Water/Nutrition Literature Update – August 2013

This update includes recent studies and resources on the integration of WASH and nutrition. Included are the just published Cochrane review on interventions to improve WASH practices and their effects on the nutritional status of children, the Lancet June 2013 series on nutrition and other studies. The full text or abstracts of the studies will also be available on an online WASH/Nutrition library that will soon be available.

LEARNING MODULES/WEBINARS

Programming for Nutritional Outcomes Learning Module. London School of Hygiene and Tropical Medicine. (Link)

This module has been designed to explore the complicated problem of undernutrition, highlight its multi-sectoral causes and identify potential programmatic solutions. Chronic undernutrition affects nearly 200 million children in low and middle income countries, with vitamin and mineral deficiencies affecting many more, and there is strong evidence that undernutrition is associated with up to 35% of all child deaths globally.

Clean, Fed and Nurtured Webinar, July 2013. (Video)

On July 9, 2013 the Clean, Fed & Nurtured Community of Practice hosted a Webinar with Dr. Marie T. Ruel on the importance of cross-sectoral collaboration. Dr. Ruel is the Director of the International Food Policy Research Institute's (IFPRI) Poverty, Health and Nutrition Division, and the lead author of the 2013 Lancet Series paper: Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition?

JOURNAL ARTICLES/REPORTS


Authors’ conclusions - The available evidence from meta-analysis of data from cluster-randomised controlled trials with an intervention period of 9-12 months is suggestive of a small benefit of WASH interventions (specifically solar disinfection of water, provision of soap, and improvement of water quality) on length growth in children under five years of age. The duration of the intervention studies was relatively short and none of the included studies is of high methodological quality. Very few studies provided information on intervention adherence, attrition and costs. There are several ongoing trials in low-income country settings that may provide robust evidence to inform these findings.


Experimental impact evaluation methods have recently emerged as a dominant force within the development effectiveness movement. Although these methods have improved understanding of what works, their “gold standard” status threatens to exclude a large body
of alternative evidence. This paper evaluates the impact of CARE’s SHOUHARDO project in Bangladesh, which employed a rights-based, livelihoods approach. Using a mixed-methods protocol, we find plausible evidence that the project led to an extraordinarily large reduction in child malnutrition. While offering valuable policy lessons, we illustrate how rigorous evaluation can be undertaken even without the randomization and control groups required by the experimental methods.

**Commentary: The changing focus for improving nutrition.** *Food and Nutrition Bulletin, vol. 34, no. 2 2013.* Alan Dangour, et al. ([Full text, pdf](#))

Global actions on solving the burden of undernutrition at scale have been strengthened by the advancing evidence base and the increasingly successful advocacy efforts. Much of the evidence currently relates to direct nutrition-specific interventions with proven cost-effectiveness, and a key requirement is for more research related to both single and packaged multisectoral interventions that may be effective in improving nutrition outcomes.

**Commentary: Sanitation and Stunting in India Undernutrition’s Blind Spot.** *Econ & Polit Weekly, June 2013.* Robert Chambers, et al. ([Full text, pdf](#))

The puzzle of persistent undernutrition in India is largely explained by open defecation, population density, and lack of sanitation and hygiene. The impact on nutrition of many faecally-transmitted infections, not just the diarrhoeas, has been a blind spot. In hygienic conditions much of the undernutrition in India would disappear.

**Determinants of reduced child stunting in Cambodia: analysis of pooled data from three Demographic and Health Surveys.** *WHO Bulletin, May 2013.* Nayu Ikeda, et al. ([Full text](#))

Child stunting was associated with the child's sex and age, type of birth, maternal height, maternal body mass index, previous birth intervals, number of household members, household wealth index score, access to improved sanitation facilities, presence of diarrhoea, parents’ education, maternal tobacco use and mother's birth during the Khmer Rouge famine. The reduction in stunting prevalence during the past decade was attributable to improvements in household wealth, sanitation, parental education, birth spacing and maternal tobacco use. The prevalence of stunting would have been further reduced by scaling up the coverage of improved sanitation facilities, extending birth intervals, and eradicating maternal tobacco use.

