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

Policy Note

No. 15 | OCTOBER 2017

Improving Nutrition in Delhi

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 Delhi.

The National Capital Territory (NCT) of Delhi (hereafter referred to as Delhi) is divided into nine districts for administrative purposes. As of 2011, Delhi accounted for 1.4 percent of India's population (Census of India 2011) and had 9.9 percent of its population living under poverty line (Planning Commission, 2013). Delhi has the highest density of population in India with 11,320 people living per square kilometer. Between 2001 and 2011, its urban population increased by 26.8 percent while rural population declined by 55.6 percent, making it the state/union territory with the largest proportion of urban population (97.5 percent).

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

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 (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.

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 the 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

Changes in nutrition outcomes in Delhi between 2006 and 2016 have been mixed (Figure 1). Stunting prevalence declined from 42.2 percent in 2006 to 32.3 percent in 2016. The prevalence of low birth weight declined slightly, from 26.5 percent to 21.9 percent. Exclusive breastfeeding for children under six months increased from 34.5 percent to 49.5 percent, bringing Delhi closer to the World Health Assembly (WHA) target of at least 50 percent prevalence. Anemia among women of reproductive age and childhood wasting remain significant public health challenges. During the last decade, prevalence of anemia increased from 44.3 percent to 52.5 percent and wasting increased from 15.4 percent to 17.1 percent.

Stunting among children under five years varied slightly across districts, ranging from 22.5 percent in East Delhi to 38.6 percent in North West Delhi (Map 1). In five out of nine districts of Delhi, prevalence of stunting in 2016 was between 30 and 40 percent, while in others it was between 20 and 30 percent.

There was huge variability in the prevalence of anemia among women of reproductive age across Delhi (Map 2), ranging from 33.4 percent in North East Delhi to 66 percent in West Delhi. In 2016, anemia prevalence was higher than 40 percent in all the districts of Delhi except East and North East districts.

The prevalence of wasting (Map 3) among children under five years of age ranged from 12.6 percent (South West Delhi) to 23.7 percent (East Delhi). All the districts in Delhi have high or very high prevalence of wasting (>10 percent). North West Delhi has the lowest prevalence of severe wasting (2.1 percent) while Central Delhi has the highest (11.3 percent), as seen in Map 4.

Data on exclusive breastfeeding (EBF) is not available for any of the districts in Delhi (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 in 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 on those are not available at this time.

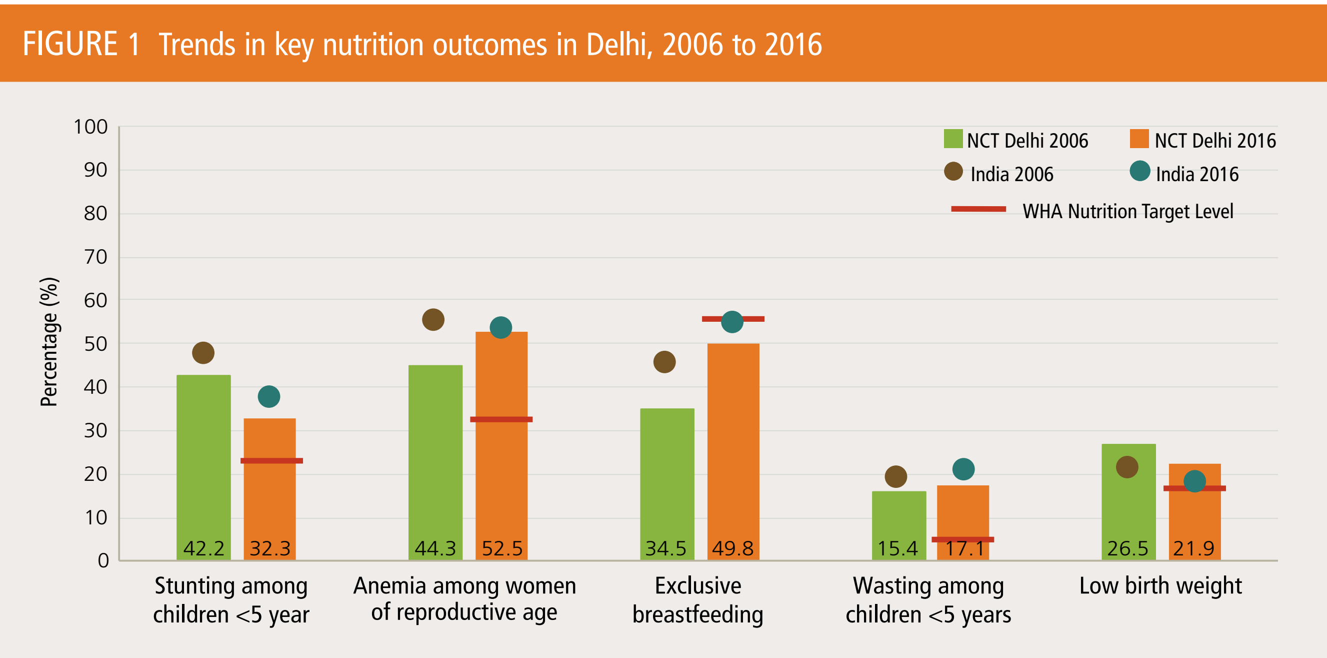
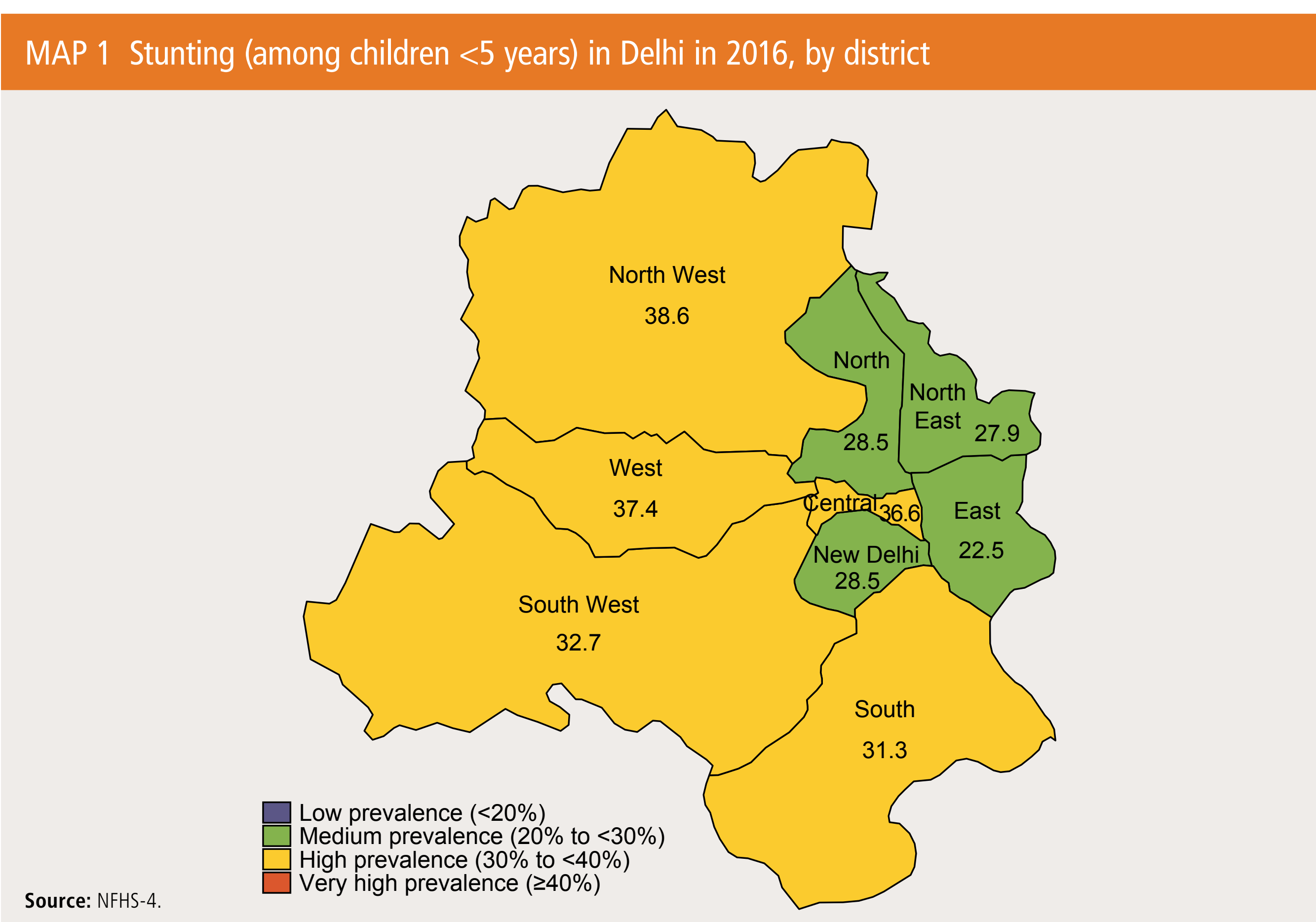


