

# Tackling nutrition in Odisha: Looking back, looking forward

Report

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## ABOUT POSHAN

POSHAN (Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India) is a multi-year initiative that aims to build evidence on effective actions for nutrition and support the use of evidence in decision-making. It is supported by the Bill & Melinda Gates Foundation and led by IFPRI in India.

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## ABOUT AZIM PREMJI PHILANTHROPIC INITIATIVES

The Azim Premji Philanthropic Initiatives is a grants organization that partners with non-profits working for the wellbeing of deeply marginalised and vulnerable people across India. The Philanthropy is a part of the Azim Premji Foundation, which also includes grassroots efforts to improve public school education, as well as the Azim Premji University. The chronic malnutrition of India's children is a major programme area for the philanthropy. The programme is presently concentrated in Odisha, where they support the state government in managing a multi-sectoral effort, with many civil society partners, to reduce stunting of under-5 children in the state, with particular emphasis on the underserved tribal belts.

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## Acronyms and Abbreviations

AARR	Average Annual Rate of Reduction
ANM	Auxiliary Nurse Midwife
ARI	Acute Respiratory Infection
ASHA	Accredited Social Health Activist
AWC	Anganwadi Centre
AWW	Anganwadi Worker
BCC	Behavior Change Communication
CCT	Conditional Cash Transfer
CW	Crèche Worker
DHFW	Department of Health and Family Welfare
DWCD	Department of Women and Child Development
EBF	Exclusive Breastfeeding
FLW	Frontline Worker
FP	Family Planning
HBNC	Home-Based Nutrition Care
ICDS	Integrated Child Development Services
IEC	Information, Education, and Communication
IFPRI	International Food Policy Research Institute
ITN/IRS	Insecticide-Treated Net/Indoor Residual Spraying
IYCF	Infant and Young Child Feeding
JSY	Janani Suraksha Yojana
MAA	Mother's Absolute Affection
MAM	Moderate Acute Nutrition
MCP	Mother and Child Protection
MMR	Maternal Mortality Rate
MoHFW	Ministry of Health and Family Welfare
MoWCD	Ministry of Women and Child Development
NCD	Non-communicable Disease
NHM	National Health Mission
NNM	National Nutrition Mission
NRC	Nutrition Rehabilitation Centre
PDS	Public Distribution System
PMMVY	Pradhan Mantri Matru Vandana Yojana
POSHAN	Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India
POSHAN	PM's Overarching Scheme for Holistic Nourishment (India's National Nutrition Mission)
SAM	Severe Acute Malnutrition
THR	Take Home Ration
VHSND	Village Health Sanitation and Nutrition Day
WASH	Water, Sanitation and Hygiene
WHA	World Health Assembly

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## Executive Summary

This report explores the state of nutrition in Odisha, assesses how nutrition outcomes changed in the state, and more importantly, and examines the road that lies ahead of Odisha on the journey to support better nutrition for the state.

*Nutrition progress in Odisha:* Odisha has made more rapid progress in reducing child undernutrition than many other richer states. Particularly between 2006 and 2016, nutrition and health outcomes improved significantly in the state. The prevalence of stunting declined from 45 percent to 34.1 percent, although there was a marginal increase in wasting from 19.6 to 20.4 percent and in severe wasting from 5.2 to 6.4 percent. In 2018, a further decline was noted in the prevalence of stunting (28.9 percent) and wasting (12.9 percent). Although anemia among women of reproductive age declined by 10 percentage points between 2006 and 2016, it is still high, with over half the women in the state suffering from anemia. Exclusive breastfeeding for children under 6 months of age is an area of progress, improving from 50.8 percent in 2006 to 65.6 percent in 2016; the prevalence of low birth weight, however, remained nearly unchanged during this period (Kohli et al. 2017). Emerging nutritional challenges, such as non-communicable diseases, are likely to create new challenges in coming years.

*How did Odisha create positive change in undernutrition?* Between 2006 and 2016, Odisha adopted a range of nutrition-specific and nutrition-sensitive policies and the state's progress in the coverage of health and nutrition interventions was promising. Odisha's investments in public health and nutrition programs played a critical role in scaling up services, especially in reaching the poor.

Odisha achieved these outcomes by demonstrating significant political and bureaucratic commitment to reducing undernutrition, expanding nationally sponsored nutrition programs and launching state-led initiatives relevant to improving nutrition. The coverage of most maternal and child nutrition interventions increased substantially in the state; key contributors to this success included a strong emphasis on integration of services at the point of delivery, decentralization of service delivery through self-help groups, and a strategic focus on equity of access to health and nutrition interventions. Financial restructuring in the early 2000s provided a springboard to improved social sector programs in Odisha and political stability for the party in power enabled technical and operational reforms in health and nutrition programs to continue uninterrupted. Finally, various social safety net programs to address food insecurity and poverty among the poor also supported Odisha's nutrition progress.

*What lies ahead for Odisha?* With further scaling up of these interventions, along with actions on water, sanitation, and hygiene, Odisha is poised to achieve its policy targets on childhood stunting. However, the state will be 6 percentage points short of its target for the reduction of anemia among women of reproductive age and it will not achieve its wasting target. To accelerate and sustain nutrition-related progress, a focus on closing inter-district variability is vital. To accomplish this, it will be especially important to use local data effectively to address lingering challenges on underlying determinants of nutrition, including women's education, age at marriage, sanitation and household assets. To achieve global, national and state-level nutrition targets, and to sustain progress, Odisha needs to enhance nutrition financing and continue to make steady progress in implementing nutrition-specific and nutrition-sensitive policies and programs. Multisectoral actions must involve innovations where the programs implemented by multiple departments together converge on households with mother-child dyads in the first 1,000 days.

Although COVID-19 poses new challenges to health and nutrition programs as well as to livelihoods, Odisha's efforts at restoring health and nutrition service delivery have been exemplary. The insights from the policy analysis and the phone-based frontline health worker surveys conducted in Odisha in October 2020 affirm the state's commitment to delivering maternal and child health and nutrition services. There

were almost no service interruptions through the lockdown period for services that could be delivered at beneficiary homes or coordinating over the phone including food supplementation, arranging for antenatal care, and counselling. The rapid program guidance and the decisions to conduct key services such as Village Health Sanitation and Nutrition Days and immunization with COVID-19 safety precautions likely contribute to limited disruptions in service delivery.

Odisha's recent launch of the Strategy for Odisha's Pathway to Accelerated Nutrition (SOPAN 2020) demonstrates its preparedness for, and is a testament to, its commitment to reaching its nutrition targets. As Odisha looks ahead to the next phase of its nutrition journey, it can draw on multiple lessons from the past. Investments in continuing to build evidence on key new initiatives will also help to create new insights for the state and for other states in India.

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## CHAPTER 1. WHAT FACTORS CREATE CHANGE FOR NUTRITION?

The nutrition landscape in India has seen considerable progress on several maternal and child nutrition outcomes in the last decade, especially in the areas of stunting among children below five years, exclusive breastfeeding, and the proportion of children with low birth weight. According to the latest National Family Health Survey (NFHS-4) of 2015–2016, in India the prevalence of stunting among children below five declined from 48 percent in 2005–2006 to 38 percent in 2015–2016.

The national commitment to maternal and child nutrition is evident in various initiatives including the ongoing [Integrated Child Development Services](#) (ICDS) scheme and the National Health Mission (NHM). In 2017, the Government of India launched the [National Nutrition Mission \(NNM\)](#), also called POSHAN Abhiyaan; this program aims to reduce stunting, undernutrition, and low birth weight by 2 percent per annum and anemia by 3 percent per annum, and to cover states and districts in a phased manner over a period of three years with the goal of benefitting more than 100 million people.

The rates of improvement seen in some of the maternal and child nutrition outcomes at the national level, however, have been highly variable across the states; this has been due mostly to variability in state-level changes in the determinants of nutrition and in the coverage of health and nutrition interventions. Although all the states in India operate under a similar national policy and programmatic environment, the variability in trends in nutritional outcomes suggest that state-specific factors matter and that they are worthy of investigation.

### 1.1 TRANSFORMATION IN CHILD AND MATERNAL NUTRITION STATUS IN ODISHA (2006–2016)

The state of Odisha is in eastern India; with 42 million people, it is the eleventh-most populous state in the country (World Bank 2016). Odisha has faced many development challenges over the years including insurgency movements, extreme deprivation in Scheduled Tribe (ST) communities, social disparities, and natural disasters; despite these problems, the state has managed to show a remarkable improvement in economic and human development indicators.

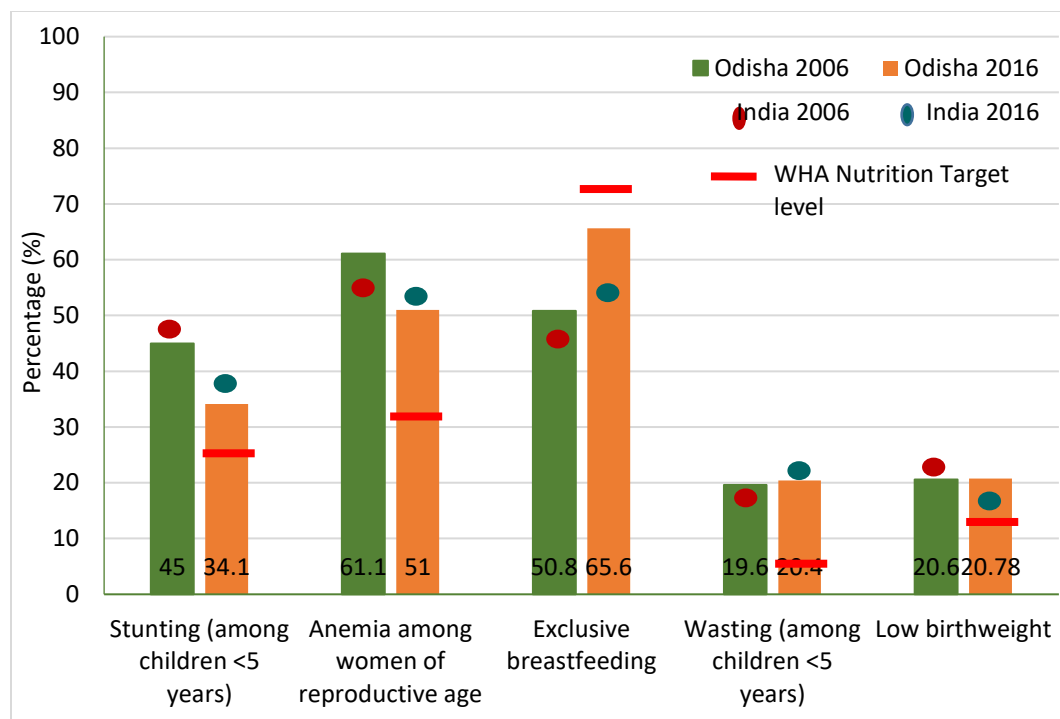
Improvements in infrastructure such as roads, electrification, and drinking water in villages have opened up new avenues for development. The poverty rate declined from 58 percent in 2005 to 33 percent in 2012, and between 2004/2005 and 2011/2012 nearly 8 million people moved out of poverty (ibid). The economy has continued to grow; between 2011/2012 and 2016/2017 it reached an annual average economic growth rate of 7.02 percent. Industry and the service sector are the main drivers of the state's economy (Odisha, Planning and Convergence Department 2018).

In the field of health, Odisha has demonstrated a significant commitment to reducing infant and maternal mortality and undernutrition; it has expanded nationally sponsored nutrition-specific programs and launched state-led initiatives relevant to improving nutrition. The infant mortality rate (IMR) declined from 95 deaths per 1,000 live births in 2000 to 44 deaths per 1,000 live births in 2016 (NITI Aayog 2020), which for the first time was below the national average; between 2004–2006 and 2014–2016, the maternal mortality rate (MMR) declined from 303 to 180 maternal deaths per 100,000 live births. Clearly, the state has made significant progress in reducing child undernutrition, and this progress has been more rapid in Odisha than in many other wealthier states.

### 1.1.1 Trends in nutrition outcomes and interdistrict variability

Nutrition and health outcomes in Odisha improved between 2006 and 2016 (Figure 1), with the prevalence of stunting declining from 45 to 34.1 percent. Anemia among women of reproductive age remains high, however, affecting over half the women in the state, though there was a decline of 10 percentage points between 2006 and 2016. Over the same period, there was a marginal increase in wasting (from 19.6 to 20.4 percent) and in severe wasting (from 5.2 to 6.4 percent); the prevalence of low birth weight, however, remained nearly unchanged. Exclusive breastfeeding (EBF) for children under six months is an area of progress; this improved from 50.8 percent in 2006 to 65.6 percent in 2016.

FIGURE 1. TRENDS IN NUTRITION OUTCOMES IN ODISHA, 2006 TO 2016

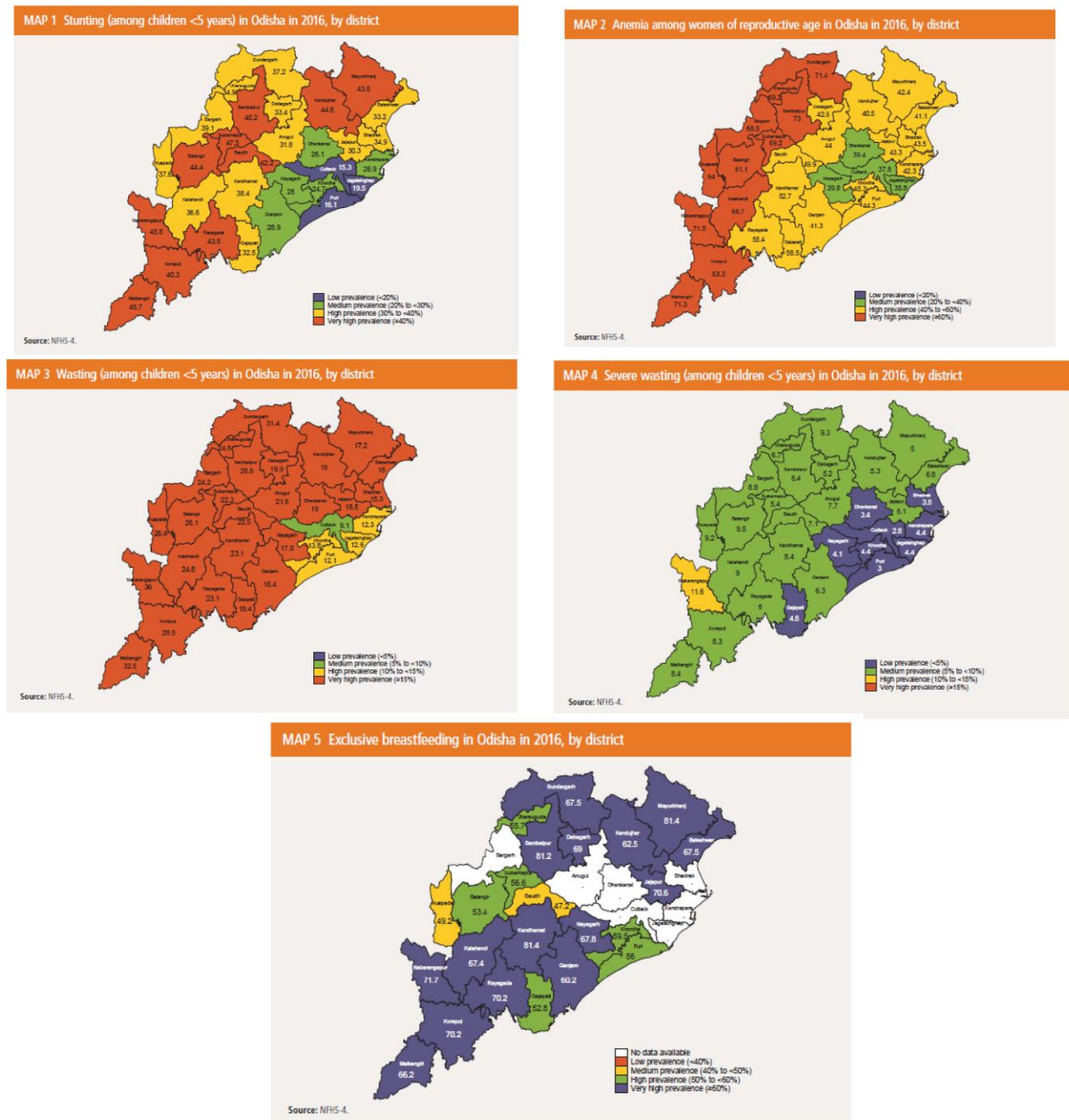


Source: Kohli et al. (2017).

Note: Refer to annexure for indicator definitions; WHA = World Health Assembly.

Despite the progress, there is high variability across different nutrition indicators within the state. Stunting among children below 5 years of age varies widely across districts, ranging from 47.5 percent in Subarnapur to only 15.3 percent in Cuttack (Figure 2, Map 1). In 10 out of 30 districts, more than 40 percent of children are stunted, which indicates a significant public health concern. The prevalence of anemia among women of reproductive age is higher than 40 percent across most of the districts in Odisha, with high variability ranging from 35.8 to 73 percent (Figure 2, Map 2). One-third of the districts have a very high (above 60 percent) prevalence of anemia. The prevalence of wasting (Figure 2, Map 3) is very high in 25 out of 30 districts in Odisha, ranging from 9.1 to 36 percent. Nabarangpur District has the highest prevalence of wasting (36 percent) and severe wasting (11.6 percent) (Figure 2, Map 4). In the majority of the districts, the prevalence of EBF is higher than 50 percent and ranges from 47.2 percent in Boudh to 81.4 percent in Kandhamal and Mayurbhanj. Data on EBF is unavailable for seven districts in Odisha (Figure 2, Map 5) because district-specific sample sizes for age subgroups are too small.

FIGURE 2. NUTRITION OUTCOMES IN ODISHA BY DISTRICT IN 2016



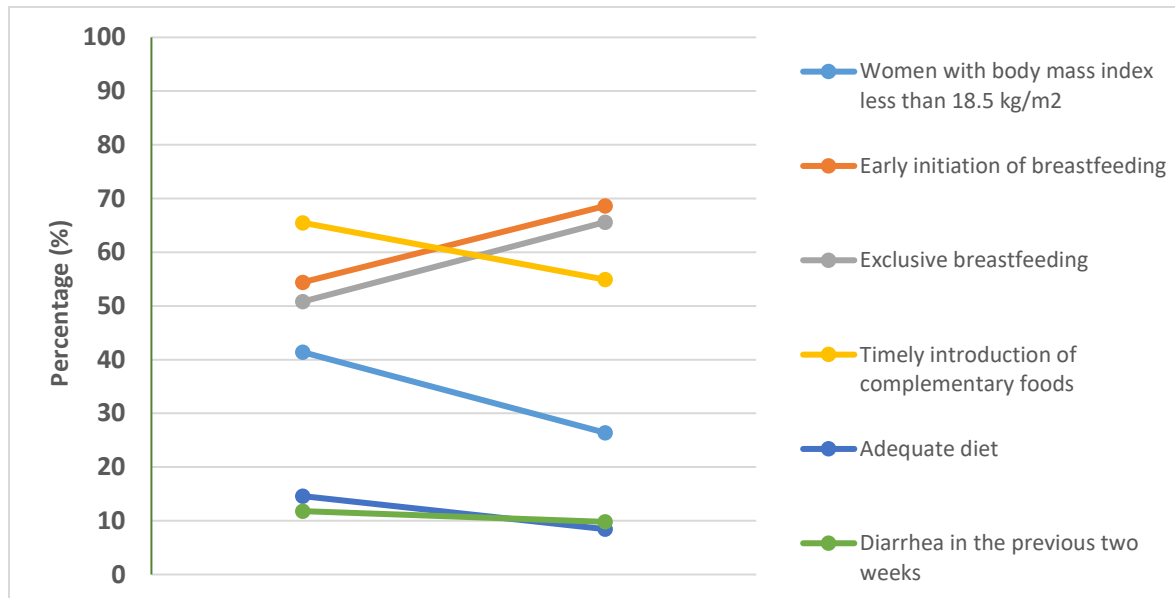
Source: Kohli et al. (2017).