**Effect of a conditional cash transfer programme on childhood mortality: a nationwide analysis of Brazilian municipalities.** *Lancet, July 2013.* Davide Rasella, et al. ([Link](#))

A conditional cash transfer program can greatly contribute to a decrease in childhood mortality overall, and in particular for deaths attributable to poverty-related causes such as malnutrition and diarrhea, in a large middle-income country such as Brazil.

**Fecal Markers of Intestinal Inflammation and Permeability Associated with the Subsequent Acquisition of Linear Growth Deficits in Infants.** *Am Jnl Trop Med Hyg, 88(2) 2013.* Margaret Kosek, et al. ([Full text, pdf](#))

Enteric infections are associated with linear growth failure in children. To quantify the association between intestinal inflammation and linear growth failure three commercially
available enzyme-linked immunosorbent assays (neopterin [NEO], alpha-anti-trypsin [AAT], and myeloperoxidase [MPO]) were performed in a structured sampling of asymptomatic stool from children under longitudinal surveillance for diarrheal illness in eight countries.

**Household Environmental Conditions Are Associated with Enteropathy and Impaired Growth in Rural Bangladesh.** *Am Jnl Trop Med Hyg, July 2013*. A Lin, et al. (Full text)

We assessed the relationship of fecal environmental contamination and environmental enteropathy. We compared markers of environmental enteropathy, parasite burden, and growth in 119 Bangladeshi children (≤ 48 months of age) across rural Bangladesh living in different levels of household environmental cleanliness defined by objective indicators of water quality and sanitary and hand-washing infrastructure. Adjusted for potential confounding characteristics, children from clean households had 0.54 SDs (95% confidence interval [CI] = 0.06, 1.01) higher height-for-age z scores (HAZs), 0.32 SDs (95% CI = -0.72, 0.08) lower lactulose:mannitol (L:M) ratios in urine, and 0.24 SDs (95% CI = -0.63, 0.16) lower immunoglobulin G endotoxin core antibody (IgG EndoCAb) titers than children from contaminated households. After adjusting for age and sex, a 1-unit increase in the ln L:M was associated with a 0.33 SDs decrease in HAZ (95% CI = -0.62, -0.05). These results are consistent with the hypothesis that environmental contamination causes growth faltering mediated through environmental enteropathy.

**Impact Pathways from Agricultural Research to Improved Nutrition and Health: Literature Analysis and Research Priorities**, 2013. Patrick Webb, FAO. (Full text, pdf)

This paper contributes to ongoing work at many institutions aimed at identifying priority knowledge gaps, determining the best research approaches needed to fill those gaps, and exploring how to better support policy and programme implementation with sound empirical evidence of ‘what works’. The paper has four parts. First, a discussion of approaches used in conceptualizing causal pathways from agriculture to nutrition and health. Second, an overview of research-based evidence on agriculture impacts on nutrition and health. Third, a discussion of knowledge gaps and associated priority research questions. Finally, conclusions on proposed priority research questions.

**Water, sanitation, hygiene and enteric infections in children.** *Arch Dis Child. 2013 August*. Joe Brown, et al. (Full text)

The relationship between diarrhoeal disease and malnutrition is complex, though it is well accepted that malnourished children suffer more frequent episodes of diarrhoeal disease, while a child's nutritional status is affected following a diarrhoeal episode. A multiple country study found that 25% of stunting in children aged 24 months could be attributable to five or more diarrhoeal episodes experienced in the first 2 years of life. Malnutrition and stunting can lead to poorer school performance, early school drop-out and, as a result, lower economic well-being in later life.

**Lancet Series on Nutrition, June 2013**

- **Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost?** Z Bhutta, et al. (Link)

Our analysis suggests the current total of deaths in children younger than 5 years can be reduced by 15% if populations can access ten evidence-based nutrition interventions
at 90% coverage. Additionally, access to and uptake of iodised salt can alleviate iodine deficiency and improve health outcomes. Accelerated gains are possible and about a fifth of the existing burden of stunting can be averted using these approaches, if access is improved in this way.

- **Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition?** Marie Ruel, et al [Link](Link)

Acceleration of progress in nutrition will require effective, large-scale nutrition-sensitive programmes that address key underlying determinants of nutrition and enhance the coverage and effectiveness of nutrition-specific interventions. We reviewed evidence of nutritional effects of programmes in four sectors—agriculture, social safety nets, early child development, and schooling.