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Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India

Policy Note

No. 14 | OCTOBER 2017

Improving Nutrition in Odisha

Insights from Examining Trends in Outcomes, Determinants and Interventions between 2006 and 2016

INTRODUCTION

India has made considerable progress in child nutrition outcomes in the last decade. These rates of improvement, however, have been highly variable across the states, mostly due to variability in state-level changes in the determinants of nutrition and in the coverage of health and nutrition interventions. Although all of the states operate under a similar national policy and programmatic environment, the variability in trends in nutritional outcomes points to state-specific factors. An understanding of such factors can facilitate both state-specific learning and cross-state learning, and assist in identifying strategies to help India accelerate progress in nutrition. In a series of *Policy Notes*, we examine state-specific trends in nutrition outcomes, determinants and the coverage of interventions, with the overall goal of supporting the state. This *Policy Note* focuses on Odisha.

Odisha, an eastern Indian state with a long coastline, middle mountainous regions, central plateaus and major flood plains, is rich in natural resources and accounts for 4.8 percent of the area of the country (Government of Odisha 2017). Odisha has 30 districts subdivided into 314 blocks (Government of Odisha 2017) and is home to more than 41 million people (2.4 percent of the population of India) of which 72.9 percent is literate and 23 percent is tribal (Census of India 2011). The state has a sex ratio of 979 females per 1,000 males (Census of India 2011).

The purpose of this *Policy Note* is to examine the trends in undernutrition in Odisha and to document trends and geographic variability in the major determinants of nutrition and the coverage of key nutrition and health interventions. In doing this analysis, we aim to highlight the key areas of action to improve nutrition in Odisha. This analysis builds upon our previous work on documenting nutrition change in Odisha (Menon et al. 2016; Kohli et al. 2017).

METHODS

We used summary data from the recently released National Family Health Survey-4 (NFHS-4 2015–16) fact sheets (International Institute for Population Sciences 2017) and data from NFHS-3 from 2005–06 to compare trends in outcomes, determinants and interventions over a decade (International Institute for Population Sciences 2008). We also used information from fact sheets of the Rapid Survey on Children (RSoC 2013–14) (Ministry of Women and Child Development 2015) for indicators that are currently not available in NFHS-4 fact sheets. We used summary data reported in the NFHS-4 district-level fact sheets to examine inter-district variability.

For outcome indicators, we examined progress on a set of global nutrition targets for maternal, infant and young child nutrition (WHO 2014).These include stunting, wasting, low birth weight, exclusive breastfeeding and anemia status among women of reproductive age.

We also examined levels and changes in several immediate, underlying and basic determinants (Black et al. 2013). For intervention coverage, we chose a set of nutrition-specific interventions across the lifecycle, including interventions affecting pregnant women, newborn babies, infants, and children.

FINDINGS

Trends in nutrition outcomes and variability in outcomes by district

There has been improvement in nutrition and heath outcomes in Odisha between 2006 and 2016 (Figure 1). Stunting prevalence declined from 45 percent to 34.1 percent. Even though anemia among women of reproductive age declined by 10 percentage points between 2006 and 2016, it is still high with over half of women suffering from anemia in the state. Exclusive breastfeeding for children under six months is an area of progress; it improved from 50.8 percent in 2006 to 65.6 percent in 2016. There was however a marginal increase in wasting (from 19.6 percent to 20.4 percent) and severe wasting (from 5.2 percent to 6.4 percent). The prevalence of low birth weight declined slightly from 20.6 percent to 18.9 percent during this period.

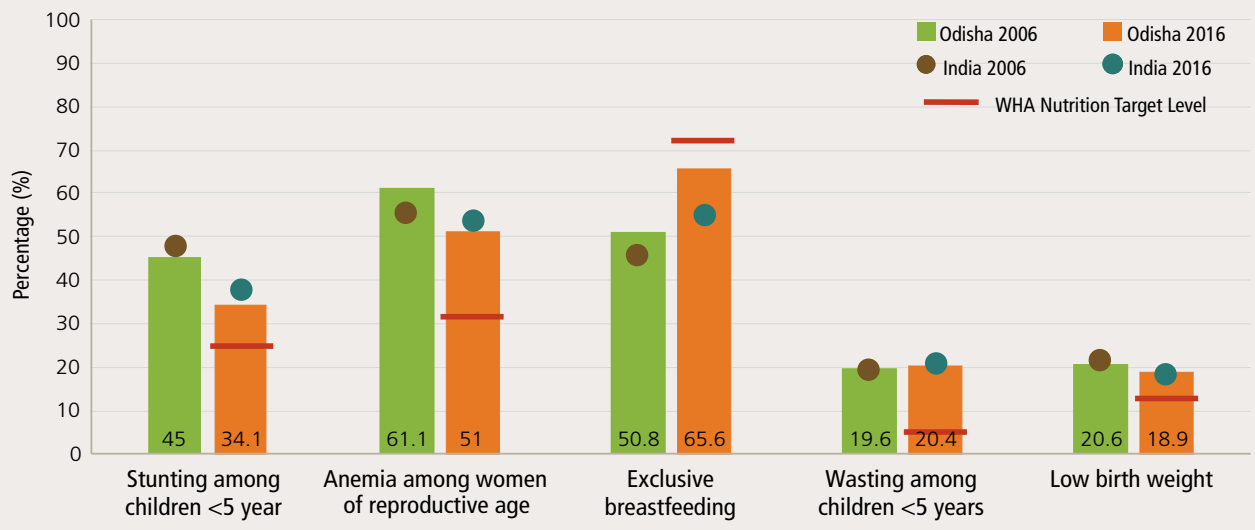
With regard to variability within the state, stunting among children below five years varies widely across districts, ranging from 47.5 percent in Subarnapur to only 15.3 percent in Cuttack (Map 1). In 10 out of 30 districts, more than 40 percent of children are stunted, which indicates a significant 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 variablity, ranging from 35.8 percent to 73 percent (Map 2). One third of the districts have very high (above 60 percent) prevalence of anemia. The prevalence of wasting (Map 3) is very high in 25 out of 30 districts in Odisha, ranging from 9.1 percent to 36 percent. Nabarangapur district has the highest prevalence of wasting (36 percent) and severe wasting (11.6 percent) (Map 4). In majority of the districts, the prevalence of exclusive breastfeeding (EBF) is higher than 50 percent and ranges from 47.2 percent in Baudh to 81.4 percent in Kandhamal and Mayurbhanj. Data on EBF is unavailable for 7 districts in Odisha (Map 5), because district-specific sample sizes for age sub-groups are too small.

