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

Policy Note

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Improving Nutrition in Uttar Pradesh

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 variabilities 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 Uttar Pradesh.

Uttar Pradesh, situated in the northern part of India, accounts for 7.3 percent of the area of the country, includes 75 districts subdivided into 822 blocks, 97,814 villages, and 689 cities and towns (Uttar Pradesh State Government 2017). Uttar Pradesh is home to more than 199 million people (16.17 percent of the population of India) of which 67.68 percent is literate. The state has a sex ratio of 912 females per 1,000 males (Census of India 2011).

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

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 71 districts.

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 adolescents, women of reproductive age, 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 among children between 2006 and 2016. Stunting prevalence declined from 57 percent in 2006 to 46 percent in 2016. The prevalence of low birth weight declined slightly from 25.1 percent to 22.5 percent.

Anemia remains a significant public health challenge with more than half of the women of reproductive age being anaemic. Among women of reproductive age, anemia prevalence increased from 50 percent to 52 percent. Wasting among children is another key concern which increased from 15 percent to 18 percent between 2006 and 2016 and severe wasting increased from 5 percent to 6 percent during the same time period (IIPS 2008 and IIPS 2017).

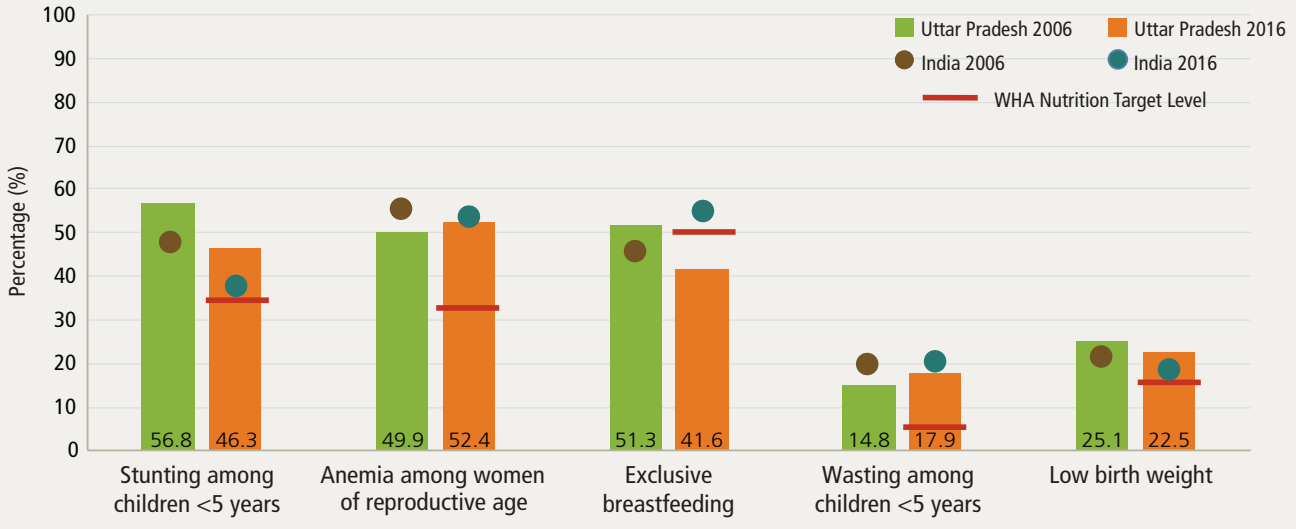
The state also performed poorly on exclusive breastfeeding (EBF) and the proportion of infants under six months who were exclusively breastfed declined from 51 percent in 2006 to 42 percent in 2016.

Stunting among children under five years varies widely across districts, ranging from 32 percent to 65 percent (Map 1). The high levels of stunting is a significant public health concern with more than 40 percent of the children stunted in 61 out of 71 districts of Uttar Pradesh. Bahraich district has the highest stunting rate (65 percent) and Gautam Buddha Nagar (32 percent) has the lowest stunting rate in the state.

In 70 percent of the districts in Uttar Pradesh, more than 50 percent of women of reproductive age are anemic (Map 2). Kannauj (25.9 percent) has the lowest prevalence rate and Chitrakoot has the highest (67.7 percent). The prevalence of wasting (Map 3) among children under five years ranged from 8 percent (Farrukhabad) to 39 percent (Lalitpur). Etah district has the lowest prevalence of severe wasting (2 percent) and Lucknow the highest (17.9 percent) (Map 4).

The prevalence of breastfeeding ranges from 13.3 percent to 71 percent. Only in 24 districts (33 percent), EBF prevalence is higher than 50 percent.