FIGURE 1 Trends in key nutrition outcomes in Delhi, 2006 to 2016

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 Delhi in 2016, by district



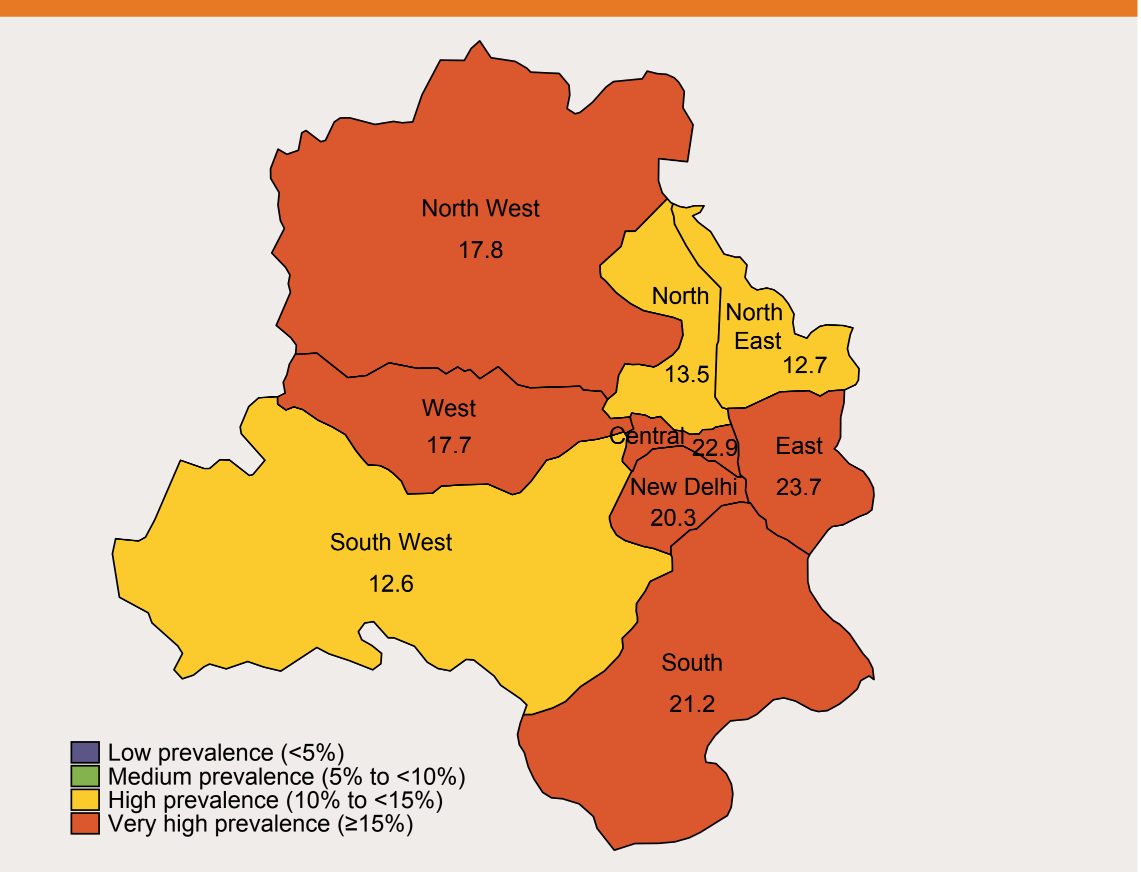
Source: NFHS-4.

