

THE 1,000 DAY WINDOW OF OPPORTUNITY FOR IMPROVING CHILD NUTRITION IN INDIA: INSIGHTS FROM NATIONAL-LEVEL DATAⁱ

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The first 1,000 days of life, from conception to the end of the second year, is the critical window of opportunity for addressing undernutrition. Using data from the National Family Health Surveys (NFHS), we show that patterns of child growth in India mirror global findings, and that undernutrition sets in during this window of the first 1,000 days of life. We also show that in India the status of recommended essential interventions for nutrition in this window is poor. This calls for substantial investments in the health, nutrition and water-sanitation sectors to fill the huge coverage gaps. Policy actions to address undernutrition in India must focus on this most vulnerable age period for nutrition, and utilize all available platforms to scale up these essential interventions.

Decision-making for improved nutrition outcomes requires a good understanding of patterns in undernutrition and of the status of coverage of essential interventions. We describe here the results of analyses of nationally representative data from the NFHS-1 (1992-93) and NFHS-3 (2005-06), and highlight actions critical for accelerating reduction in undernutrition.

It is globally acknowledged that growth faltering in infants and young children, which eventually leads to undernutrition, occurs in a window that spans the 1,000 days from conception to the end of the second year of life.[1] Interventions to improve nutrition and reduce the overall burden of undernutrition in populations must, therefore, prioritize this vulnerable age group. Direct interventions to reduce undernutrition go from early and exclusive breastfeeding and age-appropriate complementary foods and feeding practices, to the provision of micronutrient supplements [2] and micronutrient-rich foods.

The high prevalence and slow reduction of child undernutrition in India, has highlighted undernutrition as a major and stubborn national problem. For the last three years, different science, policy and program stakeholder communities in India have been building consensus on the centrality of the critical 1,000 day period in a concerted fashion. As a result, there is a strong emerging recognition of the importance of this age group within which direct nutrition interventions have the most long-term benefit.ⁱⁱ Importantly, efforts have been made to lay out recommendations for key interventions and operational

Box 1: Essential interventions to ensure good nutrition for children under two years of age

1. Early initiation of breastfeeding within one hour of birth;
2. Exclusive breastfeeding during the first six months of life;
3. Timely introduction of complementary foods at six months;
4. Age-appropriate, energy and nutrient-dense complementary foods for children 6-24 months of age with continued breastfeeding;
5. Safe handling of complementary foods and hygienic complementary feeding practices;
6. Full immunization and bi-annual vitamin A supplementation with de-worming;
7. Frequent feeding and breastfeeding during and after illness, including oral rehydration therapy and zinc supplementation for children with diarrhea;
8. Timely and quality therapeutic feeding and care for children with severe acute malnutrition;
9. Improved food and nutrient intake for adolescent girls, particularly to prevent anemia; and
10. Improved food and nutrient intake for adult women, particularly during pregnancy and lactation.

strategies to deliver these interventions to children under two and their mothers. These efforts draw upon the recommendations of the Lancet series on Maternal and Child Nutrition, while tailoring them to the epidemiology of undernutrition in India. Specific interventions contextualized for India are referenced in Box 1. These efforts need to now take a stronger hold within program implementation communities at the national and state levels, and below, to ensure that these ten essential interventions for children under two and their mothers are

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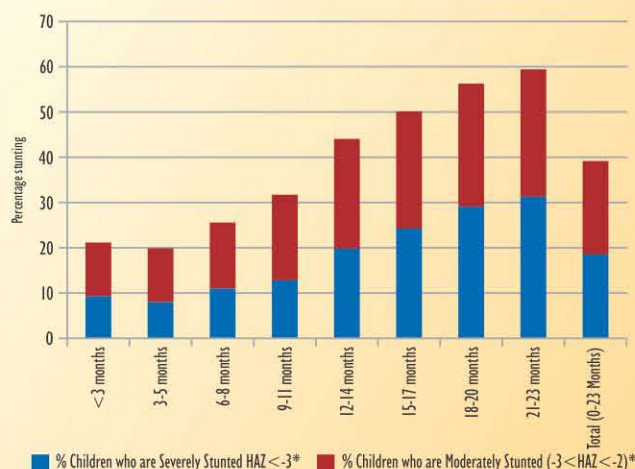
scaled up and delivered in a manner that ensures quality, equity and efficiency.[3]

