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SYNOPSIS OF PRESENTATION AT *TOGETHER FOR NUTRITION 2015* CONFERENCE

Nutrition in Ethiopia: An emerging success story?

by Derek Headey – presented at *Together for Nutrition 2015* conference, Addis Ababa, 15 June 2015

Research does not always provide the results that we expect. At the recent conference on improving nutrition in Ethiopia, *Together for Nutrition 2015*, we learnt about the rapid progress in Ethiopia in child nutritional outcomes that are linked to improved birth size and, hence, improved maternal health. However, most of the improvement in maternal health seems related to better sanitation, rather than to diet, care, or health factors.

Undernutrition - a *multidimensional* problem

IFPRI Senior Research Fellow, Derek Headey, describes undernutrition as a complex, multidimensional problem, influenced by changes in diets, care practices, and disease burdens. But what are the underlying economic and social factors that drive nutrition improvements over time?

In addressing these questions, Headey's research focuses on analyzing the sources of nutritional change over time, particularly in countries that demonstrate significant recent success in improving nutritional outcomes. Ethiopia has seen the fifth fastest reduction in preschooler stunting in the world over the past decade or so (Table 1).

Table 1: The five countries globally with the fastest reductions in preschooler stunting in the 2000s

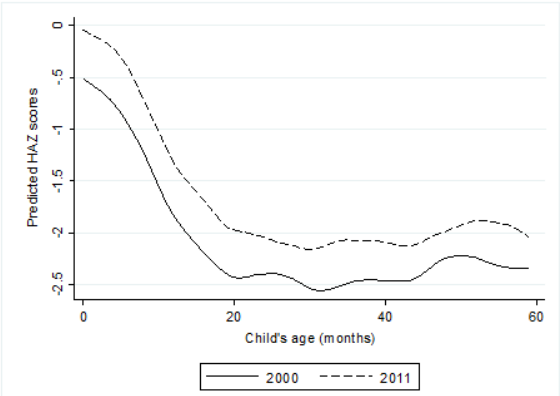
Rank	Country	Start & end dates	Start & end stunting prevalence, %	Speed of change (percentage points per year)
1st	Nepal	2001	57.1	-1.66
		2011	40.5	
2nd	Bangladesh	1997	56.7	-1.42
		2007	43.2	
3rd	Lesotho	2000	53.0	-1.40
		2010	39.0	
4th	Vietnam	2000	42.7	-1.34
		2010	29.3	
5th	**Ethiopia**	**2000**	**57.4**	**-1.20**
		2011	**44.2**	

Source: Author's estimates from 84 recent nutrition episodes recorded in the WHO (2014) Global Health Observatory Repository. Nutrition episodes are defined as periods of observations at least 8 years apart, with the last observation recorded in 2000s. Note that several episodes with apparently unreliable data were excluded. Statistics refer to children under the age of five years.

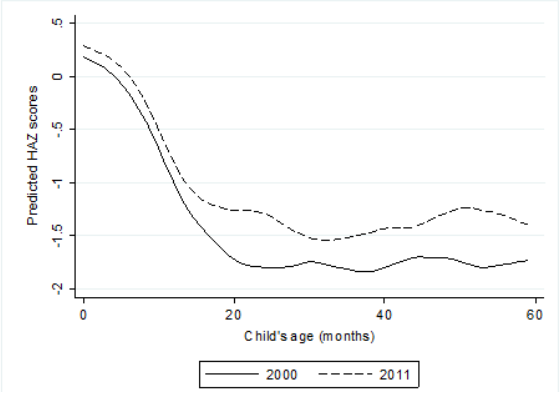
Identifying what has caused such changes is not straightforward, however. Nutritional changes for preschoolers can happen through changes in birth size or in post-natal nutrition. Headey's research also observes complex spatial patterns to changes in undernutrition. Figure 1a, for example, shows that improvements in child heights between 2000 and 2011 in rural areas of Ethiopia largely stems from children being larger at birth (as measured by the change in the y-axis intercepts). Figure 1b, in contrast, shows no improvement in birth sizes in urban areas, but improvements in child growth for children 15 months of age and older.

Figure 1: Changes in height for age (stunting) z-scores for young children in Ethiopia between 2000 and 2011

1a: Rural Areas only



1b: Urban Areas only



Source: Ethiopian Demographic Health Surveys (EDHS)

Explaining different growth patterns

What explains these rather different child growth patterns in rural and urban areas of Ethiopia? To answer this question, Headey undertook a regression analyses of data from the 2000 and the 2010 Ethiopian Demographic Health Surveys (EDHS). The regression model explains child growth patterns in terms of household assets, parents' education levels, antenatal care (ANC visits), open defecation (or lack of toilets), maternal age and height, and the sex of the child (column 2 of Table 2). Headey then uses these regression coefficients to estimate how much change in small birth size could be expected from changes in the means of these explanatory variables over the period 2000 to 2010 (column 5 of Table 2). Specifically, a variable will contribute to nutritional change if it has a large marginal effect and a large change in mean values over the 2000 to 2010 period.