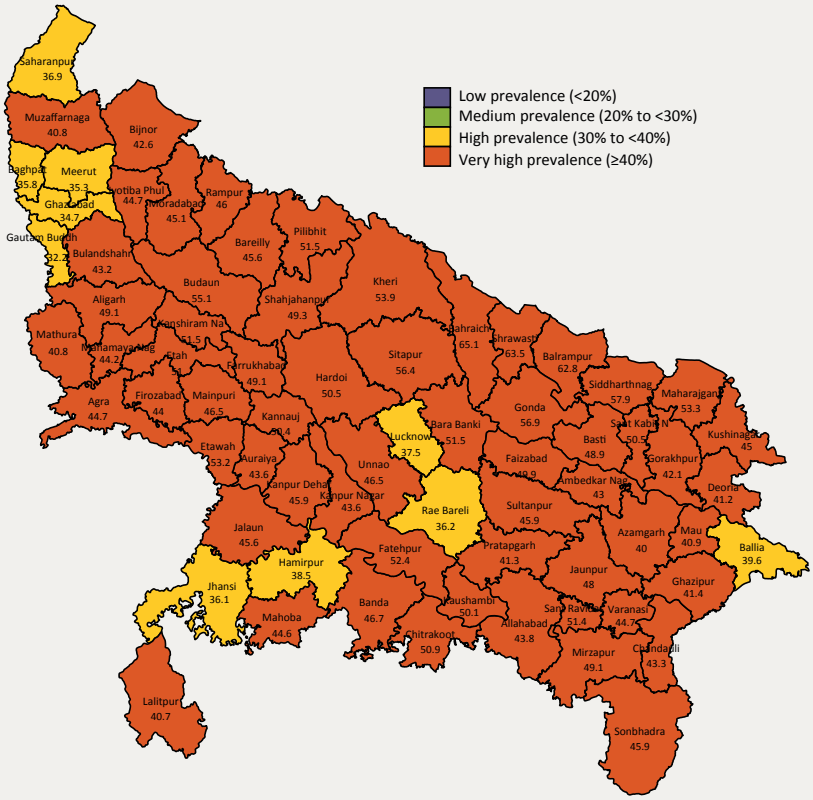
FIGURE 1 Trends in nutrition outcomes in Uttar Pradesh, 2006 to 2016



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

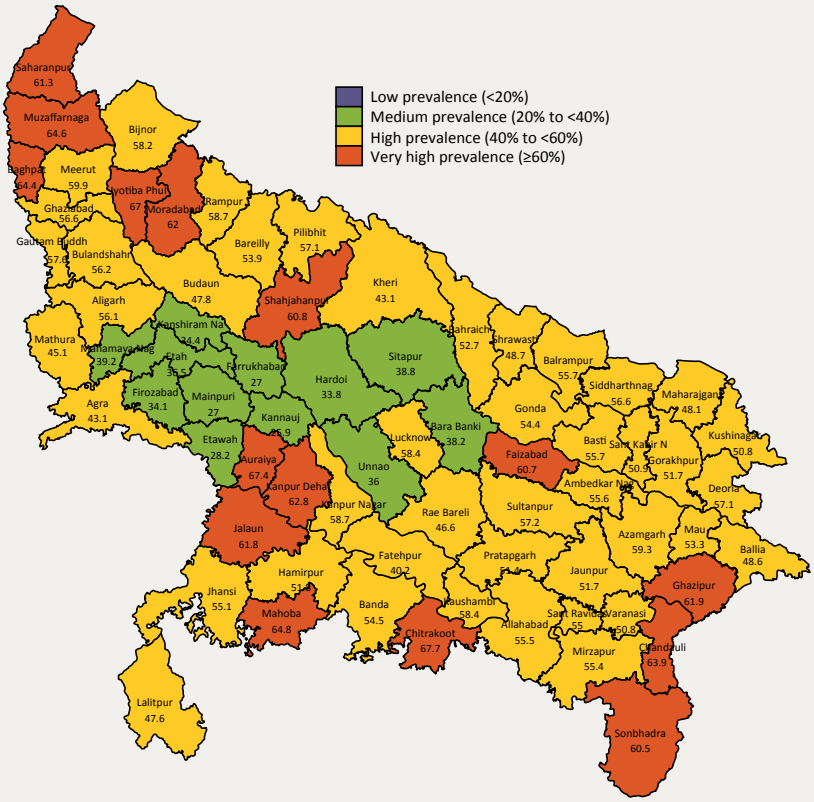
Note: A set of global nutrition targets for maternal, infant and young child nutrition were endorsed by the World Health Assembly (WHA) in 2012. The red lines represent the WHA targets to be achieved by the state, by 2025. The baseline reference year for these targets is 2012. The state baseline estimates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



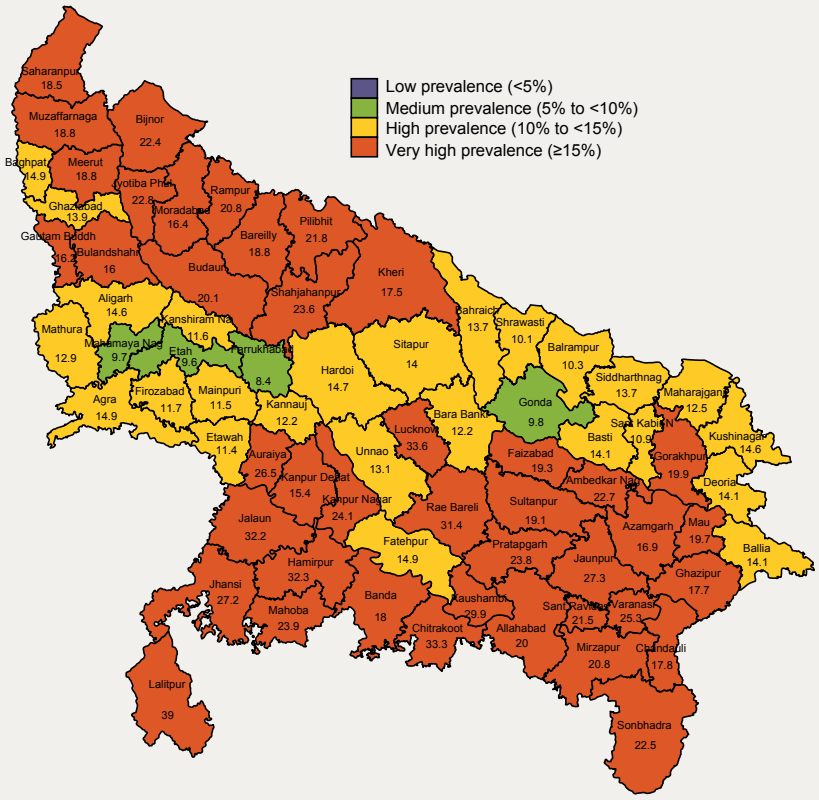
Source: NFHS-4.