This policy note also examines the status of coverage of these essential direct interventions to improve child nutrition and how the coverage rates are associated with the prevalence of child undernutrition. This note focuses on **stunting**, i.e., being too short for one's age, among infants and young children as a key outcome of interest, because stunting is most closely associated with the long-term consequences of undernutrition.

What do national data tell us about patterns of undernutrition in India?

The NFHS-3 survey of 2005-06 notes that the prevalence of stunting among children less than three years of age in India is 45 percent. Even in the best performing states, such as Kerala and Tamil Nadu, 1 in 4 children are stunted. Levels of stunting in India are much higher than those in countries with similar economic profiles; for example the prevalence of stunting in Brazil, China and South Africa is 7, 15, and 27 percent respectively.[4]

Figure 1: Prevalence of stunting in Indian children, by age (NFHS-3, 2005-06)



Source: Authors' estimates based on data from NFHS-3 (2005-06)

Data from India—well in line with the global findings on the window of opportunity—also indicate that the bulk of stunting occurs in the first two years of life (Figure 1). The prevalence of stunting among infants 0-3 months old is almost 20 percent, which likely reflects intrauterine growth restriction as well as poor immediate post-natal care and feeding practices. This highlights the crucial role of maternal nutrition, both pre-pregnancy and during pregnancy. The prevalence of stunting triples to almost 60 percent among children 21-23 months of age with little to no change in the prevalence of stunting after 24 months of age.

Improvements in undernutrition in India have been slow; over the period 1992-93 to 2005-06, the prevalence of

stunting fell on an average by about 10 percentage points (Figure 2). Reductions in stunting were greatest in the states of Tripura, Assam, Arunachal Pradesh and Jammu and Kashmir. Much smaller declines were seen, on the other hand, in states such as Gujarat and Maharashtra. Further analyses are needed to understand why some states have done well over the approximately 15-year period between surveys. Thus, documenting better practices, building the evidence base and fostering state-to-state sharing is important to understanding and learning from these differences. In this regard, specific attention on institutional arrangements for implementing direct nutrition interventions, improving governance and service delivery, and addressing the underlying determinants of maternal and child undernutrition in different sectors would be critical.

Figure 2 : Change in stunting among children under three between 1992-93 and 2005-06 (NFHS-1,3)



Not available because height data not gathered in 1992-93

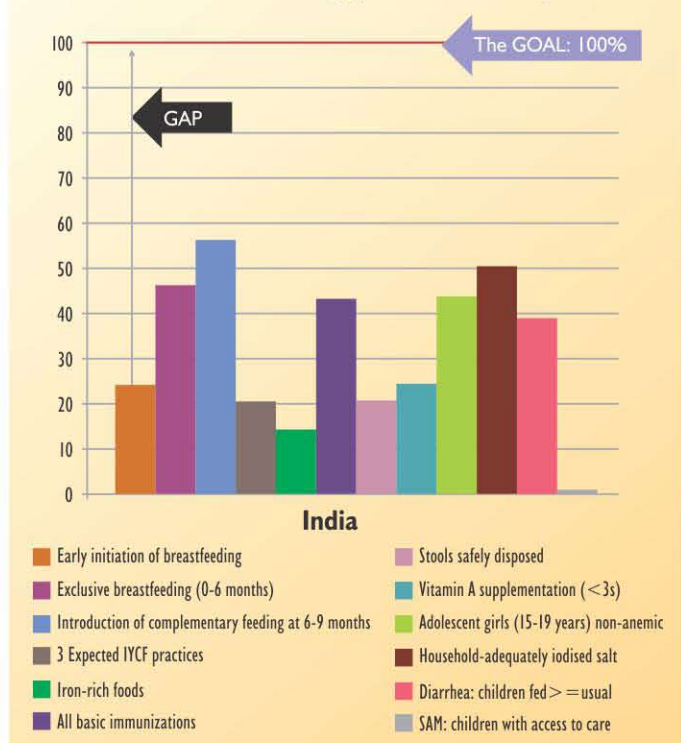
What do national data tell us about interventions to improve stunting?