### 1.1.2 Trends in immediate determinants of nutrition in Odisha

There has been some improvement in the immediate determinants of nutrition in Odisha (Figure 3). The proportion of women with low body mass index (BMI)—that is, less than 18.5 kilograms per meter squared (kg/m<sup>2</sup>)—declined considerably from 41.4 percent in 2006 to 26.4 percent in 2016. Among Infant and Young Child Feeding (IYCF) practices, breastfeeding practices improved but complementary

feeding practices did not; early initiation of breastfeeding increased from 54.4 to 69 percent and exclusive breastfeeding increased from 50.7 to 65.5 percent. Timely introduction of complementary foods (between 6 and 8 months of age), however, has declined over the last decade from 65.5 to 54.9 percent, and only 8.5 percent of children between 6 and 23 months of age received an adequate diet; this has signaled the importance of complementary feeding as a priority area for action. There has also been little change in the disease burden among children in Odisha over the past decade and the proportion of children with diarrhea decreased from 11.8 to 9.8 percent between 2006 and 2016. While there have been impressive improvements in the most proximal conditions influencing nutrition outcomes, there is high variability across these indicators within the state.

**FIGURE 3. CHANGES IN IMMEDIATE DETERMINANTS OF NUTRITION IN ODISHA, 2006 TO 2016**

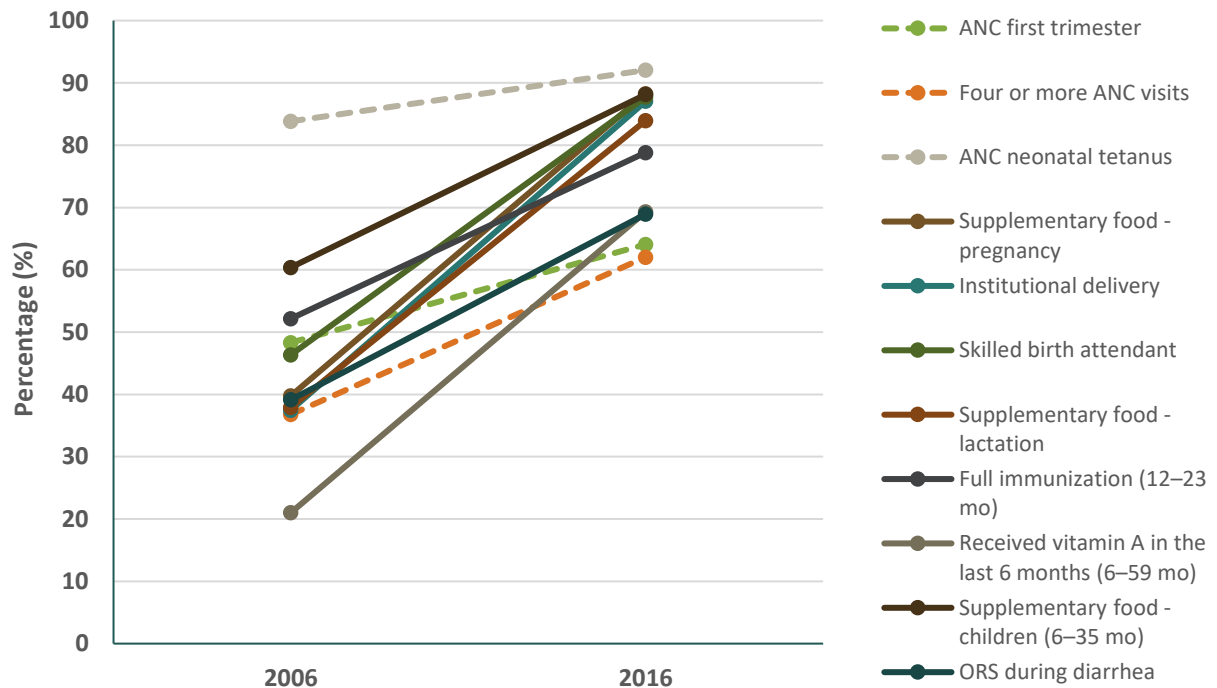


Source: Kohli et al. (2017).

### 1.1.3 Trends in coverage of nutrition-specific interventions along the continuum of care in Odisha

The coverage of nutrition-specific interventions in Odisha has improved over the last decade (Figure 4). The proportion of women who received at least four antenatal visits during pregnancy increased by over 25 percentage points, reaching 62 percent in 2016. The proportion of women who reported receiving iron and folic acid (IFA) supplements during pregnancy improved remarkably to 90 percent. While the proportion of women who consumed at least 100 IFA doses also improved from 23.4 percent in 2006 to 37.4 percent in 2016, nearly two-thirds of women still do not consume adequate amounts of IFA. Institutional deliveries and the proportion of women whose deliveries were assisted by skilled birth attendants improved by 42 and 49 percentage points, respectively, reaching above 88 percent in 2016. Between 2006 and 2016, the coverage of food supplementation also increased from 39.8 to 88.3 percent for pregnant women and from 37.9 to 84 percent for lactating women.

**FIGURE 4. CHANGES IN NUTRITION-SPECIFIC INTERVENTIONS ALONG THE CONTINUUM OF CARE IN ODISHA, 2006 TO 2016**



**Source:** Kohli et al. (2017).

**Note:** ANC = antenatal care; IFA = iron and folic acid; ORS = oral rehydration salts; for indicator definitions refer to endnotes.

The coverage of nutrition interventions focused on children has improved in Odisha in the last 10 years. The proportion of children receiving vitamin A supplementation has increased from 21 to 69.3 percent and the proportion of children with diarrhea who received ORS has increased from 39.1 to 68.9 percent; the proportion of children who were fully immunized has increased from 51.8 to 78.8 percent; also, the coverage of food supplementation for children has increased substantially, going from 60.4 to 88.1 percent between 2006 and 2016. As with the state's variable performance on improving the determinants of child nutrition, there is variability in the coverage of interventions among the districts, as illustrated in Figure 5 (a to d).

**FIGURE 5. STATUS OF NUTRITION-SPECIFIC INTERVENTIONS ALONG THE CONTINUUM OF CARE IN ODISHA BY DISTRICT, IN 2016**

Figure 5a. Percentage of women who received four or more ANC visits

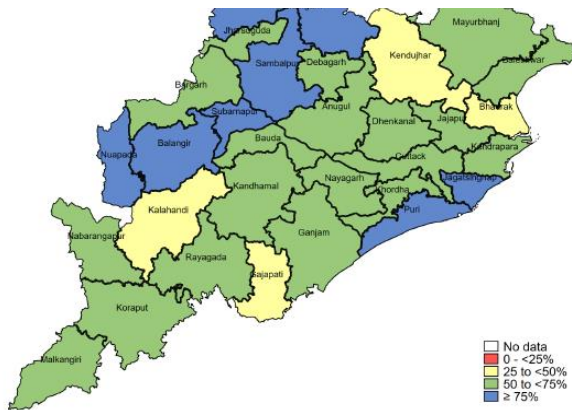


Figure 5b. Percentage of women who received breastfeeding counselling during pregnancy

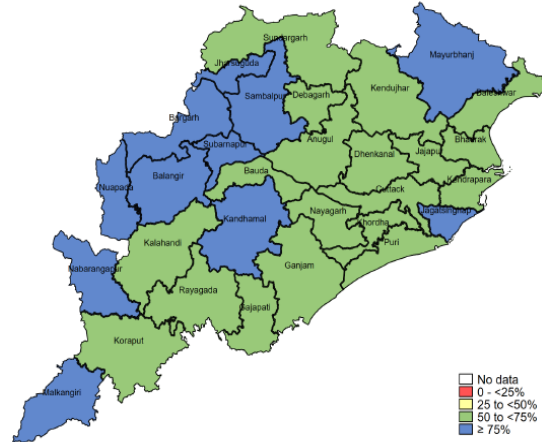


Figure 5c. Percentage of women who received or bought any IFA tablets during pregnancy

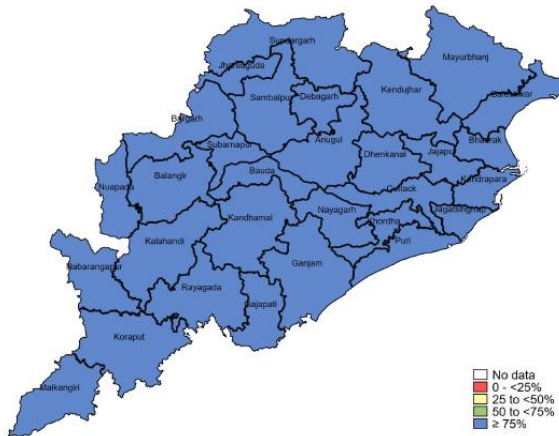
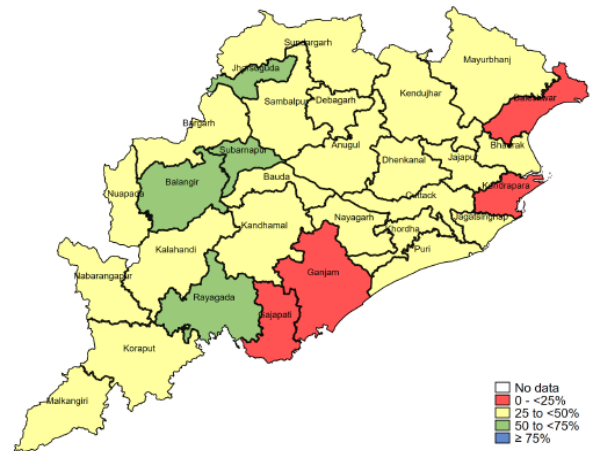


Figure 5d. Percentage of women who consumed IFA for more than 100 days



Source: Kohli et al. (2017).

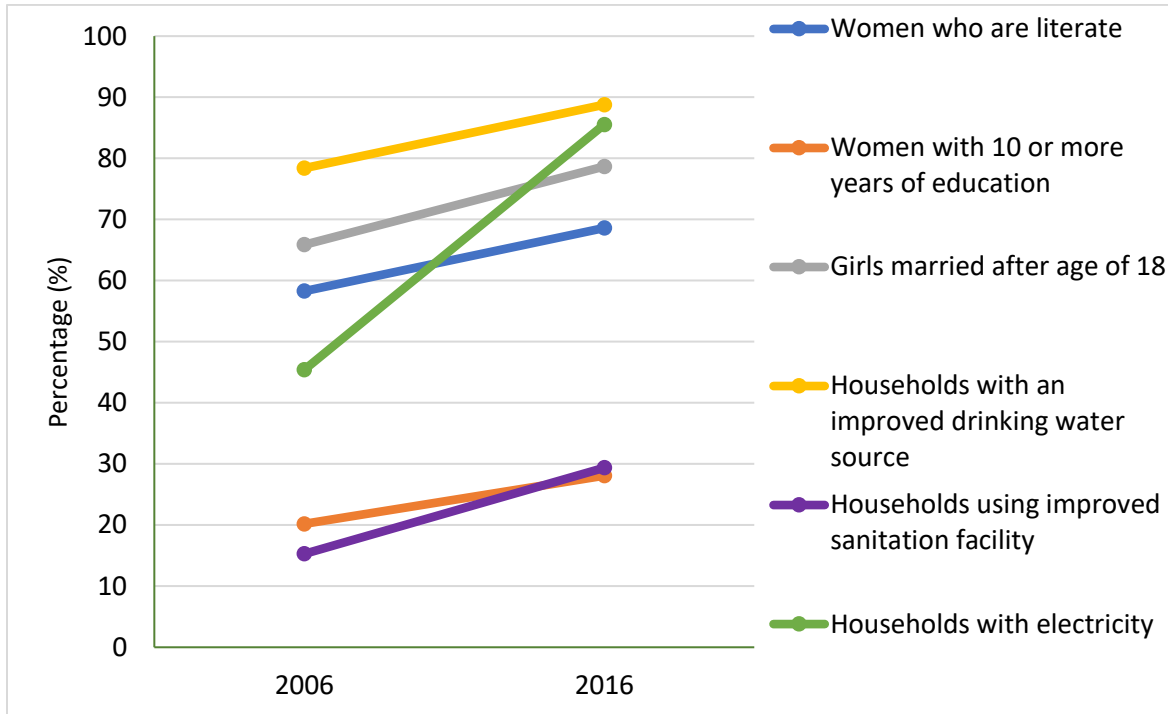
Note: IFA = iron and folic acid.

### 1.1.4 Trends in underlying determinants of nutrition in Odisha

In the last decade, Odisha has experienced several improvements in the underlying determinants of nutrition (Figure 6). Between 2006 and 2016, the proportion of households with access to electricity nearly doubled, going from 47.1 to 85.5 percent; the proportion of households with an improved drinking water source increased from 76.9 to 88.1 percent. There was limited improvement in sanitation, however, with only 27 percent of households using improved sanitation facilities in 2016. Determinants related to gender have seen improvements in the last 10 years; there has been an

increase in women’s literacy from 48.9 to 69.2 percent, even though less than a quarter of women have 10 or more years of education. The proportion of women aged 20 to 24 years who reported being married after 18 years of age increased from 48.3 percent in 2006 to 69.5 percent in 2016. Again, the enabling environment is variable across the districts, as illustrated in Figures 7 and 8.

**FIGURE 6. CHANGES IN UNDERLYING DETERMINANTS OF NUTRITION IN ODISHA, 2006 TO 2016**



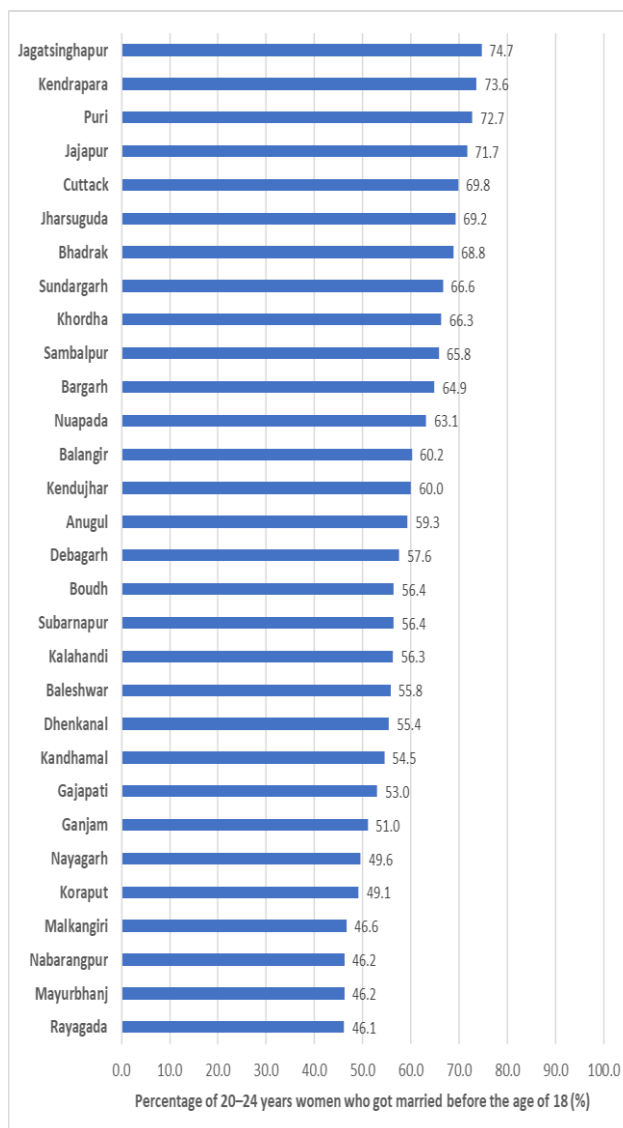
Source: Kohli et al. (2017).

## 1.2 FACTORS THAT HAVE INFLUENCED TRANSFORMATION IN CHILD NUTRITION STATUS IN ODISHA (2006–2016)

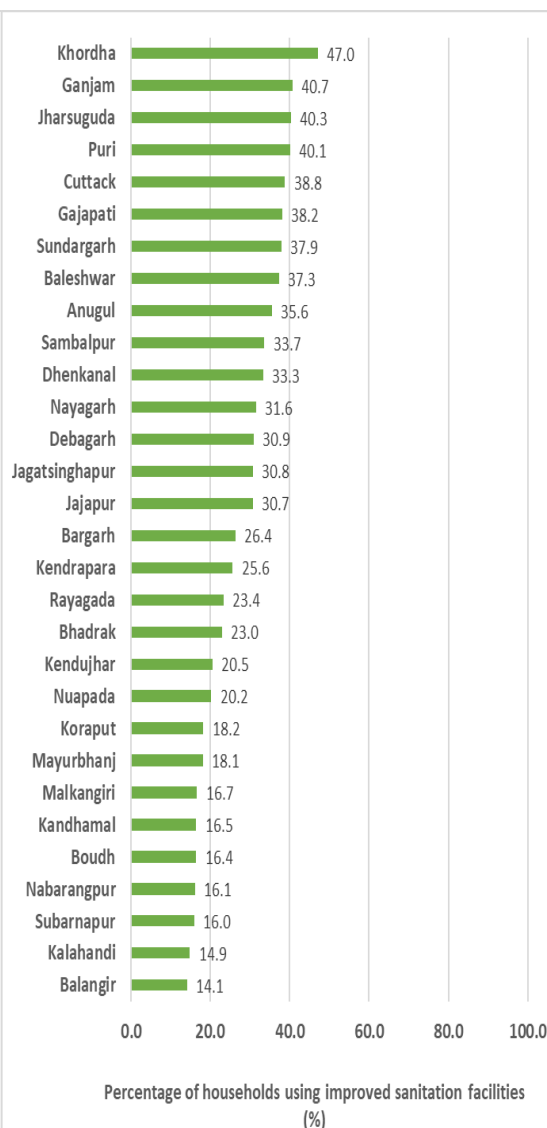
Decadal trends in the determinants of both immediate and underlying undernutrition and in changes in the coverage of nutrition-specific interventions demonstrate the existence of an enabling environment for the transformation of child nutrition status in Odisha. Despite interdistrict variability, the state has made impressive progress in its nutrition status.

To understand the factors that have influenced this state-level transformation in child nutrition status, a decomposition analysis was conducted using data from NFHS–4 (IIPS 2016) and NFHS–3 (IIPS 2006) (Box 1).

