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COVID-19 pandemic and health-care disruptions: count the most vulnerable



Pregnancy adds to an individual's vulnerability and to the adverse health effects of disasters, famines, and pandemics. During past influenza pandemics, we have witnessed increased risks of morbidity and death in pregnant people and neonates.¹ Early data suggest similar risks of acquisition of COVID-19 in pregnant and other healthy adults. However, studies exploring the indirect consequences of COVID-19 have found that pregnant individuals from Black, Asian, minority ethnic backgrounds, as well as from other disadvantaged groups, are more likely to be adversely affected by COVID-19.²⁻⁵ The effect of the pandemic on vulnerable populations needs to be compared not only with the non-vulnerable population, but also with the pre-pandemic status of those populations. The disparities related to resource levels, ethnicity, race, gender, religion, and caste among these vulnerable populations also need to be explored.^{5,6}

In *The Lancet Global Health*, Barbara Chmielewska and colleagues report a systematic review of the effect of the COVID-19 pandemic on maternal and perinatal outcomes.⁷ The authors included 40 studies that compared various maternal and neonatal health outcomes during and before the COVID-19 pandemic, from which outcomes that were reported in at least two studies were included in the meta-analysis (31 studies). They found significant increases in the incidence of stillbirth, maternal death, and ruptured ectopic pregnancy, and in mean maternal depression scores during the pandemic. Although the studies from high-income countries (HICs) showed a significant reduction in preterm births (before 37 weeks' gestation) during the pandemic, the same was not seen in low-income and middle-income countries (LMICs). There was significant heterogeneity in outcomes between HICs and LMICs, and the rates of the adverse outcomes were much higher in LMICs. These findings highlight disparities in health care within and across countries.

Most of the studies included in this review were single-centre studies and might not be a true representation of the community-level data. Studies from LMICs have shown an almost 50% reduction in hospitalisation and emergency visits during the pandemic, with increases in

stillbirths and maternal deaths.^{4,8} These findings indicate that an increased number of unattended pregnancies might have resulted in greater rates of stillbirth, neonatal death, and maternal death. The increased risk of ruptured ectopic pregnancy further highlights the delay in seeking care in early pregnancy. Countries such as India imposed strict lockdown measures early in the pandemic, leading to restricted access to health-care facilities, whereas many countries deferred lockdowns until later. Redirection of resources and manpower for creating COVID-19 facilities led to compromises in essential non-COVID-19 services, thereby contributing to the adversities.^{4,8} Chmielewska and colleagues tried to address these factors through a regression analysis adjusting for the stringency of lockdown measures and WHO Healthcare Efficiency Index. They found that the immediate health-care response, rather than the stringent lockdown measures, was responsible for the heterogeneity in many outcomes. In resource-poor countries, even under normal circumstances, it is a challenge to provide adequate coverage for antenatal checkups, obstetric emergencies, universal institutional deliveries, and respectful maternity care. The COVID-19 pandemic has widened this gap and exposed several lacunae of health-care systems worldwide, but more so in LMICs.

COVID-19 has had a severe negative impact on the Sustainable Development Goals (SDGs), particularly SDG 3, as well as the Every Newborn Action Plan (ENAP).⁹ Before the pandemic, slow but steady progress was being made towards the goal of reducing the global maternal mortality ratio to less than 70 per 100 000 livebirths and ending preventable stillbirths (ten or fewer per 1000 total births) by 2035. However, COVID-19 has widened the equity gap in health care and set this progress back by a decade or so.¹⁰ Despite widespread concerns over the inequalities in COVID-19-related mortality and morbidities among racial and ethnic minorities and socially disadvantaged groups, little attention has been paid to systematic solutions at the global level.^{3,5,6} To address these disparities, we must acknowledge the vulnerability of pregnant individuals to COVID-19, especially in LMICs, and take immediate steps to quantify the damage. Data

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on maternal mortality, the mental health status of pregnant people, stillbirths, and neonatal deaths from developing countries and minorities in HICs are lacking. We should obtain these data through community health workers, such as accredited social health activists and Anganwadi workers in India, and social leaders to measure the true burden and identify the barriers in accessing health care during the pandemic. To identify the disparities within and across countries, a COVID-19 dashboard showing live data on COVID-19 as well as non-COVID-19 morbidity and mortality according to race, ethnicity, gender, region, and religion should be developed.⁵ Although it might not be easy for pandemic-affected overburdened health-care infrastructure, a systems approach with strong leadership could pave a way for a better future.⁵ The recent surge in the use of information technology with increased access to mobile phones and internet, and judicious use of data analytic technology and telemedicine, could benefit the delivery of care to previously inaccessible people. We need to take immediate remedial measures at a global level to get back on track for attaining the SDGs and ENAP goals.

We declare no competing interests.

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- 1 Rasmussen SA, Jamieson DJ, Uyeki TM. Effects of influenza on pregnant women and infants. *Am J Obstet Gynecol* 2012; **207** (suppl): S3–8.
- 2 Vousden N, Bunch K, Morris E, et al. The incidence, characteristics and outcomes of pregnant women hospitalized with symptomatic and asymptomatic SARS-CoV-2 infection in the UK from March to September 2020: a national cohort study using the UK Obstetric Surveillance System (UKOSS). *medRxiv* 2021; published online Jan 5. <https://doi.org/10.1101/2021.01.04.21249195> (preprint).
- 3 Mackey K, Ayers CK, Kondo KK, et al. Racial and ethnic disparities in COVID-19-related infections, hospitalizations, and deaths: a systematic review. *Ann Intern Med* 2020; published online Dec 1. <https://doi.org/10.7326/m20-6306>.
- 4 Kc A, Gurung R, Kinney MV, et al. Effect of the COVID-19 pandemic response on intrapartum care, stillbirth, and neonatal mortality outcomes in Nepal: a prospective observational study. *Lancet Glob Health* 2020; **8**: e1273–81.
- 5 Wilkins CH, Friedman EC, Churchwell AL, et al. A systems approach to addressing COVID-19 health inequities. *NEJM Catalyst* 2021; **2**: CAT.20.0374.
- 6 Lopez L 3rd, Hart LH 3rd, Katz MH. Racial and ethnic health disparities related to COVID-19. *JAMA* 2021; **325**: 719–20.
- 7 Chmielewska B, Barratt I, Townsend R, et al. Effects of the COVID-19 pandemic on maternal and perinatal outcomes: a systematic review and meta-analysis. *Lancet Glob Health* 2021; published online March 31. [https://doi.org/10.1016/S2214-109X\(21\)00079-6](https://doi.org/10.1016/S2214-109X(21)00079-6).
- 8 Kumari V, Mehta K, Choudhary R. COVID-19 outbreak and decreased hospitalisation of pregnant women in labour. *Lancet Glob Health* 2020; **8**: e1116–17.
- 9 WHO. Every Newborn Action Plan. http://www.who.int/maternal_child_adolescent/newborns/every-newborn/en/ (accessed Feb 22, 2021).
- 10 UN Development Programme. Impact of COVID-19 on the Sustainable Development Goals: pursuing the Sustainable Development Goals (SDGs) in a world reshaped by COVID-19. Dec 2, 2020. https://sdgintegration.undp.org/sites/default/files/Impact_of_COVID-19_on_the_SDGs.pdf (accessed March 17, 2021).