

## Impacts of COVID-19 on childhood malnutrition and nutrition-related mortality



The unprecedented global social and economic crisis triggered by the COVID-19 pandemic poses grave risks to the nutritional status and survival of young children in low-income and middle-income countries (LMICs). Of particular concern is an expected increase in child malnutrition, including wasting, due to steep declines in household incomes, changes in the availability and affordability of nutritious foods, and interruptions to health, nutrition, and social protection services.<sup>1</sup>

One in ten deaths among children younger than 5 years in LMICs is attributable to severe wasting because wasted children are at increased risk of mortality from infectious diseases.<sup>2</sup> Before the COVID-19 pandemic, an estimated 47 million children younger than 5 years were moderately or severely wasted, most living in sub-Saharan Africa and south Asia.<sup>3</sup>

The economic, food, and health systems disruptions resulting from the COVID-19 pandemic are expected to continue to exacerbate all forms of malnutrition. Estimates from the International Food Policy Research Institute suggest that because of the pandemic an additional 140 million people will be thrown into living in extreme poverty on less than US\$1.90 per day in 2020.<sup>4</sup> According to the World Food Programme, the number of people in LMICs facing acute food insecurity will nearly double to 265 million by the end of 2020.<sup>5</sup> Sharp declines are expected in access to child health and nutrition services, similar to those seen during the 2014–16 outbreak of Ebola virus disease in sub-Saharan Africa.<sup>6</sup> Early in the COVID-19 pandemic, UNICEF estimated a 30% overall reduction in essential nutrition services coverage, reaching 75–100% in lockdown contexts, including in fragile countries where there are humanitarian crises.<sup>7</sup>

The accompanying call to action on child malnutrition and COVID-19 from leaders of four UN agencies<sup>8</sup> in *The Lancet* is an important first step for the international community. Alongside these efforts, the Standing Together for Nutrition consortium, a multidisciplinary consortium of nutrition, economics, food, and health systems researchers, is working to estimate the scale and reach of nutrition challenges related to COVID-19. These efforts link three approaches to model the combined

economic and health systems impacts from COVID-19 on malnutrition and mortality: MIRAGRODEP's macroeconomic projections of impacts on per capita gross national income (GNI);<sup>4</sup> microeconomic estimates of how predicted GNI shocks impact child wasting using data on 1.26 million children from 177 Demographic Health Surveys (DHS) conducted in 52 LMICs between 1990–2018;<sup>9</sup> and the Lives Saved Tool (LiST), which links country-specific health services disruptions and predicted increases in wasting to child mortality.<sup>10</sup>

What do our initial analyses and estimates suggest? First, the MIRAGRODEP projections suggest that even fairly short lockdown measures, combined with severe mobility disruptions and comparatively moderate food systems disruptions, result in most LMICs having an estimated average 7.9% (SD 2.4%) decrease in GNI per capita relative to pre-COVID-19 projections.<sup>4</sup>

Second, the microeconomic model projections indicate that decreases in GNI per capita are associated with large increases in child wasting.<sup>9</sup> Our own analyses, based on these estimates applied to 118 LMICs, suggest there could be a 14.3% increase in the prevalence of moderate or severe wasting among children younger than 5 years due to COVID-19-related predicted country-specific losses in GNI per capita. We estimate this would translate to an additional estimated 6.7 million children with wasting in 2020 compared with projections for

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2020 without COVID-19; an estimated 57.6% of these children are in south Asia and an estimated 21.8% in sub-Saharan Africa.

Third, when the projected increase in wasting in each country is combined with a projected year average of 25% reduction in coverage of nutrition and health services, we estimate there would be 128 605 (ranging from 111 193 to 178 510 for best and worst case scenarios) additional deaths in children younger than 5 years during 2020, with an estimated 52% of these deaths in sub-Saharan Africa. The range reflects coverage scenarios, as previously described by Robertson and colleagues,<sup>10</sup> using a low of 15% and high of 50% disruption in vitamin A supplementation, treatment of severe wasting, promotion of improved young child feeding, and provision of micronutrient supplements to pregnant women.

Our projections emphasise the crucial need for the actions to protect child nutrition that are urged by the UN leaders in the accompanying Comment.<sup>8</sup> These actions require rapid mobilisation of domestic and donor resources at a time when most national economies are reeling from COVID-19-related losses. In 2017, the World Bank estimated that \$7 billion per year over 10 years is needed to reach the global Sustainable Development Goal nutrition targets.<sup>11</sup> These estimates need to be revised upwards to overcome COVID-19-related setbacks.

The COVID-19 pandemic is expected to increase the risk of all forms of malnutrition. The wasting-focused estimates we present here are likely to be conservative, given that the duration of this crisis is unknown, and its full impacts on food, health, and social protection systems are yet to be realised. The disruption of other health services during lockdowns will further compromise maternal and child health and mortality,<sup>10</sup> and with the deepening of economic and food systems crises, other forms of malnutrition, including child stunting, micronutrient malnutrition, and maternal nutrition, are expected to increase.<sup>1</sup> Without adequate action, the profound impact of the COVID-19 pandemic on early life nutrition could have intergenerational consequences for child growth and development and life-long impacts on education, chronic disease risks, and overall human capital formation.<sup>12</sup> Forthcoming analyses by this consortium will examine a range of diet

and nutrition outcomes in women and young children and provide consensus advice on multisectoral actions and resources needed to recover and support optimal nutrition now and into the future.

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See Online for appendix