**FIGURE 7. PERCENTAGE OF WOMEN AGED 20 TO 24 YEARS WHO GOT MARRIED BEFORE THE AGE OF**

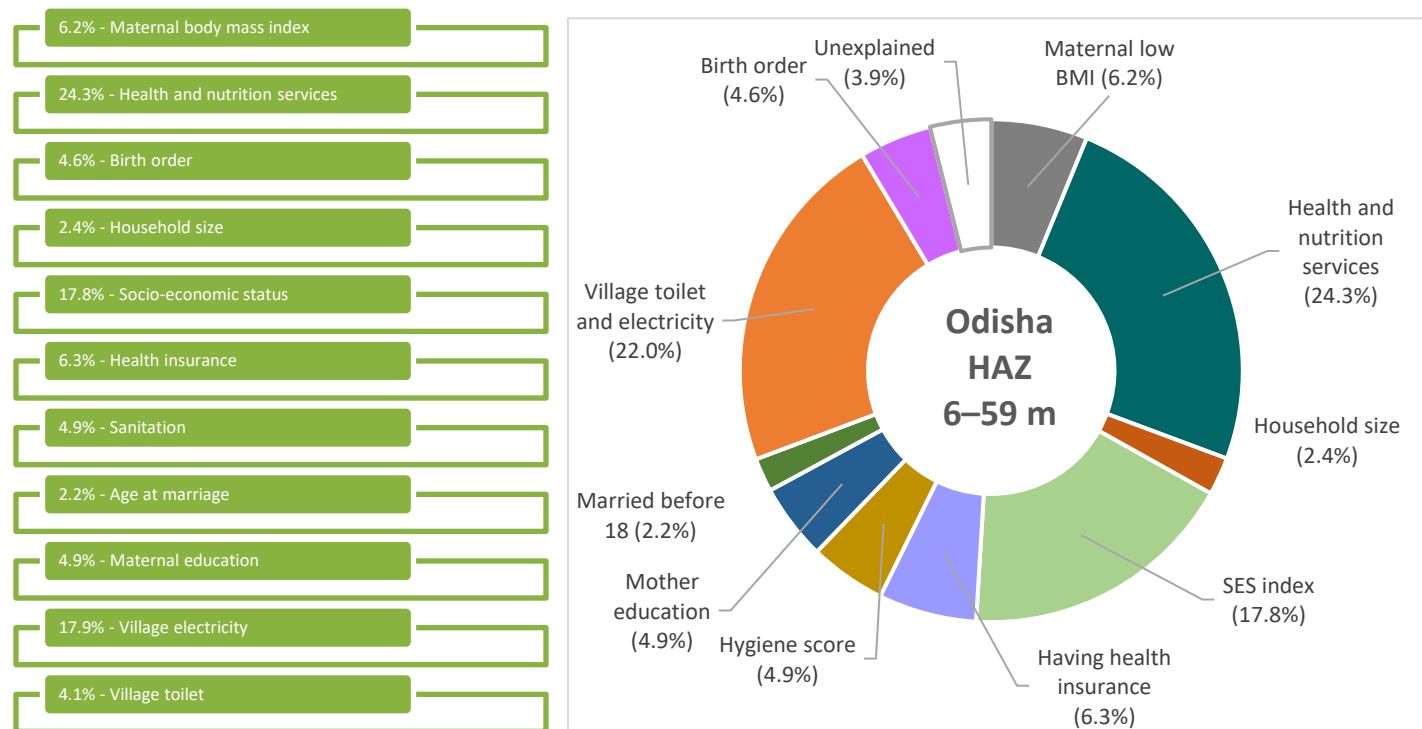


**FIGURE 8. PERCENTAGE OF HOUSEHOLDS USING IMPROVED SANITATION FACILITIES, BY DISTRICT,**



Source: IIPS (2016).

**FIGURE 9. FACTORS THAT EXPLAIN MOST OF THE IMPROVEMENT IN STUNTING IN ODISHA OVER THE PAST DECADE (2006–2016)—DECOMPOSITION ANALYSIS**



**Source:** IIPS (2006, 2016).

**Note:** HAZ = height-for-age z-scores; BMI = body mass index; SES = socio-economic status.

Our analysis indicates that improvement in health and nutrition services accounts for 24 percent of actual changes in height-for-age z-scores (HAZ) among children 6 to 59 months of age; this is followed by village sanitation and electricity availability (22 percent), socio-economic status (17.8 percent), having health insurance (6.3 percent), household hygiene (4.9 percent), maternal body mass index (6.2 percent), and maternal education (4.9 percent). These factors, together, explain almost 96 percent of the actual change in HAZ, thus confirming that stunting is a multisectoral issue.

### 1.3 SETTING THE GOALPOSTS FOR MOVING AHEAD ON NUTRITION IN ODISHA

The World Health Assembly (WHA) endorsed a set of global nutrition targets for maternal, infant, and young child nutrition in 2012 and for diet-related global

#### BOX 1. DECOMPOSITION ANALYSIS TO DETERMINE THE FACTORS CONTRIBUTING TO IMPROVEMENT IN STUNTING

Data from the 2015/2016 NFHS–4 and the 2005/2006 NFHS–3 were combined to examine changes in height-for-age z-scores (HAZ) among children 6 to 59 months of age.

Based on the UNICEF/Lancet conceptual framework (Black et al., 2013), independent variables that are likely to predict changes in HAZ were selected, including immediate and underlying determinants and nutrition and health interventions. The immediate determinants included maternal underweight and the underlying determinants included maternal age at marriage, education, household socio-economic status, sanitation, and village toilet and electricity levels. Health and nutrition interventions during pregnancy, at birth, and during early childhood were included.

A regression-based decomposition was then conducted in order to estimate how much of the change in each of the determinants contributed to the changes in HAZ between 2006 and 2016.

non-communicable diseases (NCDs) in 2013. These targets are to be achieved by 2025 and will help measure the progress that has been made toward achieving the 2030 targets of the Sustainable Development Goals. More recently, India has set its own nutrition targets under the NNM, which are even more ambitious than the global nutrition targets. Under the current global and national impetus for improving nutrition, Odisha, too, has renewed its commitment to nutrition and has set ambitious targets. The Government of Odisha outlined its commitment to a multisectoral approach to improved nutrition through the Odisha Nutrition Action Plan (ONAP); this commitment was strongly reiterated in the recent Strategy for Odisha's Pathway to Accelerated Nutrition (SOPAN 2020).

Odisha has witnessed improvement in nutrition outcome trends between 2006 and 2016; when compared to WHA targets, however, this progress needs to be further accelerated. At present, there is a gap between the current Average Annual Rate of Reduction (AARR) and the AARR that is required if the targets set for Odisha are to be achieved. At this point, the state is on track only to achieve the exclusive breastfeeding target; for stunting, there is a gap of 2.5 percent between the projected prevalence rate and the target set by the National Nutrition Mission (Table 1).

**TABLE 1. WORLD HEALTH ASSEMBLY TARGETS AND ODISHA'S PROGRESS**

Nutrition indicators	World Health Assembly (WHA) target for 2025	Odisha's 2025 target to meet the WHA target (%)	Odisha's status in 2016 (%)	Current AARR (%)	Required AARR (%)
Stunting	40% reduction in the number of children under 5 who are stunted	25.3	34.1	2.7	3.3
Anemia among women of reproductive age	50% reduction of anemia in women of reproductive age	31.5	51	1.8	5.2
Wasting	Reduction and maintenance of childhood wasting at less than 5%	5	20.4	0.5	14.5
Exclusive breastfeeding	Increase of at least 50% in the rate of exclusive breastfeeding in the first 6 months	73	65.6	2.6 (AARI)	1.2 (AARI)
Low birth weight	30% reduction in low birth weight	16.2	20.8	1.1	2.7

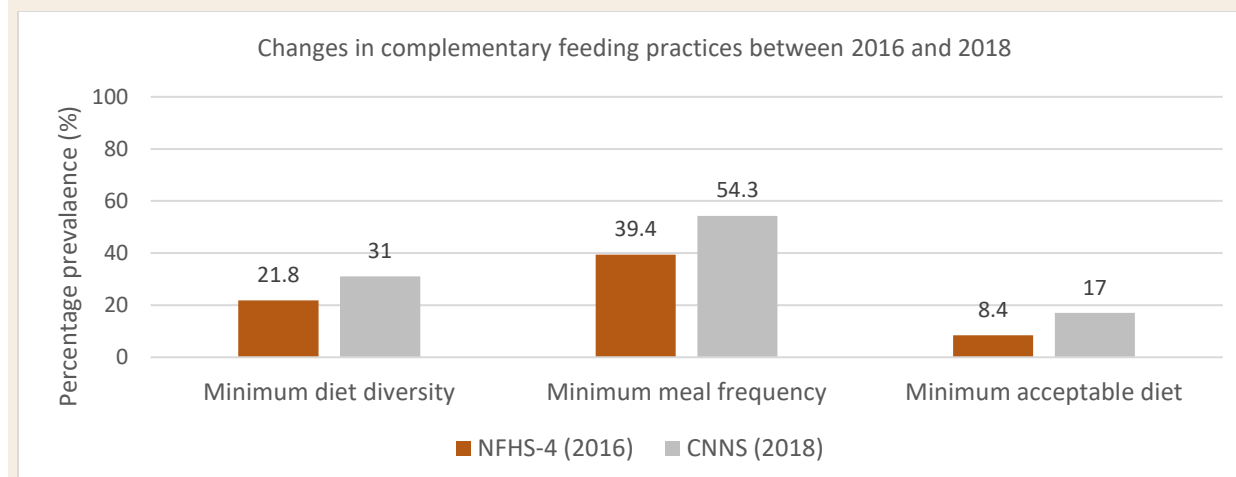
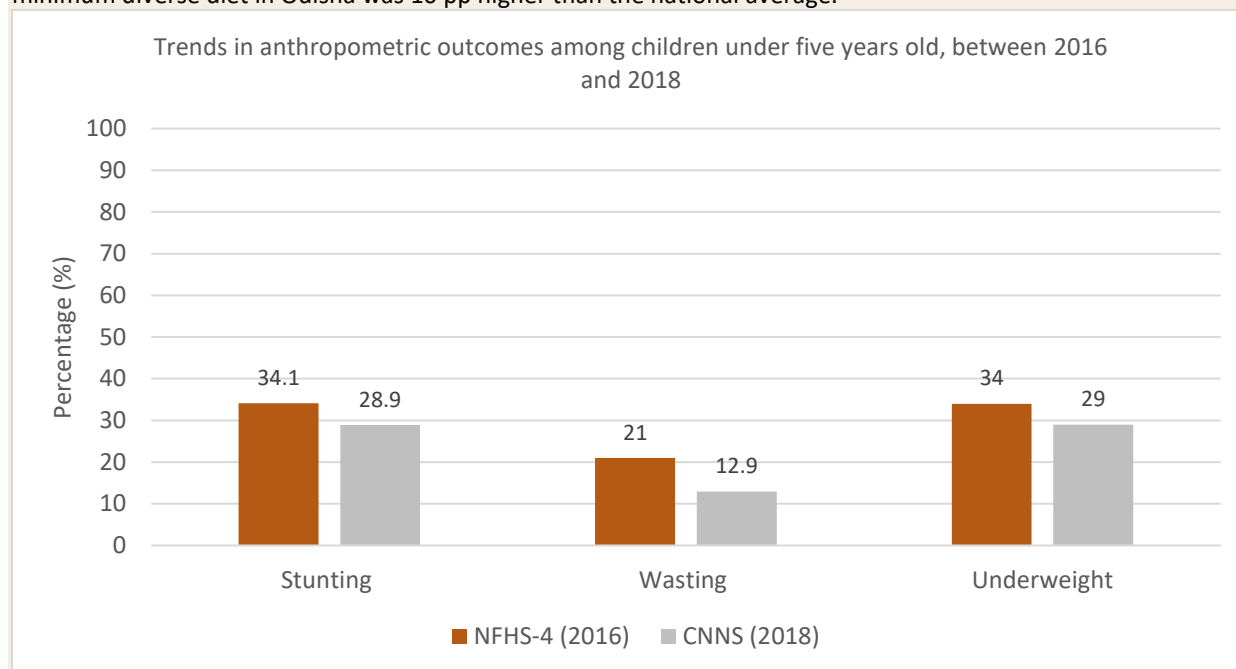
**Source:** Authors calculations.

**Note:** AARR = Average Annual Rate of Reduction; AARI = Average Annual Rate of Increase.

## BOX 2. IMPROVEMENTS IN NUTRITION OUTCOMES AND CHILD FEEDING PRACTICES BETWEEN 2016 AND 2018 IN ODISHA

Odisha has continued to improve child nutrition and its determinants; between 2016 and 2018, the prevalence of stunting among children below 5 years of age declined from 34.1 to 28.9 percent and the proportion of children who were underweight declined from 34 to 29 percent. A remarkable change was observed in wasting among children, which declined by 8 percentage points (pp) between 2016 and 2018.

In addition, improvements were observed in child feeding practices, particularly complementary feeding practices, which is one of the important determinants of child nutrition. Between 2016 and 2018, there was a 9 pp increase in the proportion of children aged 6 to 23 months who received a diverse diet and there was an increase in the proportion of children receiving the minimum number of meals per day. The proportion of children receiving the minimum diverse diet in Odisha was 10 pp higher than the national average.



**Source:** IIPS (2016); Ministry of Health and Family Welfare et al. (2019).

**Note:** NFHS = National Family Health Survey; CNNS = Comprehensive National Nutrition Survey.

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## CHAPTER 2. CAN IMPROVING COVERAGE OF NUTRITION-SPECIFIC INTERVENTIONS HELP MEET THE NUTRITION TARGETS IN ODISHA?

Between 2006 and 2016, Odisha made considerable progress in reducing child undernutrition; it has now set new targets to be achieved by 2025. Improvements in health and nutrition interventions, socio-economic status, and village electrification together contributed to nearly 60 percent of changes in the HAZ between 2006 and 2016. To accelerate progress on nutrition in the next few years, it is imperative to examine the types of interventions in which the Government of Odisha needs to invest; it is also important to assess how much more can be gained by investing in nutrition-specific interventions alone or whether these investments should be in combination with nutrition-sensitive interventions.

### 2.1 COVERAGE OF NUTRITION-SPECIFIC INTERVENTIONS IN ODISHA IN 2016

The coverage of most maternal and child nutrition-specific interventions in Odisha in 2016 was better than the national average (Box 3). The significant expansion of health- and nutrition-specific interventions has been made possible by setting a goal of reduced infant mortality rate, as well as by overarching policy support, national- and state-level financing, political and bureaucratic leadership, and the support of development partners and civil society. Financial restructuring in the early 2000s provided a springboard to improved social sector programs in Odisha, and the political stability of the party in power enabled reforms in health and nutrition programs to continue uninterrupted (Kohli et al. 2017).

Furthermore, an assured tenure for bureaucrats and a culture of innovation and learning at the bureaucratic level has led to an enabling environment for scaling up health and nutrition programs. The increase in coverage has been supported by a strong emphasis on the integration of services at the point of delivery, decentralization of service delivery through self-help groups, and a strategic focus on equity of access to interventions (ibid).

Despite gains in the coverage of nutrition-specific interventions significant gaps remain, especially for interventions in early childhood; there remains a huge interdistrict variability in the coverage of several interventions.

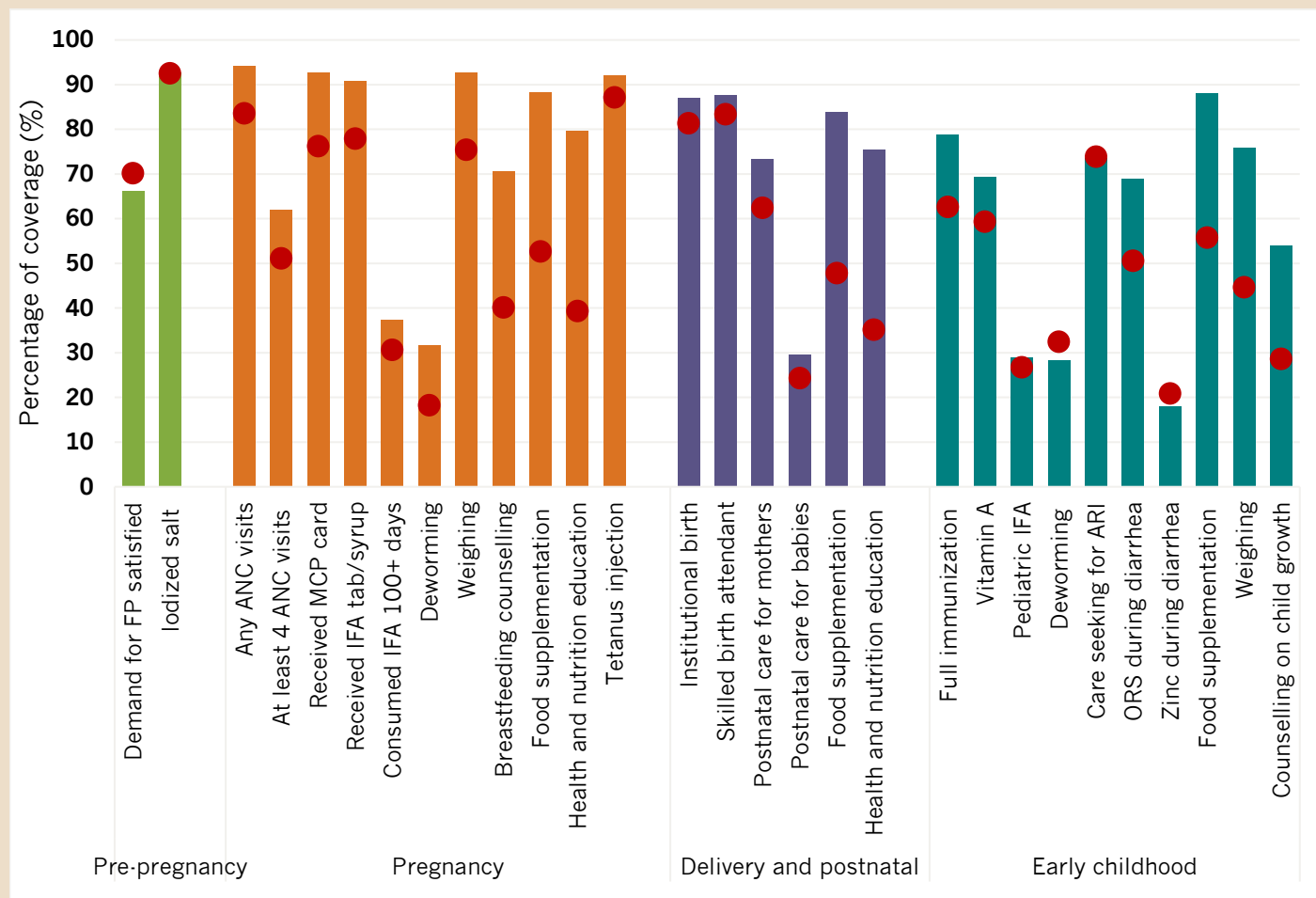
### 2.2 IMPACT OF SCALING UP NUTRITION-SPECIFIC INTERVENTIONS ON NUTRITION TARGETS

To identify interventions and to assess the impact of scaling them up so that Odisha might achieve WHA targets—particularly regarding stunting, anemia, and wasting—a two-step modeling approach using the Lives Saved Tool (LiST) was used (Box 4). The model includes interventions that were selected based on the conceptual framework outlined in the latest *The Lancet* nutrition series (Bhutta et al. 2013); interventions pertaining to hygiene and sanitation were also added.

