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Nutrition in India: Targeting the First 1,000 Days of a Child's Life

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I. Introduction

Notwithstanding the sizeable economic and social gains made by India over the last two decades, the pernicious, often invisible, challenge of maternal and child undernutrition remains a national public health concern. This undermines the assumption that economic growth is in itself a sufficient condition for improvement in public health. India is home to over 40 million stunted and 17 million wasted children (under-five years) (Raykar et al., 2015). Despite a marked trend of improvement in a variety of anthropometric measures of nutrition (for example, rates of stunting, wasting in children under-five) over the last 10 years, child undernutrition rates in India persist as among the highest in the world. This inequality in access is accentuated by the stark state-level disparity in nutritional status. Malnutrition is also responsible for lowering individuals' immunity to infections and diseases; for instance, low body weight is responsible for 50 per cent of tuberculosis (TB) in India, and also leads to higher death rate (Swaminathan, 2016). Future growth will require significant investments into human resources of which health investments are critical.

Key Recommendations

- **Establish a nodal body for multi-programme coordination on nutrition**
- **Strengthen and restructure the Integrated Child Development Services (ICDS) programme, and leverage the Public Distribution System (PDS)**
- **Extend coverage of food fortification of staples**
- **Target multiple contributing factors, for example, water, sanitation, and hygiene (WASH)**
- **Align agricultural policy with national nutritional objectives**
- **Boost private sector engagement in nutrition-interventions through PPP**

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In response, policy-makers must account for two key facts: (i) direct nutrition interventions (adequately scaled up), while essential, can reduce stunting only by 20 per cent; indirect interventions (for example, access to WASH) must tackle the remaining 80 per cent (Bhutta et al., 2013), and (ii) 50 per cent of the growth failure accrued by two years of age occurs in the womb owing to poor nutrition of the mother (UNICEF, 2015). A lack of nutrition in the first 1,000 days of a child's life causes irreversible, long-term damage to a child's cognitive functions (Walker et al., 2007), undermining later-stage investments aimed at realising the developmental potential of India's children (such as the Government of India's flagship programme, Skill India). Hence, there exist significant policy returns from investing in this critical window of opportunity, that is, from the period of conception of the child to the two-year post-natal period.

II. Key Nutrition Metrics

Malnutrition indicators in India remain among the highest in the world, despite a declining trend since the early 1990s

Table 1: Nutritional status of children

Indicator	%*
Children (under-five years) who are stunted	38.7
Children (under-five years) who are wasted	15.1
Children (under-five years) who are underweight	29.4
Children (6-59 months) with anaemia[1]	69.5

Source: Rapid Survey on Children (RSoC), 2014; [1]National Family Health Survey (NFHS-3), 2006.

Note: *Percentage of relevant population

India has the largest number of children (under-five years) who are stunted – that is, 48 million (WaterAid, 2016), or more than four times the number in countries such as Pakistan and Nigeria. As the indicators in Table 1 show, stunting and wasting persist as an invisible and irreversible inter-generational threat to India's young and growing demographic. Another major concern is that nearly 70 per cent of children in the age group of six months to five years are iron deficient or anaemic. Medical literature has established that childhood growth spurts require more iron than usual (Lozoff, 2007), and these numbers indicate that Indian children under-five are not consuming enough iron in their diet. Research also shows conclusively that if anaemia is left untreated, it makes individuals more susceptible to illness and infection, thereby raising morbidity.