Table 2: Explaining small birth sizes in rural areas

Variable	Marginal effects, %	2000 average	2010 average	Predicted change in small birth size, %
Household asset index, 1-10	-1.4**	1.0	1.5	-0.68
Father's education, yrs.	-1.1***	1.5	2.3	-0.81
4+ ante-natal clinic visits, 0/1	-3.3*	8.0	15.1	-0.23
Open defecation, 0/1	7.0**	91.5	46.3	-3.16
Mother aged > 40 yrs., 0/1	5.7*	7.7	6.5	-0.07
Mother's height, cm	-0.1			0.00
Girl child, 0/1	8.0***			0.00
Year 2010 measurement, 0/1	1.5			0.00
No. children aged 0-24 months	*5,635*			

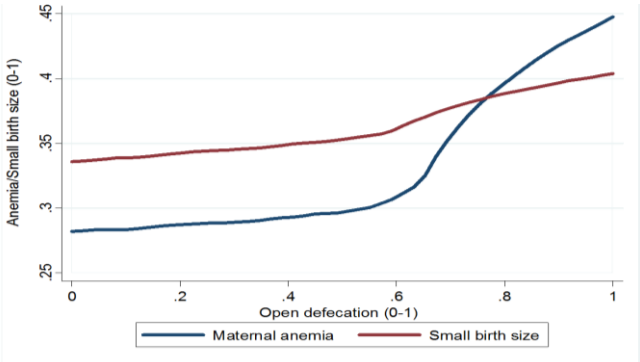
Source: Author's calculations from the 2000 and 2010 Ethiopian DHS.

While many of the possible explanatory factors had sizeable marginal effects in the regression model, the only major change in rural areas over this period was the reduction in open defecation. In 2000, 91.5 percent of rural households did not use any toilet. By 2010, this rate had fallen to 46.3 percent (Table 2). This change was achieved through the Community-Led Total Sanitation (CLTS) initiative. Pioneered in Bangladesh, the SNNP regional government adapted CLTS to local Ethiopian conditions in 2003 and achieved a remarkably rapid reduction in open defecation. The approach was scaled up and mainstreamed in the national sanitation strategy and integrated into the Health Extension Worker program and other government and NGO programs.

Open defecation can affect birth size through several channels, most notably by causing gut infections and diarrhea, but also through spreading intestinal parasites, such as worms, that contribute to maternal anemia. Headey finds a strong relationship between open defecation and maternal anemia (Figure 2).

For urban areas, a similarly structured regression model suggests that asset accumulation is the main factor behind improvements in nutritional outcomes. However, around half the change in these outcomes in urban areas over the period 2000 to 2010 remains unexplained by the model.

Figure 2: Relationship between rate of open defecation in rural Ethiopian communities, maternal anemia, and small birth size



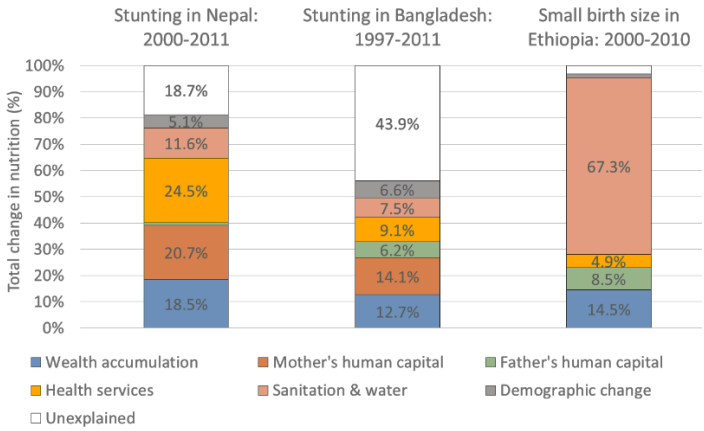
Source: Author's calculations from the 2010 Ethiopian DHS.

Policy implications

Ethiopia shares similarities with other nutrition success stories globally, such as strong economic growth, community-based health systems, and a strong focus on improving sanitation. But there remains substantial scope for other sectors whose activities are important underlying determinants of nutritional status to make more of a contribution to improved nutrition in Ethiopia.

Bangladesh promoted a secondary school stipend for girls to extend their stay in school, and this seems to have made significant contributions to improving the nutritional status of their children when they became mothers (Figure 3). In Nepal – a country which, like Ethiopia, faces major problems with remoteness – government and its development partners used transport subsidies to ensure that mothers in remote areas would travel to health facilities to give birth and access antenatal care. In Nepal, improvements in health services was the biggest driver of nutritional change over the past decade (Figure 3).

Figure 3: Comparing drivers of nutritional improvement across three major global nutrition success stories



Source: Author's calculations from DHS surveys for the three countries.

Ethiopia has achieved important success in improving nutrition by adapting best practices sanitation programs to local circumstances. There is scope to extend such successes to other factors that are important determinants of the nutritional well-being of all Ethiopians.

Together for Nutrition 2015
Working Across Sectors to Improve Nutrition in Ethiopia

Together for Nutrition is a platform for learning and facilitating discussion to bring diverse sectors together to improve maternal and child nutrition. A series of implementation notes, blogs, and debate on social media can be found via #T4N2015 or at www.togetherfornutrition.org.

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