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

North West
51.1
North
51.7
North East
33.4
West
66
Central
48.8
East
38.7
New Delhi
57.8
South West
61.9
South
58.6
Low prevalence (<20%)
Medium prevalence (20% to <40%)
High prevalence (40% to <60%)
Very high prevalence (≥60%)

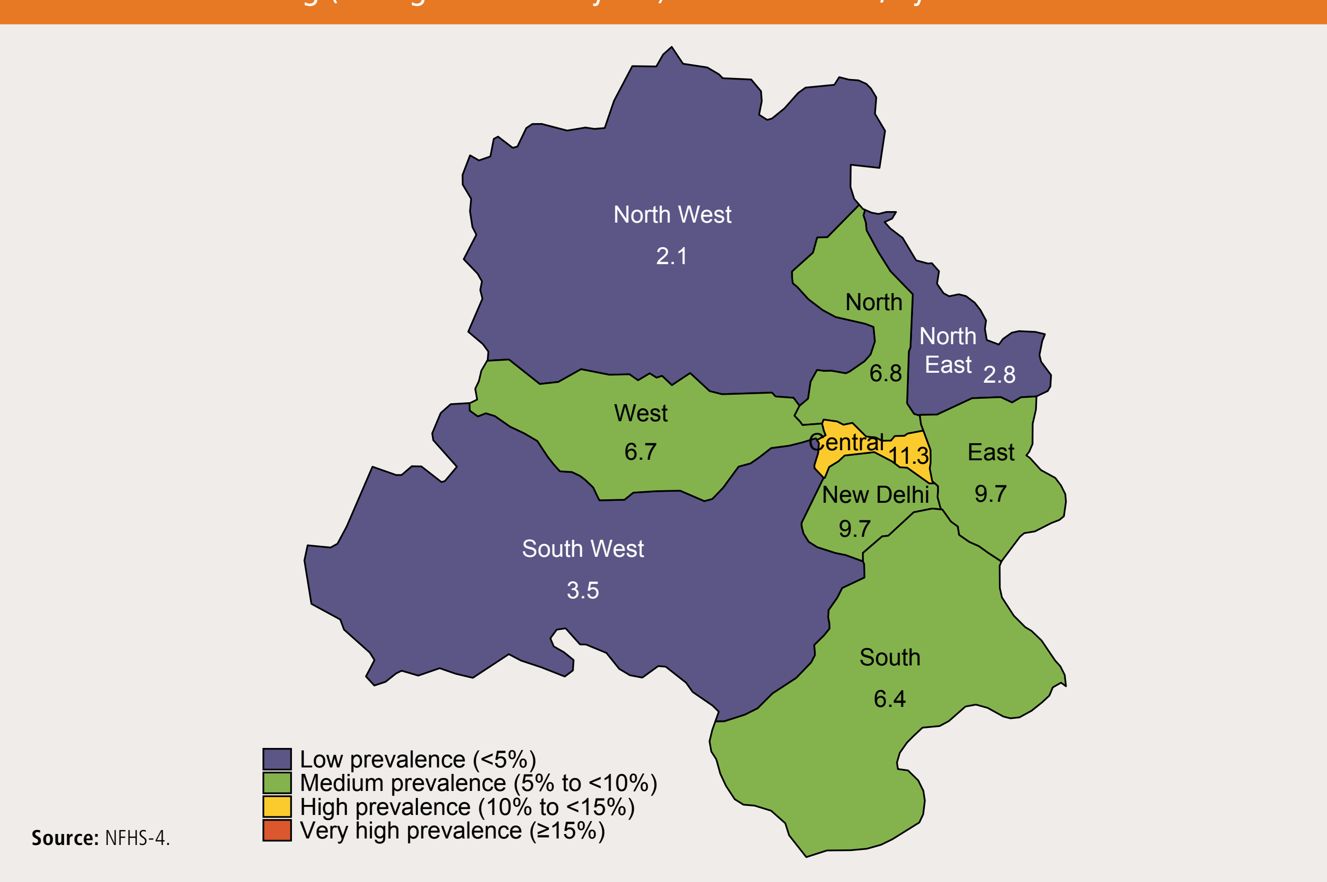
Source: NFHS-4.