Changes in the determinants of nutrition

Improving nutrition for women and children requires that investments be made in changing the determinants of poor nutrition, using a variety of policy instruments and other efforts. Here, we examine changes in the immediate determinants and of nutrition-specific interventions to address those determinants. We also describe changes in the underlying determinants of nutrition. We do not examine coverage data on programs to improve the underlying determinants in this note because data is not available at this time.

Changes in the ***immediate determinants of nutrition*** in Odisha are described in Figure 2. There has been some improvement in the immediate determinants of nutrition in Odisha. Proportion of women

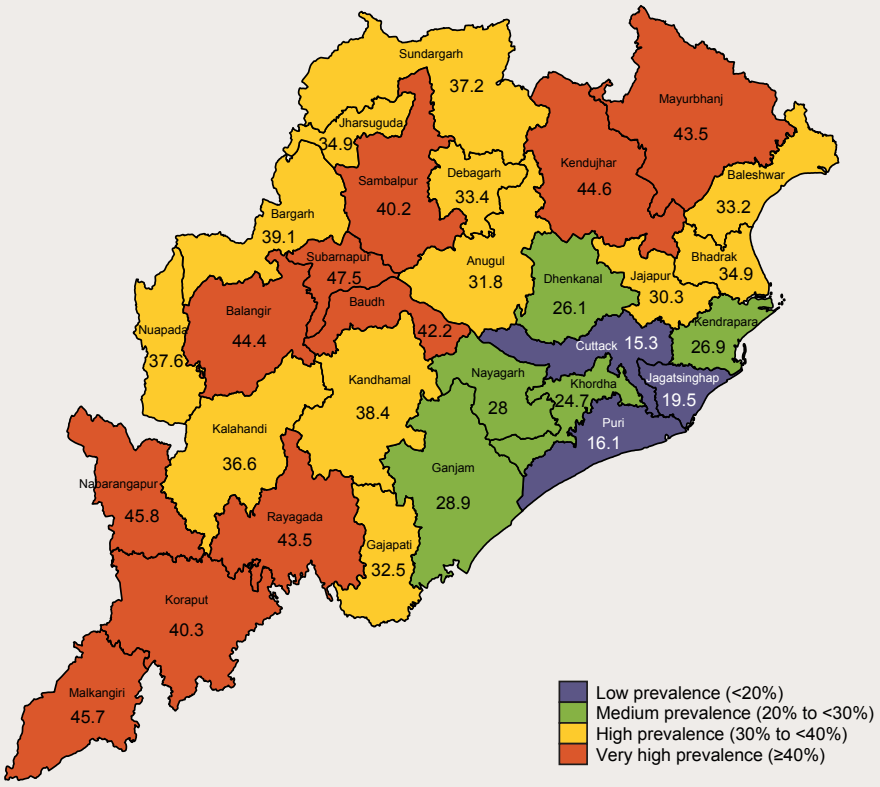
FIGURE 1 Trends in nutrition outcomes in Odisha, 2006 to 2016



Source: NFHS-3 and NFHS-4; RSoC data was used for low birth weight.

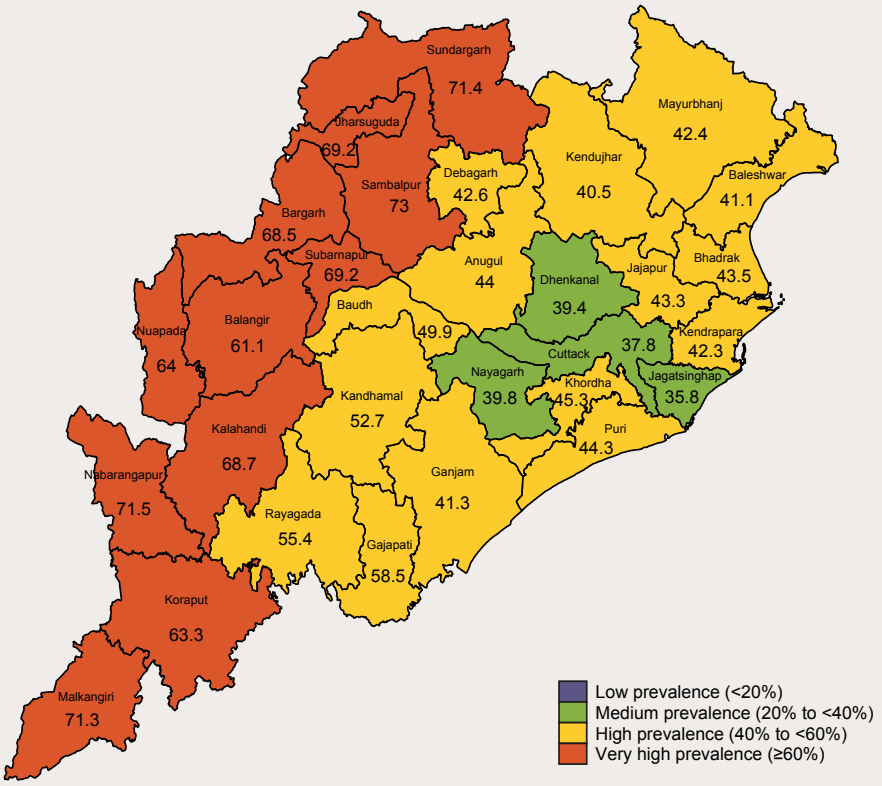
Note: A set of global nutrition targets for maternal, infant and young child nutrition were endorsed by the World Health Assembly (WHA) in 2012. The red lines represent the WHA targets to be achieved by the state, by 2025. The baseline reference year for these targets is 2012. The state baseline estimates are based on NFHS-4 (2016) as there is no survey data for 2012. Child overweight data is not available. Refer to endnotes for indicator definitions.

