

## Association between economic growth and early childhood nutrition

Sebastian Vollmer and colleagues (April issue)<sup>1</sup> apply evidence from 121 cross-sectional surveys from 36 countries to challenge the view that economic growth is a sufficient condition to reduce child undernutrition. Furthermore, they use this data to conclude that “the contribution of economic growth to the reduction in early childhood undernutrition in developing countries is very small, if it exists at all”. Although we concur with the first point, we believe that the second is unwise and unwarranted.

The 2013 *Lancet* Nutrition Series estimated that scaling up of ten proven effective nutrition-specific interventions would reduce stunting by only 20% worldwide.<sup>2</sup> This motivates a need for complementary nutrition-sensitive interventions, including poverty-reducing growth strategies and transfer programmes,<sup>3</sup> and counsels against ignoring the role of income growth. However, this counsel would be meaningless if the effect of income growth on nutrition was indeed non-existent. Other studies that used growth in gross domestic product (GDP; in cross-country studies) and household income (within-country tests) have shown substantial improvements in nutrition with economic growth,<sup>3–6</sup> albeit less than a 1% decrease of either stunting or underweight rates for a 1% increase in income. Moreover, Vollmer and colleagues also report results that are consistent with income growth contributing to improved nutrition. Their figure 2 shows that differences in GDP per person has a highly significant long-term association with stunting ( $r=-0.801$ ,  $p=0.0001$ ). However,

the association between changes in GDP and short-term changes in stunting is weaker in figure 3 but (contrary to statements in their text) is marginally significant ( $r=-0.198$ ,  $p=0.073$ ). Regression results in their appendix also show that a household wealth index (arguably a reasonable alternative measure of economic progress) is very strongly correlated with child nutrition outcomes. Vollmer and colleagues further underplay the effect of economic growth by reporting the odds ratios for a 5% increase in GDP per person, a change that is hardly the aspiration of a growth strategy. At best, therefore, Vollmer and colleagues show that there is a weak nutritional effect of a specific indicator of economic progress in a specific model.

Vollmer and colleagues’ distinctive multilevel modelling has potential weaknesses that warrant further investigation. The authors imply that tremendous statistical power is derived from the availability of Demographic and Health Survey data for about 460 000 children and their households. But because GDP per person is measured nationally, Vollmer and colleagues have only 121 observations for their key variable of interest. There is a vast number of economic reports on the problems of using GDP per person as a welfare measure, especially in the short term, and especially in developing countries with very weak national accounts systems. Indeed, several of the authors of this paper are well aware of that literature, having written on the subject previously.<sup>7</sup> But the little cross-country variation in their data exacerbates the measurement error bias and makes it difficult to document strong associations with individual-level nutrition outcomes. It therefore would be beneficial if Vollmer and colleagues could show that their regression model

would not bias all country-level coefficients downwards. Without a convincing explanation for why the available work (which documents substantially stronger cross-country and within-country relations between income and nutrition<sup>3–6</sup>) should be dismissed, the authors’ concluding interpretation should be tempered; a pro-poor growth strategy, and other means of income support, might actually complement the direct nutritional investments that the authors advocate.

We have no competing interests.

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