Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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COVID-related stress, and sleep health (Pittsburgh Sleep Quality Index, PSQI) were collected. For this analysis, we excluded mothers identified as depressed based on PHQ9. Regressions analyses were implemented to estimate the associations between PSS and COVID-related stress and multiple domains of sleep, accounting for covariates (maternal age, education, gestational age covid infection in pregnancy, time of the pandemic).

Results: Our sample consisted of N=155 women; Gestational age at assessment: 30.6±5.8 weeks; Age: 32.2±5.0 years; non-Hispanic White=66, non-Hispanic Black=12, Hispanic=56, Asian=16, Other=5; 69% 4-year college/graduate degree. Mean PSS was 18.3±5.8 weeks; non-Hispanic White=3.9±1.6. COVID-related stress negatively affected subjective sleep quality (β=0.3±0.1, p<0.01), latency (β=-0.4±0.1, p<0.001) and sleep disturbances (β=-0.5±0.2, p<0.003). Increased PSS negatively affected sleep duration (β=-0.09±0.2, p<0.001), efficiency (β=-0.08±0.02, p<0.001), and daytime dysfunction (β=-0.08±0.03, p<0.01).

Conclusions: Our results suggest that stress related to the current COVID-19 pandemic is uniquely affecting maternal sleep health during pregnancy.

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Keywords: Sleep, Perceived Stress, COVID-19, Pregnancy

Birth During the COVID-19 Pandemic, but Not Maternal SARS-CoV-2 Infection in Pregnancy, is Associated With Lower Neurodevelopmental Scores at 6-Months

Dani Dumitriu1, Lauren Shuffrey1, Morgan R. Firestein1, Margaret Kyle1, William Fifer1, and Catherine Monk1

1Columbia University

Background: Associations between in utero exposure to maternal SARS-CoV-2 infection and neurodevelopment are widely speculated, but currently unknown. Here, we sought to determine the associations between maternal SARS-CoV-2 infection during pregnancy, being born during the COVID-19 pandemic regardless of maternal SARS-CoV-2 status, and neurodevelopment at 6-months.

Methods: Infants exposed to maternal SARS-CoV-2 infection during pregnancy and unexposed controls were enrolled into the COVID-19 Mother Baby Outcomes (COMBO) initiative at Columbia University Irving Medical Center (CUIMC) in New York City. Of 1706 women approached, 596 enrolled and 70.6% of 385 women invited to a 6-month assessment completed the Ages and Stages Questionnaire, 3rd Edition (ASQ-3) at 6-months of age. Data were available for 255 COMBO infants (114 in utero exposed, 141 unexposed). Data on the ASQ-3 was also available from a historical cohort of 62 infants born at CUIMC prior to the pandemic.

Results: In utero exposure to maternal SARS-CoV-2 infection was not associated with differences on any ASQ-3 subdomain regardless of infection timing or severity. However, infants born during the pandemic had significantly lower scores on gross motor (mean difference -5.63, 95%CI[-8.75; -2.51], F1, 267=12.63, p<0.005), fine motor (mean difference -6.61, 95%CI[-10.00; -3.21], F1, 267=14.71, p<0.005), and personal-social (mean difference -3.71, 95%CI[-6.61; -0.82], F1, 267=6.37, p<0.05) subdomains when compared to the historical cohort.

Conclusions: Birth during the pandemic, but not maternal SARS-CoV-2 infection, was associated with differences in neurodevelopment at 6-months. These early findings suggest significantly higher public health impact for the generation born during the COVID-19 pandemic than previously anticipated.

Funding Source: R01MH126531

Keywords: COVID-19 Pandemic, Neurodevelopment, ASQ-3

Impact of the COVID-19 Pandemic Environment on Early Child Brain and Cognitive Development

Sean Deoni1

1Brown University

Background: Since the first reports of the novel coronavirus in the US in early 2020, public health organizations have advocated preventative policies including stay-at-home orders that closed businesses, daycares, schools, playgrounds, and limited child learning activities. The impact of these policies on child neurodevelopment is unknown but may have significant long-term consequences.

Methods: Leveraging a large and ongoing longitudinal study of child neurodevelopment, we examined general childhood cognitive scores (assessed using the Mullen Scales of Early Learning) in 672 children between 0 and 3 years of age born between 2020 and 2021 (n=118) vs. the preceding decade from 2011 to 2019 (n=554). Brain neuroimaging (MRI) was also performed on each child. Using longitudinal mixed-effects models, we compared longitudinal trends of voxel-wise brain cognitive domain measures before and during the pandemic.

Results: We find that children born during the pandemic (Since July 2020) have significantly reduced verbal, motor, and overall cognitive performance compared to children born pre-pandemic; and that skills have continued to decline as the pandemic has progressed. Moreover, we find that children from lower socioeconomic families have been most affected. These neurocognitive findings are supported by neuroimaging data, which also shows reduced brain white matter development in children born since July 2020 compared to their counterparts from 2011 to 2019.

Conclusions: Results highlight that even in the absence of direct SARS-CoV-2 infection and COVID-19 illness, the environmental changes associated COVID-19 pandemic is negatively affecting infant and child development.

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Keywords: COVID-19 Pandemic, Child Cognition, Early Neurocognitive Development, Longitudinal Neuroimaging, Developmental Neuroimaging