MAP 1 Stunting (among children <5 years) in Odisha in 2016, by district



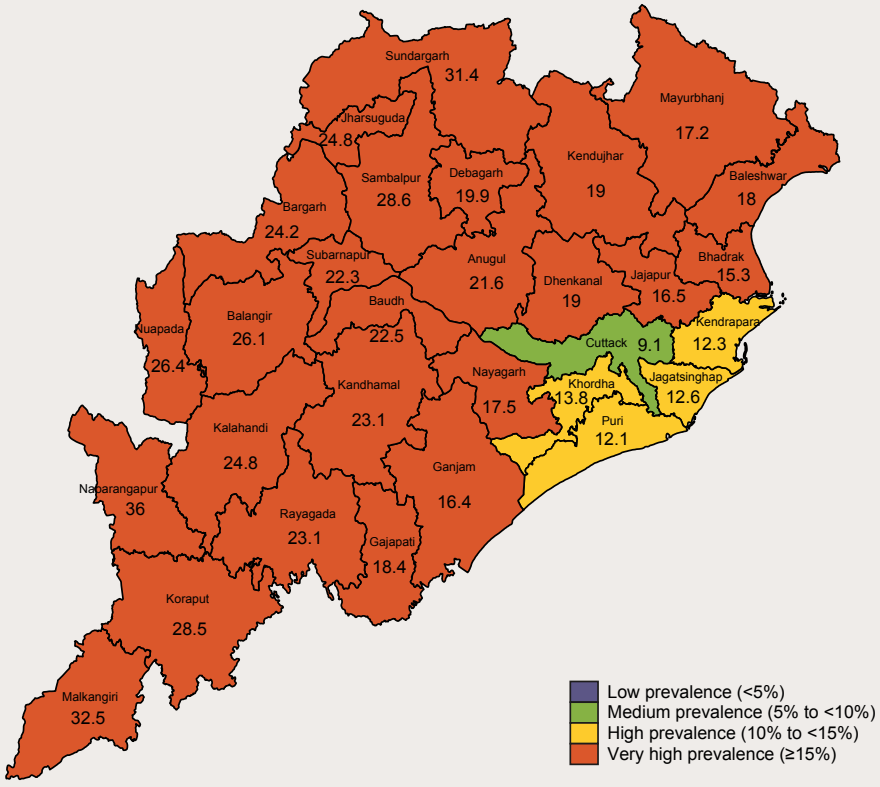
Source: NFHS-4.

MAP 2 Anemia among women of reproductive age in Odisha in 2016, by district



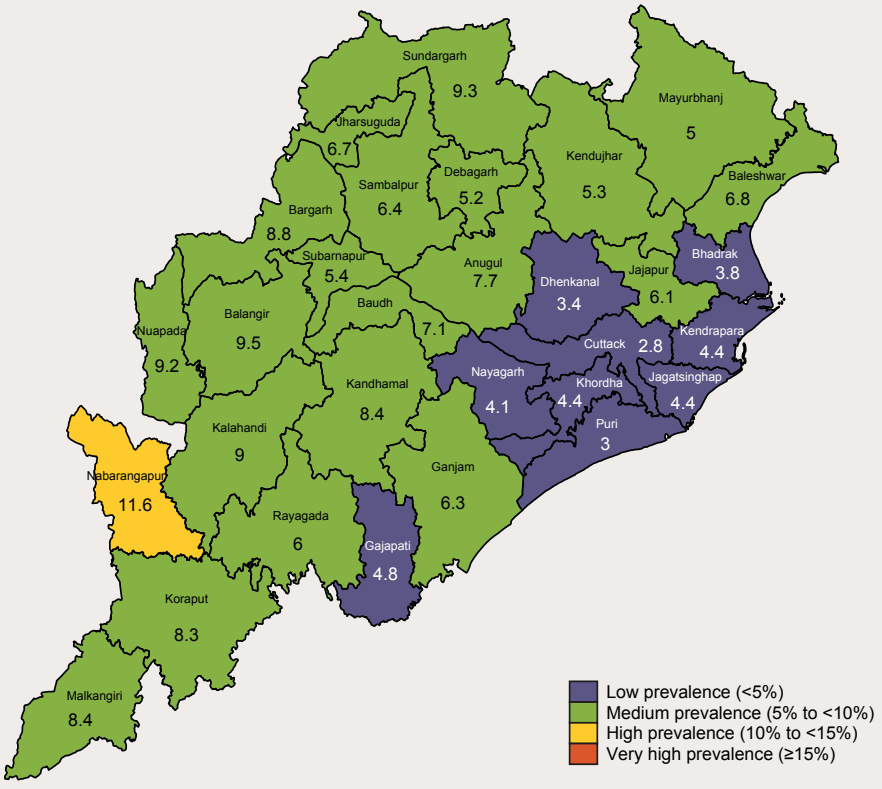
Source: NFHS-4.

MAP 3 Wasting (among children <5 years) in Odisha in 2016, by district



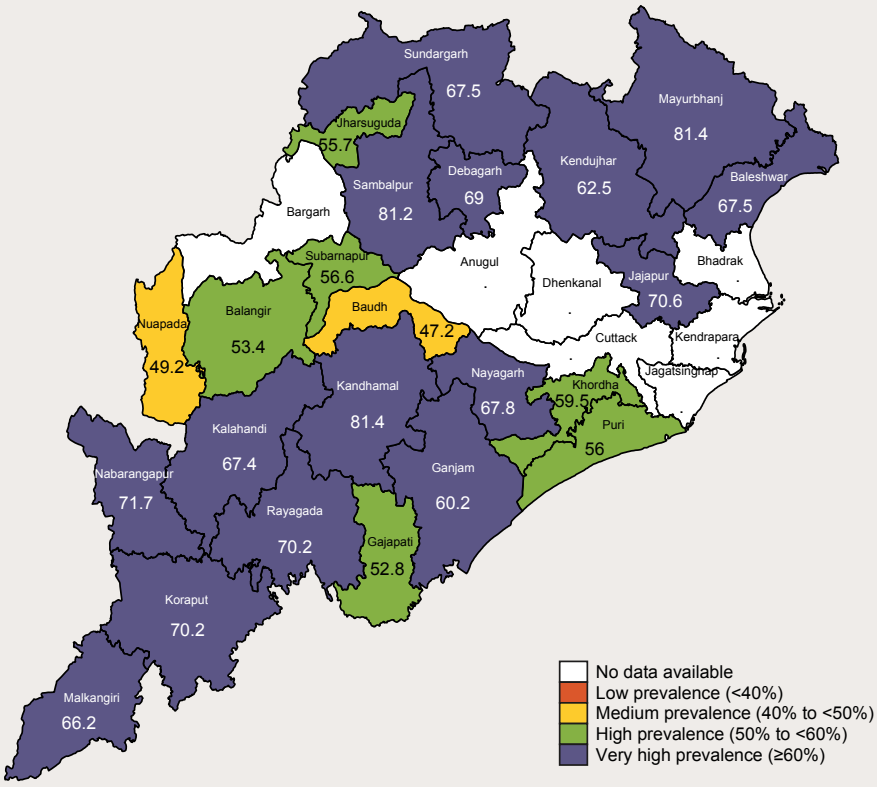
Source: NFHS-4.

