike mAb therapy. To the best of our knowledge, our study is the second largest report of this kind and includes the use of sotrovimab in 10 pregnant patients.

STUDY DESIGN: After institutional review board approval, we performed a retrospective cohort study of 47 pregnant patients aged ≥18 years who received mAb infusion for the treatment of mild-to-moderate COVID-19 between April 2021 to January 2022. We extracted the data from St. Luke's University Health Network electronic medical record

system. Mild disease was characterized by fever, change of taste or smell, and cough. Moderate disease was characterized by dyspnea, evidence of disease on imaging, or oxygen saturation of ≥94%. Severe disease was characterized by viral symptoms (mentioned in the definitions of mild and moderate diseases) with additional shortness of breath, and very severe disease was characterized by respiratory failure or shock. All patients had a confirmed positive result of direct SARS-CoV-2 testing. Patients were selected for mAb therapy if they met the eligibility criteria based on EUA guidelines released by the FDA and additional criteria defined by our institutional protocol (Figure). Pregnant patients were monitored for adverse reactions at the injection site, headache, dizziness, fever, weakness, nausea, vomiting, pruritus, rashes, anaphylaxis, diarrhea, and low blood pressure. We defined tolerability as a low rate of side effects and low admission rates. Data analysis was completed using SPSS (version 28; International Business Machines Corporation, Armonk, NY). RESULTS: A total of 47 pregnant patients were included in the study. The characteristics of the patient population are displayed in Table 1. The patients' mean age was 30 years with most patients being White (85.1%). Most patients were obese (63.8%) and in their third trimester of pregnancy (57.4%). Most patients (46.8%) received bamlanivimab and etesevimab treatment, and 10 patients (21.3%) received sotrovimab.(Author)

2022-10082

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

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

BACKGROUND

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

OBJECTIVE

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

STUDY DESIGN

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

RESULTS

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

CONCLUSION

More than 50% of women with severe COVID-19 and diagnostic criteria for preeclampsia may not be preeclampsia but a preeclampsia-like syndrome, which may affect up to 7.5% of women with severe COVID-19. Preeclampsia-like syndrome might have similar perinatal outcomes to those of normotensive women with severe pneumonia because of COVID-19. For these reasons, preeclampsia-like syndrome should be excluded by using soluble fms-like tyrosine

kinase 1–to–placental growth factor ratio in future research and before making clinical decisions. (Author)

2021-11579

SARS-CoV-2 Seroprevalence in Florida Department of Health in Palm Beach County Obstetric Clinics: A Cross-Sectional Study during the First Pandemic Surge. Gonik CO, Alonso AM, Gonik B (2023), American Journal of Perinatology vol 40, no 8, June 2023, pp 912-916

Objective Estimating severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) seroprevalence is an important part of the public health approach to coronavirus disease 2019 (COVID-19) understanding and containment. This is particularly relevant to an obstetric population because of implications in the management of the pregnant host, care of the newborn, and disease progression within the community.

Study Design A cross-sectional seroprevalence study was performed in four Department of Health Palm Beach County clinics from June 29, 2020, to August 5, 2020. Samples were collected from asymptomatic antepartum and postpartum participants. A web-based surveillance system was used to identify subsequent antibody or polymerase chain reaction (PCR) testing encounters.

Results A total of 163 of 618 subjects were seropositive (26.4%). Racial makeup was white 2.5%, black 19.0%, and Hispanic 78.5%. Positive serology was seen in 16.0, 35.6, and 30.1% of first, second, and third trimesters, respectively; 18.4% were positive postpartum. Only four patients voluntarily reported PCR positivity prior to antibody testing. Six home zip codes accounted for the majority (68.1%) of positive results. Thirty-two patients had repeat serology (65.6% positive and 34.4% negative). Of the 163 subjects, 65 underwent later PCR testing with 92% negative for SAR-CoV-2.

Conclusion Almost one in four subjects had serologic evidence of previous SARS-CoV-2 infection. These very high seroprevalence rates have not been previously reported and highlight the concern for health disparities in the United States. Most were asymptomatic and without a history for SARS-CoV-2 exposure. There was a loss of seropositivity in a significant number of subjects, raising concern for risk of reinfection, inadequate transplacental antibody transfer, and subsequent limited passive protection to the newborn. These seroprevalence data will also allow for better newborn follow-up of unanticipated consequences of COVID-19 infection in pregnancy. (Author)

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