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## Effect of COVID-19 on maternal and neonatal services

Globally, the COVID-19 pandemic has badly affected almost all sectors, including health. Ashish KC and colleagues<sup>1</sup> showed that, in Nepal, institutional birth rates declined by almost 50% and that institutional neonatal mortality increased by more than 200% in selected referral hospitals between January and May, 2020. However, convincing explanations for such a drastic change in maternal and neonatal health services are yet to be explored. Here we aim to provide possible reasons for such a decline in maternal and neonatal health services and provide perspectives on the potential ways to improve them.

First, the study was done in hospitals that were declared as “COVID-19 hub hospitals” by the Ministry of Health and Population of Nepal in March, 2020.<sup>2</sup> Fewer women and their families would be expected to visit these hospitals due to the fear of contracting severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and perhaps in some cases, a fear of stigma after discharge from those hospitals. Additionally, these hospitals are located mostly in urban areas where non-public hospitals provide delivery services. It is more likely that women attended these hospitals for deliveries, and that these women might have been overburdened by direct or indirect costs.

Second, the study found a large decline in the use of maternal and neonatal health services during the period of 5 months. This decline in service does not seem to be representative of the normal pattern. Had KC and colleagues incorporated a much longer time for data collection and a much wider inclusion of hospitals, including local health facilities, their results could have been different. Using a much

larger dataset of routinely collected national data abstracted from the health management information system of Nepal (appendix p 1), we observed a smaller decline in the rate of institutional delivery than that shown by KC and colleagues. We found the national institutional delivery rate had decreased by 31.8% between January and May, 2020 (appendix p 3). The decrease during the same period in 2019 was 24.2% (appendix p 4). Furthermore, the numbers of deliveries started to increase again after May, 2020; this increase is more pronounced in local health facilities (appendix p 5).

Third, an important covariate—the place of residence or distance to hospitals—was not adjusted for in the analysis. During the lockdown, inter-district movement was restricted in Nepal; it is more likely that women with less complex pregnancies and deliveries might have visited local health facilities, whereas those with more complex or high-risk pregnancies might have visited referral hospitals. Such differential hospital attendance could make the mortality seem higher in referral hospitals. If the authors had included this covariate in the model during analysis, mortality might have been much lower than reported.

Last, institutional deliveries, as defined by the Ministry of Health and Population of Nepal, include deliveries in different types of health facilities, from referral hospitals to local-level health facilities. Therefore, the data captured from nine referral hospitals in this study should only be interpreted as hospital deliveries. A report by the Nepalese Government in 2018 showed that referral hospitals only contributed to 27.6% of all institutional deliveries and that the rest of the institutional deliveries took place in peripheral health facilities, including health posts, primary health-care centres, district hospitals, and general hospitals.<sup>3</sup> This highlights the increased number of deliveries attended or currently being attended at these health facilities during this pandemic. Previous

studies, such as the 2020 study by Banstola and colleagues,<sup>4</sup> have shown that women might have received a substandard quality of maternal and neonatal health services in peripheral and non-public health facilities. Since May, 2020, the number of institutional births has increased in peripheral health facilities (appendix p 5). Therefore, strengthening local health systems is needed so that Nepal can recover in terms of maternal and neonatal health services and reduce out-of-pocket expenditure. Providing quality maternal and neonatal health services while strictly following procedures to reduce COVID-19 would be the best approach in this scenario.

The COVID-19 pandemic has imparted a clear lesson—there is no alternative to strengthening the primary health-care system. We agree with Sharma and colleagues,<sup>5</sup> who in 2018 recommended that enhancing the Nepalese Government’s capacity for robust governance with a focus on quality and cost-effectiveness of services by setting standards and ensuring best practices was urgently needed. This is now particularly important during the COVID-19 pandemic and beyond. Furthermore, Nepal’s nascent federal structure has a great opportunity to update the primary health-care system to increase access to affordable and high-quality health care. Along with a renewed commitment, bold leadership from the government and support from stakeholders are imperative in health system reform. We believe that the study by KC and colleagues,<sup>1</sup> along with our alternative explanations of the data, could guide policy makers in health system reform in Nepal. Finally, we thank the authors for bringing such an important topic into consideration during this trying period.

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- 1 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.
- 2 Public Health Update. List of coronavirus disease (COVID-19) hub hospitals in Nepal. Aug 6, 2020. <https://publichealthupdate.com/list-of-coronavirus-disease-covid-19-hub-hospitals-in-nepal/> (accessed Aug 25, 2020).
- 3 Government of Nepal Ministry of Health and Population Department of Health Services. Annual Report 2074–75 (2017–18). <https://dohs.gov.np/annual-report-2074-75/> (accessed Aug 26, 2020).
- 4 Banstola A, Simkhada P, van Teijlingen E, et al. The availability of emergency obstetric care in birthing centres in rural Nepal: a cross-sectional survey. *Matern Child Health J* 2020; **24**: 806–16.
- 5 Sharma J, Aryal A, Thapa GK. Envisioning a high-quality health system in Nepal: if not now, when? *Lancet Glob Health* 2018; **6**: e1146–48.