MAP 4 Severe wasting (among children <5 years) in Odisha in 2016, by district



Source: NFHS-4.

MAP 5 Exclusive breastfeeding in Odisha in 2016, by district



Source: NFHS-4.

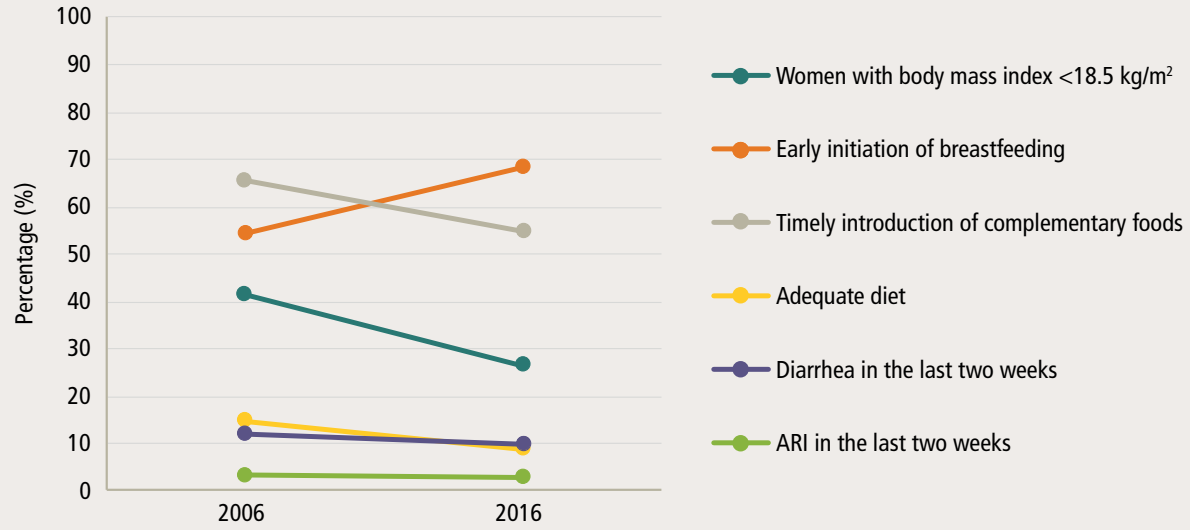
with low body mass index (<18.5 kg/m^2) declined considerably from 41.4 percent in 2006 to 26.4 percent in 2016. Among infant young child feeding (IYCF) practices, early initiation of breastfeeding increased from 54.4 percent to 68.6 percent, but timely introduction of complementary foods (between 6 and 8 months of age) declined over the last decade (from 65.5 percent to 54.9 percent). In 2016, only 8.5 percent of children (between 6 and 23 months of age) received an adequate diet, signalling the importance of complementary feeding as a priority area for action.

There has not been much change in the disease burden in children in Odisha over the past decade. The proportion of children with diarrhea decreased from 11.8 to 9.8 percent from 2006 to 2016 and the proportion of children with acute respiratory infection declined marginally from 2.8 percent to 2.4 percent (Figure 2).

The coverage of ***nutrition-specific interventions*** in Odisha improved during the last decade (Figure 3). During pregnancy, the proportion of women who received antental care during first trimester and received at least four antental visits improved by 16 to 25 percentage points, reaching over 60 percent in 2016. The proportion of women reporting consumption of iron-folic acid (IFA) supplements during pregnancy also improved from 22.5 percent in 2006 to 36.5 percent in 2016, but nearly two thirds of women still do not consume adequate amounts of IFA during pregnancy. Interventions related to childbirth, such as institutional deliveries and proportion of women whose births were assisted by skilled birth attendants, improved substantially with 43 to 50 percentage points increase, reaching above 85 percent in 2016. Coverage of food supplementation also increased significantly for pregnant women (from 44.6 to 60.6 percent) and lactating women (from 39.8 to 76.5 percent) during 2006-16.

The coverage of nutrition interventions focused on children improved in Odisha in the last ten years. The proportion of children receiving vitamin A supplementation increased greatly from 20.4 to 69.1 percent, and children with diarrhea who received ORS also increased from 39.8 to 68.6 percent. The proportion of children who were fully immunized increased considerably (from 51.8 percent to 78.6 percent). Coverage of food supplementation for children also

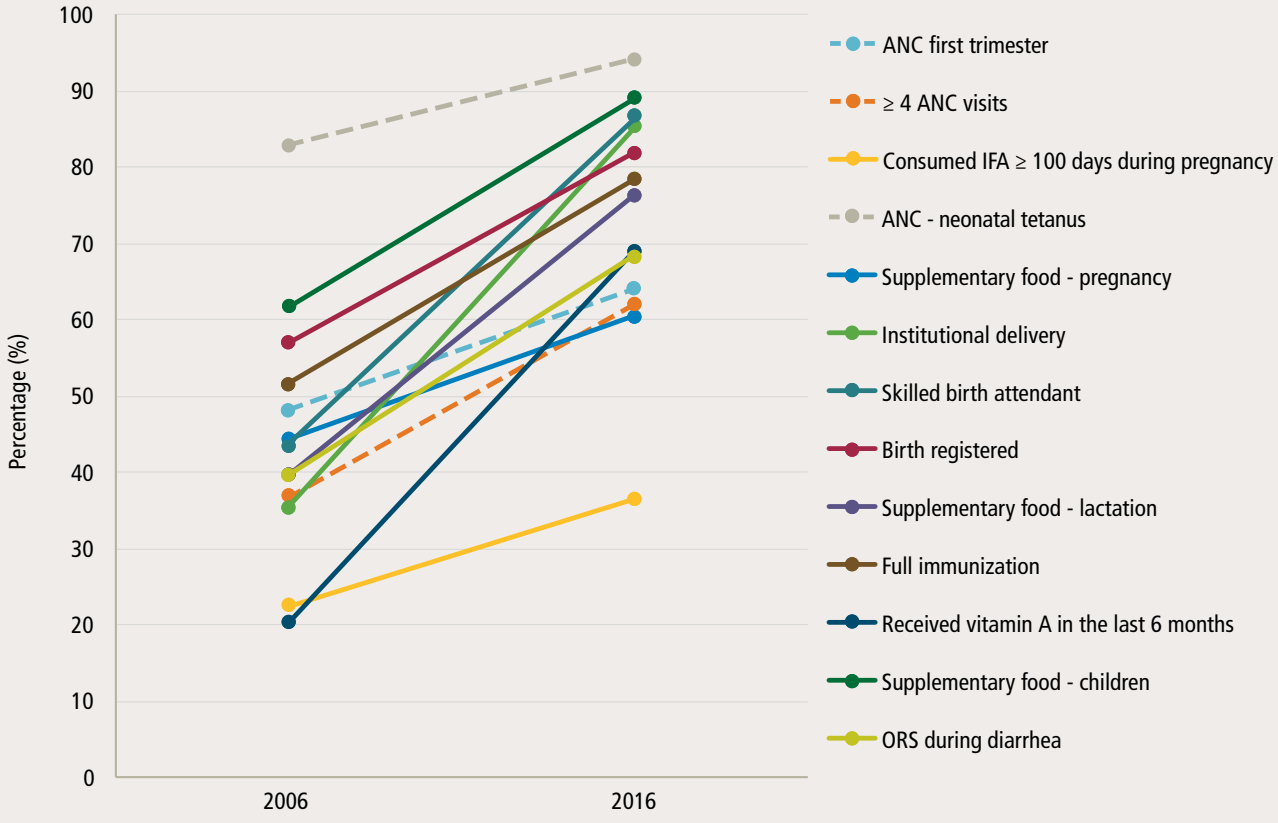
FIGURE 2 Changes in immediate determinants of nutrition in Odisha, 2006 to 2016



