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.

COVID-19 in pregnancy: evidence from LMICs

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We read with great interest the study by Leonard Mndala and colleagues published in *The Lancet Global Health*.[1] They report maternal and neonatal outcomes of COVID-19 in 261 pregnant and recently pregnant women (up to 42 days post-delivery) in Malawi during the omicron wave, compared with the preceding waves of beta and delta SARS-CoV-2 variants. The authors found that a severe maternal outcome and maternal death were less common during the omicron wave than during the beta and delta waves (p≤0·05). Shortness of breath was the only symptom associated with poor maternal outcomes (p<0·0001), and was less commonly reported in the omicron wave than in the beta and delta waves (p<0·001). There is an urgency to acknowledge that data regarding the burden of COVID-19 on maternal and perinatal outcomes in sub-Saharan Africa and other areas in low-income and middle-income countries (LMICs) are under-represented in the medical literature.

Structured surveillance systems on health outcomes allow for a fast response and uptake of data to support policymakers, and these are mostly implemented in high-income settings. For example, during the early period of the pandemic, the US Centers for Disease Control and Prevention reported increased morbidity with hospitalisation, intensive care unit (ICU) admissions, and mechanical ventilation among pregnant or postpartum women, but not increased mortality (adjusted odds ratio 0·9 [95% CI 0·5–1·5]).[2] As the pandemic evolved, data showed that symptomatic pregnant and post-partum women with confirmed SARS-CoV-2 infection were at greater risk of ICU admission (3·0 [2·6–3·4]), extracorporeal membrane oxygenation (2·4 [1·5–4·0]), and death (1·7 [1·2–2·4]), than were their non-pregnant counterparts.[3] Moreover, data from a living systematic review, including 435 studies, also reported greater risk of severe maternal morbidity (invasive ventilation: odds ratio 2·41 [2·13 to 2·71]), mortality (6·09 [1·82 to 20·38]), stillbirth (1·81 [1·38 to 2·37]) and neonatal death (2·35 [1·16 to 4·76]) than did non-pregnant women with SARS-CoV-2 infection.[4] Most of the included studies were from high-income countries.

Health emergencies are known to shed light on underlying weaknesses in the health system, worsening delays in medical care and revealing inequities within a population. Most countries in sub-Saharan Africa and other LMICs have ineffective epidemiological surveillance systems and, therefore, are underrepresented when considering the impact of a pandemic on maternal and perinatal health. Even when surveillance is adequately implemented, it rarely translates into timely public health interventions. Brazil, for example—with reliable data from the national surveillance system on severe respiratory syndrome—reported clear inequities and delays in medical care during the COVID-19 pandemic, given that 22·6% of women died without having been admitted to an ICU and 14·6% without ventilatory support early in the pandemic.[5]

Mndala and colleagues' analyses were made possible by the previously implemented national maternal surveillance platform in Malawi (MATSurvey). Another multi-institutional effort in Latin America was the use of the Perinatal Information System (SIP) from the Latin American Center for Perinatology, Women and Reproductive Health, which allowed the uptake of regional data on eight countries, presenting 447 maternal deaths.[6] In keeping with the MATSurvery data, dyspnoea was the most frequent symptom at admission, and was present in 73% of women who died.

Other research initiatives in LMICs implemented before the COVID-19 pandemic also enabled the quick organisation of data collection. In Brazil, the Network of Studies on Reproductive and Perinatal Health, which was implemented over 10 years ago initially for the surveillance of maternal morbidity, provided baseline data for the multicentre REBRACO study (named to denote the Brazilian network of COVID-19 during pregnancy). Data from REBRACO showed that the availability of tests for SARS-CoV-2 and outcomes varied throughout the first year of the pandemic (before the dominance of gamma as a variant-of-concern), with worse outcomes in the initial 4 months.[7] This finding is certainly true for other settings in LMICs. REBRACO joined an ongoing initiative of WHO to use a generic protocol for the reporting of findings on COVID-19 during pregnancy, including in several LMICs in Africa, Latin America, and Asia, with an expected sample size of more than 20 000 women.[8]

The findings reported by Mndala and colleagues, regardless of the small sample size of 261 women, include 28 health-care facilities and contribute substantially

to elucidating the burden of different SARS-CoV-2 variants and variants-of-concern on maternal and perinatal outcomes. Most notably, by comparing the dominant time periods of different variants-of-concern, they showed that omicron was associated with better maternal and perinatal outcomes. These findings are similar to those of other studies.[10] There is great disparity in vaccine coverage, especially among countries in Africa, with scarce data available during pregnancy. Overall vaccine coverage varies from the 3·2% reported in Malawi and 4·6% in Nigeria, to 11·6% in Zambia and 30·0% in South Africa, considering data up to March, 2022. Data from Brazil, in the same period, showed that 40·3% of pregnant and postpartum women were fully vaccinated; among these women, those with COVID-19 infection had a 50% reduction in dyspnoea and ICU admission and an 80% reduction in intubation and maternal mortality when compared with their unvaccinated counterparts.[9] Therefore, there is evidence that vaccination reduces severe outcomes.

The global progress in reducing maternal mortality in the past two decades is notable; however, the 2030 Sustainable Development Goal 3.1 target is far from being achieved, especially in LMICs. The COVID-19 pandemic has aggravated such numbers, drawing attention towards the challenge of prioritising health care. To implement measures to avoid preventable mortality in under-resourced settings, we need the data and we need action.

We declare no competing interests.

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