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



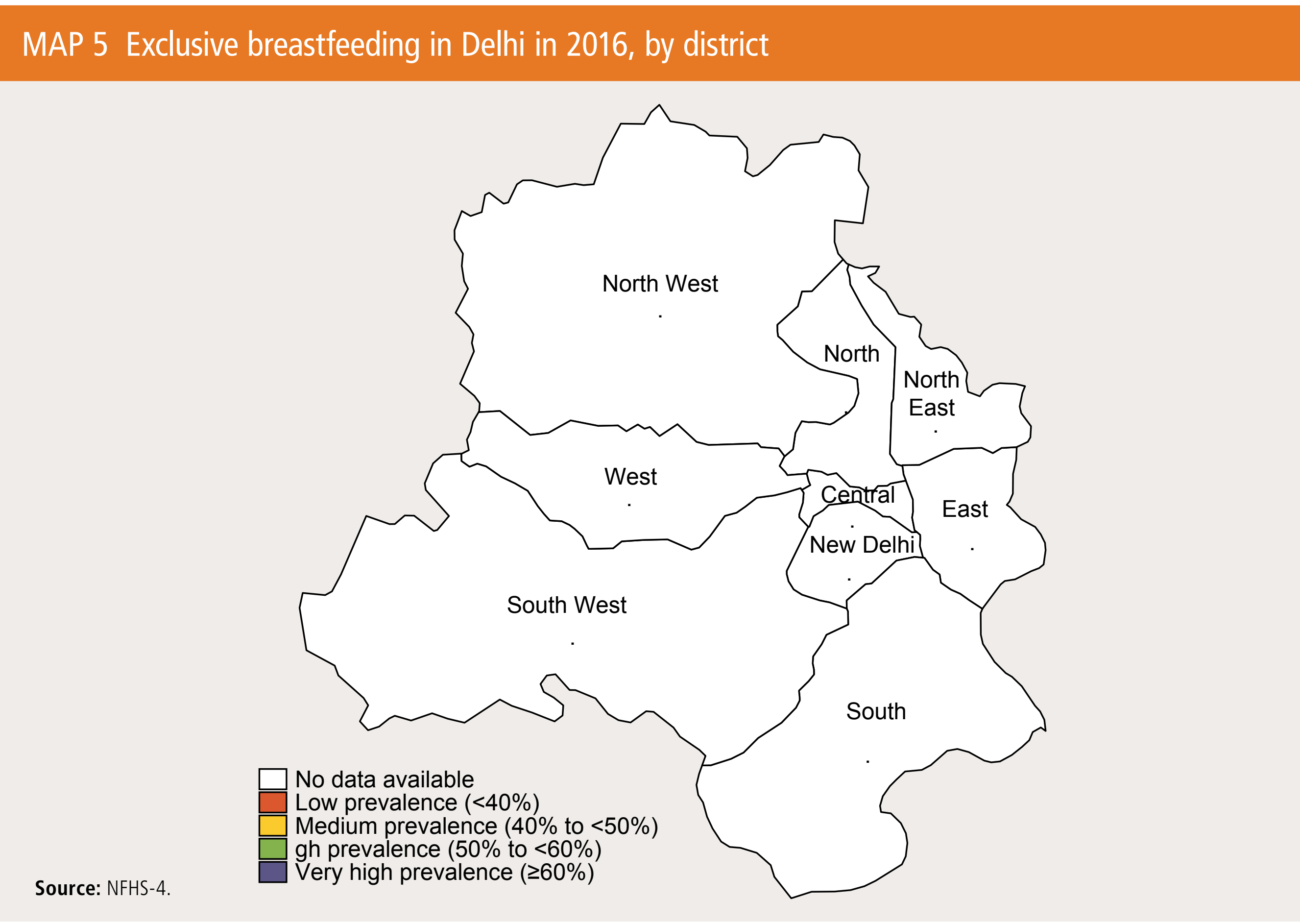
Source: NFHS-4.

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



Source: NFHS-4.

MAP 5 Exclusive breastfeeding in Delhi in 2016, by district



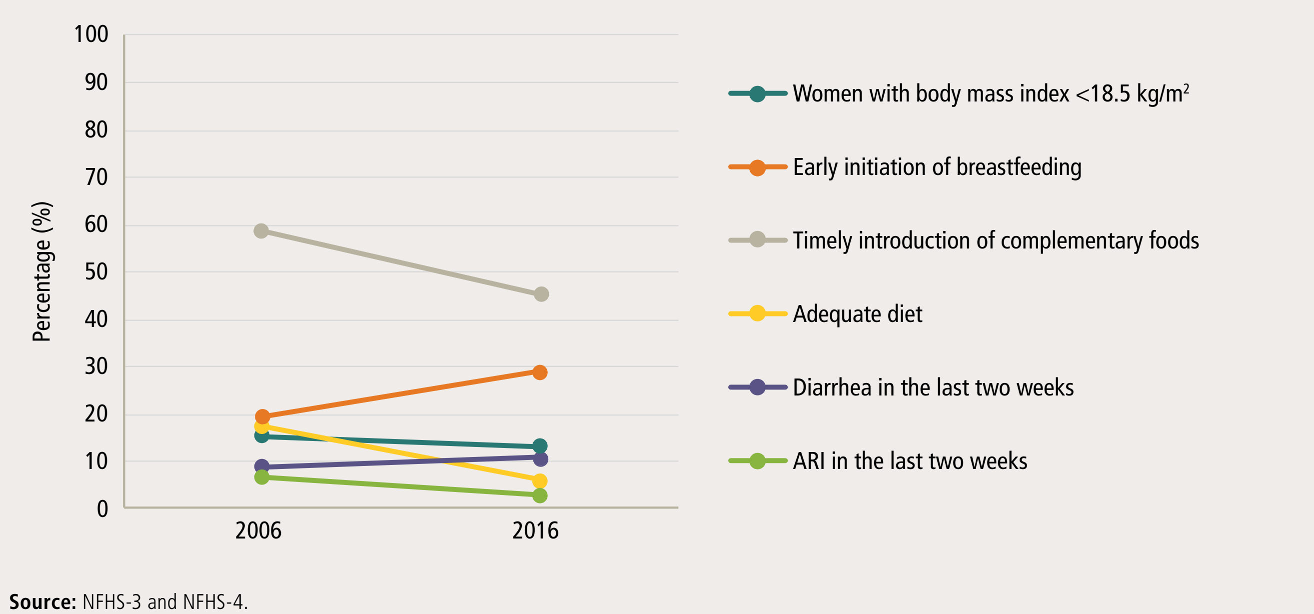
Source: NFHS-4.

Changes in the ***immediate determinants*** of nutrition in Delhi are described in Figure 2. The prevalence of low body mass index (<18.5 kg/m^2) among women was low in 2006 (14.8 percent) and it declined slightly to 12.8 percent by 2016. Early initiation of breastfeeding improved from 19.3 percent in 2006 to 29.1 percent in 2016. However, more than 70 percent of children are still not breastfed within an hour of birth. Complementary feeding is a key concern. Timely introduction of complementary foods (between 6 and 8 months of age) declined from 58.7 percent to 45 percent during 2006-16 and in 2016, only 5.8 percent of children (between 6 and 23 months of age) received an adequate diet.

