POSHAN
Led by IFPRI
Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India
Policy Note
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# Improving Nutrition in Manipur

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

### INTRODUCTION

India has made considerable progress on child nutrition outcomes in the last decade. These rates of improvement, however, have been highly variable across the states, mostly due to variabilities in state-level changes in the determinants of nutrition and in the coverage of health and nutrition interventions. Although all of India's 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 its 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 Manipur.

Manipur is located in North Eastern India, and shares its border with Myanmar. The state has an area of 22,327 square kilometers and a population of 2.72 million people (Government of Manipur 2017). Manipur is currently divided into 16 administrative districts. The literacy rate of the state is 76.94 percent, and the sex ratio is 985 females for 1000 males (Census of India 2011).

The purpose of this *Policy Note* is to examine the trends in undernutrition in Manipur 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 Manipur.

### 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 NFHS-4 district-level fact sheets to examine inter-district variability. Since NFHS-4 used the Census 2011 district boundaries, this Policy Note reports information for only 9 districts.

For outcome indicators, we examined progress on a set of global nutrition targets for maternal, infant and young child nutrition (World Health Organization 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

Overall, there have been improvements in nutrition and health outcomes in Manipur between 2006 and 2016 (Figure 1). Stunting declined from 35.6 percent to 28.9 percent. The prevalence of anemia among women of reproductive age reduced from 35.7 percent to 26.4 percent. Wasting among children below the age of 5 declined from 9 percent to 6.8 percent in the last decade, though severe wasting increased slightly from 2.1 percent to 2.2 percent over the same period. Exclusive breastfeeding increased by 11.5 percentage points, from 62.1 percent in 2006 to 73.6 percent in 2016. Low birth weight reduced from 13.1 percent to 7.3 percent.

Stunting among children under five years of age varies across districts, ranging between 21 percent in Imphal West and 37.1 percent in Tamenglong district (Map 1). Prevalence of anemia among women of reproductive age (Map 2) is lowest in Ukhrul district at 16 percent, and highest in Imphal West at 29.1 percent.

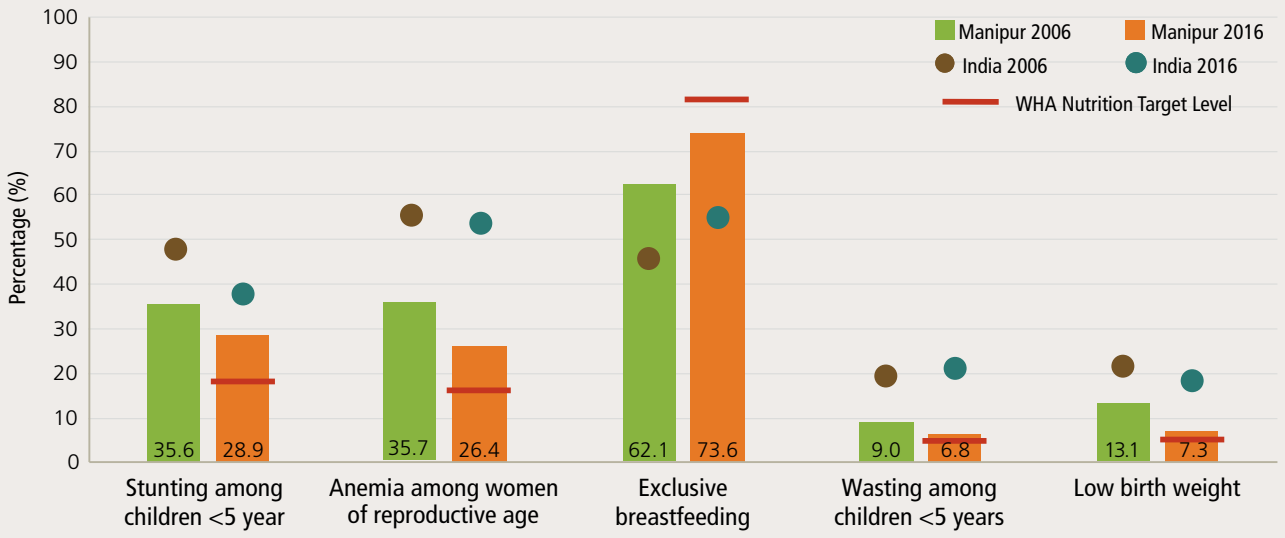
Wasting among children under five years of age ranges from 4.7 percent in Imphal West to 8.2 percent in Senapati and Tamenlong districts. Severe wasting is lowest in Imphal West (1.3 percent) and highest in Tamenlong district (3.9 percent). Senapati, Chandel and Tamenlong districts suffer from multiple burdens of stunting, wasting and anemia.

Exclusive breastfeeding ranges widely across districts in Manipur, with the lowest practice prevalence in Ukhrul (47.2 percent) and the highest level in Bishnupur (83.3 percent).