Source: NFHS-3 and NFHS-4.

Note: ARI= Acute respiratory infection; Refer to endnotes for indicator definitions.

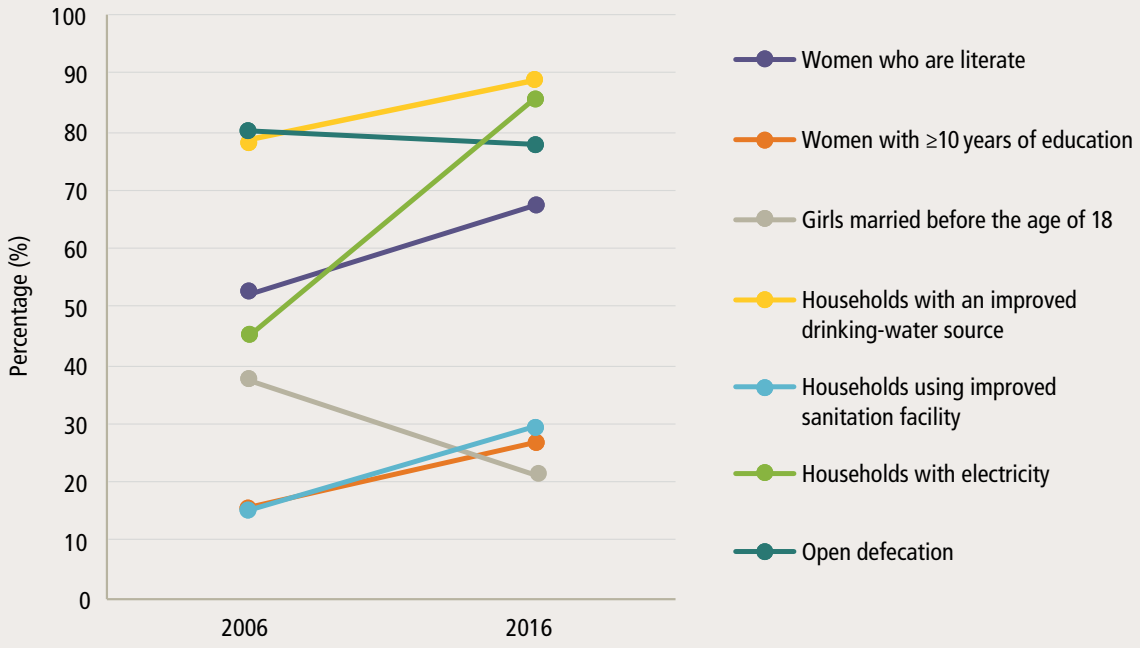
FIGURE 3 Changes in nutrition-specific interventions along the continuum of care in Odisha, 2006 to 2016



Source: NFHS-3 and NFHS-4; RSoC data used for food supplementation.

Note: ANC = Antenatal care; IFA = Iron and folic acid; ORS = Oral rehydration salts; Refer to endnotes for indicator definitions.

FIGURE 4 Changes in underlying determinants of nutrition in Odisha, 2006 to 2016



Source: NFHS-3 and NFHS-4; RSoC data used for open defecation.

Note: Refer to endnotes for indicator definitions.

increased substantially (from 61.9 to 89.2 percent) between 2006 and 2016.