Table 2: Nutritional status of women and adolescent girls

Indicator	%*
Pregnant women (15-49 years) with anaemia[1]	58.7
Women (of reproductive age) who are undernourished[2]	33.3
Women (20-24 years) who were married before the age of 18[3]	30.3
Indian women who are underweight when they begin pregnancy[4]	42.2

Source: [1]National Family Health Survey (NFHS-3), 2006; [2]UNICEF, 2015; [3]Rapid Survey on Children (RSoC), 2014; [4]Coffey, 2014.
Note: *Percentage of relevant population

The low nutritional status of women and adolescent girls reflects the deep societal discrimination that women in India face on a routine basis. The indicators in Table 2 show the magnitude of nutritional deficiency among Indian women, with a particular focus on the period of pregnancy. It is of significant concern that despite sustained growth and improvements in food security overall, nearly 60 per cent of pregnant women in India are anaemic, the leading cause of which is poor nutritional intake. Also strikingly, 42 per cent of Indian women are underweight when they begin pregnancy compared with 16.5 per cent of women in Africa (Coffey, 2014). Acute nutritional deficiency during pregnancy has long-term effects on the mother as well as the life of the child. It raises the risk of abnormal delivery and lowers immunity of both mother and child.

Table 3: Nutrition-specific interventions (ICDS and NRHM[1])

Indicator	%*
Pregnant women who availed supplementary food under ICDS	40.7
Mothers (of children under-36 months) who received 3+ antenatal check-ups prior to delivery	63.4
Children (12-23 months) who are fully immunised	65.3
Anganwadi Centres (AWCs) without functional adult weight scales	48.4

Source: Rapid Survey on Children (RSoC), 2014.
Note: *Percentage of relevant population

Key Centrally Sponsored Schemes (CSSs) with a focus on health have seen budgetary cuts over the last two years, with central allocations to the Integrated Child Development Services (ICDS) having declined almost 10 per cent from ₹15,502 crore (in FY 2015-16) to ₹14,000 crore (in FY 2016-17) (Kapur, Joshi, and Srinivas, 2016). As the indicators in Table 3 show, the outreach of nutrition-interventions under the ICDS and National Rural Health Mission (NRHM) is limited by operational challenges. Anganwadi Centres (AWCs) require investment in vital infrastructure (close to half of AWCs do not have functional adult weight scales), and Anganwadi Workers (AWWs) require monitoring so as to ensure that they are proactively encouraging target groups to avail supplementary nutrition on offer at AWCs. A complementary public intervention is the provision of school meals as part of the Mid Day Meal (MDM) programme (for children in primary grades, 1 to 8). Field studies highlight the link between the provision of school meals and improved cognition (Adelman et al., 2008).

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[1] Integrated Child Development Services (ICDS) targets nutrition interventions for children (under-six years) through a range of services (supplementary nutrition, immunisation, health check-ups etc.), delivered through Anganwadi Centres (AWCs) and Anganwadi Workers (AWWs).

National Rural Health Mission (NHRM) addresses the health needs of under-served rural areas. Its nutrition-specific interventions include iron supplementation, antenatal care, counselling for pregnant women and lactating mothers etc., delivered through community health volunteers called Accredited Social Health Activists (ASHAs).

In the context of India, the provision of school meals has been found to lead to improved classroom concentration and effort (Afridi, Barooah, and Somanathan, 2013). This has consequences for long-term learning outcomes and the educational attainment of children, especially nutritionally-deprived children.

Significant state-level disparities in nutritional status and progress on reducing stunting

Table 4: State-level disparities in nutritional status

Indicator	India Avg.*	Best Performers	Worst Performers
Children (under-five) who are stunted	38.7%	Kerala: 19.4% Goa: 21.3% Tamil Nadu: 23.3%	Uttar Pradesh: 50.4% Bihar: 49.4% Jharkhand: 47.4%
Children (under-five) who are wasted	15.1%	Sikkim: 5.1% Manipur: 7.1% Jammu & Kashmir: 7.1%	Andhra Pradesh: 19.0% Tamil Nadu: 19.0% Gujarat: 18.7%
Children (under-five) who are underweight	29.4%	Manipur: 14.1% Mizoram: 14.8% Jammu & Kashmir: 15.6%	Jharkhand: 42.1% Bihar: 37.1% Madhya Pradesh: 36.1%

Source: Rapid Survey on Children (RSoC), 2014.
Note: *Percentage of relevant population

While the policy focus has been concentrated on the CSSs, the performance of individual states has varied greatly over the years. Table 4 illustrates the extent of state-level variance in key nutritional indicators. Governance failures at the level of specific states have exacerbated the national undernutrition challenge, with marked disparity in nutritional outcomes. Incoming NFHS-4 (2016) data however shows signs of improvement, with a decline in rates of stunting, wasting, and underweight children, including in underperforming states such as Bihar and Madhya Pradesh.