### Changes in the determinants of nutrition

To improve the nutrition of women and children in states such as Manipur, investments must be made to address the determinants of poor nutrition, using a variety of policy instruments and other efforts. Here we examine changes in the immediate determinants of nutrition in the state, as well as the performance of nutrition-specific interventions to address these determinants. This is followed by a description of changes seen in the underlying determinants of nutrition, however we do not examine coverage data on programs to improve underlying

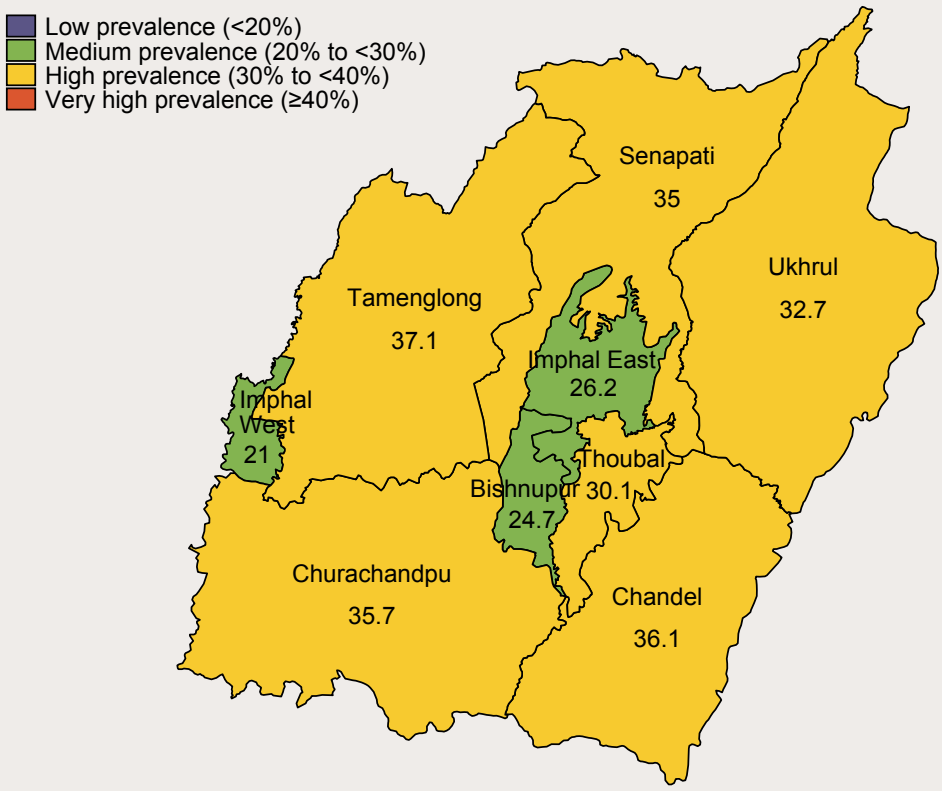
FIGURE 1 Trends in nutrition outcomes in Manipur, 2006 to 2016




**Source:** NFHS-3 and NFHS-4 and RSoC for low birth weight.

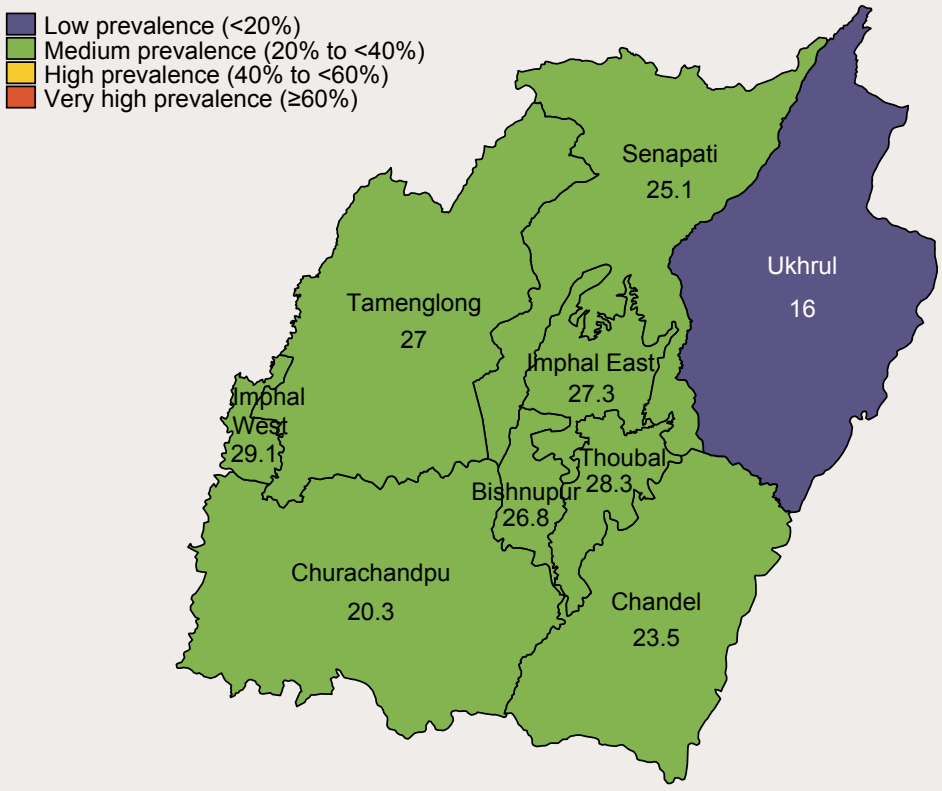
**Note:** A set of global nutrition targets for maternal, infant and young child nutrition were endorsed by the World Health Assembly (WHA) in 2012. The red lines represent the WHA targets to be achieved by the state, by 2025. The baseline reference year for these targets is 2012. The state baseline 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 Manipur in 2016, by district