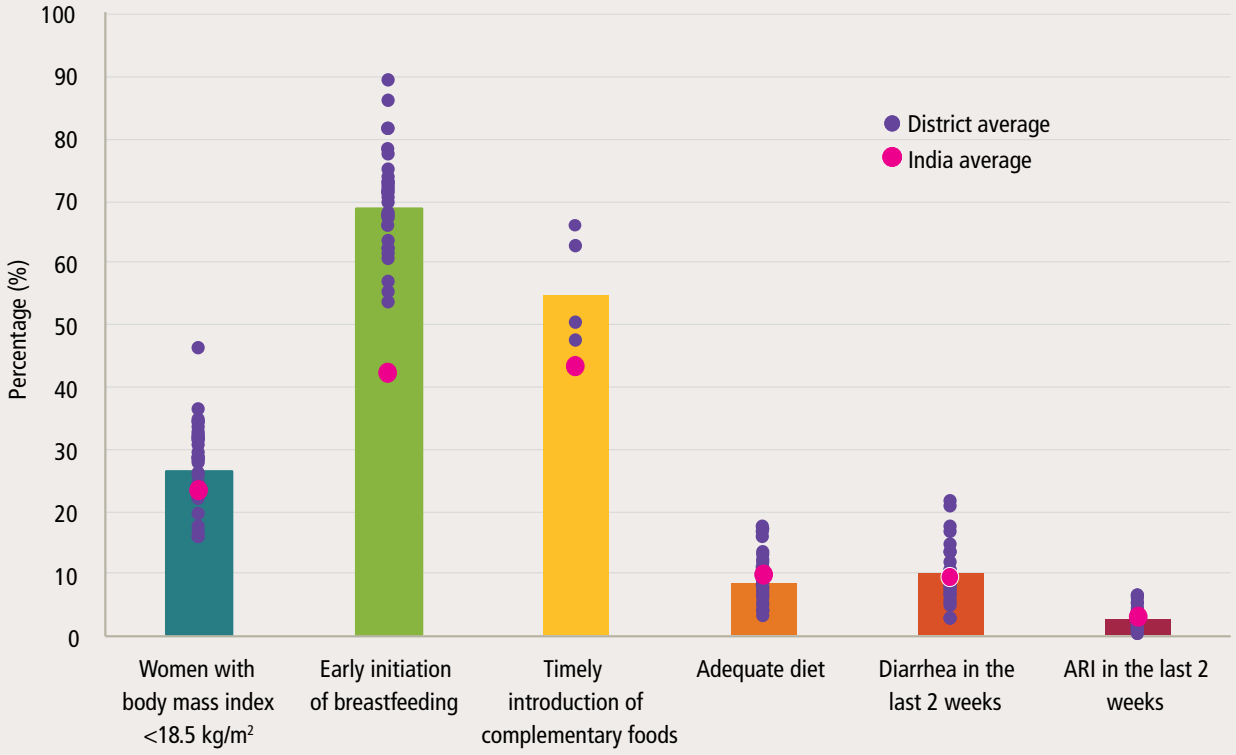
In the last decade, Odisha experienced several improvements in the ***underlying determinants of nutrition*** (Figure 4). The proportion of households with access to electricity increased from 45.4 percent in 2006 to 85.5 percent in 2016 and the proportion of households with an improved drinking-water source increased from 78.4 percent to 88.8 percent in the same time period. There was some improvement in the proportion of households using improved sanitation facility (15.3 to 29.4 percent) in the last decade. There is however still an urgent need to improve sanitation; 70 percent of the households are still not using improved sanitation facility and 77.7 percent still practice open defecation in 2016. Determinants related to gender have seen improvements in the last ten years. There was a rise in women's literacy (from 52.2 percent to 67.4 percent) and the proportion of women with more than 10 years of education (from 15.6 percent to 26.7 percent) but there is clearly much room for improvement in women's education. There was a decline in the proportion of girls who were married before the age of 18 (from 37.2 percent to 21.3 percent).

Inter-district variability in selected determinants and coverage of interventions in Odisha, in 2016

In Figures 5, 6, and 7, we highlight the district variability in immediate determinants (Figure 5), coverage of health and nutrition interventions (Figure 6) and underlying determinants (Figure 7). Among the 30 districts of Odisha, there is a high degree of inter-district variability for most key determinants (that is, early initiation of breastfeeding, care during pregnancy and birth, full immunization, vitamin A, diarrhea treatment, girls married before 18 years of age, electricity, improved sanitation, etc.). In contrast, there is little inter-district variability for some other determinants, either because the coverage is very high (for example, MCP card and mothers whose last birth was protected against neonatal tetanus), or because challenges are uniform across all the districts (for example, adequate diet among children 6–23 months is low across the districts).

For many determinants, such as early initiation of breastfeeding, 4 ANC visits, institutional delivery, receive cash transfers to support institutional delivery, full immunization, vitamin A supplementation and

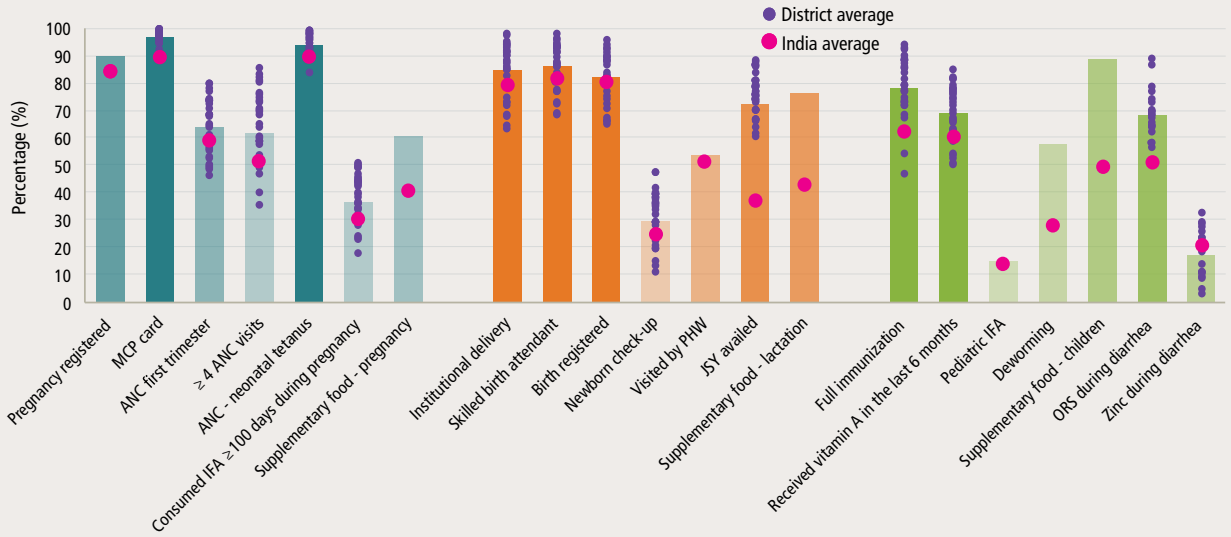
FIGURE 5 Inter-district variability in immediate determinants in Odisha, in 2016



Source: NFHS-4.

Note: Bars represent state averages; ARI= Acute respiratory infection; Refer to endnotes for indicator definitions.

