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Early childhood developmental concerns following SARS-CoV-2 infection and COVID-19 vaccination during pregnancy: a Scottish population-level retrospective cohort study

Iain Hardie¹, Louise Marryat², Aja Murray¹, Josiah King¹, Kenneth Okelo¹, James P. Boardman^{3,4}, Michale V Lombardo⁵, Sarah J. Stock⁶, Rachael Wood⁷, and Bonnie Auyeung¹

¹Department of Psychology, School of Philosophy, Psychology and Language Sciences, University of Edinburgh, Edinburgh, United Kingdom

²School of Health Sciences, University of Dundee, Dundee, United Kingdom

³Centre for Clinical Brain Sciences, University of Edinburgh, Edinburgh, United Kingdom

⁴Centre for Reproductive Health, Institute for Regeneration and Repair, University of Edinburgh, Edinburgh, United Kingdom

⁵Laboratory for Autism and Neurodevelopmental Disorders, Center for Neuroscience and Cognitive Systems, Istituto Italiano di Tecnologia, Rovereto, Italy

⁶Usher Institute, University of Edinburgh, Edinburgh, United Kingdom

⁷Public Health Scotland, Edinburgh, United Kingdom

Objectives

Understanding the effects of SARS-CoV-2 infection and COVID-19 vaccination during pregnancy can help inform clinical guidance and tackle vaccine hesitancy. We examined relationships between SARS-CoV-2 infection during pregnancy, COVID-19 vaccination during pregnancy, and early child developmental concerns in children age 13–15 months in Scotland.

Method

We created a large population-level linked administrative health dataset, combining the COVID-19 in Pregnancy in Scotland (COPS) dataset with age 13–15 month child health review data and other datasets. We included children conceived after May 18, 2020, and born before Sept 30, 2021, and their mothers. We used logistic regression modelling to investigate associations between SARS-CoV-2 infection during pregnancy, COVID-19 vaccination during pregnancy, and developmental concerns (ie, parent or caregiver developmental concerns and health visitor-identified concerns regarding speech–language–communication, problem solving, gross motor, personal–social, and emotional–behavioural development) measured during routine child health reviews at age 13–15 months.

Results

A total of 24 919 child–mother pairs (12 752 [51.2%] male children; 12 167 [48.8%] female children) were included. 1631 (6.5%) children were prenatally exposed to SARS-CoV-2 and 4943 (19.8%) to COVID-19 vaccination. We found no associations between SARS-CoV-2 infection during pregnancy and developmental concerns. After confounder and covari-

ate adjustment, COVID-19 vaccination during pregnancy was associated with reduced odds of developmental concerns regarding problem solving (odds ratio 0.78 [95% CI 0.64–0.95]), personal–social (0.76 [0.61–0.95]), and emotional–behavioural (0.67 [0.48–0.92]) development, but had no associations with other developmental concerns.

Conclusion

SARS-CoV-2 infections during pregnancy do not appear to be linked to early childhood developmental concerns, and COVID-19 vaccinations during pregnancy are safe from the perspective of early childhood developmental concerns. As some developmental concerns do not become apparent until children are older than 13–15 months, future research should continue to monitor outcomes as children grow and develop.