MAP 2 Anemia (among women of reproductive age) in Uttar Pradesh in 2016, by district



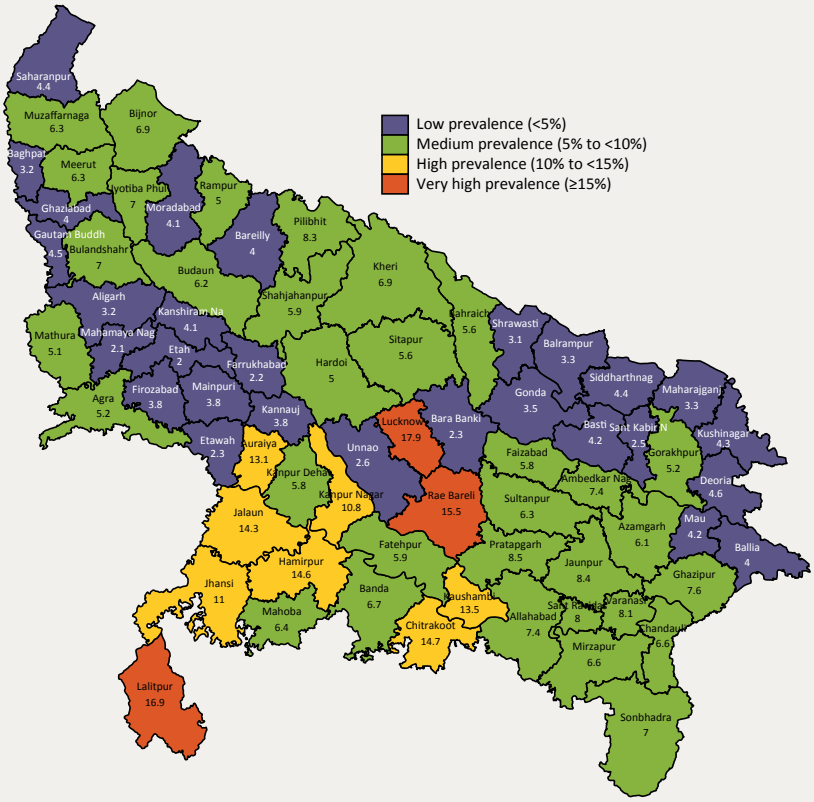
Source: NFHS-4.

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



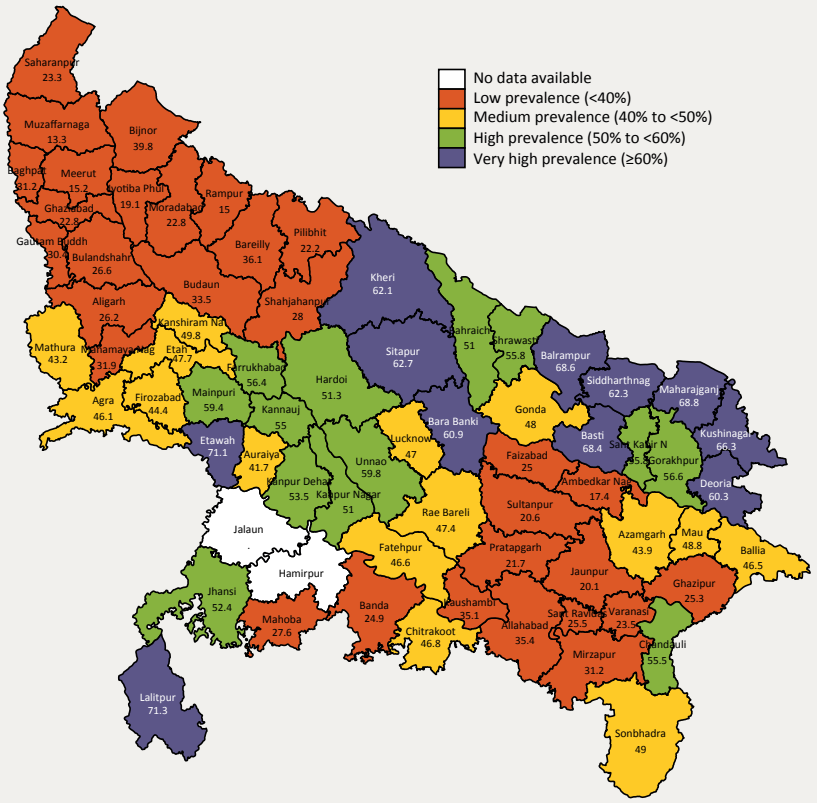
Source: NFHS-4.