**BOX 3. COVERAGE OF SELECTED NUTRITION INTERVENTIONS IN ODISHA IN 2016**

For most of the health and nutrition interventions in Odisha, the coverage has impressively outperformed the national average (Figure 10). In terms of interventions such as supplementary food for mothers and children, pediatric iron and folic acid supplements, and cash transfers to support institutional delivery, all the districts are doing better than the national average. For interventions such as ensuring at least four ANC visits, institutional delivery, full immunization, vitamin A supplementation, and ORS during diarrhea, coverage in most districts is also better than the national average. For most interventions, however, there is much variability among the 30 districts.

**FIGURE 10. COVERAGE OF SELECTED INTERVENTIONS IN ODISHA, IN 2016**



**Source:** Sehgal et al. (2018).

**Note:** FP = family planning; ANC = antenatal care; MCP = Mother and Child Protection; IFA = iron and folic acid; ARI = acute respiratory infection; ORS = oral rehydration salts; bars represent Odisha averages and dots represent India average; indicator definitions are found in the annexure.

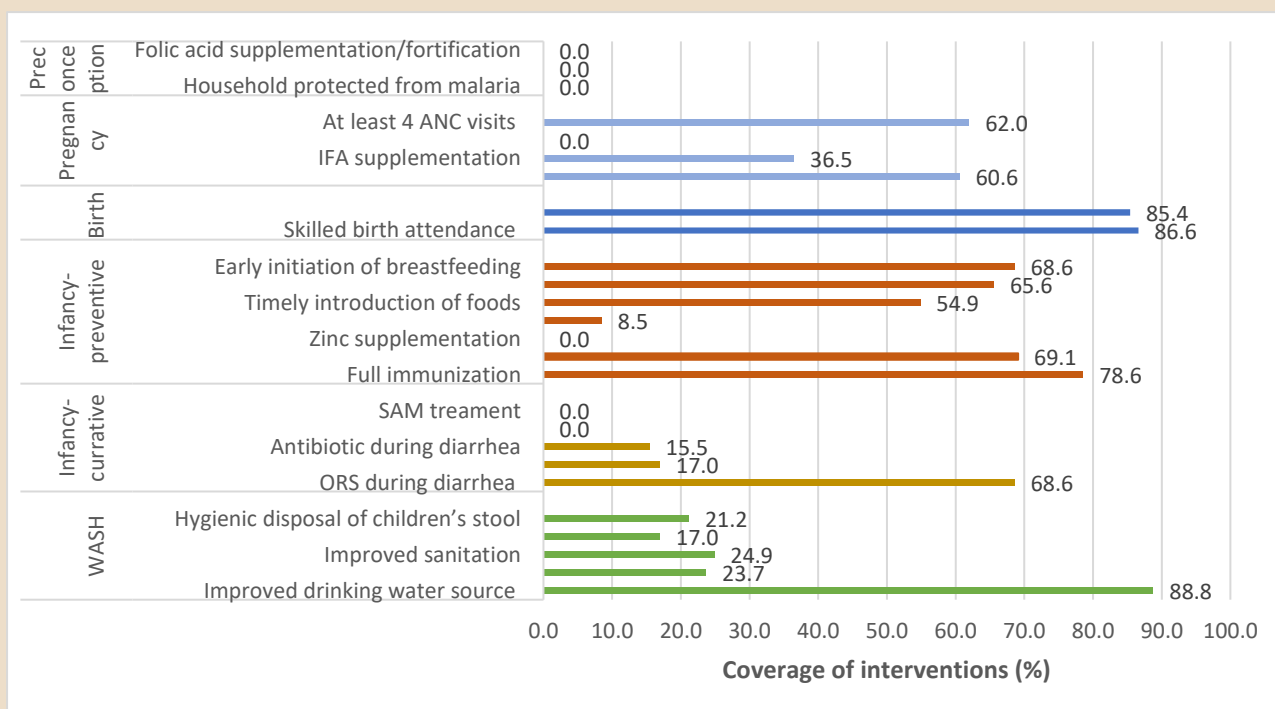
**BOX 4. LIVES SAVED TOOL (LiST) TO PROJECT NUTRITIONAL OUTCOMES AND ESTIMATE THE NUMBER OF STUNTING CASES THAT COULD BE AVERTED BY INCREASING THE COVERAGE OF NUTRITION INTERVENTIONS**

The Lives Saved Tool (LiST) model (Version 5.71), which was built into a demographic software package (Spectrum), was used to project nutritional outcomes and estimate the number of stunting cases that could be averted by increasing the coverage of nutrition interventions. The default data that was built into LiST was taken from various reliable sources, including Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS), and the WHO/UNICEF Joint Monitoring Programme; the assumptions and methods have been drawn from a large number of empirical studies. The default effectiveness values are drawn from systematic reviews and meta-analyses; these allow users to use their own data at the subnational and national levels. Ongoing adaptations to the tool provide insights on improvements in nutrition from changing coverage.

Multiple data sources were used for the analyses, including data from the 2011 Census of India, the Sample Registration System (SRS), and the fourth round of the National Family Health Survey (NFHS-4). The base for demographic, nutrition, and health outcomes was projected using over 190 indicators. The demographic projections were based on 2011 census data. Baseline intervention coverage data was taken from NFHS-4 (2015–2016). NFHS-4 is the most recent survey in India; it sampled 601,509 households and provided estimates of most indicators for India as a whole, for its 29 states and 7 union territories, and for all 640 districts in the country. Figure 11 presents the list of interventions that were used in the LiST modeling. Some interventions that were not available for Odisha, or even for India, were set to zero at baseline.

The modeling of the potential impact of interventions on different target indicators was done using two steps; the first scenario included scaled-up models of each intervention (or each set of interventions) to allow comparison of the relative benefits of each nutrition intervention; the second scenario involved the scaling up of all interventions to estimate the total impact.

**FIGURE 11. BASELINE COVERAGE OF MODELLED INTERVENTIONS USING NFHS-4 DATA**



Source: IIPS (2016).

Note: ANC= antenatal care; MAM= moderate acute malnutrition; SAM= severe acute malnutrition; ORS = oral rehydration salts; WASH = Water, Sanitation and Hygiene.

### 2.2.1 IMPACT OF SCALING UP INTERVENTIONS ON STUNTING

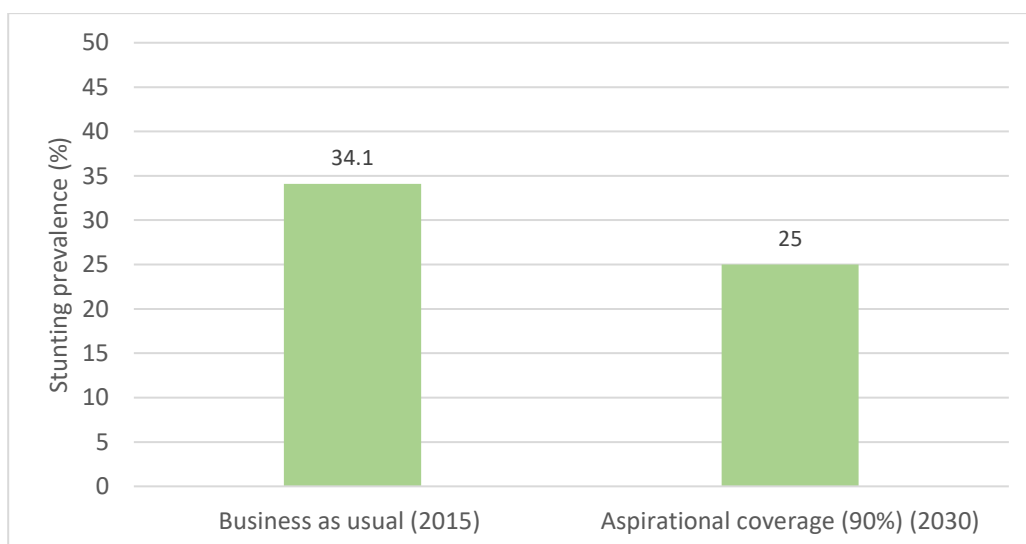
In the LiST modeling, to estimate the proportion of children whose stunting could be averted, the following interventions were included, and were modeled to be at 90 percent coverage by 2030:

- Intervention during pregnancy (IFA, calcium, and energy/food supplementation)
- Improved breastfeeding practices (early initiation and exclusive breastfeeding)
- Feeding and supplement interventions (complementary feeding education, supplementary feeding, vitamin A and zinc supplementation)
- Water, sanitation, and hygiene (WASH) interventions (use of improved sanitation, use of piped water in the home, handwashing with soap, and hygienic disposal of children's stool).

Coverage data for calcium and zinc supplementation was not collected as part of the National Family Health Surveys (NFHSs); for calcium supplementation, baseline intervention coverage was assumed to be zero and for zinc supplementation the national default value assigned by LiST was used.

Using the LiST analysis, two scenarios were modeled for stunting reduction by 2030; Scenario 1 was business as usual (BAU) and Scenario 2 was accelerated coverage. In the BAU scenario, the calculation of intervention coverage by 2030 was based on the continuation of past trends; BAU figures were based on the changes in indicators between 2005/2006 and 2015/2016, the two points for which estimates of many indicators are available. (To avoid the estimates for the final year (2030) exceeding 90 percent, the indicator has been fixed at 90 percent.) Such a BAU approach results in 31.3 percent stunting by 2030. In the model of Scenario 2, where coverage of selected interventions is ensured to be at 90 percent by 2030, stunting declines from 34 percent in 2006 to 25 percent in 2030 (Mishra et al. 2019) (Figure 13). Appropriate complementary feeding would avert about half of the stunting cases under both scenarios. Other effective interventions include a water connection at home, washing hands with soap, and improved sanitation (ibid).

**FIGURE 12. REDUCING STUNTING BY SCALING UP NUTRITION INTERVENTIONS (2016–2030)**



Source: Adapted from Mishra et al. (2019).

**FIGURE 13. PROJECTED NUMBER OF STUNTING CASES AVERTED AMONG CHILDREN UNDER FIVE BY TYPE OF INTERVENTIONS AND ALTERNATIVE SCENARIOS IN ODISHA, 2015–2030**

	Stunting cases averted (n)				Percentage in 2030 (%)
	2016	2020	2025	2030	
<b>Business as usual</b>					
Appropriate complementary feeding	1,164	15,053	37,457	56,148	53.04
Zinc supplementation	1,434	10,922	24,173	25,812	24.38
Improved sanitation- utilisation of latrines or toilets	279	2,957	6,884	7,845	7.41
Water connection at home	267	2,827	6,582	7,500	7.08
Handwashing with soap	196	2,076	4,834	5,509	5.20
Vitamin A supplementation	83	816	1,876	2,126	2.01
ITN/IRS – households protected from malaria	13	256	644	745	0.70
Rotavirus vaccine	11	72	150	181	0.17
<b>Total</b>	<b>3,447</b>	<b>34,979</b>	<b>82,600</b>	<b>1,05,866</b>	<b>100.00</b>
<b>Aspirational coverage</b>					
Appropriate complementary feeding	3,167	41,293	99,725	147,267	45.63
Zinc supplementation	3,916	28,091	60,116	85,790	26.58
Water connection at home	1,899	16,983	33,891	42,837	13.27
Handwashing with soap	727	6,507	12,986	16,414	5.09
Improved sanitation- utilisation of latrines or toilets	637	5,700	11,375	14,378	4.46
Age-appropriate breastfeeding practices	229	2,593	5,335	6,747	2.09
ITN/IRS – households protected from malaria	171	1,991	4,571	6,537	2.03
Vitamin A supplementation	105	897	1,782	2,254	0.70
Rotavirus vaccine	11	156	372	497	0.15
<b>Total</b>	<b>10,862</b>	<b>1,04,211</b>	<b>2,30,153</b>	<b>3,22,721</b>	<b>100.00</b>

**Source:** Reproduced from Mishra et al. (2019).

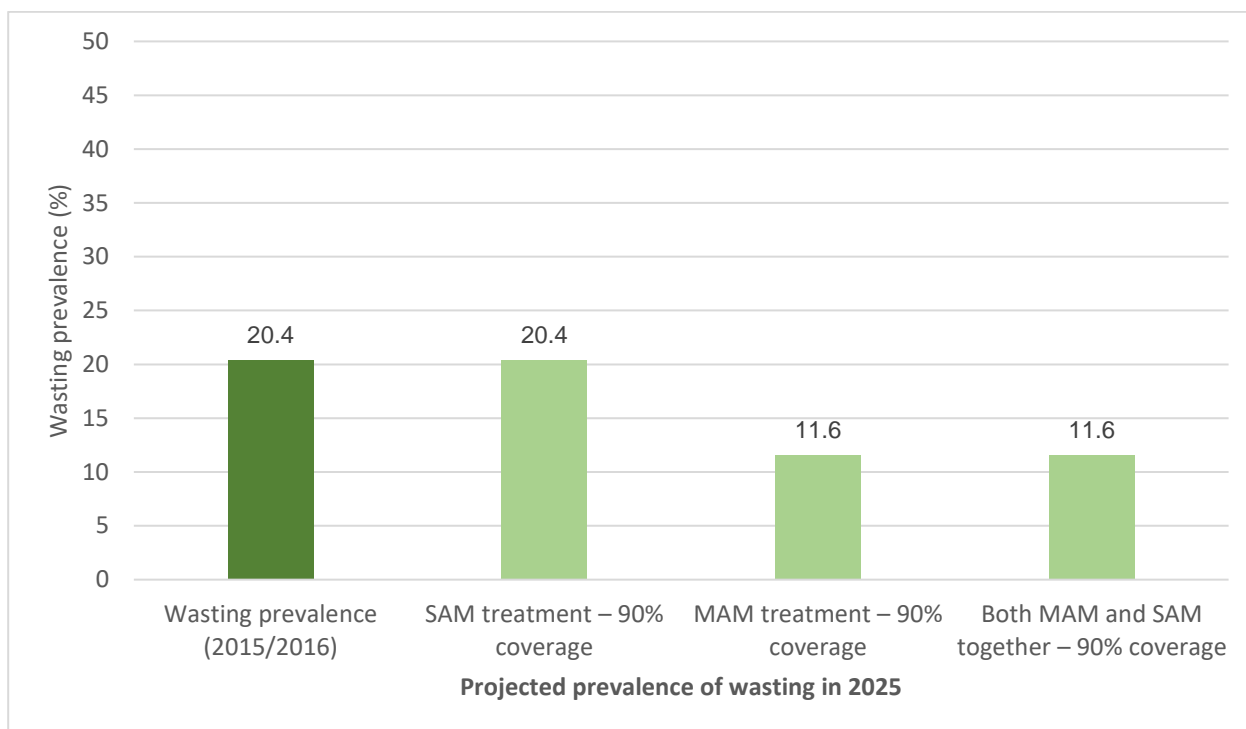
**Note:** ITN/IRS = insecticide-treated net/indoor residual spraying.

### 2.2.2 Impact of scaling up interventions on wasting

The only two interventions available in the LiST tools for estimating the impact on wasting are the treatment of severe acute malnutrition (SAM) and of moderate acute malnutrition (MAM). As coverage data for these two interventions were not collected as part of the NFHS–3, the 2016 coverage estimates, which are treated as the baseline estimates for Odisha, were set to zero.

While scaling up MAM treatment to 90 percent coverage showed a significant impact—reducing wasting from 20.4 percent in 2016 to 11.6 percent in 2025—the scaling up of SAM treatment did not show any additional benefits on wasting reduction (Figure 14). A possible reason for this is that SAM treatment would only be able to move wasted children from the SAM to the MAM category, which would not contribute to an overall reduction in wasting. Additional nutrition- and health-sensitive strategies are required to achieve further reductions in wasting if the WHA target for Odisha of 5 percent wasting by 2025 is to be achieved (Figure 15).

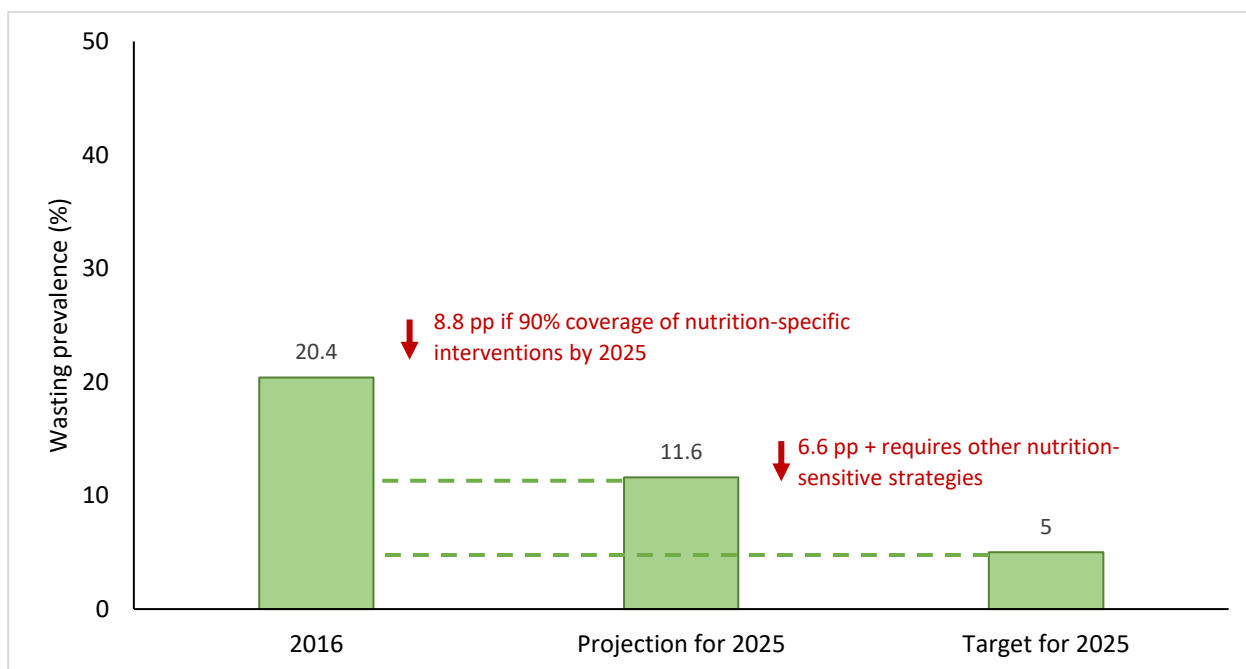
**FIGURE 14. REDUCING WASTING BY SCALING UP NUTRITION INTERVENTIONS (2016–2025)**



**Source:** IIPS (2016).

**Note:** MAM = moderate acute malnutrition; SAM = severe acute malnutrition.

**FIGURE 15. COMPARISON OF PROJECTED REDUCTION IN WASTING RATE WITH 2025 TARGETS**



**Source:** Menon et al. (2016); IIPS (2016).

**Note:** pp = percentage points.

### 2.2.3 Impact of scaling up interventions on anemia

The numbers and proportions of women whose anemia could be prevented were estimated by scaling up three key interventions from their most recent coverage in 2016 to 90 percent coverage in 2025. These include:

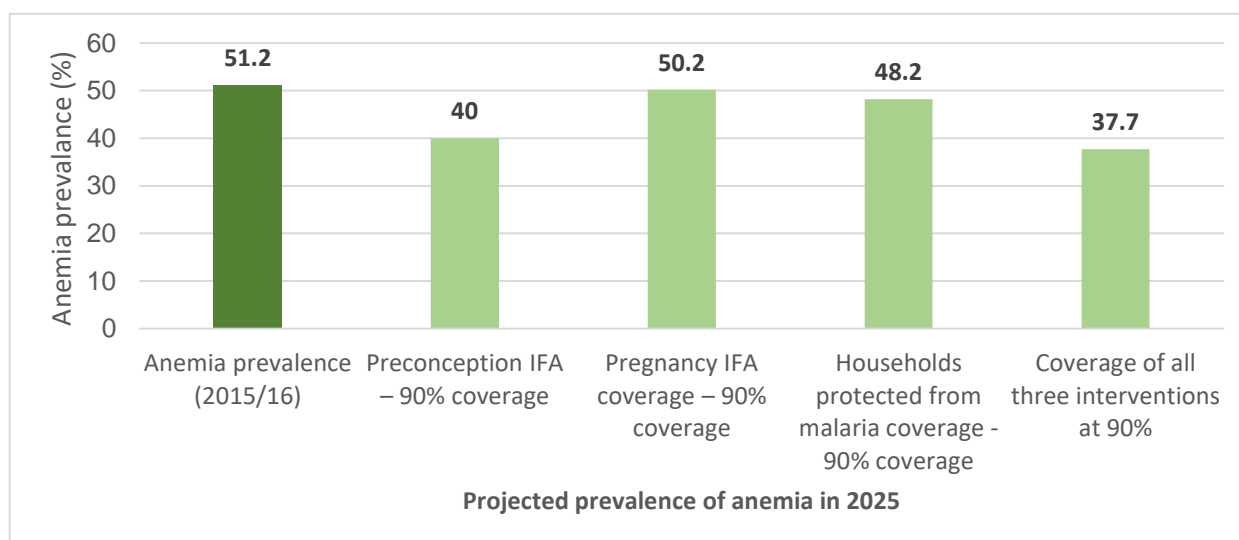
- Iron supplementation and/or fortification during preconception
- Iron or multiple micronutrient supplementation during pregnancy
- Households protected from malaria by owning at least one insecticide-treated bednet (ITN) and/or being protected by indoor residual spraying (IRS).

