


Commentary: Foetal growth, preterm birth and childhood undernutrition

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The application of the World Health Organization (WHO) Child Growth Standards released in 2006 showed that in many low- and middle-income countries (LMICs), a child’s length is already compromised at birth. In this issue of the *IJE*, Christian and colleagues make an important contribution to understanding the extent to which foetal growth restriction contributes to childhood stunting and other indicators of nutritional status. The consortium of researchers, pooling data from 19 birth cohorts from LMICs, show that childhood undernutrition has its origins in the foetal period. Relative to children born adequate size-for-gestational age (AGA) and at term, the odds ratios of childhood (12–60 months) stunting associated with AGA and preterm; small-for-gestational age (SGA) and term; and SGA and preterm; are 1.93, 2.43 and 4.51, respectively. A similar magnitude of risk is observed for wasting and underweight. Importantly, despite the large variation in the prevalence of both SGA and preterm birth, the risk of undernutrition associated with being born too small or too soon is comparable across populations and regions, reflecting common underlying causes of either foetal growth restriction or preterm birth. The results indicate a stronger association between SGA and stunting than between preterm and stunting.
In contrast, preterm birth – which affects a smaller number of neonates – is associated with a higher risk of neonatal mortality, with relative risk ranging from 6 to 9 vs. SGA alone, which was consistently associated with a 3-fold increased risk.4

In 1998 we reported a first attempt to estimate the burden of intrauterine growth restriction in LMICs.5 Knowledge has evolved and today we are better able to estimate the large number of babies born each year too small or too soon.6,7 In other respects, however, past challenges remain. An important one is accurately assessing gestational age in LMICs in the context of antenatal care programmes. Furthermore, the definition of what constitutes ‘normal’ foetal growth continues to be hotly debated. At present, there is no classification system that incorporates both the clinical heterogeneity and the multi-causality of foetal growth disturbances reflecting the lower and upper ends of the distribution, including describing the different phenotypes associated with disturbed foetal growth. Ideally, a unified classification should be developed that is consistent with the definitions and terminology commonly used in postnatal life so that there is a harmonized approach to classifying disturbances in human growth from early pregnancy to childhood. An important component of such a system will be the availability of international standards for foetal growth and neonatal weight, length and head circumference for gestational age. Such standards should follow the prescriptive conceptual approach used to construct the WHO Child Growth Standards currently used worldwide.8 However, their utility depends on accurate measurement of weight, length and head circumference at birth, which is rare in LMICs. In these settings, in which either a large proportion of pregnant women do not have access to antenatal care or many births occur in the home, valid estimates of gestational age and accurate anthropometry birth measurements are difficult or impossible to obtain. Nevertheless, in an ideal world, their availability would enable us to move beyond the traditional maternal and child health indicator of low birthweight (<2500 g) which, as shown by Lee and colleagues,7 fails to identify most babies who are born either too small or too soon.

The new evidence from Christian and colleagues3 is both timely and important. Timely, because it comes at a moment when international mobilization around malnutrition has never been stronger, in particular with the Scaling Up Nutrition (SUN) movement (http://scalingupnutrition.org). Important, because it shows that efforts to tackle the scourge of undernutrition and its perverse effects on human health and development will not succeed without paying attention to what happens during pregnancy and before. Today, no one contests the need to intervene early, during pregnancy and ideally even before, to reduce foetal growth restriction and preterm birth.

Promising interventions exist to improve maternal nutrition and reduce foetal growth restriction and SGA births in appropriate settings in LMICs, if scaled up before and during pregnancy. They include balanced energy protein, calcium and multiple micronutrient supplementation and preventive strategies for malaria in pregnancy.9,10 These interventions would need to be linked to nutrition-sensitive approaches, i.e. women’s empowerment, agriculture, food systems, education, employment, social protection and safety nets, to accelerate progress in countries with the highest burden of child undernutrition.9,11 In south Asia, where SGA prevalence is highest,7 there is a need to introduce promising interventions in the preconception period and in adolescents, given the poor pre-pregnancy health and nutrition status of girls and women. Often uneducated and still teenagers, many mothers in south Asia have little say in decisions or control over household resources.

In 2012 the World Health Assembly adopted an ambitious set of global goals on stunting and other nutrition conditions.12 Increasingly, stakeholders are convinced that not only is it crucial to effectively address child undernutrition as a prerequisite for development, but also that it is possible to do so. Strong consensus has emerged on the ‘1000 days window of opportunity’ (www.thousanddays.org), when interventions are likely to have the greatest impact on child health and development and ultimately boost social and economic progress. There might be other windows of opportunity, particularly during adolescence,13 but no one questions the importance of the early window – given undernutrition’s short-term impact on mortality, brain growth and development of other viscera, affecting intelligence or non-communicable diseases (NCDs). What happens, or fails to happen, in the crucial first 1000 days – conception through 24 months of age – will drive progress in fighting child undernutrition in south Asia and sub-Saharan Africa, as in every other region.

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References
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