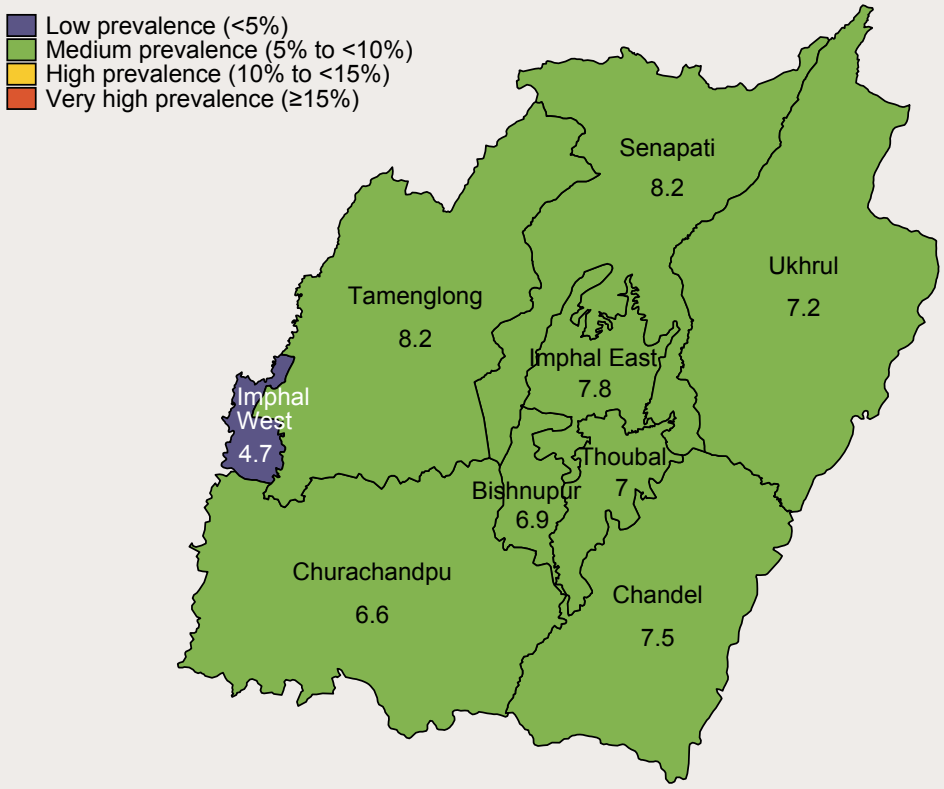

**Source:** NFHS-4.

## MAP 2 Anemia (among women of reproductive age) in Manipur in 2016, by district



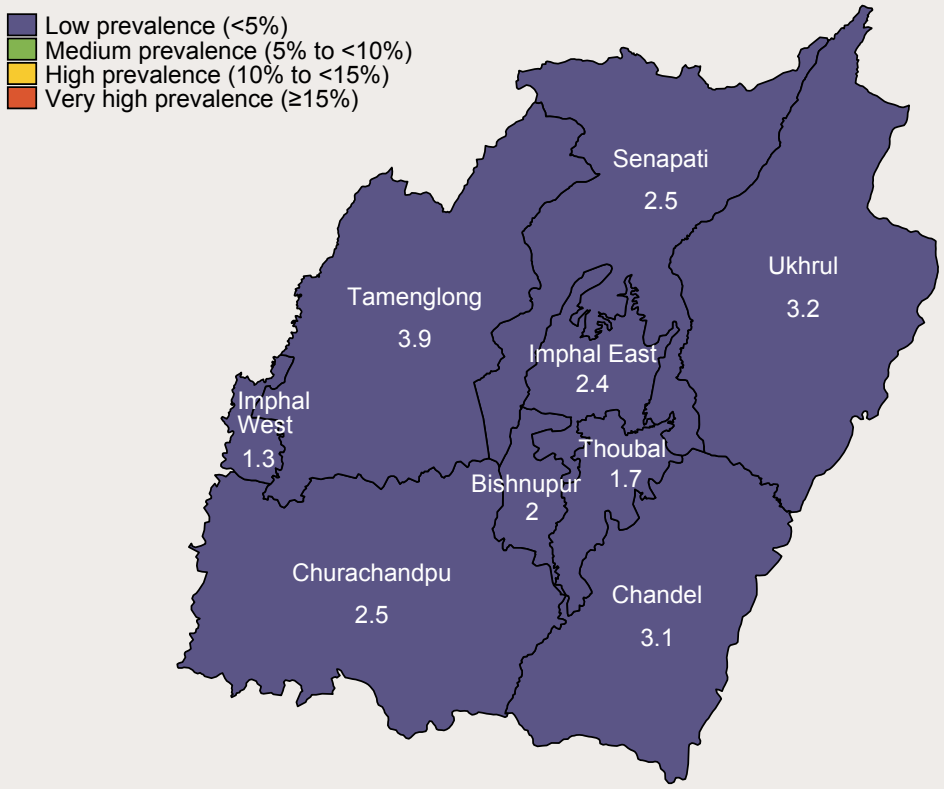

**Source:** NFHS-4.

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



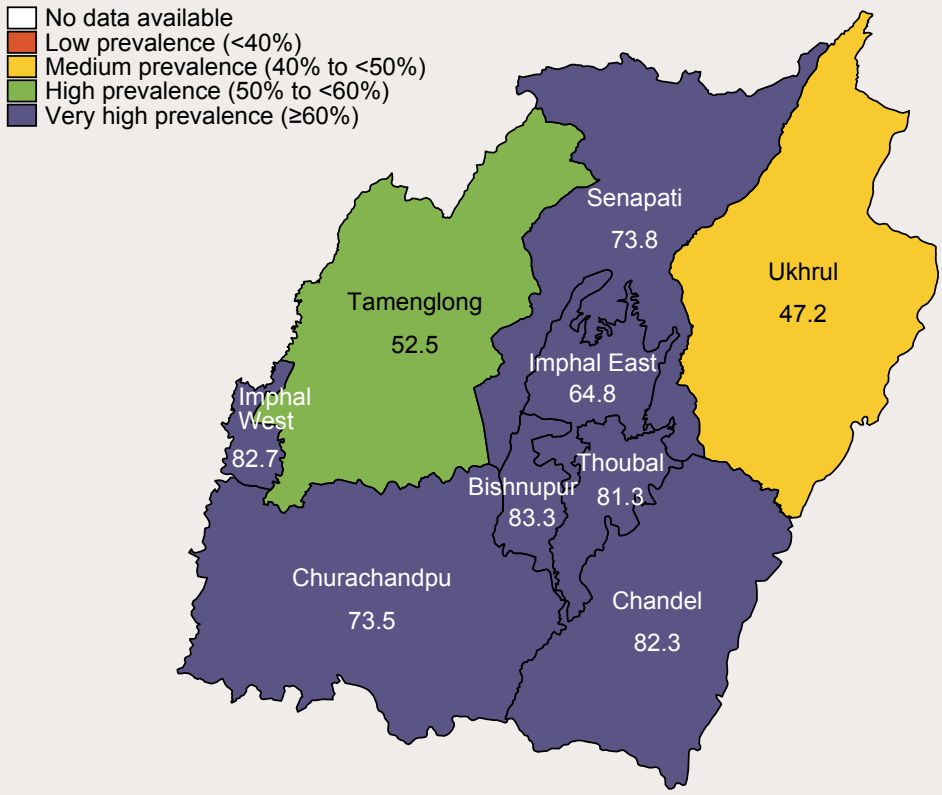

**Source:** NFHS-4.

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




**Source:** NFHS-4.

## MAP 5 Exclusive breastfeeding in Manipur in 2016, by district




**Source:** NFHS-4.

determinants in this Note, because this data is not currently available.

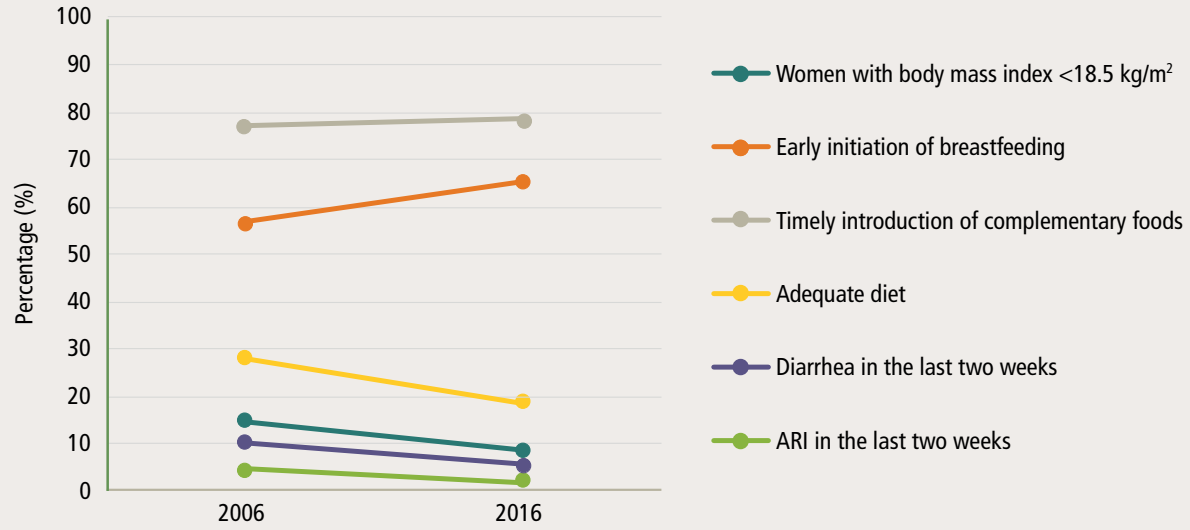
Changes in the **immediate determinants** in Manipur have been largely positive (Figure 2). The proportion of women with low body mass index declined from 14.8 percent in 2006 to 8.8 percent in 2016. Early initiation of breastfeeding increased from 57.2 percent to 65.4 percent over the last decade. Timely introduction of complementary feeding to children between 6 and 8 months improved marginally from 77.4 percent to 78.8 percent. However, less than a quarter of children (18.8 percent) in the age group of 6 to 23 months received adequate diet.

Disease burden among children improved in Manipur. The proportion of children with diarrhea fell from 10 percent in 2006 to 5.8 percent in 2016 and the prevalence of acute respiratory infection (ARI) declined from 4.7 percent to 1.7 percent during the same period.

Overall, the coverage of **nutrition-specific interventions** in Manipur has improved over the last decade (Figure 3). The proportion of women who had an antenatal check-up (ANC) in their first trimester of pregnancy increased from 64.5 percent to 77 percent in 2016. Instances of 4 or more ANC visits increased from 54.1 percent to 69 percent between 2006-16. Women who consumed iron-folic acid (IFA) supplements during pregnancy increased from a low 6.8 percent in 2006 to 39.2 percent in 2016. Neonatal tetanus coverage rates too improved from 79.2 percent to 88.8 percent over the last decade.

There were improvements across interventions related to childbirth. Institutional delivery improved from 45.9 percent to 69.1 percent. Presence of health personnel at delivery increased from 59 percent to 77.2 percent, and number of births registered more than doubled from 30.4 percent to 64.8 percent over the last decade.

