

# Reduction in the preterm birth rate during the COVID-19 pandemic: analyzing causation

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**Reduction in the preterm birth rate during the COVID-19 pandemic: analyzing causation**

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An article by Rusconi et al. in the current issue of BJOG compared preterm birth (PTB) during the COVID-19 pandemic period (March 1, 2020, to March 31, 2021) to the pre-pandemic period (January 2017-February 2020). Their study evaluated 1,479,301 women, covering 84.3% of the births in Italy and noted a decreased risk of PTB (Risk Ratio: 0.91; 95% Confidence Interval, CI: 0.88, 0.93) and no change in the rate of stillbirth during the COVID-19 pandemic period. The authors hypothesized that this reduction of PTB might be due to a number of pandemic-related factors including enhanced attention to health care of pregnant women, a reduction in the number of women undergoing *in vitro*fertilization, increased emphasis on a healthy diet and a diminished exposure to air pollution. Previous studies on alterations in the rates of PTB and stillbirth during COVID-19, including reviews and meta-analyses, have yielded conflicting results and a consistent trend has not been identified. The present investigation adds support to the view that the increased attention given to pregnant women during the pandemic may have unforeseen benefits. The inclusion of twins in their analysis adds an additional parameter to these studies.

It is difficult to conduct an unambiguous analysis of changes in trends over time due to the presence of multiple variables that can introduce bias and other errors (Elvik R. *Accid Anal Prev.* 2013;60:245-53). In addition, as noted for research in obstetrics, “association is not causation” (Skupski D, *Am J Obstet Gynecol* 2016;214:133-4). We must be cautious before accepting definitive results from individual studies and every possible source of bias must be carefully considered. The study by Rusconi et al. employed a very large sample size and the availability of detailed outcome records, supporting the reasonableness of their observations. However, questions concerning the ambiguity of their conclusions are unavoidable. For example, the study did not evaluate trend-rate analysis bias. The two time periods compared are continuous: the first ended in February 2020 and the second began in March 2020. Pregnancies that were initiated and completed within the pandemic period might not be affected the same way as pregnancies that began prior to the pandemic but ended during the first months of the pandemic. The absence of an exclusionary time period between the pandemic and pre-pandemic periods to allow for the removal of

overlapping cases, remains a shortcoming of their investigation. There is also a failure to account for a possible secular trend as a source of bias. The difference between groups might be due, for example, at least in part to the general improvement in obstetric care over time, rather than being a consequence of the COVID pandemic. Investigators at the National Institutes of Health recently commented on the difficulty in making valid associations between a SARS-CoV-2 infection and the occurrence of various pathologies (<https://www.nhlbi.nih.gov/news/2021/unraveling-mysteries-covid-19>).

In summary, while an association is plausible, it remains problematic to definitively conclude that the COVID-19 pandemic had a direct positive effect on the rate of PTB in Italy.

### **Conflict of interest**

No conflicts identified by all the authors