Coverage data for iron supplementation during the preconception period and for the proportion of households protected from malaria were not collected as part of the NFHSs and hence were unavailable for Odisha; these intervention coverage estimates were therefore set to zero at baseline. Baseline coverage for the use of IFA during pregnancy in Odisha was 36.5 percent.

The impact of scaling up individual and combined interventions on anemia among women of reproductive age is presented in Figure 16. It was seen that preconception IFA has the highest impact and that it could reduce anemia to 40 percent by 2025. The next-highest priority intervention in terms of achieving impact was protecting households from malaria; this could reduce anemia to 47.7 percent by 2025. Scaling up all three interventions could reduce anemia to 37.7 percent. Given the WHA target of 50 percent reduction of anemia in women of reproductive age, Odisha will need to reduce anemia to 31.5 percent by 2025, meaning that it will need to mobilize other strategies to reduce anemia by an additional 6 percentage points (Figure 17).

Our modeling also suggests that by scaling up three nutrition interventions to the 90 percent target level in Odisha, anemia can be prevented among 1,572,000 women, using 2016 as the base year. Among these nutrition interventions, the most effective is iron supplementation and/or fortification during preconception; this could prevent 1,300,000 women from having anemia.

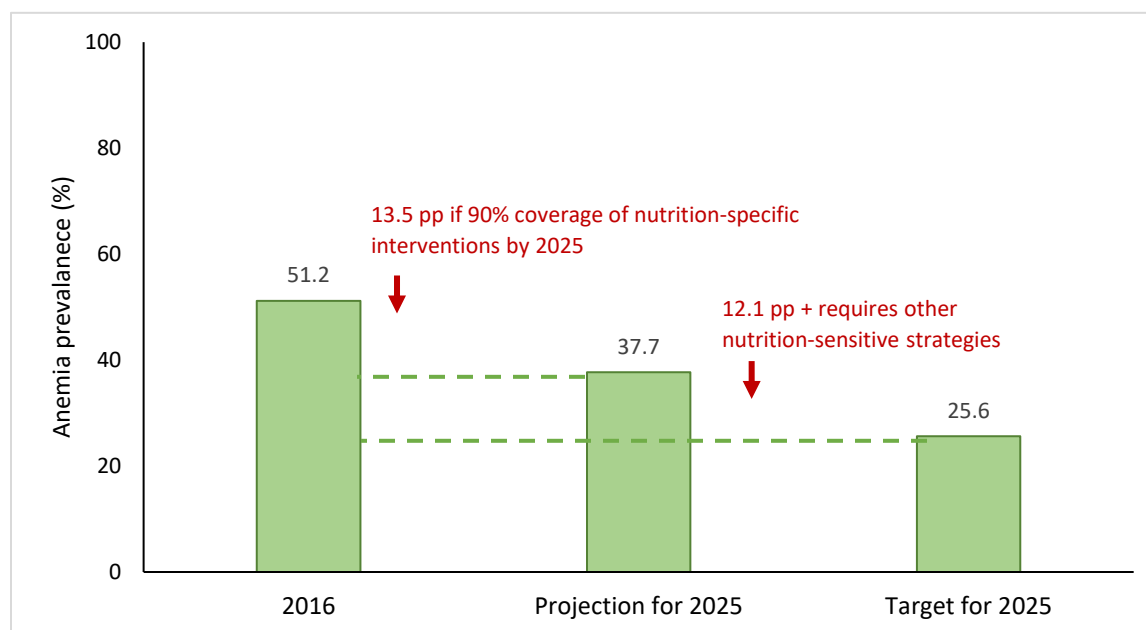
**FIGURE 16. REDUCING ANEMIA IN ODISHA BY SCALING UP NUTRITION INTERVENTIONS (2016–2025)**



**Source:** IIPS (2016).

**Note:** IFA = Iron and folic acid.

FIGURE 17. COMPARISON OF PROJECTED REDUCTION IN ANEMIA RATE WITH 2025 TARGETS



Source: IIPS (2016).

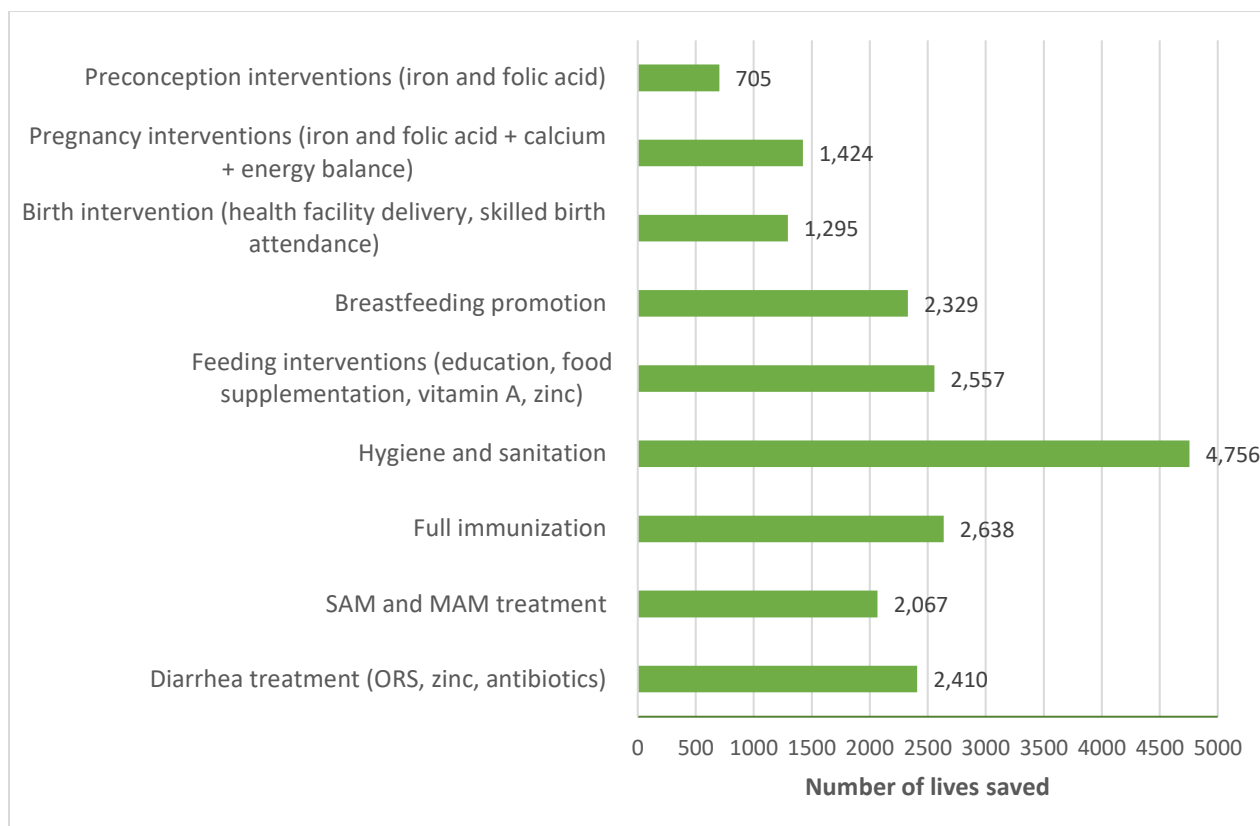
Note: pp = percentage points.

#### 2.2.4 Impact of scaling up nutrition and WASH interventions

The number of child deaths that could be averted in Odisha was estimated by increasing the coverage of effective key nutrition-specific interventions during preconception, pregnancy, birth, and infancy, as per the LiST model (Box 3). These interventions were selected on the basis of the conceptual framework outlined in the latest *The Lancet* nutrition series (Bhutta et al. 2013); WASH interventions were also added.

Figure 18 presents the overall results of this modeling for lives saved by scaling up nutrition and WASH interventions. The results suggest that scaling up all of the above interventions to the 90 percent target level in Odisha can prevent 11,750 deaths in children under 5 years of age, taking 2016 as the base year; this includes 3,891 lives saved among children below one month and 7,859 lives saved among children between 1 and 59 months. The highest number of deaths is averted by scaling up WASH interventions; this is due to the low baseline coverage level of these interventions, which ranges from 17 to 25 percent except for the improved drinking water source intervention. Scaling up IYCF practices (including promotion of both breastfeeding and complementary feeding), together with vitamin A and zinc supplementation, can save nearly 5,000 lives. In addition, curative interventions during infancy proved to have a high impact on lives saved (2,067 for SAM and MAM treatment and 2,410 for different curative interventions for diarrhea).

**FIGURE 18. LIVES SAVED BY SCALING UP NUTRITION AND WASH INTERVENTIONS**



**Source:** IIPS (2016).

**Note:** IFA = Iron and folic acid; MAM = moderate acute malnutrition; SAM = severe acute malnutrition; ORS = oral rehydration salts.

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## CHAPTER 3. FINANCING ODISHA'S TRANSFORMATIVE AGENDA FOR NUTRITION

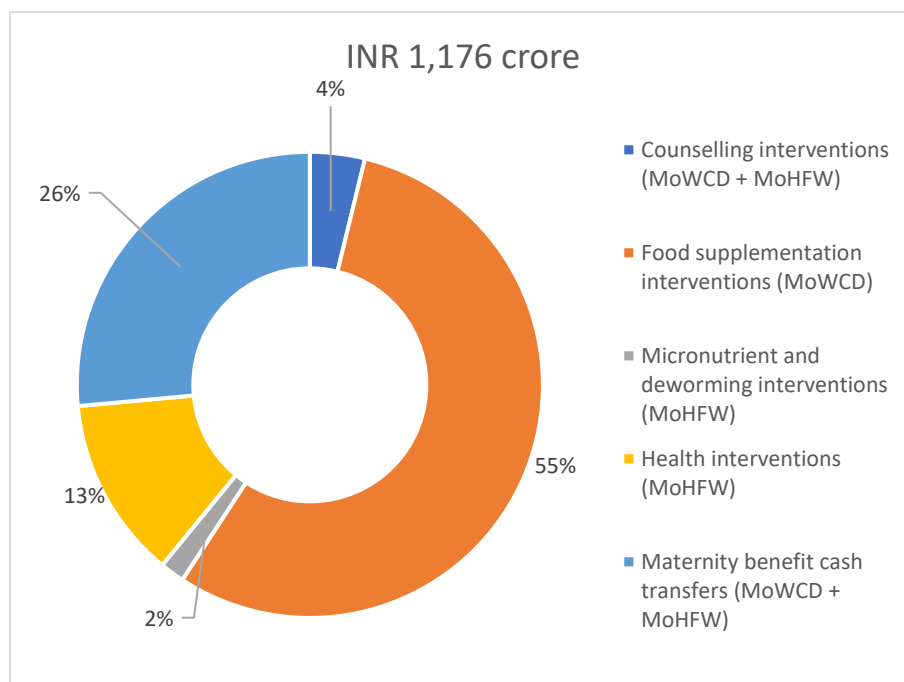
Between 2006 and 2016, Odisha has invested significant resources into the delivery of nutrition interventions at scale (Kohli et al. 2017). Factors that have contributed to the scaling up of nutrition interventions include financing at the national and state levels, leadership across sectors, and state innovations in service delivery interventions. For state-specific targets to be achieved in Odisha by 2025, however, continued improvements are required across all WHA indicators (ibid). Resources thus need to be prioritized and synergized across sectors to accomplish nutrition targets in Odisha in the coming decade.

### 3.1 ANNUAL COST OF DELIVERING NUTRITION-SPECIFIC INTERVENTIONS IN ODISHA AT SCALE

Integrated Child Development Services (ICDS) and the National Health Mission (NHM) are delivering nutrition-specific interventions which include IFA supplementation during pregnancy, breastfeeding promotion, complementary feeding education, vitamin A supplementation in early childhood, and food supplementation. In order to make cost estimates, Kapur et al. (2020) divided these interventions into five categories vis-à-vis the ministries that deliver them:

1. Counselling interventions: these include counselling during pregnancy, counselling for breastfeeding, complementary feeding and as well as water, hygiene and sanitation practices; these are delivered by the Ministry of Women and Child Development (MoWCD) and the Ministry of Health and Family Welfare (MoHFW).
2. Food supplementation interventions: these are delivered by the MoWCD and include food supplements for out-of-school adolescent girls, pregnant and lactating women, children (6–36 months) and malnourished children (6–36 months).
3. Micronutrient and deworming interventions: these are delivered by the MoHFW and include IFA and deworming for adolescent girls and pregnant women, calcium for lactating women, and IFA, deworming and vitamin A for children.
4. Health interventions: these are delivered by the MoHFW and include insecticide-treated bednets, immunization, ORS and zinc during diarrhea for children, and facility-based treatment of children with SAM.
5. Maternity benefit cash transfers under the Janani Suraksha Yojana (JSY), Pradhan Mantri Matru Vandana Yojana (PMMVY); these are delivered by the MoWCD and the MoHFW.

FIGURE 19. TOTAL ANNUAL COST OF DELIVERING NUTRITION INTERVENTIONS AT SCALE, BY PROGRAM AND MINISTRY



**Source:** Kapur et al. 2020

**Note:** MoWCD = Ministry of Women and Child Development; MoHFW = Ministry of Health and Family Welfare.

Kapur and colleagues (2020) calculated the cost of delivering nutrition-specific interventions at scale in Odisha updating the costing methods used by Chakrabarti et al (2017) (Box 5). Estimates show that at 2019 target population levels, it would cost approximately INR 1,176 crores (US\$ 11.76 billion) annually to deliver the core set of nutrition interventions in Odisha (Figure 19). Based on the five categories of nutrition interventions, it is estimated that INR 45 crores (US\$ 450 million) is required to deliver counselling interventions; INR 651 crores (US\$ 6.51 billion) is required to deliver food supplementation interventions under the MoWCD; INR 20 crores (US\$ 200 million) is required to deliver micronutrients at scale, making them the lowest-cost interventions in this set; INR 149 crores (US\$ 1.49 billion) is required to deliver health interventions; INR 311 crores (US\$ 3.11 billion) is required to deliver maternity benefits (Kapur et al. 2020). While PMMVY only covers first born children, in Odisha under the Mamata Scheme, two live births are covered. It would cost an additional INR 4,140 crores (US\$ 41.4 billion) to provide PMMVY benefits for second-born children.

**BOX 5. CALCULATING THE COSTS OF DELIVERING NUTRITION-SPECIFIC INTERVENTIONS AT SCALE**

Kapur and colleagues (2020) used the following steps to calculate the cost of providing interventions at full coverage:

- Each intervention to be costed was described.
- The target population of each intervention was defined.
- The size of the target population in 2019 for each intervention was estimated by using the natural growth rate to update population figures year-on-year. The birth rates from Sample Registration System (SRS) 2019 were used to estimate the number of births, to estimate the number of pregnant women.
- The platform or channel(s) through which each intervention or activity would be delivered was specified.
- Local unit cost data for the nutrition interventions was obtained from relevant sources within India or from comparable programmatic settings in South Asia. Unit costs, however, are not uniform across the state. A standard pan-India unit cost was applied for interventions for which state-wise data was unavailable. The unit costs of health interventions were inflated using the consumer price index. For cash transfers and food supplementation, unit costs from the Government of India available for 2017 were used.
- For each intervention, the size of the target population was multiplied by the unit cost to arrive at a total cost of implementing each intervention at full coverage; necessary adjustments were performed for inflation. The researchers defined “full coverage” as 100 percent of the target population; an exception was the case of treatment of severe acute malnutrition, which was set to 80 percent.

**Source:** Kapur et al. (2020).

### 3.2 EXPENDITURE ADEQUACY AND SUSTAINABILITY OF DELIVERING NUTRITION-SPECIFIC INTERVENTIONS IN ODISHA AT SCALE

Looking at the expenditure adequacy, Shrivastava et al. (2017) have highlighted two important findings for Odisha. First, in the aftermath of fiscal devolution (2015/2016) there was an initial reduction in the budget allocation for nutrition interventions from INR 1,180 crores to 960 crores; the trend has reversed, however, with Odisha investing a greater share of resources (INR 1,130 crores) to bridge funding gaps in 2016/2017. Second, despite an increase in the total budget allocation for nutrition, there is considerable inadequacy in budget outlays against our cost estimates for several interventions in 2017. Apart from allocations for supplementary food under ICDS, cash transfers under the Mamata Scheme, the PMMVY, and the JSY combined, and bednets provided by Odisha's Mo Masari malaria prevention program, budget outlays fell short of the amounts required to deliver interventions at scale. Financing gaps are particularly striking for all micronutrient and deworming interventions, counselling during pregnancy and lactation, and facility-based treatment of SAM (Chakrabarti, Mathews, Menon 2018).

Despite generally high levels of intervention coverage in Odisha, substantial financial investments are still necessary to ensure at-scale delivery of the full package of essential nutrition interventions across the continuum of care. As seen in Section 3.1, Odisha needs to allocate INR 1,176 crores per year to cover the full set of nutrition interventions (ibid).