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



Source: NFHS-4.

MAP 5 Exclusive breastfeeding in Uttar Pradesh in 2016, by district



Source: NFHS-4.

Data on EBF for two districts (Jalaun and Hamirpur) in Uttar Pradesh is missing (Map 5), because district-specific sample sizes for age sub-groups are too small.

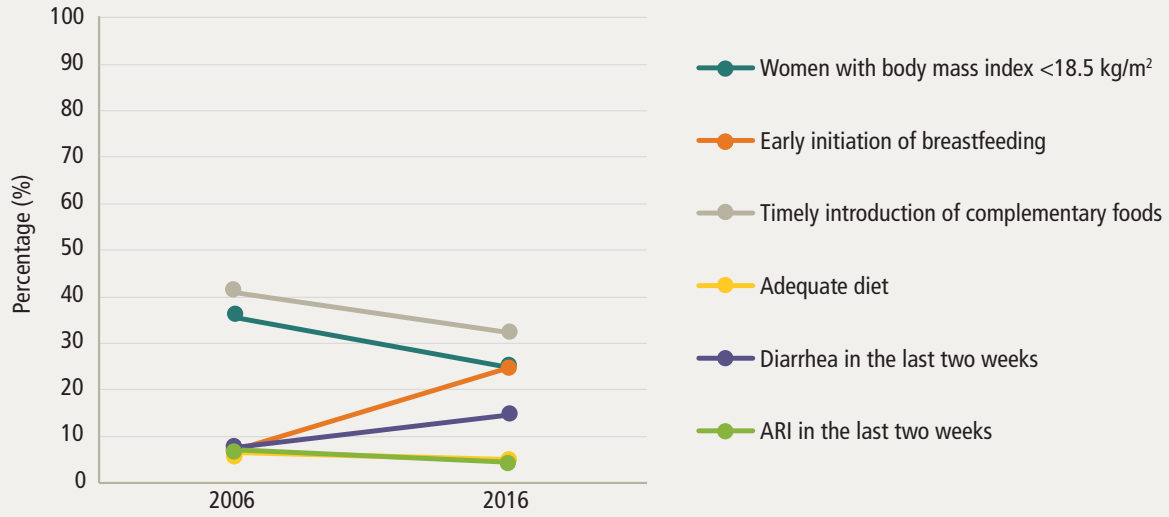
Changes in the determinants of nutrition

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 are not available at this time.

Changes in the ***immediate determinants*** of nutrition in Uttar Pradesh are described in Figure 2. The trends in the immediate determinants of nutrition in Uttar Pradesh are of great concern. Between 2006 and 2016, there was little progress on infant and young child feeding (IYCF) practices and child health, all important immediate determinants of child nutrition. In the last decade, even though early initiation of breastfeeding increased from 7 percent to 25 percent, only a quarter of children were breastfed within the first one hour of birth. Timely introduction of complementary foods (between 6 and 8 months of age) declined over the last decade (from 41 percent to 33 percent). In 2016, only 5 percent of children (between 6 and 23 months of age) received an adequate diet.

The disease burden has not improved in Uttar Pradesh over the past decade. The proportion of children with diarrhea increased from 8 percent in 2006 to 15 percent in 2016 and the proportion of