The proportion of children with diarrhea has increased from 8.3 percent in 2006 to 10.6 percent in 2016, while proportion of children with acute respiratory infection declined from 6.4 percent to 2.6 percent over the same time period.

Coverage of ***nutrition-specific interventions*** in Delhi improved considerably over the last decade (Figure 3). Interventions related to delivery, such as birth registration, the proportion of women who delivered in health facilities and whose births were assisted by health professionals, improved substantially, reaching above 80 percent. Changes in interventions related to care during pregnancy in the last decade have been mixed. The proportion of women who received any antenatal care (ANC) during first trimester declined slightly from 63.8 percent to 63.3 percent, while the proportion of women who received at least 4 ANC visits increased from 64.3 percent to 68.6 percent. Coverage of iron-folic acid (IFA) consumption during this period increased from 27.5 percent to 49.9 percent. Nutrition interventions focusing on children have improved over the last ten years. The proportion of children who received vitamin A supplements increased substantially by 41.6 percentage points (from 12.6 in 2006 to 54.2 percent in 2016). The proportion of children with diarrhea who received oral rehydration salts (ORS) also improved greatly (from 29.9 percent to 61.9 percent). Although the proportion of children who were fully immunized increased slightly from 63.2 percent to 66.4 percent, one third of children have not received all the requisite vaccinations in 2016. Between 2006 and 2016, the coverage of food supplementation improved slightly for pregnant women (from 5.3 percent to

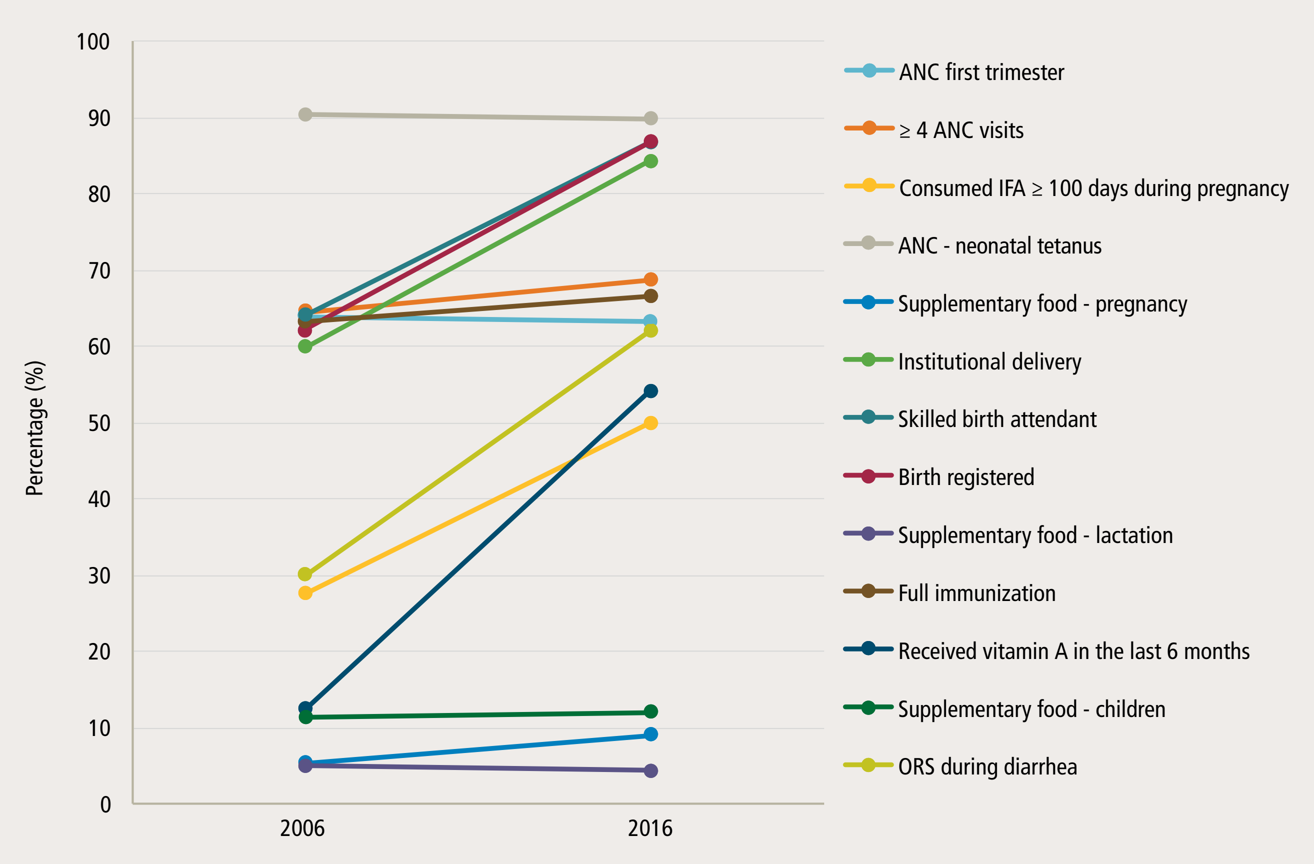
FIGURE 2 Changes in immediate determinants of nutrition in Delhi, 2006 to 2016



Source: NFHS-3 and NFHS-4.