For this, higher budget allocations will have to be made available for nutrition interventions delivered by the health sector (NHM) to address gaps in the delivery of key micronutrient and deworming interventions including IFA and deworming for adolescent girls and pregnant women, calcium for lactating women, and IFA, deworming and vitamin A for children, and health interventions including insecticide-treated bednets, immunization, ORS and zinc during diarrhea for children, and facility-based treatment of children with SAM. Costs required to deliver micronutrient and health interventions at

scale (INR 169 crores per year) are substantially less than food interventions (INR 651 crores per year) or cash transfers (INR 4,140 crores per year). It will also be crucial to explore options for scaling up interpersonal counselling and home visits to support Infant and Young Child Feeding, as coverage is lower than optimal. According to the calculations above, it would cost approximately INR 45 crores per year to deliver counselling interventions at scale. Additional financing will be needed for state-specific formative research, mass media campaigns, or use of other behavior change platforms such as self-help groups.

It will be essential to allocate adequate funds for full-scale coverage of malnutrition treatment interventions in densely populated districts with high rates of severe wasting. Odisha will have to ensure continued budget outlays for cash transfers and for bednets in malaria-endemic areas. The new unit cost norms for ICDS SNP have substantial implications for nutrition financing. To ensure that the delivery of essential nutrition interventions across the continuum of care is at scale and sustainable, it is also critical to routinely publish state-level expenditure data for all nutrition interventions in order to allow for timely assessment of budget adequacy (ibid).

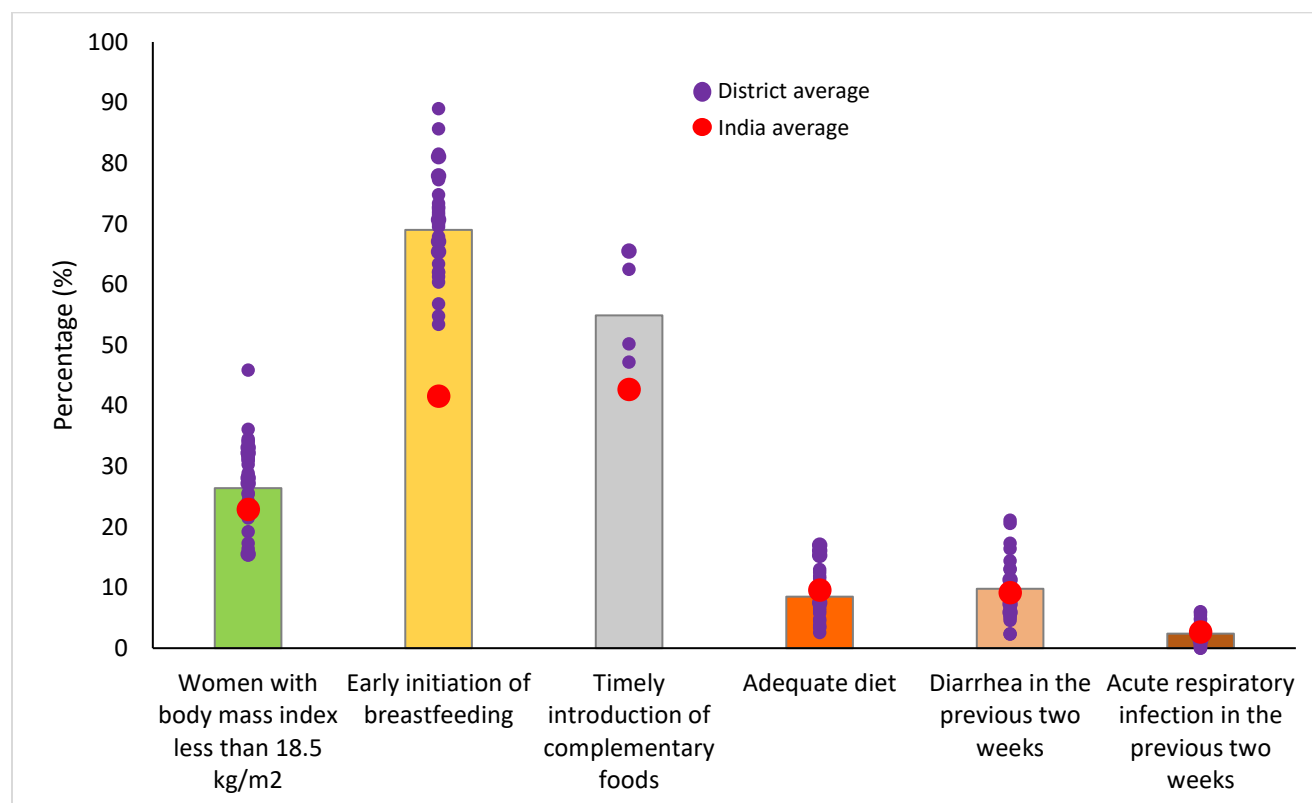
It is encouraging to note that critical gaps in the delivery of essential nutrition interventions can be closed at a relatively low additional cost (for micronutrient interventions and interpersonal counselling for IYCF). The additional costs of scaling up are not very high because Odisha is already spending on, and ensuring coverage of, the high-cost interventions, including supplementary food in ICDS and conditional cash transfers. The new fiscal devolution architecture in India provides Odisha with an opportunity to choose to invest in interventions that are not currently being delivered at scale while not losing focus on sustaining both the scale and quality of interventions that are already reaching a majority of the population. Such investments are crucial to speeding up Odisha's efforts to scale up critical interventions, to support undernutrition reduction, and to achieve both WHA and NNM targets in a sustainable manner.

## CHAPTER 4. ACHIEVING AND SUSTAINING NUTRITION TARGETS IN ODISHA

Between 2006 and 2016, Odisha made great strides in reducing undernutrition. Aligning with the global WHA targets, the state has now set its 2025 targets. To accelerate progress on nutrition in the next few years, it is imperative to examine the types of interventions in which the Government of Odisha needs to invest and to assess how much more can be gained by investing in nutrition-specific interventions along with strengthening nutrition-sensitive interventions.

Odisha's progress in the coverage of health and nutrition interventions in the last decade is promising; it demonstrates the role that investments in public health and nutrition programs have played, especially in reaching the poor. To make this progress sustainable, it is critical to address remaining gaps in immediate and underlying determinants of nutrition, particularly the IYCF (Figure 20), women's education, age at marriage, and household assets (Figure 21); in addition, it is crucial to focus on interdistrict variability to close gaps across the state. For Odisha to continue to make strides in achieving nutrition goals over the next five years, a comprehensive multisectoral approach with a clear vision for sectoral responsibilities is required.

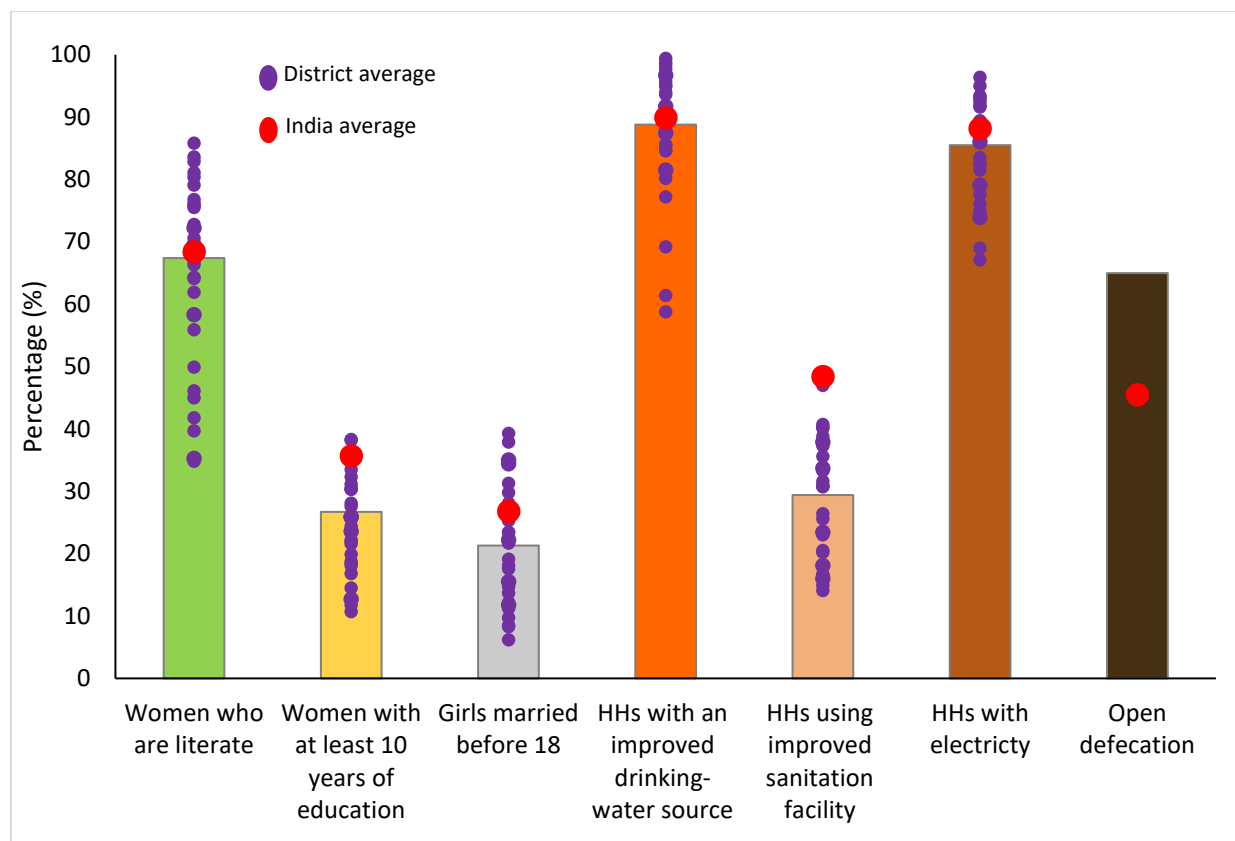
**FIGURE 20. LEVEL OF IMMEDIATE DETERMINANTS OF NUTRITION IN ODISHA IN 2016**



**Source:** IIPS (2016).

**Note:** Bars represent state averages, red dots represent national averages, and blue dots represent district averages.

FIGURE 21. LEVEL OF UNDERLYING DETERMINANTS OF NUTRITION IN ODISHA IN 2016



**Source:** IIPS (2016).

**Note:** Bars represent state averages, red dots represent national averages, and blue dots represent district averages; HH = households.

#### 4.1 ACTIONS REQUIRED FOR ACHIEVING PROGRESS ON REDUCTION OF STUNTING

The prevalence of stunting in Odisha has declined from 45 percent in 2006 to 34.1 percent in 2016. According to the LiST modeling, Odisha is well placed for achieving WHA targets, provided there is an increase in the coverage of *all* the essential health and nutrition interventions to 100 percent with quality. The state is set to achieve its stunting reduction target, but it needs to ensure a special focus on complementary feeding and sanitation.

To achieve sustained reductions in the prevalence of stunting, actions are required in the areas of complementary feeding, food security, social protection, and water, sanitation, and hygiene; along with these, women's low BMI, women's education, and marriage before the age of 18 are areas that need special focus. This calls for multisectoral actions involving multiple government departments. Examples of possible collaborations between departments include Women and Child Development (DWCD) and Health and Family Welfare (DHFV) together facilitating actions for improved complementary feeding through, respectively, food supplementation and counselling; the Rural Development Department could, at the same time, be working on improved access to water and sanitation, while collaboration with the ST & SC Development, Minorities & Backward Classes Welfare Department could facilitate the reach of these programs to the tribal areas. The Food Supply and Consumer Welfare Department and the

Department of Agriculture & Farmers' Empowerment could play a critical role in ensuring food security and dietary diversity through fulfilling their sectoral roles (Table 2).

**TABLE 2. ACTIONS REQUIRED FOR REDUCTION OF STUNTING**

Actions required	Sectoral responsibilities
<b>Improved complementary feeding</b>	<ul style="list-style-type: none"> <li>■ Department of Women and Child Development (DWCD): counselling, food supplementation/cash transfers</li> <li>■ Department of Health and Family Welfare (DHFV): counselling</li> <li>■ Department of Food Supply and Consumer Welfare: improve food security</li> </ul>
<b>Improved water and sanitation</b>	<ul style="list-style-type: none"> <li>■ Rural Development Department:               <ul style="list-style-type: none"> <li>- rural sanitation program</li> <li>- Swachh Bharat Abhiyan</li> <li>- Accelerated Rural Water Supply Programme</li> </ul> </li> <li>■ Collaborate with the ST &amp; SC Development, Minorities &amp; Backward Classes Welfare Department to reach the tribal areas</li> </ul>
<b>Improved food security</b>	<ul style="list-style-type: none"> <li>■ Department of Food Supply and Consumer Welfare               <ul style="list-style-type: none"> <li>- improve food security through continued innovations in the Public Distribution System and diversifying the food basket</li> </ul> </li> <li>■ Department of Agriculture &amp; Farmers' Empowerment               <ul style="list-style-type: none"> <li>- continue to invest in improving and diversifying agricultural production</li> </ul> </li> <li>■ Collaborate with the ST &amp; SC Development, Minorities &amp; Backward Classes Welfare Department to reach tribal populations</li> <li>■ Department of Education               <ul style="list-style-type: none"> <li>- Mid-Day Meal Scheme</li> </ul> </li> </ul>
<b>Social protection</b>	<ul style="list-style-type: none"> <li>■ ST &amp; SC Development, Minorities &amp; Backward Classes Welfare Department               <ul style="list-style-type: none"> <li>- Odisha Tribal Empowerment and Livelihoods Programme (OTELP)</li> </ul> </li> </ul>

## 4.2 ACTIONS REQUIRED FOR ACHIEVING PROGRESS ON REDUCTION OF WASTING

Wasting needs special attention because its prevalence in Odisha increased from 19.6 percent in 2006 to 20.4 percent in 2016, with severe wasting rising from 5.2 percent to 6.4 percent during this period. The WHA target for 2025 is the reduction and maintenance of childhood wasting at less than 5 percent. The state is unlikely to meet this target; it is therefore vital to pay special attention to the identification and treatment of SAM and MAM. Scaling up a combination of interventions to treat SAM and MAM could help to save more lives than would the scaling up of individual interventions.

Although the key interventions pertaining to SAM and MAM identification and treatment fall under the purview of the DWCD and the DHFW, actions required to prevent wasting require multisectoral interventions. Such interventions require a combination of sectoral actions from various departments including Rural Development, ST & SC Development, Minorities & Backward Classes Welfare, Food Supply and Consumer Welfare, and Agriculture and Farmers' Empowerment (Table 3).

**TABLE 3. ACTIONS REQUIRED FOR REDUCTION IN WASTING**

Actions required	Sectoral responsibilities
<b>Improved methods of linking to identify and treat SAM</b>	<ul style="list-style-type: none"> <li>■ Department of Health and Family Welfare (DHFW)               <ul style="list-style-type: none"> <li>- assess how SAM referrals are tracked from the AWC to the Primary Health Centre (PHC) and how the follow-up process ensures facility-based and community-based treatment of SAM;</li> <li>- to prevent relapse, establish mechanisms, in collaboration with the DWCD, for community-based monitoring of children after discharge from the Nutrition Rehabilitation Centre (NRC);</li> </ul> </li> <li>■ Department of Women and Child Development (DWCD)               <ul style="list-style-type: none"> <li>- continue to identify severely underweight children at periodic growth monitoring sessions;</li> <li>- continue to provide Take Home Ration (THR) to severely underweight children who do not require facility-based treatment;</li> <li>- provide counselling to ensure optimal child feeding practices;</li> </ul> </li> <li>■ Collaborate with the ST &amp; SC Development, Minorities &amp; Backward Classes Welfare Department to ensure reach in the tribal areas</li> </ul>
<b>Improved complementary feeding</b>	<ul style="list-style-type: none"> <li>■ DWCD: counselling, food supplementation/cash transfers</li> <li>■ DHFW: counselling</li> <li>■ Department of Food Supply and Consumer Welfare: improve food security</li> </ul>
<b>Improved water and sanitation</b>	<ul style="list-style-type: none"> <li>■ Rural Development Department               <ul style="list-style-type: none"> <li>- rural sanitation program</li> <li>- Swachh Bharat Abhiyan</li> <li>- Accelerated Rural Water Supply Programme</li> </ul> </li> <li>■ Collaborate with the ST &amp; SC Development, Minorities &amp; Backward Classes Welfare Department to reach tribal areas</li> </ul>
<b>Improved food security</b>	<ul style="list-style-type: none"> <li>■ Department of Food Supply and Consumer Welfare               <ul style="list-style-type: none"> <li>- improve food security through continued innovations in PDS and diversifying food basket</li> </ul> </li> <li>■ Department of Agriculture and Farmers' Empowerment               <ul style="list-style-type: none"> <li>- continue to invest in improving and diversifying agriculture production</li> </ul> </li> <li>■ Collaborate with the ST &amp; SC Development, Minorities &amp; Backward Classes Welfare Department to reach tribal populations</li> <li>■ Department of Education</li> </ul>

Actions required	Sectoral responsibilities
	<ul style="list-style-type: none"> <li>- Mid-Day Meal Scheme</li> </ul>
<b>Social protection</b>	<ul style="list-style-type: none"> <li>■ ST &amp; SC Development, Minorities &amp; Backward Classes Welfare Department</li> <li>- Odisha Tribal Empowerment and Livelihoods Programme (OTELP)</li> </ul>

### 4.3 ACTIONS REQUIRED FOR ACHIEVING PROGRESS ON REDUCTION OF ANEMIA

In 2016, the prevalence of anemia in women of reproductive age was 51 percent and, at the current rate of progress, the state is unlikely to achieve its target percentage. The state needs to intensify its efforts to improve IFA consumption during preconception through supplementation and/or fortification and to ensure protection against malaria. This requires action by the Department of Health and Family Welfare as well as the Departments of Food Supply and Consumer Welfare, and Agriculture and Farmers' Empowerment. A key partner in ensuring reach and coverage is the ST & SC Development, Minorities & Backward Classes Welfare Department (Table 4).

**TABLE 4. ACTIONS REQUIRED FOR REDUCTION OF ANEMIA**

Actions required	Sectoral responsibilities
<b>Ensure IFA supplementation</b>	<ul style="list-style-type: none"> <li>■ Department of Health and Family Welfare               <ul style="list-style-type: none"> <li>- assess implementation gaps in the National Iron Plus Initiative in the state;</li> <li>- include monitoring indicators in the Monitoring &amp; Information System (MIS) to track availability, provision, and consumption of IFA;</li> <li>- test strategies for treating moderate anemia;</li> <li>- control infections and malaria;</li> </ul> </li> <li>■ Department of Women and Child Development (DWCD)               <ul style="list-style-type: none"> <li>- collaborate with the Department of Health and Family Welfare (DHFV) for iron supplementation to reach out-of-school girls;</li> </ul> </li> <li>■ Department of Education               <ul style="list-style-type: none"> <li>- iron supplementation for in-school girls;</li> </ul> </li> <li>■ Collaborate with Scheduled Castes and Scheduled Tribes via the SC &amp; ST Development, Minorities &amp; Backward Classes Welfare Department to ensure reach in the tribal areas</li> </ul>
<b>Improve food security</b>	<ul style="list-style-type: none"> <li>■ Department of Food Supply and Consumer Welfare               <ul style="list-style-type: none"> <li>- improve food security through continued innovations in the Public Distribution System (PDS) and diversifying food basket</li> </ul> </li> <li>■ Department of Agriculture and Farmers' Empowerment               <ul style="list-style-type: none"> <li>- continue to invest in improving and diversifying agriculture production through the Watershed Development Mission, National Horticulture Mission, State Potato Mission, National Mission on Oilseeds and Oil Palm;</li> </ul> </li> </ul>

Actions required	Sectoral responsibilities
	<ul style="list-style-type: none"> <li>■ Collaborate with the ST &amp; SC Development, Minorities &amp; Backward Classes Welfare Department to ensure reach in tribal areas.</li> </ul>

Overall, the state needs to focus on closing the coverage, equity, and quality gaps to achieve and maintain improvements in nutrition; furthermore, a strong multisectoral approach is needed whereby each sector fulfills its responsibilities collaboratively. There are several examples of state- and non-governmental organizations (NGOs) implemented programs and pilots respectively, spanning cash transfers, counselling, WASH, nutri-gardens, and social accountability in Odisha, whose goal is to improve health and nutrition in the state. What is learned from these pilots can be used to strengthen program designs; programs can then be implemented at scale, with built-in mechanisms for monitoring which will allow the necessary adjustments to be made during implementation.