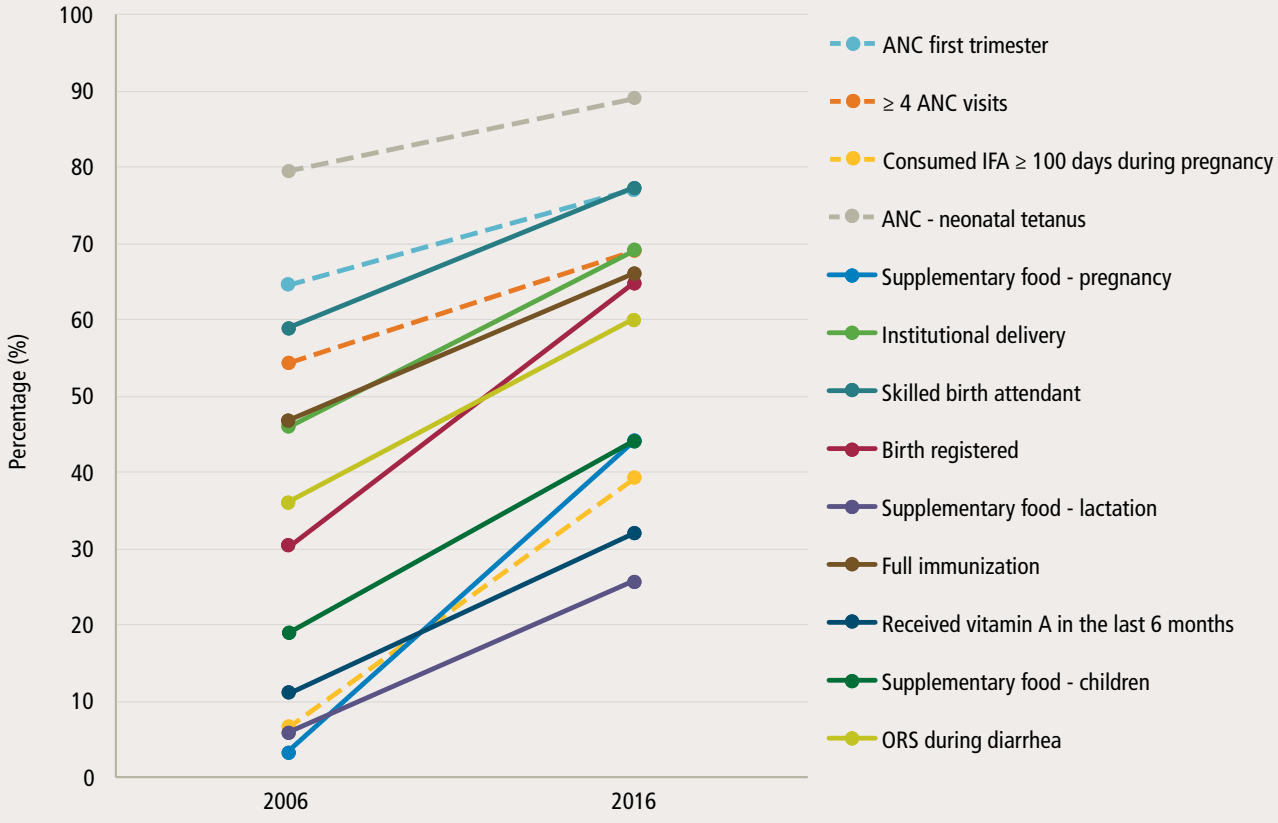
## FIGURE 2 Changes in immediate determinants of nutrition in Manipur, 2006 to 2016




**Source:** NFHS-3 and NFHS-4.

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

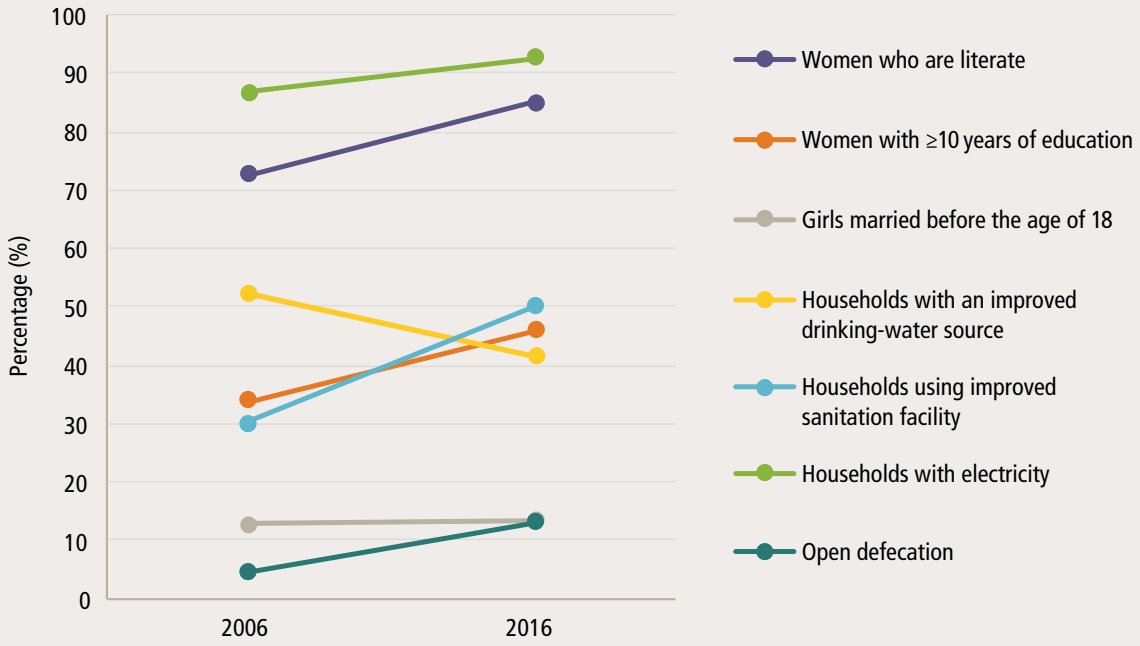
## FIGURE 3 Changes in coverage of nutrition-specific interventions along the continuum of care in Manipur, 2006 to 2016




