



Agriculture-nutrition linkages and child undernutrition in India

The South Asian region and in particular India, has one of the highest rates of child undernutrition in the world, and is home to around 40 per cent of the global total of children who are stunted. Child stunting has been shown to have severe lifelong economic, health, and cognitive disadvantages and costs. Despite improvements in some states in recent years, the levels continue to be high. Understanding the reasons for the high prevalence of child undernutrition in India in the face of the relatively strong economic performance has emerged as an important research topic and is an area of focus of LANSAs research in the region.

Under the research theme, 'How enabling is the wider context in linking agriculture and food systems to other determinants of nutritional status?' – LANSAs research in India focuses on understanding the barriers and facilitators to nutrition-sensitive agricultural development in the country. The analyses and empirical work on the available large secondary datasets from India are expected to elaborate on the pathways that connect agriculture and nutrition and the type and degree of interaction with other non-food drivers¹. This research brief summarises the key findings from some of the studies² undertaken by LANSAs partners, on agriculture-nutrition linkages and child undernutrition in India.



Enabling environments underpin positive agriculture-nutrition linkages

India exploring the associations between agricultural prosperity and rural child undernutrition concluded that agricultural

prosperity³ has a positive influence on reducing child undernutrition. Access to toilets and piped drinking water were included in all the equations and showed positive impact on reducing undernutrition. It was observed that inequality in landholding dampens the positive effect of agricultural prosperity on nutrition outcomes. However, the influence of aspects of

↑ Children eating the Mid Day Meal in a village school in Odisha.

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¹ These include enabling environment aspects of access to water, sanitation and hygiene, public provisioning of healthcare and food and role of women.

² See References at the end

agricultural prosperity³ are not the same for different indicators of undernutrition in children such as underweight or stunting.

Interestingly, increasing crop diversification did not show favourable impacts on nutrition outcomes. Given that a large part of India is under dry-land and rain-fed farming, characterised by greater crop diversification, this finding highlights the need for targeting agriculture policies to these agro-ecological areas, to ensure that agricultural growth consistently translates into higher labour productivity and better wages. (Swarna et al. 2014). The analysis indicates that focus on agricultural policy, together with the social provisioning of WASH can help ensure better nutritional outcomes (Swarna et al. 2014).

A further district level cross-sectional analysis linked child underweight rates to agricultural land productivity (used as a proxy for agricultural prosperity) and provisioning of public services. The results showed a positive relationship between agricultural land productivity and child nutrition, consistent with the state-level analysis. The district level analysis enabled the study to capture agro-climatic conditions, agricultural development and delivery of public

services. The results emphasise the policy implications for public health provisioning such as vaccinations and access to healthcare facilities in rural areas and public provisioning for maternal health and women’s education as well as social provisioning of food for vulnerable communities (Swarna et al. 2015& 2016).

Variations across Indian States in child undernutrition

A distinctive feature of child nutrition outcomes in India and their evolution is the striking and substantial heterogeneity across the different states (See **Table I**). The National Family Health Survey data for 2005-06 (NFHS-3) showed that the prevalence of stunting among children under-five years old ranges from 24 per cent in Kerala to 57 per cent in Uttar Pradesh. The more recent Rapid Survey of Children (2013-14) by the Ministry of Women and Child Development and UNICEF, shows a similar trend albeit with slight reductions in levels at 20 per cent for Kerala and 51 per cent for Uttar Pradesh, The evolution of stunting prevalence over time and its associations with drivers such as economic

“Agricultural prosperity as indicated by agricultural growth, worker and land productivity, and per capita food grain production has a positive influence on reducing child undernutrition.”

Table I Heterogeneity in the prevalence of child undernutrition in States of India

STATES	Stunted (%)		Underweight (%)	
	NFHS-3 2005–06	RSoC 2013–14	NFHS-3 2005–06	RSoC 2013–14
Bihar	56	49	56	37
Gujarat	52	42	45	34
MP	50	42	60	36
Odisha	45	38	41	34
Tamil Nadu	31	23	30	23

Source: NFHS -3 (2005-06); Rapid Survey on Children (RSoC) 2013-14

³ As indicated by agricultural growth, worker and land productivity and per capita food grain production

and agricultural growth is also characterised by significant heterogeneity across the states, with economic progress including agriculture growth strongly correlated with nutritional outcomes in some states but very weakly in others (Cavatorta et al. 2015) (See **Table 2**).

Some of these differences across states are attributable to the differential endowments that are commonly used to explain nutritional outcomes, such as income and sanitation. However, it would appear that there is also substantial variation across states in how endowments like income and sanitation are converted into improved nutrition by households. .

The LANSA study by Cavatorta et al. (2015) to understand and explain the observed heterogeneity in childhood nutrition outcomes across the states, compared some Indian states with poor nutrition outcomes (Madhya Pradesh, Bihar, Odisha and Gujarat) with a benchmark good performer state, Tamil Nadu. The study found surprisingly modest proportions of the differences in stunting are attributable to just endowment differences. This study finds the superior track record of food and nutrition policies of Tamil Nadu since



the 1980s as being key to its superior performance in terms of nutrition. The state’s ‘capacity and willingness’⁴ to address the problem of undernutrition is highlighted as a key factor distinguishing the good and bad performer states.

↑ Men and women farmers working in paddy fields, transplanting rice in Koraput district, Odisha.

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Table 2 Agricultural performance is strongly correlated with better nutritional outcomes in some states of India but very weakly in others

Agricultural performance	Improvements in nutrition*	States in India
Modest or strong agricultural growth	Significant improvement in nutrition indicators	Goa, Kerala, Maharashtra, TN
Modest or strong agricultural growth	Little or no improvement in nutrition indicators	MP, Gujarat, Meghalaya,
Poor agricultural performance	Strong improvements in nutrition indicators	UP, Karnataka, Punjab, Odisha, WB
Weak agricultural performance	Mixed improvements in nutrition indicators	Rajasthan, Haryana

*Based on percentage changes from 1992 – 2005

Adapted from: Headey D., Chiu A., & Kadiyala S. (2012) Agriculture’s role in the Indian enigma: help or hindrance to the crisis of undernutrition? Food Security, 4(1), 87–102

⁴ <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/3729.pdf>

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Credits

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The LANSAs project with regional and international partners and lead by MSSRF, Chennai, India is funded by UK Aid from the British people.

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↑ Child from a village in Odisha, holding his lunch provided by the ICDS Centre.

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