The Government of Odisha's Mamata Scheme was found to encourage use of health services and had positive impacts on household food security (Box 6). A sanitation pilot that included toilet construction and piped-water connections was developed by Gram Vikas, an NGO, and implemented in Ganjam and Gajapati Districts, which increased toilet usage and reduced soil-transmitted helminth infections, and highlighted the importance of community involvement and piped water connection (Box 7). A review of a pilot program, which offered day-care services for children between six months and three years of age in the marginalised pockets of five districts in Southern Odisha, showed that reviewing and streamlining the aspects of space, facilities, and human resources are important prior to scaling up the model through the government systems (Box 8). A pilot program implemented by Ekjut, a civil society organization, showed that having a worker dedicated to conducting home visits and participatory women's group meetings could improve dietary diversity among pregnant women and children and increase handwashing and infant survival (Box 9). Azim Premji Philanthropic Initiatives supported implementation of a pilot focused on nutri-gardens along with participatory learning and action to improve diet diversity among the community members (Box 10). The importance of social audit programs in sensitizing communities to their rights and entitlements and for improving service delivery was demonstrated in a pilot implemented by an Odisha-based NGO, Society for Promoting Education and Rural Development (Box 11). More recently, insights from the policy analysis and the frontline health worker surveys in Odisha in the context of the COVID-19 pandemic reaffirm the state's commitment to nutrition (Box 12).

### BOX 6. MAMATA SCHEME: IMPACT OF CONDITIONAL CASH TRANSFER ON THE UPTAKE OF NUTRITION INTERVENTIONS AND HOUSEHOLD FOOD SECURITY

The Women and Child Department of the Government of Odisha launched the Maternity Entitlement (“Mamata”) Scheme in September 2011 for all women over the age of 19 with up to two live births, provided they meet certain conditions. The intent of this scheme is to provide partial wage compensation to pregnant and nursing mothers, to improve utilization of health services, and to improve infant and young child feeding practices. This conditional cash transfer (CCT) scheme transfers a total of INR 5,000 (approximately US\$ 75) directly to the beneficiary’s bank account in four instalments, upon fulfilment of certain conditions; the cash is payable at the end of the second trimester and at 3, 6, and 9 months after delivery.

A [study](#) (Raghunathan et al. 2017) was conducted by IFPRI researchers in three select districts to examine the effect of the Mamata Scheme on eight outcomes: 1) pregnancy registration, 2) receipt of antenatal care (ANC) services, 3) receipt of iron and folic acid (IFA) tablets, 4) exposure to counselling during pregnancy, 5) exposure to postnatal counselling, 6) exclusive breastfeeding, 7) full immunization, and 8) household food security.

Key findings:

- Nearly 60 percent of the mothers in the study were enrolled in the Mamata Scheme and 90 percent had received money; the proportion of women reporting receipt of money, however, varied by district.
- While the average amount received appeared to increase with child age, the transfers were smaller than expected from the specifications of the scheme. It is plausible that payments to beneficiaries were delayed or that incorrect amounts of money had been deposited.
- The Mamata Scheme increased the likelihood of pregnancy registration and of the receipt of antenatal services and IFA tablets from government frontline health workers.
- The receipt of payments from the Mamata Scheme was associated with:
  - a 5–percentage point (pp) increase in the likelihood of receiving antenatal services,
  - a 10–pp increase in the likelihood of receiving IFA tablets, and
  - a 6–pp reduction in the likelihood of there being no food in the house.
- The receipt of payments was not associated with the practice of exclusive breastfeeding.

Implications:

- As shown by the authors, the CCT appears to have large and positive impacts on household food security while simultaneously encouraging adherence to conditions related to health and nutrition service use.
- To be effective, the CCT programs need to take the local context and constraints into consideration along with the size and regularity of payments.
- For CCT to have an impact, it must be feasible for households or individuals to meet the conditions, which requires the availability of, and access to, adequate services.
- Behavior change communication is critical to achieving and sustaining impacts on behaviors linked to the CCTs.

**Source:** Raghunathan et al. (2017).

**BOX 7. LONG-TERM EFFECTIVENESS OF SANITATION INTERVENTIONS ON CHILD NUTRITIONAL STATUS: A COHORT STUDY IN RURAL ODISHA**

Globally, over a billion people practice open defecation and more than half of those live in India. Open defecation is widespread in rural areas where few households have piped water connections. The Government of India has implemented large-scale sanitation campaigns focused on toilet construction; evaluations of these programmes, however, have shown limited impact on child health outcomes.

Nearly two-thirds of Odisha's population practices open defecation. Odisha has adopted the national sanitation program which focuses on construction and use of toilets and on community mobilization. A study published recently in the *International Journal of Epidemiology* assessed—at least five years after its completion—the effectiveness of a community-level combined household piped water and sanitation intervention in Odisha. This study found that the intervention was associated with a reduction in soil-transmitted helminth infections and improvements in height-for-age.

The intervention was entitled Movement and Action Network for the Transformation of Rural Areas (MANTRA), and was developed by Gram Vikas, an Indian non-governmental organization (NGO). It included: (i) a household pour-flush toilet with dual soak-away pits; (ii) an attached bathing room; and (iii) household piped water connections in the toilet, bathing room, and kitchen. It was implemented in Ganjam and Gajapati Districts. For a village to be eligible to participate, all the households in the village had to commit to constructing their own toilet and bathroom; the NGO then assisted in the installation of a piped water connection to every household. For the matched study, 45 intervention villages were randomly selected from a list of those where MANTRA intervention had been completed at least five years earlier; these were then matched to 45 control villages. In each village, 40 households were recruited; they were assessed for the incidence of diarrhea, acute respiratory infection (ARI), and soil-transmitted helminth infection, and also underwent anthropometric assessments. Results showed that the intervention villages, compared to control villages, had five times greater access to toilets (85 percent as compared to 18 percent), higher toilet usage (74 percent versus 13 percent), and higher child faeces disposal (35 percent versus 6 percent). Although there was no evidence supporting the impact of the intervention on acute conditions including the high incidence of diarrhea and ARI, the intervention was associated with a reduction in soil-transmitted helminth infections and improvements in height-for-age, which may require longer-term reductions in faecal exposure.

Previous investigations have indicated that increasing toilet use, even with high coverage, is difficult in rural India. The current study provides evidence that substantial decreases in open defecation can result from the combined community-level implementation of household piped water and sanitation intervention wherein a piped water connection is contingent on community sanitation coverage.

**Source:** Reese et al. (2019).

### BOX 8. A COMMUNITY-BASED NUTRITION INITIATIVE: PILOT CRÈCHE PROGRAM

Azim Premji Philanthropic Initiatives (APPI), in collaboration with the Government of Odisha and the Public Health Resource Network (PHRN), is implementing a community-based nutrition initiative in the form of a pilot crèche program which will offer day-care services for children between six months and three years of age. These crèches, based in the marginalised pockets of five districts in Southern Odisha (Rayagada, Kalahandi, Koraput, Malkangiri and Nabrangpur), are primarily aimed at providing a safe and secure environment for the overall growth and development of children through supervised feeding, regular growth monitoring, and early stimulation.

There are three models of crèches through which the program is implemented across the five districts:

1. Anganwadi-cum-crèche, where crèches are co-located with Anganwadi Centres (AWCs);
2. Crèches in villages with Particularly Vulnerable Tribal Group (PVTG) communities, which serve the most vulnerable population;
3. Crèches in remote villages/blocks with non-PVTG communities.

Oxford Policy Management (OPM) conducted a process evaluation of 30 crèches in Rayagada and Kalahandi that had been set up in late 2017 and were fully operational. Some of the key findings from the first of the two rounds of this iterative process evaluation are:

- **Crèche establishment and infrastructure:** Community engagement, a critical element in the crèche set-up process, was time intense, with frontline workers and community gatekeepers facilitating the process. The set criteria for Crèche Worker (CW) selection were relaxed and community consensus was given preference; this can lead to the selection of CWs who are unsuitable for the position. Most crèches did not have toilets and the space for the crèche was insufficient. The CW cooked in the same area where the children played, which made the area unsafe for children.
- **Food provision:** Crèche manual guidelines of providing two snacks and one hot cooked dish were being followed; severely malnourished children were being given extra meals and additional oil.
- **Early Childhood Care and Development (ECCD):** ECCD activities were limited to playing with the (limited) available toys and there was a paucity of open space for playing. CWs were instructed on ECCD milestones during the induction training, which provided a very elementary understanding of the topic. ECCD-specific training had not yet been introduced.
- **Growth monitoring and hygiene:** Because of limited or no education, CWs are currently unable to perform any functions related to growth measurement and recording; they rely on block coordinators and AWWs for these. The community has limited awareness.
- **Hygiene:** Handwashing stations and drinking water filters had been installed. Lack of regular water supply and functional toilets, however, continues to be a problem.
- **Crèche Worker motivation:** The main drivers of CW motivation include benefits to the community, income, and the possibility for workers to manage their own childcare responsibilities while being employed as a Crèche Worker.
- **Strategies for mainstreaming crèches:** To mainstream crèches as an integral component of the larger public service infrastructure under government administration, the issuing of key top-down guidelines from the state to the block and village levels is necessary. This will standardize certain crucial components of the program and establish a clear framework for monitoring and supervision.

Overall, the study identified important implementation processes that need to be considered at the planning stage of establishing crèches; these include the aspects of space, facilities, and human resource capabilities that could potentially influence the implementation and sustainability of the models. A rigorous assessment of the models will help determine the critical elements that need to be in place prior to scaling up the model through governmental or non-governmental entities.

**Source:** Jhunjunwala et al. (2019).

**Note:** The pilot crèche program was supported by the Azim Premji Philanthropic Initiatives.

### Box 9. THE “CARING” TRIAL: EXPLORING THE EFFECT OF PARTICIPATORY WOMEN'S GROUPS AND COUNSELLING THROUGH HOME VISITS, ON CHILDREN'S LINEAR GROWTH IN RURAL EASTERN INDIA

In India, 38 percent of children are too short for their age. Evidence suggests that scaling up a set of nutrition interventions to 90 percent coverage has the potential to reduce stunting by 20 percent. India's Integrated Child Development Services (ICDS) and the National Health Mission (NHM) together deliver these evidence-based interventions and seek to increase their coverage to promote growth in the first 1,000 days of life.

The Government of India, in its 12th National Plan (2012–2017), has proposed a new cadre of community-based workers—along with the Anganwadi Worker, who is the ICDS' main cadre— to promote growth among children under 3 years in 200 districts that have a high burden of undernutrition.

In a [study](#) published in *The Lancet Global Health* (Nair et al. 2017), a group of researchers determined whether involving a new worker to conduct home visits and participatory women's group meetings could improve children's linear growth. A cluster-randomized controlled trial was conducted in West Singhbhum (Jharkhand) and Kendujhar (Odisha). To approximate the catchment area of an Anganwadi Worker, 120 geographical clusters were identified in each district, each of which had a population of nearly 1,000 people. Within each district, 60 clusters were randomly assigned to the control arm and 60 to an intervention arm. Pregnant women and their children were recruited into the study. The primary outcome of the study was children's mean length-for-age z-scores at 18 months; secondary outcomes included wasting and underweight, birthweight, growth velocity, feeding, hygiene, and care practices.

Ekjut, a civil society organisation, led the intervention for the trial. In the intervention arm, a cadre of 60 female community-based workers, referred to as Su-Poshan Karyakartas (SPKs), was recruited. Each SPK covered 1,000 people within a village in which she herself lived; she was responsible for counselling and facilitating two to three participatory meetings per month with local women's groups, with meetings following a four-phase learning and action cycle. Each SPK was expected to conduct one home visit to every third-trimester pregnant woman in her catchment area to give counselling on maternal nutrition; she was also expected to conduct monthly home visits to all children below two years of age in order to counsel the mother on growth promotion.

Using an intent-to-treat analysis approach, it was found that:

- The intervention did not have an effect on maternal and child anthropometric outcomes other than child underweight, and it did not affect morbidity or care-seeking practices;
- The intervention did, however, improve dietary diversity among pregnant women and children (measured at 12 months and 18 months of age) and it increased handwashing and infant survival.

On the question of introducing a second worker in 200 districts that have a high burden of undernutrition, this trial suggests that it is feasible and could affect dietary diversity, handwashing, and infant survival; a substantial effect would not, however, be expected on maternal or child anthropometry in the short term.

**Source:** Nair et al. (2017).

**BOX 10. OPPORTUNITIES FOR LINKING AGRICULTURE AND NUTRITION: THE LIVING FARMS INITIATIVE**

Living Farms, with support from Azim Premji Philanthropic Initiatives (APPI), is implementing a dietary diversity program in eight blocks of the two severely malnutrition-affected districts in Southern Odisha (Rayagada, Kalahandi). The primary objectives of the program are:

- To create awareness and knowledge around nutrition-specific and sensitive issues using 17 specially developed modules called Participatory Learning and Action—Linking Agriculture and Natural Resource for Nutrition (PLA-LANN); this is a process whereby the community comes to understand the underlying causes of their problems, then plans and implements strategies using locally available resources and, finally, evaluates its own actions.
- To ensure availability of diverse food groups throughout the year by promoting Nutri-gardens (NG) in back yards: A model Nutri-garden consists of seven beds (linked to the seven days of the week) in order that the community can more easily understand the importance of diversified food groups.
- To ensure the translation of knowledge into the practice consumption of food groups by personal counselling through individual home visits.

Valid International conducted a qualitative study, with some of the key findings being that:

- Through this project, 100,000 households were covered during the span of three years;
- 82,000 Nutri-gardens were established in households and 13 different varieties of local vegetable seeds were distributed;
- The PLA—LANN approach seemed to be effective in contributing to a balanced and nutritional diet as well as in inducing positive behavior changes leading to a better nutritional and health status;
- Four major behavior changes were identified as: increased handwashing, greater use of mosquito nets, wider dietary diversity, and increased use of shoes;
- Living Farms (LF) was able to increase many people's interest in starting a Nutri-garden; even without LF support, a number of people were interested to the point of increasing the number of seed beds;
- It was found that changing agricultural priorities and practices takes time; LF's Nutri-garden activities could be considered an initial success and an excellent strategy toward the objective of promoting dietary diversity; the community was found to have gained in various ways, including:
  - o Consumption of the vegetables produced in their Nutri-garden;
  - o Reduction of household food costs and increased income from selling extra produce;
  - o Sharing of vegetables with other people, mainly pregnant and lactating women (a point mentioned by adolescents);
  - o Formation of a large pool of community cadres in the area who were helping sustain the activities.

This program is now in scale-up mode because the Odisha Livelihoods Mission, under the Panchayati Raj and Drinking Water Department, has adopted this model and has initiated the process to implement it across all 30 districts of Odisha by establishing a dedicated nutrition program vertical.

**Note:** This program was supported by the Azim Premji Philanthropic Initiatives.

### BOX 11. ROLE OF SOCIAL AUDIT IN IMPROVING DELIVERY OF NUTRITION SERVICES: APPI/SPREAD COLLECTIVE ACTION FOR NUTRITION SOCIAL AUDIT PROGRAMME ODISHA, INDIA

Social accountability approaches, including social audits, are demand-driven alternatives to improving delivery of state nutrition-related services. Between August 2016 and July 2019, the Odisha-based NGO, Society for Promoting Education and Rural Development (SPREAD), implemented a Collective Action for Nutrition (CAN) Social Audit Programme with support from Azim Premji Philanthropic Initiatives (APPI). The goal of the social audit process was to sensitize communities to their rights and entitlements under the National Food Security Act (NFSA). The intervention had three phases: pre-social audit, social audit, and post-social audit. During the pre-social audit phase, a social audit calendar was developed, community volunteers were recruited, and social audit teams were set up. During the intensive seven-day social audit process a series of meetings and activities took place, including initial village meetings, focus group discussions with local council members, field surveys, data collection with NFSA rights holders, and verification of registers and documentation; this was followed by data compilation and report writing. The process culminated in a public hearing to share findings and the grievances that were raised as part of the data collection. During the post-social audit phase, the social audit team followed up on NFSA grievance redressal with the relevant government officials.

The Institute of Development Studies (IDS), UK, in partnership with Development Corner Consulting (DCOR), India, led the evaluation of the intervention to: 1) determine the short-term impact of the SPREAD model of social audits on improving the delivery of nutrition services and entitlements, and the uptake of these services; and 2) understand how the social audit process leads to changes in knowledge, behavior, and practice at the household level, and to community-level changes and outcomes.

The evaluation findings include the following:

- **Awareness of social audit:** There was a fairly good level of awareness about social audit among primary caregivers (59 percent) despite a 40 to 80 percent variation in awareness level across districts. Participation levels in Palli Sabha and Gram Sabha were low (below 25 percent) among both men and women, mainly due to lack of time; more than a third of men reported being away from the village during the meetings.
- **Awareness of entitlements:** Between the early and late Gram Panchayats (GPs)—as defined by the length of time between the social audit and the end line data collection—there were differences in the improvements in the caregivers' and pregnant women's knowledge of services under the Integrated Child Development Services (ICDS) scheme, in their awareness and knowledge of the Maternity Entitlement (Mamata) Scheme, and in their knowledge of the Targeted Public Distribution System (TPDS).
- **Access, uptake, and satisfaction with NFSA services:** There was an increase in the likelihood of children receiving food after growth monitoring and referral to rehabilitation centers. There was also a significant increase in the enrolment in, and satisfaction with, the Mamata Scheme among late GPs. Improvements were seen across groups for TPDS uptake and satisfaction.
- **Findings strongly supported the view that social audits led to very large positive changes in attitudes related to the civic life of caregivers and pregnant women; surprisingly, however, the changes seen in nutrition-related knowledge and practices were not positive.**
- **There was a significant improvement in dietary diversity scores for women and children; however, as nutritional knowledge among the sample had not improved during that time and in some cases had deteriorated (with nutrition knowledge decreasing in early GPs), it is hard to link this change to social audits, although the possibility cannot be fully ruled out that social audits had an immediate impact.**

Overall, this evaluation presents evidence that a social audit model has the potential to improve delivery and uptake of NFSA services.