**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 Manipur, 2006 to 2016




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

**Note:** Refer to endnotes for indicator definitions.

Nutrition interventions focused on children also improved in the last ten years. The proportion of children who were fully immunized increased from 46.8 percent to 65.9 percent. The proportion of children receiving vitamin A supplementation increased from 11.2 percent to 32.1 percent. Use of oral rehydration salts (ORS) during diarrhea among children increased from 36.2 percent to 60.2 percent during this period.

Between 2006 and 2016, the coverage of food supplements improved substantially among pregnant women (from 3.7 percent to 44.3 percent), lactating mothers (from 6 percent to 25.8 percent) and children (from 19.2 percent to 44.3 percent).

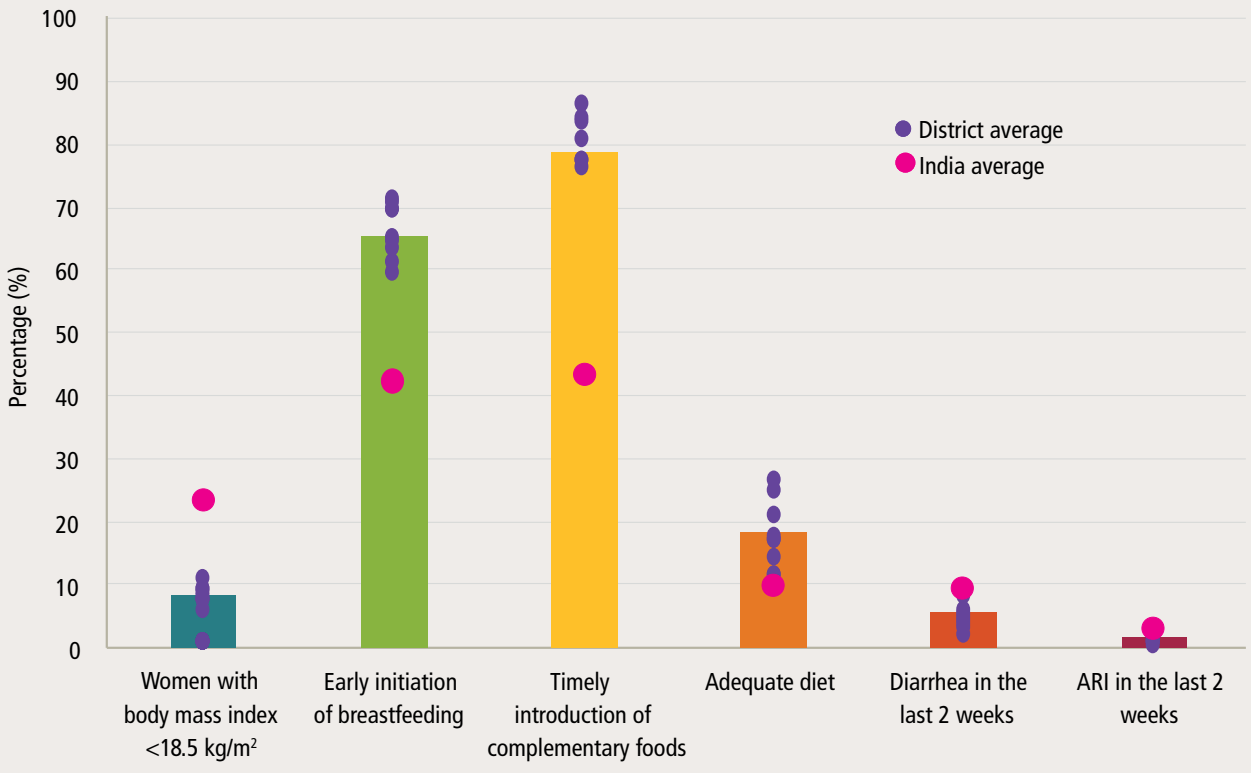
In the last decade, Manipur experienced improvements in most of the **underlying determinants of nutrition** (Figure 4). Literacy among women improved from 72.6 percent to 85 percent, and the proportion of women with 10 or more years of education increased from 33.8 percent to 45.9 percent. However, underage marriage among girls, that is, below the age of 18, saw a marginal increase from 12.7 percent to 13.1 percent.

Improvements in access to infrastructure and household facilities was mixed in Manipur over the last decade. Household access to electricity improved from 87 percent to 92.4 percent. Households using improved sanitation facilities increased from 30.2 percent to 49.9 percent. However, open defecation saw a threefold rise from 4.4 percent in 2006 to 12.6 percent in 2016, and household access to improved drinking water reduced from 52.1 percent to 41.6 percent in the same period.

