

## SHORT COMMENTARY

# Could children born to mothers with COVID-19 be more prone to non-communicable diseases?

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Although COVID-19 tends to affect older people more severely, women of reproductive age are not spared. Based on perinatal COVID-19 data, we express concerns about theoretical adverse consequences particularly to the offspring, in the framework of non-communicable diseases, which develop slowly across the life course. The trajectory of risk commences early, in adolescence and the pre/peri-conceptual period to the first years of life. The offspring, even trans-generationally, may be directly and/or indirectly affected. Non-communicable diseases include obesity, diabetes, hypertension, cardiovascular, renal, lung and other diseases.<sup>1</sup>

The COVID-19 pandemic has caused widespread school closures and lockdowns and led to unhealthy dietary changes and sedentary living among adolescents and young adults, who are tomorrow's parents. While these conditions are likely self-limited, future obesity may derive. It is known that peri-conceptual obesity may cause pregnancy complications and offspring disorders in early and later life in the context of non-communicable diseases.<sup>2</sup>

Furthermore, COVID-19 has been related to an increase in preterm births, to a lesser extent, foetal growth restriction and to predominantly Caesarean section deliveries.<sup>3,4</sup> All of these factors have been closely associated with non-communicable diseases,<sup>4,5</sup> although underlying maternal conditions are also possible culprits.

Stillbirths and postnatal symptoms suggest that COVID-19 may have a direct impact on the foetus and neonate. The increased still-birth rates, possibly attributed to lack of care during confinement, may result from placental tissue/amniotic membrane viral infection.<sup>4</sup>

Feeding difficulties and diarrhoea in the neonate may point to dysbiosis, while lack of breastfeeding, as suggested in some studies, can alter a healthy microbiome and may contribute to short-term and long-term non-communicable diseases.

As the case with other maternal viral infections during pregnancy (eg H1N1), possible neuropsychiatric and behavioural disorders in the offspring of COVID-19-infected mothers could be long-term outcomes<sup>4</sup> falling into the spectrum of non-communicable diseases.


Taken that the non-communicable disease perspective of COVID-19-infected mother/infant dyads is still hypothetical, there is an urgent need for long-term follow-up studies.

Moreover, stressful conditions due to the harsh socio-economic consequences of COVID-19, applying particularly to deprived families, may aggravate the worldwide incidence of non-communicable diseases.

## CONFLICT OF INTEREST

None.

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