Policies to reduce undernutrition include child development

The *Lancet* Series on Maternal and Child Undernutrition highlights the damaging effects of undernutrition during the first 2 years of life on children's survival, health, attained schooling, and ultimately their human capital. The Series also points out that, although there are effective nutritional interventions, the international nutrition system, comprising international and donor organisations, academia, civil society, and the private sector, is fragmented and in need of reform. An improved nutrition system will undoubtedly improve the lives of the millions of children who are undernourished. But there would still be major gaps in the educational success and improvement of human capital of millions of children in developing countries because nutritional adequacy alone is insufficient.

The mechanisms underlying educational failure and adverse economic consequences operate through poor early cognitive and social development.[1–3] The loss of developmental potential in the first 5 years of life, partly caused by undernutrition, results in late entry into schooling, poor educational attainment, early drop-out, and low earning potential.

The first 2–3 years of life are crucial for both nutrition and child development. Rapid growth, including brain development, places high demands on nutrition. However, early brain development also requires environmental stimulation.[4] Inadequate cognitive or social stimulation during these early years has lifelong negative consequences on educational performance and psychological functioning. In countries where children are adequately nourished, children without early opportunities for cognitive and social stimulation develop poorly cognitively and socially, which puts them on a trajectory toward low school attainment, early exit from education, and limited economic potential.[5]

Experience in Jamaica shows the synergistic effects of integrating nutrition and stimulation.[6] 9–24-month-old stunted children who received weekly supplements of milk and cognitive or social stimulation at home for 2 years had higher developmental scores than those who received neither or only one intervention. Long-term follow-up showed that the children who received early cognitive or social stimulation had better cognitive, educational, and psychosocial functioning in late adolescence than those who did not. Also, there were no long-term effects of nutritional supplementation, either alone or in combination with cognitive or social stimulation.[7–9] Although the nutritional intervention may have been too little too late, the long-term effects of the cognitive or social stimulation are consistent with evidence from middle-income and high-income countries on the beneficial effects of early intervention.[3,10]

The extent of undernutrition and loss of developmental potential is far reaching: in children under 5 years,

112 million are underweight, 178 million are stunted, and over 219 million do not reach their developmental potential, which places an enormous burden on the children, their families, and their societies. Although undernourished children's health is likely to be improved by effective nutritional interventions, they are unlikely to catch up to well-nourished children in cognitive or social development without the inclusion of early child development programmes.[3] Substantial numbers of children growing up in poverty also lose developmental potential even when their nutritional status is acceptable. Thus what is needed to promote human capital are interventions that protect children against undernutrition and lack of cognitive or social stimulation, both of which lead to the loss of developmental potential early in life.

The Millennium Development Goals (MDG) serve as blueprints to eliminate or reduce eight of the most severe challenges to the world's poorest citizens. Programmes that integrate nutrition and early child development promote better health and development, which enables children to take greater advantage of educational opportunities. Such integrated programmes not only address MDG 1 on the reduction of poverty and undernutrition, but also MDG 2 on the promotion of early education. Integration across the MDGs is a cost-effective strategy to reduce the consequences of poverty. For example, the 36 countries at greatest risk for childhood undernutrition are also at greatest risk for poor child development, which makes integrated programming feasible and economical.

We applaud *The Lancet* and the authors of the Maternal and Child Undernutrition Series for their leadership and clarity about the negative consequences of undernutrition. As the international nutrition system works toward reforms, we urge global policy makers to adopt integrated approaches that incorporate nutrition and health together with early opportunities for cognitive and social stimulation. This strategy will reduce undernutrition and enable children to achieve educational and psychological success, which will, in turn, increase equity and human capital.

**Maureen M Black, Susan P Walker, Theodore D Wachs, Nurper Ulkuer, Julie Meeks Gardner, Sally Grantham-McGregor, Betsy Lozoff, Patrice L Engle, Meena Cabral de Mello*

University of Maryland School of Medicine, Baltimore, MD 21201, USA (MMB); University of the West Indies, Kingston, Jamaica (SPW, JMG); Purdue University, West Lafayette, IN, USA (TDW); UNICEF, New York, NY, USA (NU); Institute of Child Health, University College, London, UK (SG-M); University of Michigan, Ann Arbor, MI, USA (BL); Cal Poly State University, San Luis Obispo, CA, USA (PLE); WHO, Geneva, Switzerland (MCdM)

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