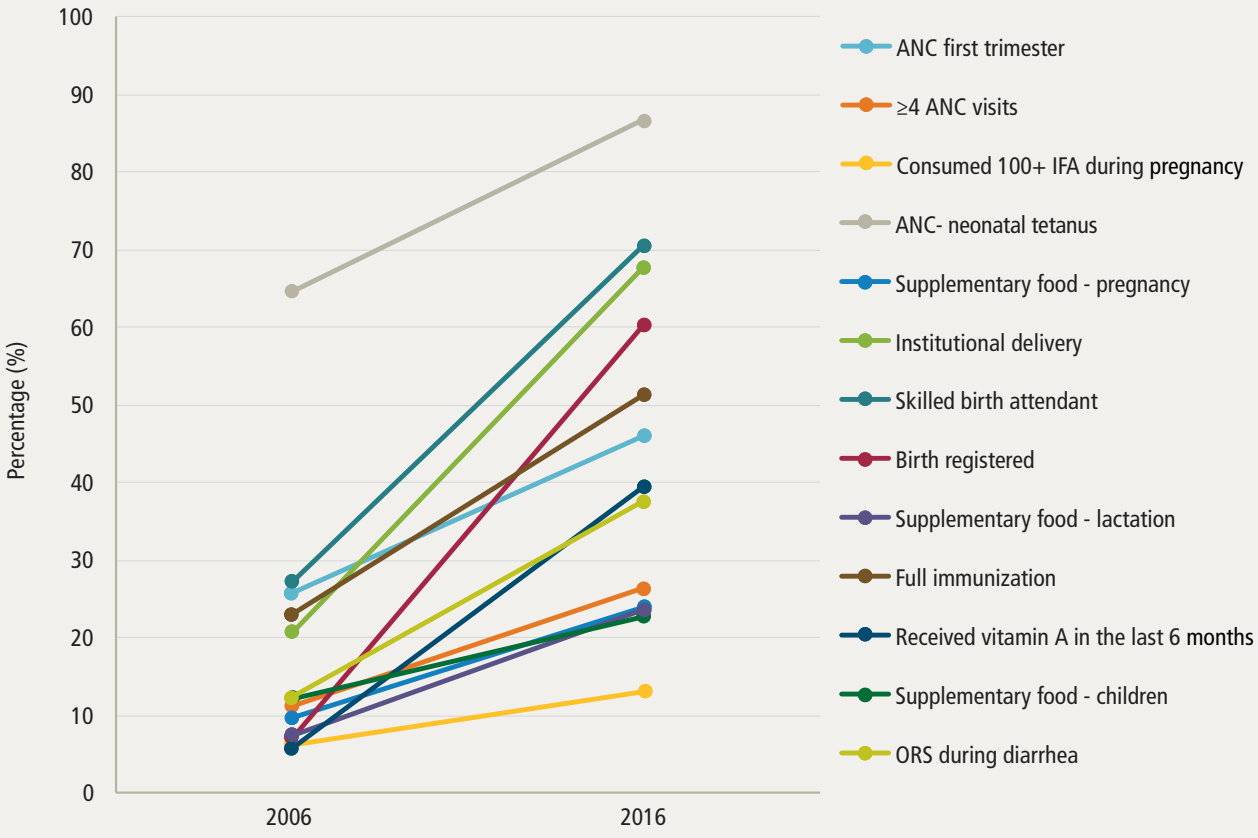
FIGURE 2 Changes in immediate determinants of nutrition in Uttar Pradesh, 2006 to 2016



Source: NFHS-3 and NFHS-4.

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

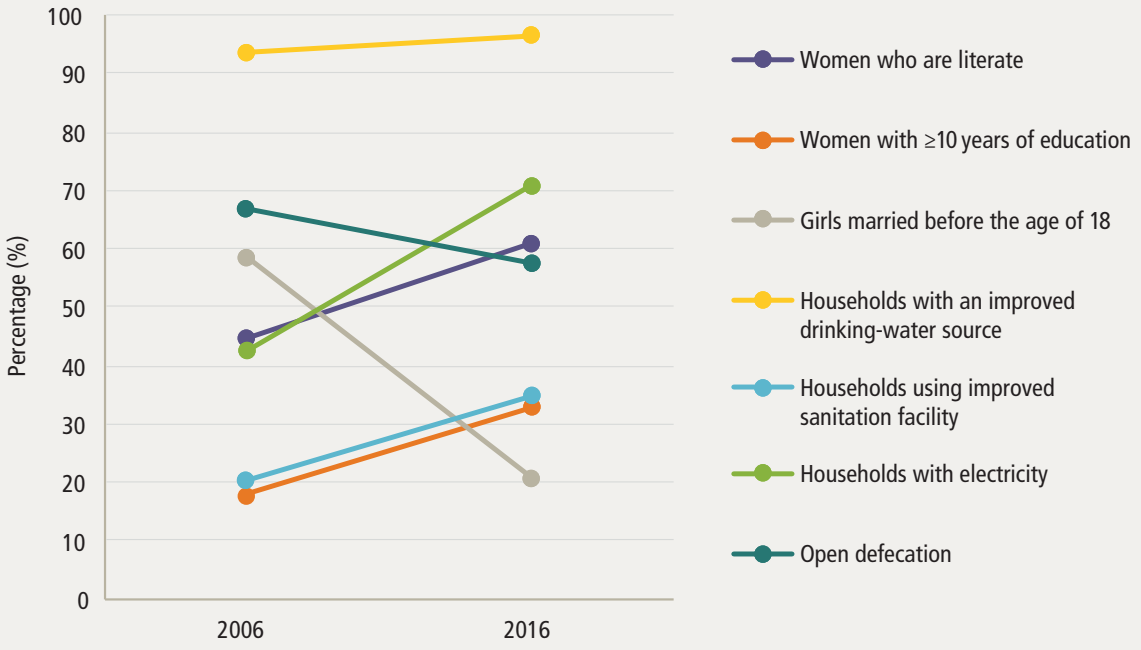
FIGURE 3 Changes in coverage of nutrition-specific interventions along the continuum of care in Uttar Pradesh, 2006 to 2016



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 Uttar Pradesh, 2006 to 2016



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

Note: Refer to endnotes for indicator definitions.

children with acute respiratory infection moderately declined from 7 to 5 percent for the same time period. For women, the proportion with body mass index below 18.5 kg/m^2 declined from 36 percent to 25 percent during this period.

Changes in the coverage of ***nutrition-specific interventions*** in Uttar Pradesh are presented in Figure 3. Interventions related to delivery, such as the proportion of women who delivered in health facilities and whose births were assisted by health professionals, improved substantially in the last decade. Vitamin A supplements for children under six months increased, from 6 percent to 40 percent in the last decade. The proportion of women reporting consumption of iron-folic acid (IFA) supplements remained low though it moderately increased from 6 percent in 2006 to 13 percent in 2016. The proportion of women who received more than four antenatal visits increased (from 11 percent to 26 percent). Half the population of children (12–23 months) did not receive all the requisite vaccinations in 2016 even though the proportion of children who were fully immunized increased (from 23 percent to 51 percent).