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

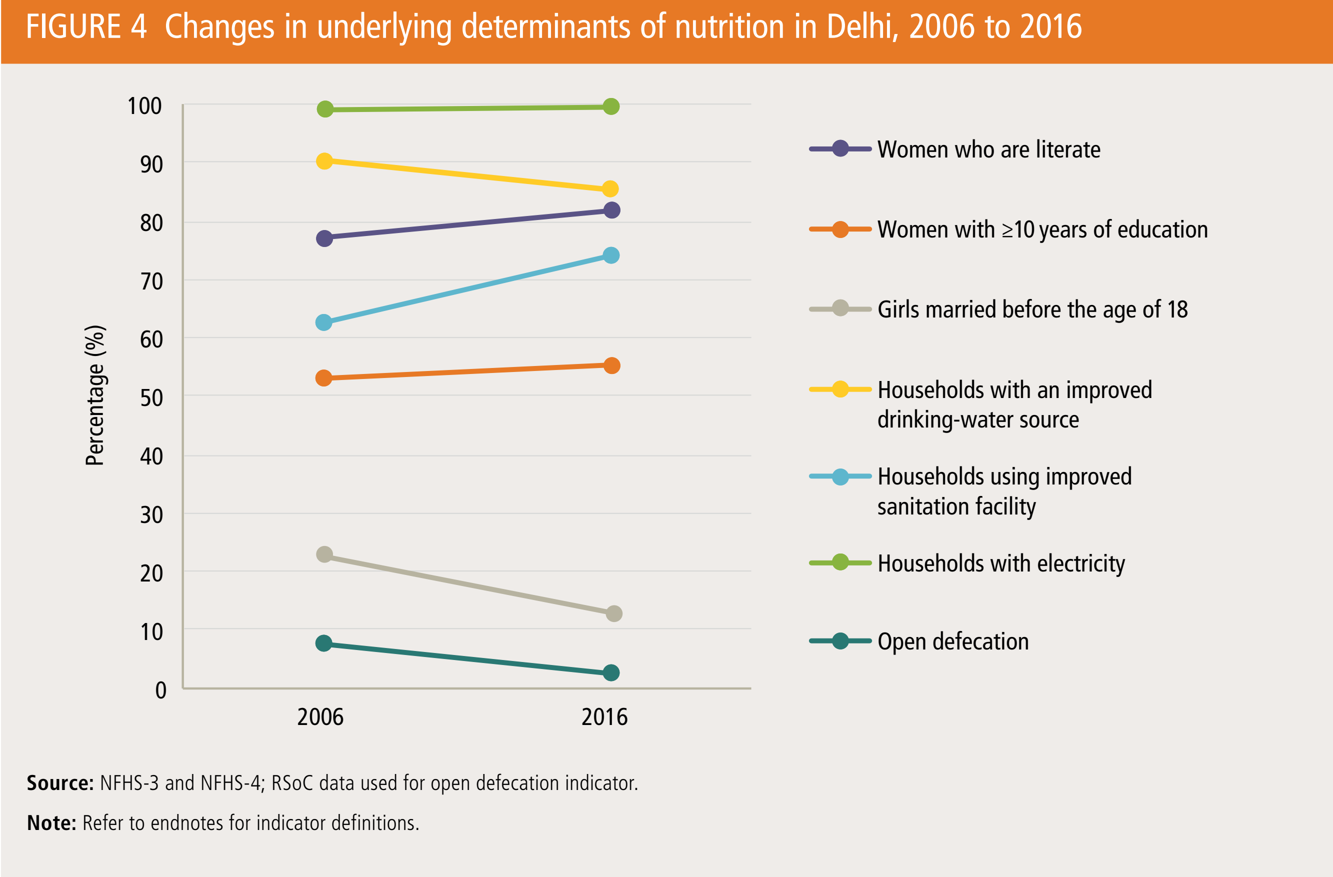
FIGURE 3 Changes in coverage of nutrition-specific interventions along the continuum of care in Delhi, 2006 to 2016



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 Delhi, 2006 to 2016



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

Note: Refer to endnotes for indicator definitions.

8.8 percent) and children under three years of age (from 11.4 percent to 11.9 percent), while it declined for lactating mothers (from 5.0 percent to 4.3 percent). Overall, the status of coverage of food supplementation remains very low for all beneficiaries.

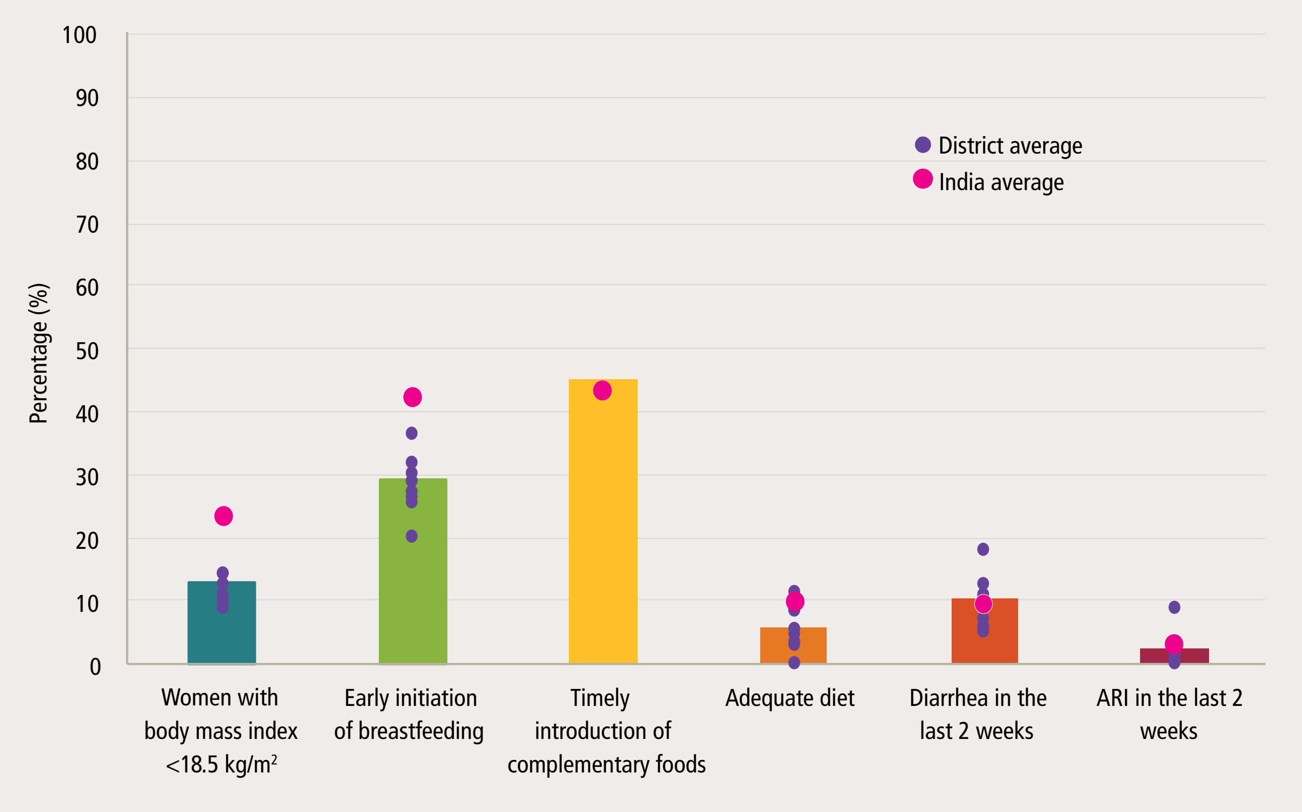
In the last decade, Delhi experienced improvements in all ***underlying determinants*** of nutrition (Figure 4), except in coverage of improved drinking water. The proportion of households with access to improved drinking water was high in 2006 (90.5 percent), but declined slightly to 85.7 percent in 2016. During the same time, access to improved sanitation facilities improved (from 62.6 percent to 74 percent). The proportion of households with access to electricity was already very high in 2006 (99.3 percent) and increased slightly to 99.8 percent, making the coverage of electricity nearly universal. There were also improvements in the proportion of literacy among women (from 77.3 percent to 81.8 percent) and the proportion of women with more than 10 years of education (from 53.2 percent to 55.4 percent). The proportion of girls who were married before the age of 18 declined from 22.7 percent to 13 percent.