III. Existing Policy Framework

Explicit and priority policy attention to nutrition is needed as India seeks to accelerate and sustain its recent gains in development. Given that maternal and child undernutrition is a common cause of infant and child mortality, policy must break the link between undernutrition, disease, and child mortality. Most importantly, nutrition must be given renewed priority in the government's integrated health and development agenda. The moderate rate of progress over the last two decades has led to a long-overdue reorientation from addressing undernutrition post-birth towards interventions that target preventive, early action – prenatally, in the neonatal period, in early infancy, and over the first two years of life. The importance of the first 1,000 days of a child's life cannot be overstated, with early life-cycle interventions crucial for reducing a child's susceptibility to infections, and creating a strong foundation for a child's cognitive and physical development. Policy must also overcome the marked disparities in nutritional status across gender, community groups, and geographical regions. The delivery of universal, right-based health and nutrition services must be a key component of a socially inclusive development agenda, and policy should target the linkages between undernutrition and multiple deprivations related to poverty, exclusion, and gender discrimination.

The existing policy framework to combat malnutrition includes legislative policy, plan, and programme commitments at the central and state government level.

The most prominent government nutrition interventions include the ICDS programme led by the Ministry of Women and Child Development (MWCD), and the NHRM led by the Ministry of Health and Family Welfare (MHFW). Both CSSs prioritise the role of community-level organisations – AWCs and AWWs under the ICDS, and Accredited Social Health Activists (ASHAs) under the NHRM – for the delivery of nutrition interventions to the target groups of pregnant women, lactating mothers, and infants.

These programmes are supplemented by the Public Distribution System (PDS), which is used to provide subsidised food grains to large sections of the country's poor. In addition, more than half a dozen states, including Maharashtra, Madhya Pradesh, Uttar Pradesh, Odisha, Gujarat, Karnataka, and most recently Jharkhand have also established state nutrition missions, with the aim to provide advice and coordination on the multi-sectoral plans for nutrition-specific interventions. An overview of the interventions directly relevant to the first 1,000 days of a child's life is provided in Table 5.

Table 5: Nutrition-specific interventions (relevant to the first 1,000 days of a child's life)

Target Group	Schemes	Key Interventions
Pregnant and Lactating Mothers	Integrated Child Development Services (ICDS)	ICDS: Supplementary nutrition, counselling on diet, rest and breastfeeding, health and nutrition education
	Indira Gandhi Matritva Sahyog Yojana (IGMSY)	Conditional Maternity Benefit
	Reproductive Child Health (RCH-II), National Rural Health Mission (NRHM), Janani Suraksha Yojana (JSY)	NRHM: Antenatal care, counselling, iron supplementation, immunisation, transportation for institutional delivery, institutional delivery, cash benefit, post-natal care, counselling for breastfeeding and spacing of children etc.
Children (0-3 years)	Integrated Child Development Services (ICDS)	ICDS: Supplementary nutrition, growth monitoring, counselling health education of mothers on child care, promotion of infant and young child feeding, home-based counselling for early childhood stimulation, referral and follow-up of undernourished and sick children
	Reproductive Child Health (RCH-II), National Rural Health Mission (NRHM)	NRHM: Home-based new born care, immunisation, micronutrient supplementation, deworming, health check-up, management of childhood illness and severe undernutrition, referral and cashless treatment for first month of life, care of sick newborns, facility-based management of severe acute malnutrition and follow-up
	Rajiv Gandhi National Creche Scheme	Rajiv Gandhi National Creche Scheme: Support for the care of children of working mothers

Explicit and priority policy attention to nutrition is needed as India seeks to accelerate and sustain its recent gains in development.