**Source:** Gordon et al. (2019).

**Note:** This program was supported by the Azim Premji Philanthropic Initiatives.

**Box 12. RESTORING NUTRITION SERVICES IN THE CONTEXT OF THE COVID-19 PANDEMIC IN ODISHA**

The COVID-19 pandemic and the associated national lockdown had the potential to substantially disrupt access to health and nutrition services. Odisha appears to have moved rapidly to issue program guidance to ensure minimal disruption to services. Between March 13 and March 31, 2020, the state government issued a range of orders beginning with the closure of all AWCs and pre-school education at AWCs. This was replaced by doorstep delivery of ration and eggs for morning snacks and hot-cooked meals for pre-school children 3-6years. However, a few days later, an order was issued to ensure the safe conduct of Village Health Sanitation and Nutrition Day (VHSND) and immunizations. Subsequent guidance documents provided more details on the provision of home-delivered supplementary foods under the ICDS, including the weekly home-delivery of eggs. By the end of March 2020, the government and partners had together conducted assessments to inform multisectoral responses to COVID-19 in the state, including both a short term (April-June 2020) and medium-term (July 2020-June 2021) strategy.

The impacts of this rapid evolution in policy and program guidance on service delivery in Odisha were explored in a set of phone interviews with frontline workers (FLWs) in 9 districts in Odisha, conducted by the ASER-PRATHAM Centre, together with IFPRI, with the approval of the state government. The phone-based interviews were conducted with *Anganwadi* workers (AWWs) and Accredited Social Health Activist (ASHAs) in 9 districts [Boudh, Jagatsinghpur, Keonjhar, Khorda, Mayurbhanj, Nayagarh, Puri, Sonepur, and Sundargarh] and in total, 415 AWWs and 284 ASHAs were interviewed.

**Key findings:**

- FLWs reported almost no service interruptions through the lockdown period and in October 2020, for services that they could deliver at the home or organize in safe ways. These include provision of take-home rations, arranging for antenatal care at health centers, immunization, and counseling.
- The only major service disruption is to hot cooked meals that are dependent on centers being open for children to attend.
- A majority of FLWs also reported facing no problems in service provision and noted they had been trained primarily by the government on COVID-19 services

**Implications:**

The insights from the policy analysis and the frontline health worker surveys in Odisha affirm the state's commitment to delivering maternal and child health and nutrition services. The rapid program guidance and the decisions to conduct key services such as VHSNDs and immunization days with COVID-19 safety precautions likely contribute to limited disruptions in service delivery. At the same time, population-level data are not yet available to assess whether the traditionally high coverage of these services was affected. In addition, there is a gap in understanding whether the provided services were of the intended quality, and whether they reached beneficiaries in a uniform and equitable manner. Nevertheless, this case study offers a glimpse into the evolution of program guidance to assure minimal disruptions to service delivery, and to the delivery of these services by frontline workers. Subsequent research could help the state government and other partners assess where additional service strengthening is likely to be needed to preserve Odisha's positive trajectory on nutrition and health service delivery.

**Source:** ASER-PRATHAM Centre and IFPRI surveys (unpublished)

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## CHAPTER 5. SUMMARY

Odisha has demonstrated significant commitment to reducing undernutrition; it has expanded nationally sponsored nutrition-specific programs and launched state-led initiatives relevant to improving nutrition. In the last decade (2006–2016), the state has witnessed improvements in the prevalence of stunting (from 45 to 34.1 percent) and in anemia among women of reproductive age (from 61.1 to 51 percent). Exclusive breastfeeding for children under 6 months improved from 50.8 percent in 2006 to 65.6 percent in 2016 and the prevalence of low birth weight declined slightly from 20.6 to 18.9 percent during this period. There was, however, a marginal increase in wasting (from 19.6 to 20.4 percent) and severe wasting (from 5.2 to 6.4 percent) during this period.

Odisha has also witnessed an increase in the coverage of most maternal and child nutrition interventions. This has been supported by a strong emphasis on integration of services at the point of delivery, decentralization of service delivery through self-help groups, and a strategic focus on equity of access to interventions. Financial restructuring in the early 2000s provided a springboard to improved social sector programs in Odisha, and political stability for the party in power enabled reforms in health and nutrition programs to continue uninterrupted (Kohli et al. 2017).

Factors that explain most of the improvement in stunting in Odisha over the past decade (2006–2016) are related to household assets (which determine the socio-economic status of the households), access to health services, sanitation indicators, maternal education and body mass index (BMI), and demographic indicators. Although the level of households with an improved drinking water source is at par with the national average, the level of households using an improved sanitation facility is quite low (at 29.4 percent, as compared to the national average of 48.4 percent) and the prevalence of open defecation is high. Women's well-being and education needs a special focus since the prevalence of low BMI among women is 26.4 percent and only 26.7 percent of women have more than 10 years of education.

The results from the LiST modeling indicate that Odisha is well placed for achieving WHA targets provided there is an increase in the coverage of *all* the essential health and nutrition interventions to 100 percent with quality. The state is set to achieve its target for reduction of stunting, but it needs to ensure a special focus on complementary feeding and sanitation. At the current rate of progress, the state is unlikely to achieve its target for reduction in anemia among women of reproductive age; according to the LiST analysis results, the state needs to give special attention to blanket iron supplementation or fortification. The state is unlikely to meet its target for reduction of wasting among children below five years of age; however, scaling up treatment of MAM can help to reduce the rate of wasting, and a combination of interventions to treat both SAM and MAM can help to save more lives than will only one of the interventions.

In order to achieve the global WHA targets by 2025 through increasing coverage of interventions, and to ensure sustained progress, Odisha needs to enhance nutrition financing and make steady progress in implementing nutrition-specific and nutrition-sensitive policies and programs.

The new fiscal devolution architecture in India provides Odisha with an opportunity to choose to invest in interventions that are not currently being delivered at scale while maintaining its focus on sustaining both the scale and quality of interventions that are already reaching a majority of the population. Such investments will be crucial to speeding up Odisha's efforts to scale up critical interventions, support the reduction of undernutrition, and sustain the stellar success that it has displayed in the past decade in addressing undernutrition. Moving forward with a multisectoral and collaborative approach, the state

will be able to make remarkable progress in closing the coverage, equity, and quality gaps, and will be able to achieve sustainable progress and attain its nutrition targets.

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## REFERENCES

- Bhutta, Z. A., J. K. Das, A. Rizvi, M. F. Gaffey, N. Walker, S. Horton, P. Webb, A. Lartey, and R. E. Black. 2013. "Evidence-Based Interventions for Improvement of Maternal and Child Nutrition: What Can Be Done and at What Cost?" *The Lancet* 382 (9890): 452–477. [https://doi.org/10.1016/S0140-6736\(13\)60996-4](https://doi.org/10.1016/S0140-6736(13)60996-4).
- Black, R. E., C. G. Victora, S. P. Walker, Z. A. Bhutta, P. Christian, M. de Onis, M. Ezzati, S. Grantham-McGregor, J. Katz, R. Martorell, and R. Uauy. 2013. "Maternal and Child Undernutrition and Overweight in Low-Income and Middle-Income Countries." *The Lancet* 382 (9890): 427–451. [https://doi.org/10.1016/S0140-6736\(13\)60937-X](https://doi.org/10.1016/S0140-6736(13)60937-X).
- Chakrabarti, S., P. Mathews, and P. Menon. 2018. "Delivering for Nutrition in Odisha: What Will It Cost?" POSHAN Policy Note. Unpublished, International Food Policy Research Institute, Washington, DC.
- Chakrabarti, S., Kapur, A., Vaid, A., and Menon, P. 2017. "Achieving the 2025 World Health Assembly targets for nutrition in India: What will it cost?" POSHAN Policy Note 2. New Delhi, India: International Food Policy Research Institute (IFPRI). <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/131083>
- Chakrabarti, S., and P. Menon. 2016. "Budgeting to Deliver for Nutrition: Reflections from a Costing Study on Nutrition Specific Interventions in India." *Budget Track* 11. <http://www.cbgaindia.org/wp-content/uploads/2016/03/Budget-Track-on-Nutrition-Compressed.pdf>.
- Gordon, J., J. Tranchant, L. Casu, and B. Mitchell. 2019. *APPI/SPREAD Collective Action for Nutrition Social Audit Programme Odisha, India: Final Evaluation Report*. Brighton: Institute of Development Studies.
- IIPS (International Institute for Population Sciences). 2016. "2015–16 National Family Health Survey, India." Mumbai: International Institute for Population Sciences. Accessed November 22, 2020. <http://rchiips.org/NFHS/nfhs4.shtml>.
- India, Ministry of Health and Family Welfare, UNICEF, and Population Council. 2019. *Comprehensive National Nutrition Survey 2016–2018*. New Delhi: Ministry of Health and Family Welfare. <https://nhm.gov.in/WriteReadData/l892s/1405796031571201348.pdf>.
- Jhunjhunwala, G., P. Mitra, U. Ranjan, and N. Raykar. 2019. "Process Evaluation of PHRN Crèche Set-up in Odisha: Findings from Round 1(Draft Report)." Unpublished, Oxford Policy Management Limited.
- Kapur, A., R. Shukla, M. Thakkar, and P. Menon. 2020. "Financing Nutrition in India: Cost implications of the new nutrition policy landscape, 2019-20." New Delhi, India. Accountability Initiative, Centre for Policy Research and International Food Policy Research Institute. <https://accountabilityindia.in/wp-content/uploads/2020/07/Financing-Nutrition-in-India-AI-IFPRI-Final.pdf>
- Kohli, N., P. H. Nguyen, R. Avula, L. M. Tran, and P. Menon, P. 2017. "Improving Nutrition in Odisha: Insights From Examining Trends in Outcomes, Determinants and Interventions Between 2006 and 2016." POSHAN Policy Note. Washington, DC: International Food Policy Research Institute. <https://www.ifpri.org/publication/improving-nutrition-odisha-insights-examining-trends-outcomes-determinants-and>.
- Menon, P., C. M. McDonald, and S. Chakrabarti. 2016. "Estimating the Cost of Delivering Direct Nutrition Interventions at Scale: National and Subnational Level Insights From India." *Maternal and Child Nutrition* 12: 169–185. <https://doi.org/10.1111/mcn.12257>.

- Mishra, N. R., S. K. Mohanty, D. Mitra, M. Shah, and W. B. Meitei. 2019. "Projecting Stunting and Wasting Under Alternative Scenarios in Odisha, India, 2015–2030: A Lives Saved Tool (LiST)-Based Approach." *BMJ Open* 9 (5): 1–12. <https://doi.org/10.1136/bmjopen-2018-028681>.
- Nair, N., P. Tripathy, H. S. Sachdev, H. Pradhan, S. Bhattacharyya, R. Gope, S. Gagrai, S. Rath, S. Rath, R. Sinha, S. S. Roy, S. Shewale, V. Singh, A. Srivastava, A. Costello, A. Copas, J. Skordis-Worrall, H. Haghparast-Bidgoli, N. Saville, and A. Prost. 2017. "Effect of Participatory Women's Groups and Counselling Through Home Visits on Children's Linear Growth in Rural Eastern India (CARING Trial): A Cluster-Randomised Controlled Trial." *The Lancet Global Health* 5 (10): e1004–e1016. [https://doi.org/10.1016/S2214-109X\(17\)30339-X](https://doi.org/10.1016/S2214-109X(17)30339-X).
- NITI Aayog. 2020. *Infant Mortality Rate (IMR) (Per 1000 Live Births)*. New Delhi: Government of India. <https://niti.gov.in/content/infant-mortality-rate-imr-1000-live-births>.
- Odisha, Department of Women & Child Development. *ONAP: Odisha Multi-Sectoral Nutrition Action Plan 2017–2020*. Bhubaneswar, India.
- Odisha, Department of Women & Child Development and Mission Shakti. 2020. *Strategy for Odisha's Pathway to Accelerated Nutrition (SOPAN)*. Bhubaneswar, India.
- Odisha, Planning and Convergence Department. 2018. *Odisha Economic Survey 2017–18*. Bhubaneswar, India. [https://pc.odisha.gov.in/sites/default/files/2020-03/Economic\\_Survey\\_2017-18.pdf](https://pc.odisha.gov.in/sites/default/files/2020-03/Economic_Survey_2017-18.pdf).
- Raghunathan, K., S. Chakrabarti, R. Avula, and S. S. Kim. 2017. "Can Conditional Cash Transfers Improve the Uptake of Nutrition Interventions and Household Food Security? Evidence from Odisha's Mamata Scheme." *PLoS ONE* 12 (12): 1–19. <https://doi.org/10.1371/journal.pone.0188952>.
- Reese, H., P. Routray, B. Torondel, S. S. Sinharoy, S. Mishra, M. C. Freeman, H. Chang, and T. Clasen. 2019. "Assessing Longer-Term Effectiveness of a Combined Household-Level Piped Water and Sanitation Intervention on Child Diarrhoea, Acute Respiratory Infection, Soil-Transmitted Helminth Infection and Nutritional Status: A Matched Cohort Study in Rural Odisha." *International Journal of Epidemiology* 48 (6): 1757–1767. <https://doi.org/10.1093/ije/dyz157>.
- Sehgal, M., R. Avula, P. H. Nguyen, L. M. Tran, S. Scott, and P. Menon. 2018. "Coverage of Nutrition and Health Interventions in Odisha: Insights from the National Family Health Survey–4." POSHAN Data Note. Washington, DC: International Food Policy Research Institute. <https://www.ifpri.org/publication/coverage-nutrition-and-health-interventions-odisha-insights-national-family-health>.
- Shrivastava, S., C. Singh, N. Acharya, P. Mishra, R. S. Pandey, R. Parhi, S. Bhattacharjee, A. Daniel, and V. Sethi. 2017. *Budget Outlays for Nutrition-Specific Interventions: Insights from Odisha, Chhattisgarh, Bihar and Uttar Pradesh*. [https://www.researchgate.net/publication/315487502\\_Budget\\_Outlays\\_for\\_NutritionSpecific\\_Interventions\\_Insights\\_from\\_Bihar\\_Chhattisgarh\\_Odisha\\_and\\_Uttar\\_Pradesh](https://www.researchgate.net/publication/315487502_Budget_Outlays_for_NutritionSpecific_Interventions_Insights_from_Bihar_Chhattisgarh_Odisha_and_Uttar_Pradesh).
- World Bank. 2016. *India State Briefs—Odisha*. Washington, DC: World Bank. <https://www.worldbank.org/en/country/india/brief/india-states-briefs-odisha>.

## ANNEXURE

### Definitions of indicators

Indicators	Definition
<b>World Health Assembly Targets</b>	
Stunting	Percentage of children aged 0 to 59 months who are <-2 standard deviations (SD) from median height-for-age of the WHO Child Growth Standards
Wasting	Percentage of children aged 0 to 59 months who are below <-2SD from median weight-for-height of the WHO Child Growth Standards
Anemia among women of reproductive age	Percentage of women aged 15 to 49 who are anemic: less than 12.0 grams per deciliter (g/dL) for non-pregnant women and less than 11.0 g/dL for pregnant women
Low birth weight	Percentage of live births in the last 5 years where the newborn weighed less than 2,500 grams at birth
Exclusive breastfeeding	Percentage of infants aged 0 to 5 months who were exclusively breastfed
<b>Interventions</b>	
<b>Pre-pregnancy</b>	
Demand for family planning (FP) satisfied	Percentage of women aged 15 to 49 who have their need for family planning satisfied with modern methods
Iodized salt	Percentage of households with children under 5 using iodized salt
<b>Pregnancy</b>	
Any antenatal care (ANC) visits	Percentage of women aged 15 to 49 with children under 5 who were attended by a trained health provider at least once while pregnant with their youngest child
At least four ANC visits	Percentage of women aged 15 to 49 with children under 5 who were attended by a trained provider at least four times while pregnant with their youngest child
Received Mother and Child Protection (MCP) card	Percentage of women aged 15 to 49 with children under 5 who received the Mother and Child Protection card after pregnancy registration, while pregnant with their youngest child
Received IFA	Percentage of women aged 15 to 49 with children under 5 who received or bought any IFA tablets/syrup while pregnant with their youngest child
Consumed IFA for more than 100 days	Percentage of women aged 15 to 49 with children under 5 who consumed IFA tablets/syrup for at least 100 days while pregnant with their youngest child
Deworming	Percentage of women aged 15 to 49 with children under 5 who received a deworming drug while pregnant with their youngest child
Weighing	Percentage of women aged 15 to 49 with children under 5 who were weighed when they were pregnant with their youngest child
Breastfeeding counselling	Percentage of women aged 15 to 49 with children under 5 who received advice on breastfeeding from any provider while pregnant with their youngest child
Food supplementation	Percentage of women aged 15 to 49 with children under 5 who received food supplements from the Anganwadi Centre (AWC) while pregnant with their youngest child
Health and nutrition education	Percentage of women aged 15 to 49 with children under 5 who received health and nutrition education from the AWC while pregnant with their youngest child
Tetanus (TT) injection	Percentage of women aged 15 to 49 with children under 5 who received at least 2 TT injections while pregnant with their youngest child
<b>Delivery and postnatal care</b>	
Institutional birth	Percentage of women aged 15 to 49 with children under 5 who delivered their youngest child in a health facility

Indicators	Definition
Skilled birth attendant	Percentage of women aged 15 to 49 with children under 5 who were attended by a skilled health attendant when they delivered their youngest child
Postnatal care for mothers	Percentage of women aged 15 to 49 with children under 5 who received postnatal care in a facility or at home, two days after they delivered their youngest child
Postnatal care for babies	Percentage of last-born children aged 0 to 59 months in the last 5 years, who received postnatal care within two days of birth
Food supplementation	Percentage of women aged 15 to 49 with children under 5 who received food supplements from the AWC while breastfeeding their youngest child
Health and nutrition education	Percentage of women aged 15 to 49 with children under 5 who received health and nutrition education from the AWC while breastfeeding their youngest child
<b>Early childhood</b>	
Full immunization	Percentage of last-born children aged 12 to 23 months in the last 5 years who received one dose of BCG vaccine, three doses of polio vaccine, three doses of DTP3 vaccine, and one dose of measles vaccine
Vitamin A	Percentage of last-born children aged 6 to 59 months in the last 5 years, who had received vitamin A supplements in the six months preceding the survey
Pediatric IFA	Percentage of last-born children aged 6 to 59 months in the last 5 years, who had received iron supplements in the 7 days prior to the survey
Deworming	Percentage of last-born children aged 12 to 59 months in the last 5 years, who had received albendazole or any other deworming drug in the 6 months prior to the survey
Care seeking for acute respiratory infection (ARI)	Percentage of last-born children aged 0 to 59 months in the last 5 years, who had had suspected ARI symptoms in the previous two weeks, who were taken to a health care provider
Oral rehydration salts (ORS) during diarrhea	Percentage of last-born children aged 0 to 59 months in the last 5 years, who had had diarrhea in the previous two weeks, who received ORS
Zinc during diarrhea	Percentage of last-born children aged 2 to 59 months who had had diarrhea in the last two weeks, who received zinc
Food supplementation	Percentage of last-born children aged 6 to 35 months in the last 5 years, who had received food supplements from the AWC in the 12 months prior to the survey
Weighing	Percentage of last-born children aged 0 to 59 months in the last 5 years, who had been weighed in the previous 12 months
Counselling on child growth	Percentage of women aged 15 to 49 with children under 5 who had been counselled about their youngest child's growth after weighing, in the last 12 months prior to the survey.

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