## Inter-district variability in selected coverage of interventions in Manipur, in 2016

As seen in Figures 5-7, there is a high degree of inter-district variability among the 9 districts in Manipur for some key determinants (that is, ANC in the first trimester, 4 or more ANC visits, IFA consumption during pregnancy, institutional delivery, presence of skilled birth attendant, full immunization). In contrast,

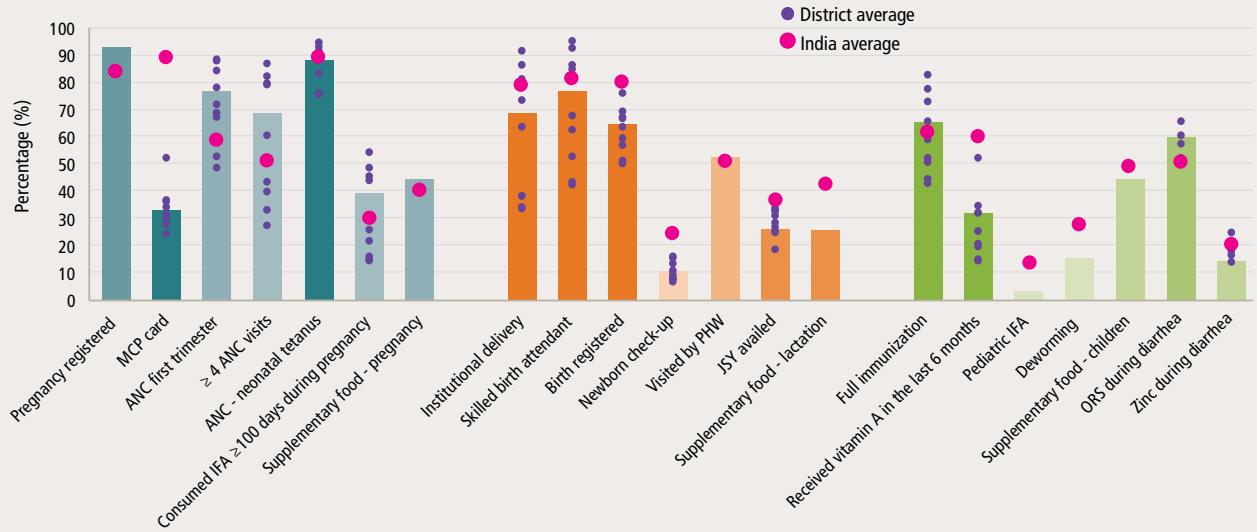
## FIGURE 5 Inter-district variability in immediate determinants in Manipur, in 2016




**Source:** NFHS-4.

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

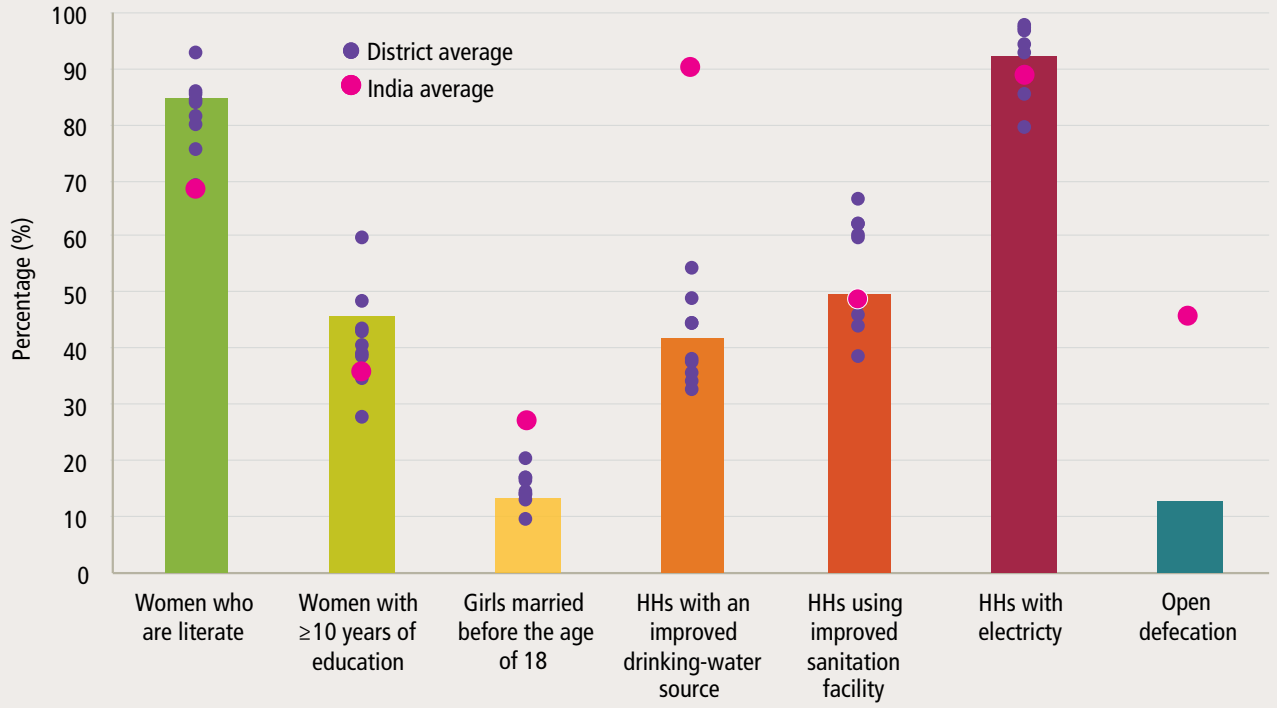
## FIGURE 6 Inter-district variability in coverage of selected interventions in Manipur, in 2016




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

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

FIGURE 7 Inter-district variability in underlying determinants in Manipur, 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.

there is low inter-district variability for some determinants (for example, early initiation of breastfeeding, adequate diet, neonatal tetanus, JSY availed, literacy among women, household access to drinking water, sanitation and electricity). For some indicators (that is, vitamin A supplementation, mother and child protection (MCP) card provision, births registered, newborn check-up, household access to improved drinking water) most districts in the state do not perform as well as the national average.