In this section, we bring together data on the coverage of direct essential nutrition interventions needed to accelerate reductions in child stunting (Figure 3). We also examine the association between the coverage of these essential interventions and the prevalence of child stunting, by state.

Our findings show that at the national level, the status of coverage of these direct essential interventions to address child undernutrition is a major concern (Figure 3). Whereas the recommended coverage of these direct inputs should be at least 90 percent to maximize reductions in child undernutrition, the coverage seen in 2005-06 is no higher than 55 percent for any of the essential interventions. For some of these essential nutrition interventions such as age-appropriate complementary feeding and consumption of iron-rich foods, levels range as low as 10-20 percent.

We have previously shown that there is substantial variability in the coverage of these essential interventions

Figure 3: Coverage of essential nutrition interventions to reduce stunting (NFHS-3, 2005-06)



by state—while states like Tamil Nadu perform well on most essential inputs, states like Bihar show very poor coverage for almost all essential interventions.[5]

We used regression analyses to examine how states with different coverage levels for these essential nutrition interventions perform with respect to child nutrition, using the prevalence of child stunting as the outcome indicator. We included in these analyses the recommended package of direct essential interventions for improving child nutrition (a total of 12 indicators). We found a strong and statistically significant association between the coverage of these essential inputs and state-level stunting prevalence (Figure 4). Simply put, states with high levels of the key direct nutrition interventions have lower levels of stunting. Importantly, this association is statistically significant when controlling for poverty and literacy rates. Although these findings do not establish a causal relationship, they are in line with the expected differences in child undernutrition with low and high coverage of essential nutrition interventions.

The findings that higher levels of direct nutrition interventions are strongly associated with lower prevalence of childhood stunting raises numerous questions about what sets apart states that have made the investments to improve the coverage of these essential interventions to reduce undernutrition and thereby improve individual and social well-being. A full analysis of this issue is beyond the scope of this policy note, but studies suggest that

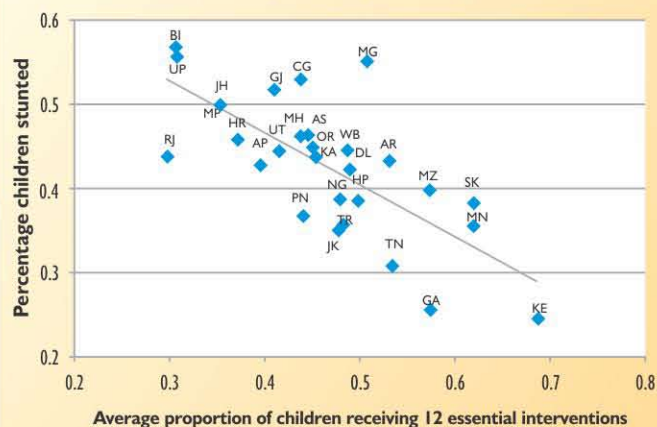
strengthening governance for improving health and nutrition systems and services, among other inputs, is crucial. In other contexts, such as Brazil, the adoption of broad spectrum policy measures to improve overall equity has also yielded tremendous benefits for nutrition.[6] *In India, and Indian states, putting in place policy-making and governance mechanisms to scale up the coverage of these direct, essential nutrition interventions, while addressing the underlying issues of gender and equity, would have a major impact on the unacceptably high levels of child stunting.*

Summary of key findings

In this policy note, we have highlighted the following key issues related to childhood undernutrition in India:

- The most vulnerable period for preventing child undernutrition is the period from conception to the end of the second year of life;
- There is substantial variability in reductions in undernutrition by state; further analyses to unpack and understand actions that led to maximal reductions in some of the better performing states should inform future policy action;
- The coverage of essential direct interventions to improve nutrition in children is poor across India, with significant variability by state;
- Levels of child stunting are strongly and significantly associated with the coverage levels of direct essential nutrition interventions. While not causal, this finding is in line with expectations of the role of direct inputs in reducing undernutrition.

