

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.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

COVID-19 and maternal and perinatal outcomes

In their systematic review and metaanalysis, Barbara Chmielewska and colleagues¹ note significant increases in maternal death and stillbirths during the COVID-19 pandemic. They link these outcomes to reduced access to maternal health services, stating that in low-income and middleincome countries (LMICs), remote antenatal care appointments are less feasible because of technological shortcomings in these countries.

As the authors note, the experiences and outcomes in different countries have varied widely during the pandemic and their review only included a few papers from LMICs. For this reason, we find it crucial to share our experiences at our six Partners In Health project sites in Haiti, Lesotho, Liberia, Malawi, Mexico, and Sierra Leone. Since May, 2020, we have continuously monitored health services using the model described by Fulcher and colleagues.2 In four sites (Haiti, Liberia, Mexico, and Sierra Leone), we did observe moderate declines in antenatal care and facilitybased deliveries, but in most cases services rebounded back to what was expected by mid-2020. In the other sites, we did not observe any significant decline in maternal health services during the pandemic.

Our experience sheds light on health services in LMICs during the pandemic, which are often under-represented in the literature. Importantly, although access to technology might be a barrier at some of our programme sites, many non-technological solutions were implemented to ensure the continuity of maternal health services. First, it is important to note that lockdowns have differed from country to country. Our programme sites in Lesotho, Malawi, and Mexico reported fewer mobility constraints than those in Haiti, Liberia, and Sierra Leone. Second, programmes have adopted homegrown solutions to maintain access to care, and each country produced a different adaptation. Lesotho, Malawi, and Mexico adopted strategies to safely maintain community health worker programmes, which have been previously shown to be a key factor in the uptake of maternal services,3 despite the pandemic restrictions. Sierra Leone focused on communication campaigns to inform the population about COVID-19 infection and the importance of maintaining other health services. Liberia promoted providers' capacity building on the safe provision of maternal health care during COVID-19 and strengthening their supply chain, whereas Haiti restructured clinic spaces so that pregnant women could still receive care at the same time as distancing at the facility. Importantly, all sites benefited from long-standing and close collaboration between Partners In Health and public health systems to ensure the continuity of essential health services, using lessons learned by the organisation through its experience in other infectious disease outbreaks in the past.

The COVID-19 pandemic has affected every country, but every country has been affected differently. We hope that this Correspondence adds perspective on the effect of the pandemic on maternal health service use in LMICs, and identifies the strategies adopted by sites to maintain services during this health emergency.

We declare no competing interests.

Copyright © 2021 The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC BY 4.0 license.

*Zeus Aranda, Isabel R Fulcher, Bethany Hedt-Gauthier, Jean Claude Mugunga, Thierry Binde zaranda@pih.org

Partners In Health Mexico/Compañeros En Salud, Ángel Albino Corzo, Chiapas 30370, México (ZA); Department of Global Health and Social Medicine, Harvard Medical School, Boston, MA, USA (IRF, BH-G, JCM); Harvard Data Science Initiative, Boston, MA, USA (IRF); Department of Biostatistics, Harvard TH Chan School of Public Health, Boston, MA, USA (BH-G); Partners In Health, Boston, MA, USA (JCM); Division of Global Health Equity, Brigham and Women's Hospital, Boston, MA, USA (JCM); Partners In Health Sierra Leone, Koidu, Kono, Sierra Leone (TB)

- 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; 9: e759-72.
- Fulcher IR, Boley EJ, Gopaluni A, et al. Syndromic surveillance using monthly aggregate health systems information data: methods with application to COVID-19 in Liberia. Int J Epidemiol 2021; published online May 31. https://doi.org/10.1093/ije/dyab094.
- 3 Kachimanga C, Dunbar EL, Watson S, et al. Increasing utilisation of perinatal services: estimating the impact of community health worker program in Neno, Malawi. BMC Pregnancy Childbirth 2020; 20: 22.