In the last two decades, Uttar Pradesh experienced improvements in the ***underlying determinants*** of nutrition (presented in Figure 4). The proportion of households with access to electricity increased from 43 percent to 71 percent. Although levels are still too low, there was a rise in the proportion of households using improved sanitation (from 21 percent to 35 percent) in the last decade. There was also a rise in women's literacy (from 45 percent to 61 percent) and the proportion of women with more than 10 years of education (from 18 percent to 33 percent). There was a remarkable decline in the proportion of girls who were married before 18 years (from 59 percent to 21 percent).

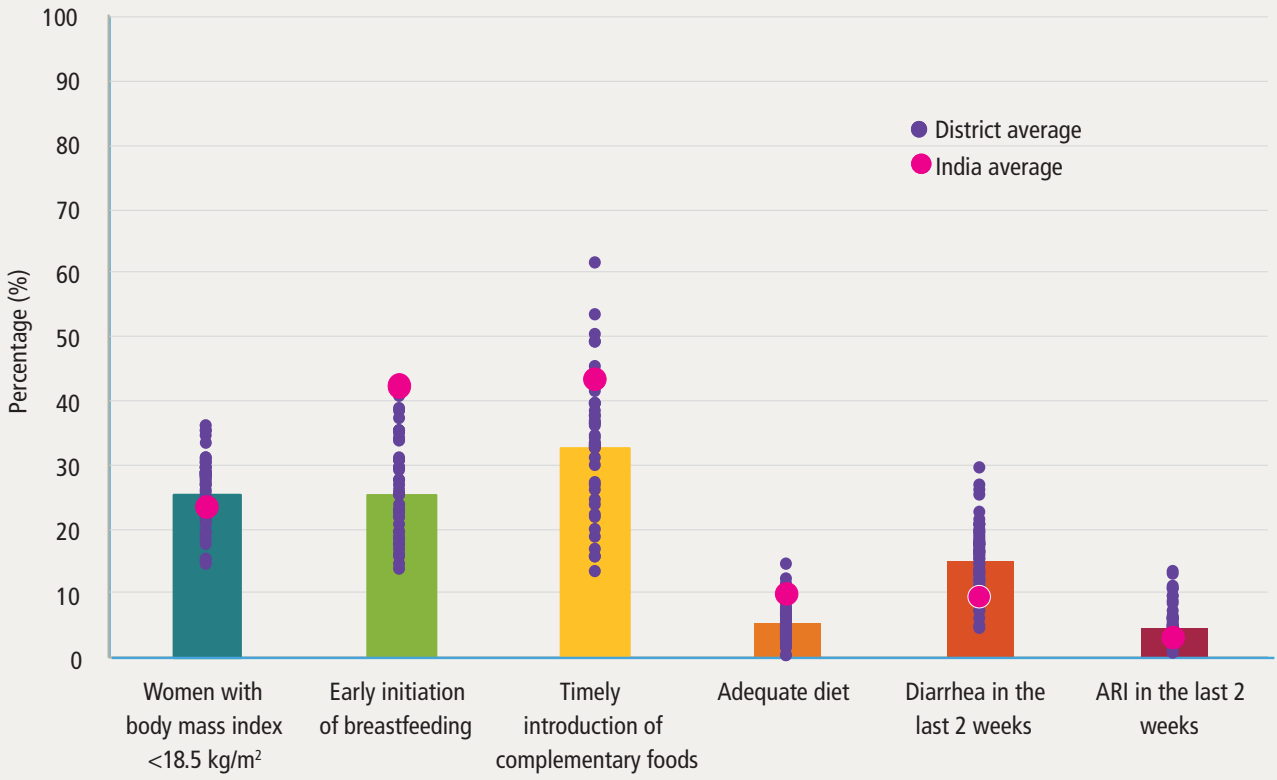
Inter-district variability in selected determinants and coverage of interventions in Uttar Pradesh in 2016

The 71 districts for which NFHS-4 data is available cover a range of agro-ecological and economic characteristics. Among these districts there is a high degree of inter-district variability for most key determinants (that is, early initiation of breast-feeding, coverage of antenatal care, institutional delivery, full immunization, women's education, electricity, improved sanitation, etc.). In contrast, there is little to no inter-district variability for some other determinants, either because 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 districts (for example, adequate diet among children 6–23 months or consumption of IFA during pregnancy is low across districts).

