

## Faecal Infections and Undernutrition

The question is whether infections transmitted through open defecation and poor hygiene are more significant causes of sickness, debilitation and undernutrition than is commonly recognised. For nutrition, the five As of food and faecal infections are relevant. These are: for food - Availability and Access; and for faecal infections - Absorption, Antibodies and Allopathogens. With faecal infections in the gut, Absorption is reduced by atrophied villi and intestinal parasites. Antibodies refers to the energy and proteins diverted to dealing with infections as with tropical enteropathy. Allopathogens refers to 'other' pathogens both with faecal-oral pathways (including Hepatitis A,B and C, typhoid fever, poliomyelitis and other enteroviruses), and with other pathways (including hookworm, schistosomiasis, liverfluke, neurocysticercosis and other zoonoses).

Attention has focused on diarrhoea. This is dramatic, measurable, episodic (but often with rapid catch up in infant and child growth), and often now treated with oral rehydration. Relatively neglected have been other faecally-related infections estimated to be widespread such as Ascaris (1.5 billion), hookworm (740 million), Schistosomiasis (200 million) and liverfluke (40 – 70 million). These are often subclinical and less visible, less measurable and measured, not episodic but continuously debilitating, and less treated. Even Jean Humphrey in her Lancet Research Note of September 19, 2009, considers only diarrhoea and tropical enteropathy, and not these other widespread and continuous infections. Yet many children and adults can be expected to carry multiple infections which may have cumulative and interacting effects. It can be asked whether the necessary specialisations of medical and nutritional sciences have tended to obscure the multiple linkages of faecally-related infections in an individual.

All of these infections – diarrhoeas and all the others - can be attacked and in principle eliminated by safe sanitation and hygienic behaviour. A plausible link between open defecation and undernutrition is suggested by India which has over half the open defecation in the world (some 575 million daily in rural India alone) and in 2005-06 had an undernutrition rate in 0-3 year-olds of 46 per cent.

Does all the above imply a new or intensified research agenda, and should safe sanitation and hygienic behaviour be raised even higher in the priorities of policy and practice?

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