IV. Context for Change

Despite the ambitious scope of the current policy framework, India continues to struggle to deliver evidence-based interventions during the most critical window of opportunity in a child's life. The efficacy of the ICDS and NRHM remain constrained by state-level implementation and delivery challenges in the form of limited financial resources, poor targeting of benefits (to the girl child), leakages of food to the non-needy, infrastructure constraints of AWCs, lack of training of AWWs, and weak mechanisms for monitoring and evaluation (M&E). These challenges are compounded by the lack of a nodal body responsible for multi-sectoral coordination and programme oversight, despite the obvious inter-linkages between the scope of interventions under the ICDS and NRHM. In fact, evidence for the claim that states that rank high on ICDS performance[2] have superior nutritional outcomes is scarce (Planning Commission, 2011). Existing evidence also suggests a weak link between improvements in the PDS and better nutritional outcomes (Bhattacharya, 2015). PDS-provided food is over-reliant on carbohydrates, and micronutrient deficiencies remain unaddressed. More significantly, the existing policy framework fails to account for the multi-sectoral causes of undernutrition, that is, there is limited emphasis on realising the long-term benefits from pro-WASH interventions, and from addressing the underlying factors that perpetuate the lower social status of women. There is an urgent need to de-fragment the various policy interventions addressing undernutrition in India.

V. Policy Recommendations

In response to the persistence of the undernutrition challenge in India, and taking note of the evidence evaluating current policy approaches, key lessons for nutrition-specific policy interventions are as follows:

1. Establish a nodal body for multi-programme coordination on nutrition

Existing policy efforts to combat undernutrition are fragmented and therefore constrained by the lack of a nodal government body, which can be delegated responsibility for meeting time-bound nutrition targets, and coordinating multi-sectoral programmes such as the ICDS, NRHM, MDM, and PDS. A key constraint at present is that the MWCD only recognises the indicator of 'underweight children'. There is no recognition of complementary anthropometric measures such as stunting and wasting. As a result, AWWs do not measure the height of children under two years. It is thus critical for a nodal body to draw-up a list of key nutrition metrics on which policy progress can be monitored and tracked over time.

2. Strengthen and restructure ICDS, and leverage PDS

ICDS needs to be in mission mode, with a sanction of adequate financial resources (from the central government) and decision-making authority. Last-mile delivery of ICDS interventions requires strengthening, including standardising the nutritional component of supplementary food, prioritising educational outreach to pregnant and lactating mothers (on the importance of proper breastfeeding and complementary feeding), improving programme targeting (to the most vulnerable segments, including the girl child), and streamlining the operations of AWCs through better infrastructure provision and training for AWWs.

[2] States were ranked on the basis of a composite index, taking into account factors such as the average number of days beneficiaries received nutritional supplements, the percentage of children fully immunised, and the percentage of mothers who consulted AWWs when their children fell sick.

ICDS reform also requires greater resource allocation, supplementing existing AWWs with an additional worker as a nutrition counsellor, and enabling greater community participation in the delivery of services. In addition, the delivery of subsidised food through the PDS network must include pulses and millets, and fortified wheat flour. Given minor millets are nutritionally rich and climate-smart, their inclusion under the ICDS would also help increase the nutrient value of the dietary intake of target groups.

3. Extend coverage of food fortification of staples

Food fortification of relevant staples represents one of the most cost-effective and scalable solutions to address micronutrient deficiencies, and can take the form of a mass public health strategy to enhance the nutrient intake of target groups (Dwyer et al., 2015). At present, fortification of staples is limited to the mandatory iodisation of salt, however the Food Safety and Standards Authority of India (FSSAI) is in the process of formulating draft standards for the fortification of food grains such as wheat, flour, and rice, which will add to the nutrient value of food intake. Additional proposals under consideration include making the double fortification of salt (with iodine and iron), and the fortification of edible oils mandatory. The standards of the hot cooked meal (as provided under the ICDS) should also be changed to using only fortified inputs, including fortified flour, oil, and double iodised salt. This would help in providing sufficient calories and adequate micronutrients to a large number of children under-five.