## LOOKING FORWARD: IMPLICATIONS & RECOMMENDATIONS

In this era of India's commitment to global nutrition targets, this is an opportune time for Manipur to set its own nutrition targets to be achieved by 2025, to examine progress within and across the state, and to accelerate actions necessary to improve all forms of malnutrition. The state of Manipur has performed well compared to the national average on several nutrition outcomes in 2006 and has made good progress in the last ten years. To make further progress in nutrition outcomes, Manipur should invest in sustaining improvements and further increase in coverage of interventions targeting the first 1000 days of life.

Among prenatal interventions, efforts are needed to strengthen MCP card provision and ANC visits. Further improvement is required to improve the coverage of IFA consumption which has seen progress in the last 10 years (32.4 percentage point increase) but is still far from optimal (at 39.2 percent). Interventions related to delivery have made considerable progress in the last 10 years but further improvement is required as the proportion of women who delivered in health facilities and whose births were assisted by health professionals are still not optimal (69-77 percent).

Significant investments are needed to strengthen the coverage of several postnatal interventions, particularly vitamin A supplementation where the coverage is low (32.1 percent). For other

postnatal-care related interventions, such as full immunization and ORS during diarrhea, further improvements are required as more than a third of children still do not receive the services. Significant efforts are also required to improve the coverage of supplementary food for pregnant, lactating women and children.

Among the underlying determinants, Manipur has done well on women's education and should continue its efforts to maintain this good progress. However, there was a small rise in underage marriage among girls, calling for special attention to reverse this trend. Special efforts are required to increase the low coverage of improved drinking water and improved sanitation (currently less than 50 percent). Finally, the inter-district variability across outcomes and multiple determinants calls for district-specific strategies to bridge these gaps.

It is also imperative that Manipur focuses on the emerging challenge of non-communicable diseases, alongside making investments in undernutrition. Over a quarter of adult women (26 percent) and 19.8 percent of adult men in the state are overweight or obese. As Figure 8 below shows, high blood sugar and high blood pressure rates in the state are above the national average. Non-communicable diseases are thus a pressing issue for the state to address.

## NOTES

1. Manipur currently consists of 16 districts. Since National Family Health Survey-4 used the Census 2011 district boundaries, this Policy Note reports information for only 9 districts.

2. 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.

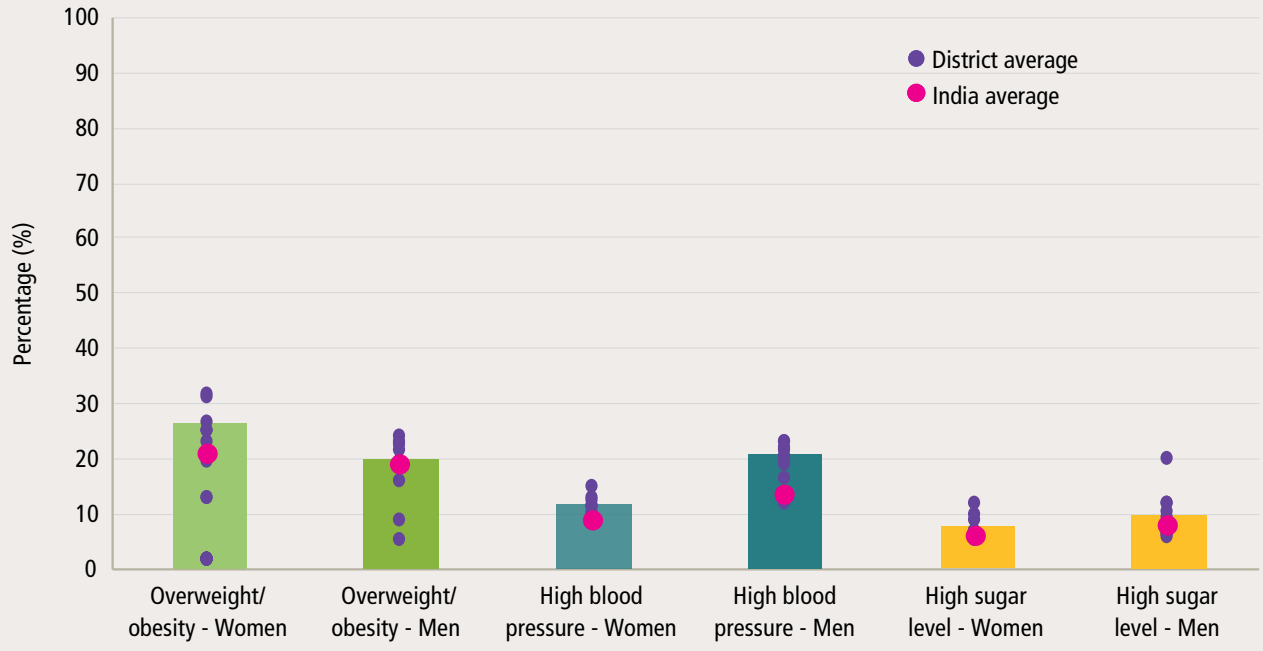
**ANC (first trimester):** Percentage of mothers who received ANC during the first trimester of pregnancy for the last birth in the last 5 years.

**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.

FIGURE 8 Levels of non-communicable diseases in Manipur and India, in 2016




**Source:** NFHS-4.

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

**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).

**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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