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

In Figures 5, 6, and 7 below, 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 nine districts in Delhi, there is a high degree of inter-district variability for many key determinants (that is, early initiation of breastfeeding, women who received at least 4 ANC visits, IFA during pregnancy, full immunization, newborn check-up, zinc during diarrhea, women with more than 10 years of education, improved sanitation). In contrast, there is little inter-district variability for some other determinants, either because their levels are very good (for example, mother and child protection card, households with access to electricity and women with low BMI), or because the challenges are uniform across all the districts (for example, adequate diet among children 6–23 months old, Janani Suraksha Yojana).

For many determinants (for example, women with low BMI, pregnant women who received at least 4 ANC visits, IFA during pregnancy, interventions during

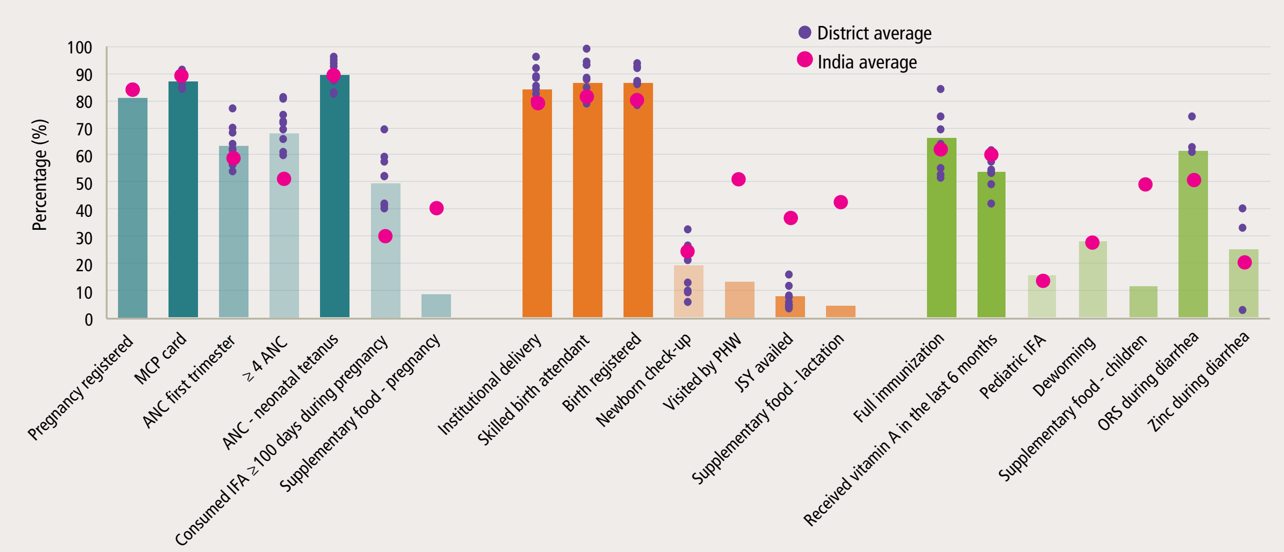
FIGURE 5 Inter-district variability in immediate determinants in Delhi, in 2016



Source: NFHS-4.