4. Target multiple contributing factors, for example, WASH

The underlying drivers for India's 'hidden hunger' challenge are complex and go beyond direct nutritional inputs. For instance, 50 per cent of malnutrition cases are linked to chronic diarrhoea caused by the lack of clean water, sanitation, and hygiene (WaterAid, 2016), and unsanitary practices such as open defecation make children vulnerable to intestinal worm and other infections. In fact, community-led total sanitation has been shown to lead to a tangible decrease in rates of stunting (Pickering et al., 2015). In India, around 45 per cent of households continue to practice open defecation (MWCD, 2014). The significant push by the Modi government since 2014 on sanitation with a focus on building toilets under the Swachh Bharat Abhiyan has increased access to toilets throughout the country. However, given that access doesn't guarantee usage, the push for toilet construction must be combined with a strategy for behavioural change through campaigns of social messaging, and spending on Information, Education, and Communication (IEC) activities. Existing programmes such as the ICDS should also integrate cost-effective and complementary pro-WASH interventions.

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5. Align agricultural policy with national nutritional objectives

Agriculture policy must be brought in tune with nutrition policy, with incentives provided for encouraging the production of nutrient-rich crops such as pulses and oil seeds, and the cultivation of local crops for self-consumption. Efforts should also be made to reduce current distortions in agricultural incentives, and to discourage the cultivation of resource-rich cash crops with no nutrient value, such as sugarcane and cotton. Policies for the agricultural sector must promote agricultural productivity, dietary diversification, and environmental security, thereby improving households' food security. Agriculture should be focused on securing diet quality for infants and young children, and a particular challenge in the Indian context is to increase the consumption of fruit and vegetables in local diets.

Policy must also target inefficiencies in the government's current structure of procurement and distribution of food grains (as enshrined in the National Food Security Act, 2013). The Indian government procures nearly one third of all grains produced in India (Gulati, Gujral, and Nandakumar, 2012), and steps must be taken to overcome delays in grain release, especially during periods of high food inflation.

6. Boost private sector engagement in nutrition interventions

Private sector collaboration in the form of public-private partnerships (PPPs) has the potential to leverage the appropriate technology for scaling-up food fortification interventions, and to develop and distribute nutrient-rich foods to improve maternal and infant nutrition. Multi-sectoral partnerships in food distribution and food fortification are especially important, given the trend of packaged food moving into the consumption basket of rural households. There is also significant scope for the private sector to lead mass awareness and education campaigns about good nutrition practices (for example, breastfeeding, hygiene, sanitation), furthering outreach in both rural and urban communities. Existing government nutrition interventions should also be made CSR-eligible such that private sector engagement can help overcome constraints in government delivery systems at the state-level.

VI. Conclusion

A well-nourished, healthy population is a precondition for sustainable development, and India faces significant challenges in harnessing long-term dividends from its young demographic base. The success of the government's numerous flagship programmes (including Make in India, Skill India, Digital India) is contingent on the availability of a healthy and trained workforce. The current state of malnutrition in India however poses a serious threat to the realisation of this vision. Given that malnutrition has severe economic, health, and social consequences for future generations, foregoing investment into early childhood development is a costly policy mistake. Most starkly, India has the world's highest number of children at risk of poor development: as of 2010, 52 per cent of the country's 121 million children (under-five) were at risk (defined as children who are either stunted or living in extreme poverty) (Black et al., 2016). In fact, the country's experience with undernutrition illustrates that economic growth in itself should not be seen as a panacea for all public health problems. Nutrition must be prioritised within the government's health agenda, and the institutional and administrative framework through which nutrition-specific interventions are delivered calls for reform. Policy must remain doggedly focused on the time frame of the first 1,000 days of a child's life, and rely on evidence-based interventions to tackle the multiple contributing causes of malnutrition.

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