LOOKING FORWARD: IMPLICATIONS & RECOMMENDATIONS

In the era of India's commitment to global nutrition targets, it is an opportune time for Uttar Pradesh 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. To achieve progress on nutrition, the state should invest in improving the coverage of interventions targeting the first 1,000 days of life and continue to invest in sustaining adequate delivery where coverage is already high. On nutrition-specific interventions, special emphasis is needed on strengthening coverage of several health and nutrition interventions, including antenatal care, IFA supplementation (where coverage is currently extremely low), food supplementation and other interventions related to maternal care during pregnancy. Given the low coverage of several postnatal interventions as well in Uttar Pradesh, an

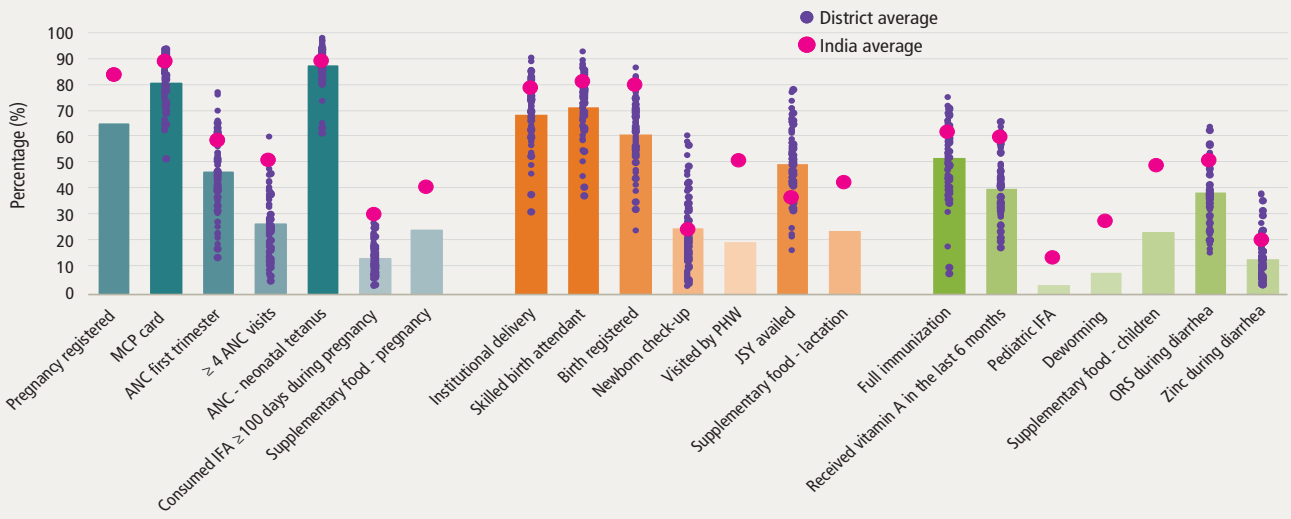
FIGURE 5 Inter-district variability in immediate determinants in Uttar Pradesh, in 2016



Source: NFHS-4.

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

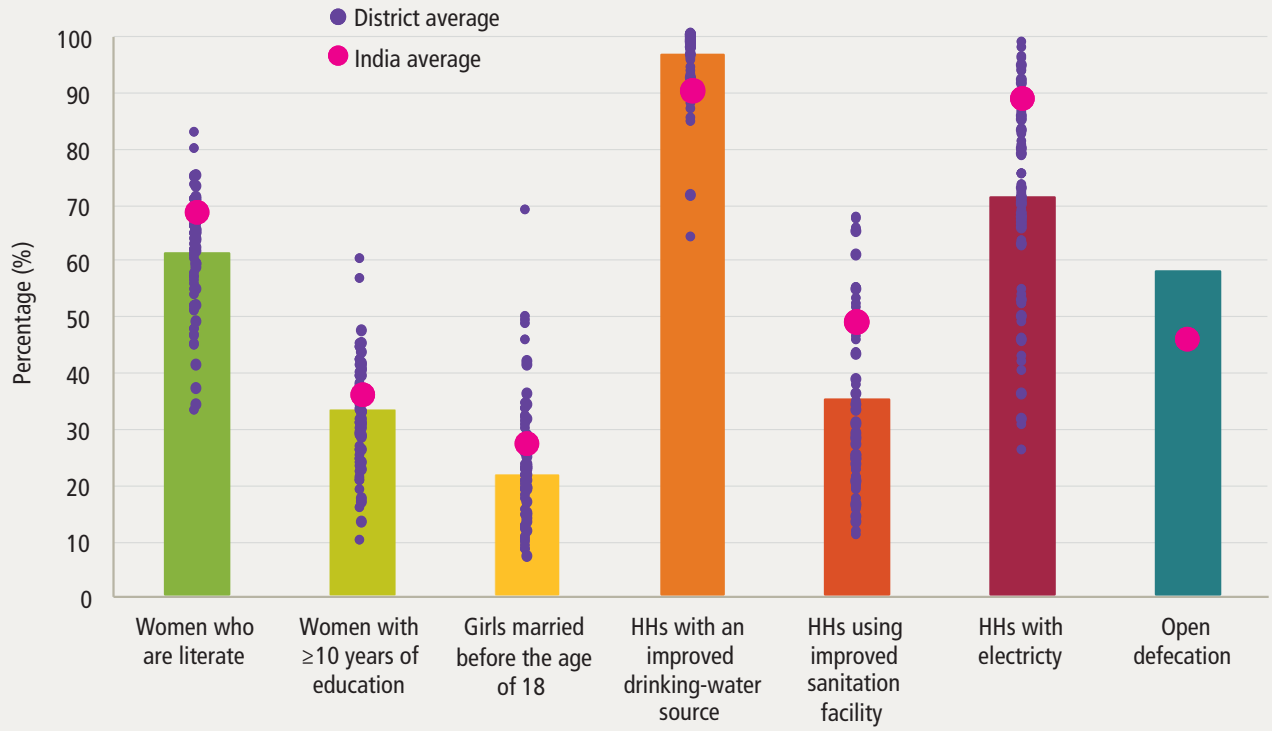
FIGURE 6 Inter-district variability in selected coverage of interventions in Uttar Pradesh, in 2016



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 Uttar Pradesh, in 2016



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

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

all-out effort is needed to strengthen actions to support child health (immunization, ORS and zinc, and other interventions) and especially adequate infant and young child feeding practices (particularly complementary feeding practices). On underlying determinants, women's education, early marriage, electricity and sanitation need urgent attention.