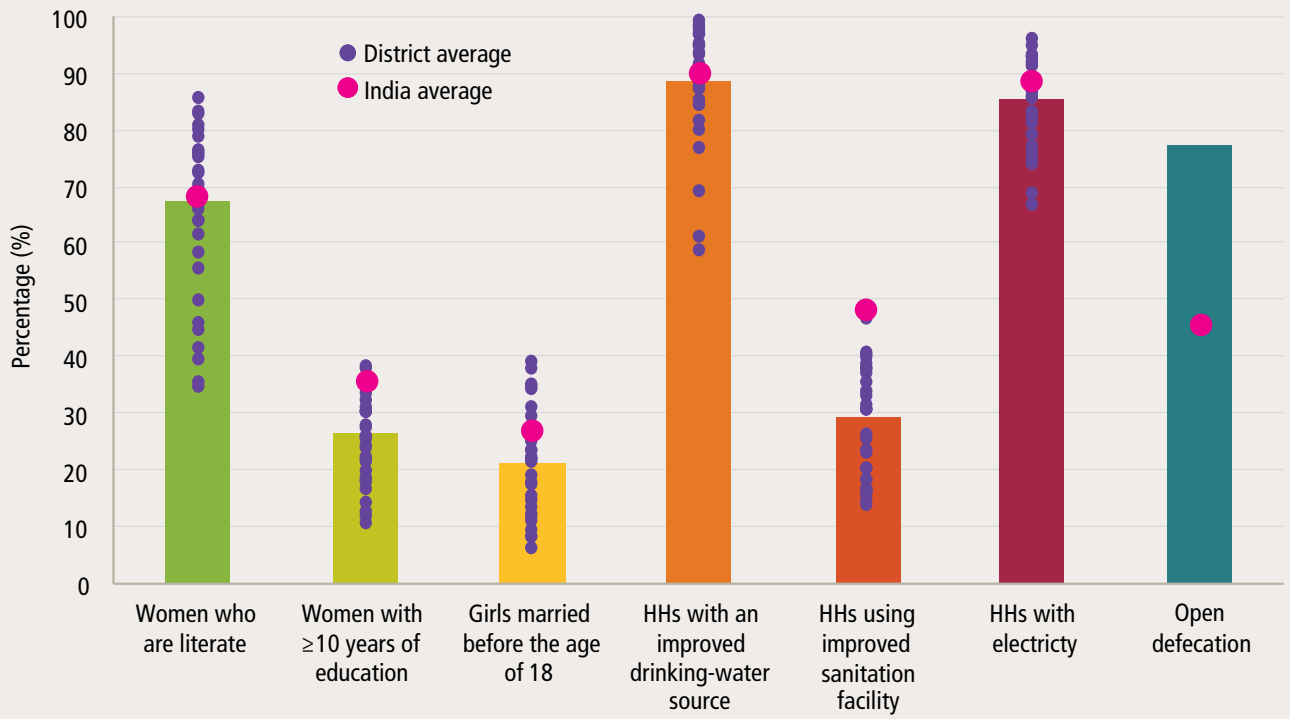
FIGURE 6 Inter-district variability in coverage of selected interventions in Odisha, in 2016



Source: NFHS-4; RSoC data was used for indicators on pregnancy registration, food supplementation during pregnancy, lactation, and for children, visits by health worker, pediatric IFA and deworming for children.

Note: Bars represent state averages; As RSoC data is not representative at the district-level, district variablity is unavailable for these indicators; ANC= Antenatal care; IFA= Iron and folic acid; JSY= Janani Suraksha Yojana; ORS= Oral rehydration sals; MCP= Mother and child protection; PHW= Primary health worker; Refer to endnotes for indicator definitions.

FIGURE 7 Inter-district variability in underlying determinants in Odisha, in 2016



Source: NFHS-4; RSoC data is used for indicator for open defecation.

Note: Bars represent state averages; HHs= Households; Refer to endnotes for indicator definitions.

ORS during diarrhea, most of the districts are doing better than the national average. In constrast, for some underlying determinants, such as women with over ten years of education and households using improved sanitation facility, most of the districts are worse than the national average.

LOOKING FORWARD: IMPLICATIONS & RECOMMENDATIONS

In the era of India's commitment to global nutrition targets, it is encouraging that Odisha has set its own nutrition targets to be achieved by 2025 in the Odisha Nutrition Action Plan, which was launched in December 2016. Odisha's success story in nutrition has been attributed to the state's commitment to reduce infant mortality, a capable bureaucracy, an enabling policy environment and support from civil society and development partners (Kohli et al. 2017). Although Odisha has made progress in stunting reduction and has stunting rates lower than the national average, stunting rates are still high at 34 percent. To make further progress in nutrition in Odisha, efforts need to continue to further increase the coverage of nutrition-specific interventions. The state has done well in providing antenatal care and supplementary food during pregnancy. However, emphasis is needed on further increasing consumption of IFA during pregnancy where coverage is still low. Interventions related to delivery have made tremendous progress and so have most of the postnatal interventions, such as supplementary food during lactation and for children, full immunization, and vitamin A supplementation for children. It is important, now, for Odisha to continue investments that can help to sustain the achieved progress. With a reversing trend on timely introduction of complementary foods and the extremely low proportion of children with adequate diet, Odisha needs to invest significant efforts to promote and support optimal complementary feeding practices. On underlying determinants, even though several improvements have taken place, efforts are needed towards achieving women's education and reducing early marriage in girls. Furthermore, special emphasis is required to improve sanitation as only 30 percent households are using improved sanitation facilities and 80 percent defecate in the open.

Alongside investments in early nutrition, it is also important for Odisha to consider the challenge of non-communicable diseases as part of an overall state nutrition strategy. As Figure 8 shows, the challenge is emerging with 16.5 percent women and 17.2 percent men in Odisha being overweight or obese. The challenges of high blood pressure, especially in men, is also emerging. Most of these numbers are around or below the national average, which provides an opportunity to tackle the problem before it escalates further.

Odisha now needs to revisit the existing nutrition action plan to simultaneously address undernutrition and these emerging non-communicable diseases related to nutrition. Lessons for successful delivery and scale-up abound in the state of Odisha. Actions for moving forward should pay heed to the past successes and challenges.

NOTES

1. Indicator definitions, in alphabetical order:

Acute respiratory infection (ARI) in the last two weeks: Percentage of children below 5 years of age with symptoms of ARI in 15 days preceding the survey.

Adequate diet: Percentage of children 6–23 months old who received 4 or more food groups and a minimum meal frequency.

ANC (4 or more visits): Percentage of mothers receiving at least 4 ANCs for the last birth in the last 5 years.

ANC (first trimester): Percentage of mothers who received ANC during the first trimester of pregnancy for the last birth in the last 5 years.

ANC-neonatal tetanus injections: Percentage of mothers who were protected against neonatal tetanus for the last birth in the last 5 years.

Anemia among women of reproductive age: Percentage of women 15–49 years old who are anemic (<12.0 g/dl for non-pregnant women and <11.0 g/dl for pregnant women).

Birth registered: Percentage of children under the age of 5 years whose birth was registered.

Consumed IFA ≥ 100 days during pregnancy: Percentage of mothers who took IFA supplements for at least 100 days for the last birth in the last 5 years.

Deworming: Percentage of children 6–59 months old who were given deworming medication in the last 6 months.