Figure 4: Association between coverage of essential nutrition interventions and prevalence of child stunting, India (NFHS-3, 2005-06)



Andhra Pradesh-AP, Arunachal Pradesh-AR, Assam-AS, Bihar-BI, Chhattisgarh-CG, Delhi-DL, Goa-GA, Gujarat-GJ, Haryana-HR, Himachal Pradesh-HP, Jammu and Kashmir-JK, Jharkhand-JH, Karnataka-KA, Kerala-KE, Madhya Pradesh-MP, Maharashtra-MH, Manipur-MN, Meghalaya-MG, Mizoram-MZ, Nagaland-NG, Orissa-OR, Punjab-PN, Rajasthan-RJ, Sikkim-SK, Tamil Nadu-TN, Tripura-TR, Uttar Pradesh-UP, Uttarakhand-UT, West Bengal-WB

Box 2: Policy recommendations

To enable rapid reductions in child undernutrition in India, the following priorities are critical:

- Implement national and state-level nutrition strategies that focus on evidence-based, high-impact interventions for children under two, adolescent girls, and pregnant and breastfeeding mothers;
- Scale up direct inputs for nutrition through every potential implementation platform, including the National Rural Health Mission (NRHM), Integrated Child Development Services (ICDS), Mid-day Meal Scheme (to reach adolescent girls) and others;
- Prioritize community-based delivery with the effective engagement of NGOs, self help groups, and others as the main strategy to bring services and support closer to children under two and their mothers;
- Improve human resource capacity for maternal and child nutrition at all levels and ensure training, guidance, support, recognition and motivation of frontline workers;
- Focus on measurable results with a strong monitoring and evaluation framework, integrating indicators of maternal and child nutrition across programs and sectors to measure performance of both program and sector; and
- Explore forums such as consultations and e-learning platforms, for state-to-state sharing of better practices for scaling up essential nutrition interventions for children under two and their mothers.

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ⁱⁱ This emerging consensus is also reflected in the most recent (June 2011) recommendations on ICDS reform by the National Advisory Council (NAC).

REFERENCES:

- [1] Victora CG, de OM, Hallal PC, Blossner M, Shrimpton R. Worldwide timing of growth faltering: revisiting implications for interventions. *Pediatrics* 2010 Mar; 125(3):e473-e480.
- [2] Bhutta ZA, Ahmed T, Black RE, Cousens S, Dewey K, Giugliani E, et al. What works? Interventions for maternal and child undernutrition and survival. *Lancet* 2008 Feb 2; 371(9610):417-40.
- [3] Swaminathan MS. Undernutrition in infants and young children in India: A leadership agenda for action. *IDS Bulletin* 2009; 40(4):103-10.
- [4] UNICEF Tracking Progress of Child and Maternal Nutrition, 2009; UNICEF State of the World's Children, 2011.
- [5] Menon P, Raabe K, Bhaskar A. Biological, programmatic and socio-political dimensions of child nutrition in three states in India. *IDS Bulletin* 2009 Jul 2; 40(4):60-9.
- [6] Monteiro CA, Benicio MH, Conde WL, Konno S, Lovadino AL, Barros AJ, et al. Narrowing socio-economic inequality in child stunting: the Brazilian experience, 1974-2007. *Bull World Health Organ* 2010 Apr; 88(4):305-11.

For further information on 'The 1,000 day window of opportunity for improving child nutrition in India: Insights from national-level data' contact Purnima Menon at P.Menon@cgiar.org

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