Alongside investments in early nutrition, it is also important for Uttar Pradesh to consider the challenge of non-communicable diseases. As Figure 8 below shows, one in six women and one in eight men in Uttar Pradesh are now overweight or obese. The challenges of high blood pressure and high blood sugar are also emerging. These numbers are slightly below the Indian average, which provides an opportunity to tackle the problem before it escalates further. Uttar Pradesh now needs to develop a strong nutrition strategy to simultaneously address undernutrition and these emerging non-communicable diseases related to nutrition. This is particularly important because even low proportions in Uttar Pradesh translate to large numbers in absolute terms.

NOTES

1. Uttar Pradesh currently has 75 districts. Since NFHS-4 used the Census 2011 district boundaries, this Policy Note reports information for only 71 districts.

2. Indicator definitions, in alphabetical order:

   Access to electricity: Percentage of households with electricity.

   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.

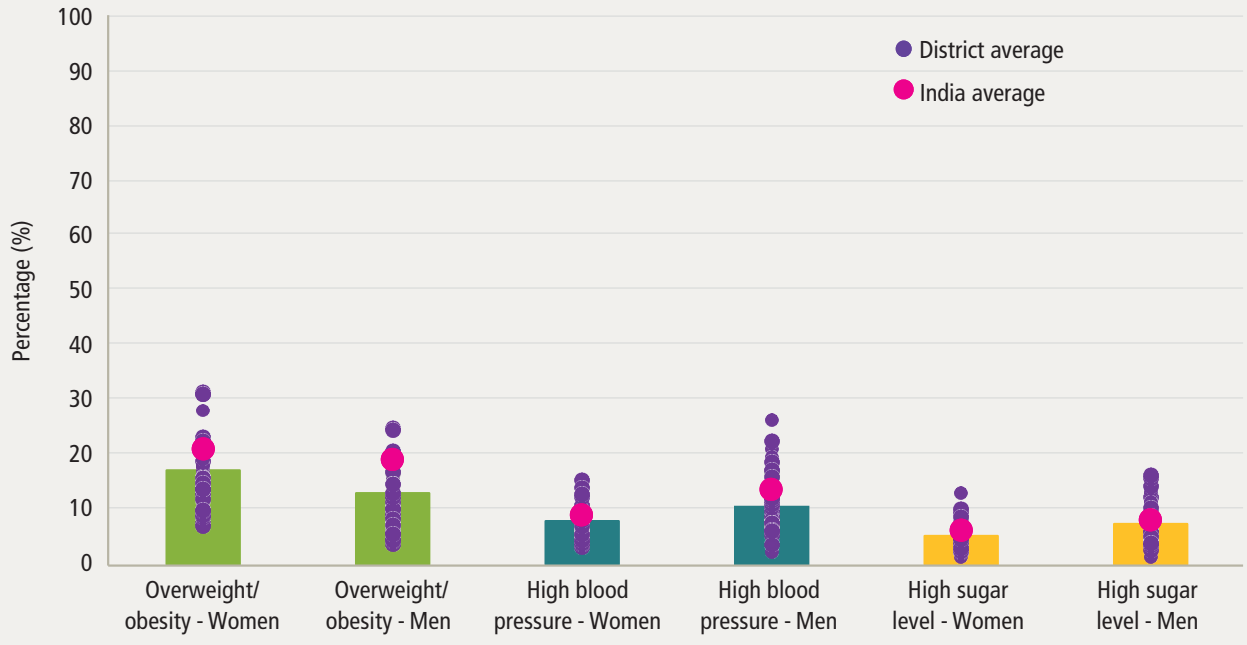
   Anemia among women of reproductive age: Percentage of women 15–49 years old who are anemic (<12.0 g/dl for non-pregnant women and <11.0 g/dl for pregnant women).

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

   Consumption of IFA supplements: 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.

FIGURE 8 Levels of non-communicable diseases in Uttar Pradesh, in 2016



Source: NFHS-4.

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

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

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

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

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

Improved sanitation: 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.

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 year old men and women with body mass index ≥25 kg/m^2.

Prevalence of acute respiratory infection (ARI): Percentage of children below 5 years of age with symptoms of ARI in 15 days preceding the survey.

Prevalence of diarrhea: Percentage of children below 5 years of age who had diarrhea in 15 days preceding the survey.

Severe wasting: Percentage of children 0–59 months old who are below <-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 AWC who received supplementary food provided at the AWC in the last 12 months.

Supplementary food (lactation): Percentage of mothers with children under age 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 age 6 years in areas covered by an Anganwadi center (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.

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 below <-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 schooling.

Women with low body mass index (BMI): 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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