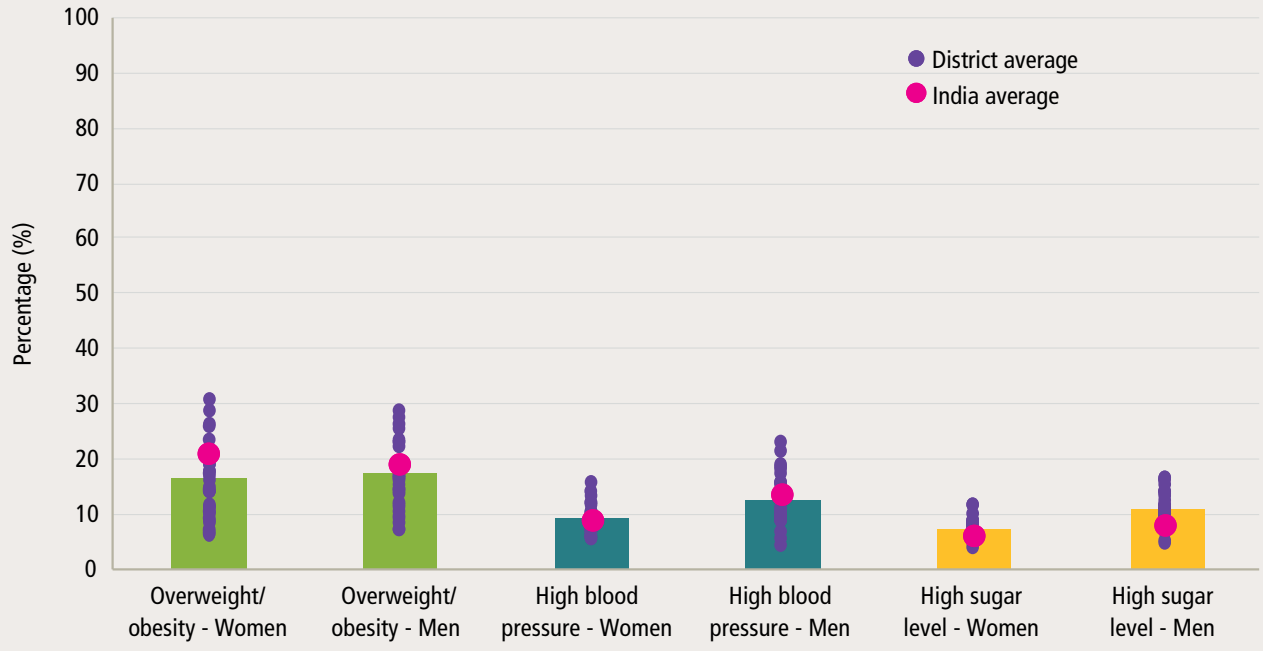
Diarrhea in the last two weeks: Percentage of children below 5 years of age who had diarrhea in 15 days preceding the survey.

Early initiation of breastfeeding: Percentage of children who were breastfed within one hour of birth.

Exclusive breastfeeding: Percentage of infants 0–5 months old who were exclusively breastfed.

Full immunization: Percentage of children 12–23 months old who received BCG, measles, and three doses each of DPT and polio vaccine (excluding polio vaccine given at birth).

FIGURE 8 Levels of non-communicable diseases in Odisha, in 2016



Source: NFHS-4.

Note: Bars represent state averages; Refer to endnotes for indicator definitions.

Girls married before the age of 18 years: Percentage of women 20–24 years old married before the age of 18 years.

High blood pressure: 15–49 years old men and women with systolic ≥140 mm of Hg and/or diastolic ≥90 mm of Hg.

High blood sugar: 15–49 years old men and women with blood sugar level >140 mg/dl.

Households with an improved drinking-water source: Percent distribution of households with an improved drinking water source.

Households with electricity: Percentage of households with electricity.

Households using improved sanitation facility: Percent distribution of households using improved sanitation facilities.

Institutional delivery: Percentage of births delivered in a health facility for births in the last 5 years.

Janani Suraksha Yojana (JSY) availed: Percentage of women who received financial assistance under JSY for births delivered in an institution for the last birth in the last 5 years.

Low birth weight: Percentage of live births in the last 5 years weighing less than 2,500 grams at birth.

Mother Child Protection (MCP) card: Percentage of registered pregnancies for which the mother received an MCP card.

Newborn check-up: Percentage of children who received a health check after birth from a doctor/nurse/LHV/ANM/midwife/other health personnel within 2 days of birth.

Open defecation: Percentage of household having no sanitation facilities.

ORS during diarrhea: Percentage of children below 5 years of age who received ORS during diarrhea.

Overweight/obesity: 15–49 years old men and women with body mass index ≥25 kg/m^2.

Pediatric IFA: Percentage of children 6-59 months old who received iron and folic acid supplement in the last 6 months.

Pregnancy registered: Percentage of pregnancies registered among women who had a live birth in the 35 months preceding the survey.

Severe wasting: Percentage of children 0–59 months old who are <-3SD from median weight for height of the WHO Child Growth Standards.

Skilled birth attendant: Percentage of births assisted by a doctor/nurse/LHV/ANM/other health personnel.

Stunting: Percentage of children 0–59 months old who are <-2SD from median height for age of the WHO Child Growth Standards.

Supplementary food (children): Percentage of children 6–35 months old covered by an Anganwadi center (AWC) who received supplementary food provided at the AWC in the last 12 months.

Supplementary food (lactation): Percentage of mothers with children under the age of 6 years in areas covered by an AWC who received supplementary nutrition from the AWC during lactation.

Supplementary food (pregnancy): Percentage of mothers with children under the age of 6 years in areas covered by an AWC) who received supplementary nutrition from the AWC during pregnancy.

Timely introduction of complementary foods: Percentage of infants 6–8 months old who received solid and semi-solid foods and breastmilk.

Visited by primary health worker (PHW): Percentage of women who were visited by a primary health worker (AWW/ASHA/ANM) at home within one week of delivery/discharge from health institution, among those who had a live birth in 35 months preceding the survey.

Vitamin A: Percentage of children 9–59 months old who received vitamin A supplements in the last six months.

Wasting: Percentage of children 0–59 months old who are <-2SD from median weight for height of the WHO Child Growth Standards.

Women who are literate: Percentage of women who are literate.

Women with at least 10 years of education: Percentage of women 15–49 years old having at least 10 years of schooling.

Women with body mass index (BMI) <18.5kg/m^2: Percentage of women 15–49 years old with BMI less than 18.5 kg/m^2.

Zinc during diarrhea: Percentage of children below 5 years of age who received zinc during diarrhea.

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ABOUT POSHAN

Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India (POSHAN) 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.

ABOUT POLICY NOTES

POSHAN Policy Notes aim to provide evidence-based guidance to support policy and program actions for nutrition in India.

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