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

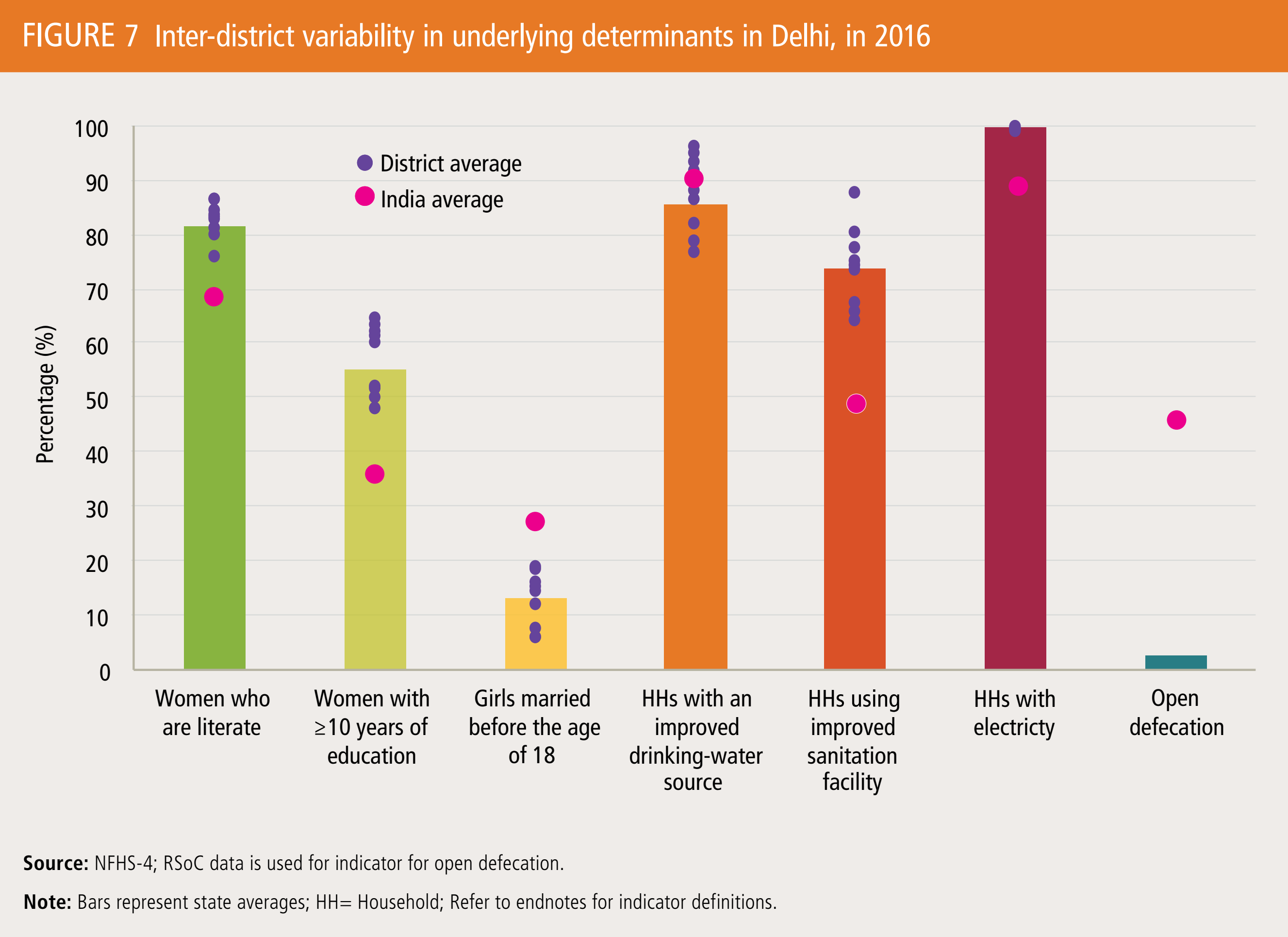
FIGURE 6 Inter-district variability in coverage of selected interventions in Delhi, in 2016



Source: NFHS-4; RSoC data was used for indicators on pregnancy registration, food supplementation during pregnancy, lactating mothers 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 variability is unavailable for these indicators; ANC= Antenatal care; IFA= Iron-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 Delhi, 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.

delivery, ORS during diarrhea, women's education, girls married before the age of 18 years, households with electricity and improved sanitation), all or almost all districts in Delhi are doing better than the national average. For some others, such as early initiation of breastfeeding, adequate diet among children and availing of Janani Suraksha Yojana (JSY) cash transfer, all or most districts in Delhi fall below the national average.

LOOKING FORWARD: IMPLICATIONS & RECOMMENDATIONS

In the era of India's commitment to global nutrition targets, it is an opportune time for Delhi 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. While there have been encouraging improvements in several nutritional outcomes, prevalence of anemia in women of reproductive age and childhood wasting have increased over the last decade. Therefore, Delhi now needs to put in place a strategy that considers all forms of malnutrition captured in the WHA indicators (Figure 1). For each outcome, it is important to invest in identifying the factors that helped some districts perform well as it can offer useful insights for the poor performing districts to improve.

To achieve progress on nutrition, Delhi should continue investments in improving the coverage of interventions targeting the first 1000 days of life. The state has better coverage than the national average on most interventions. However, food supplementation for children as well as pregnant and lactating mothers is a key area where focused action is needed since its coverage is much lower than the national average. On nutrition-specific interventions during the pre-natal phase, special emphasis is needed on reversing the declining trend in women who have received ANC in the first trimester and increasing IFA consumption by pregnant women, given only half of the intended beneficiaries are currently covered. The state has high coverage of interventions for delivery care and should therefore ensure that it continues the good performance.

Significant efforts need to be made on strengthening the coverage of several postnatal interventions, including newborn check-up, immunization, visits by

primary health worker, cash transfer, pediatric IFA, vitamin A, deworming and zinc supplementation during diarrhea where coverage is low. Promotion of timely and appropriate complementary feeding practices for children are recommended as the performance on related indicators is very poor. On underlying determinants, while the state's performance is overall better than the Indian average, improvement is required on ensuring household access to improved drinking water, the status of which has declined slightly over the last decade.

Alongside investments in early nutrition, it is also important for Delhi, which has experienced rapid urbanization, to consider the challenge of non-communicable diseases. As Figure 8 below shows, one third of women and a quarter of men in Delhi are now overweight or obese. This is much higher than the national average.The challenges of high blood pressure and high blood sugar are also emerging, especially in some districts. Therefore, Delhi now needs to develop a strong nutrition strategy to simultaneously address undernutrition and these emerging non-communicable diseases related to nutrition.

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.

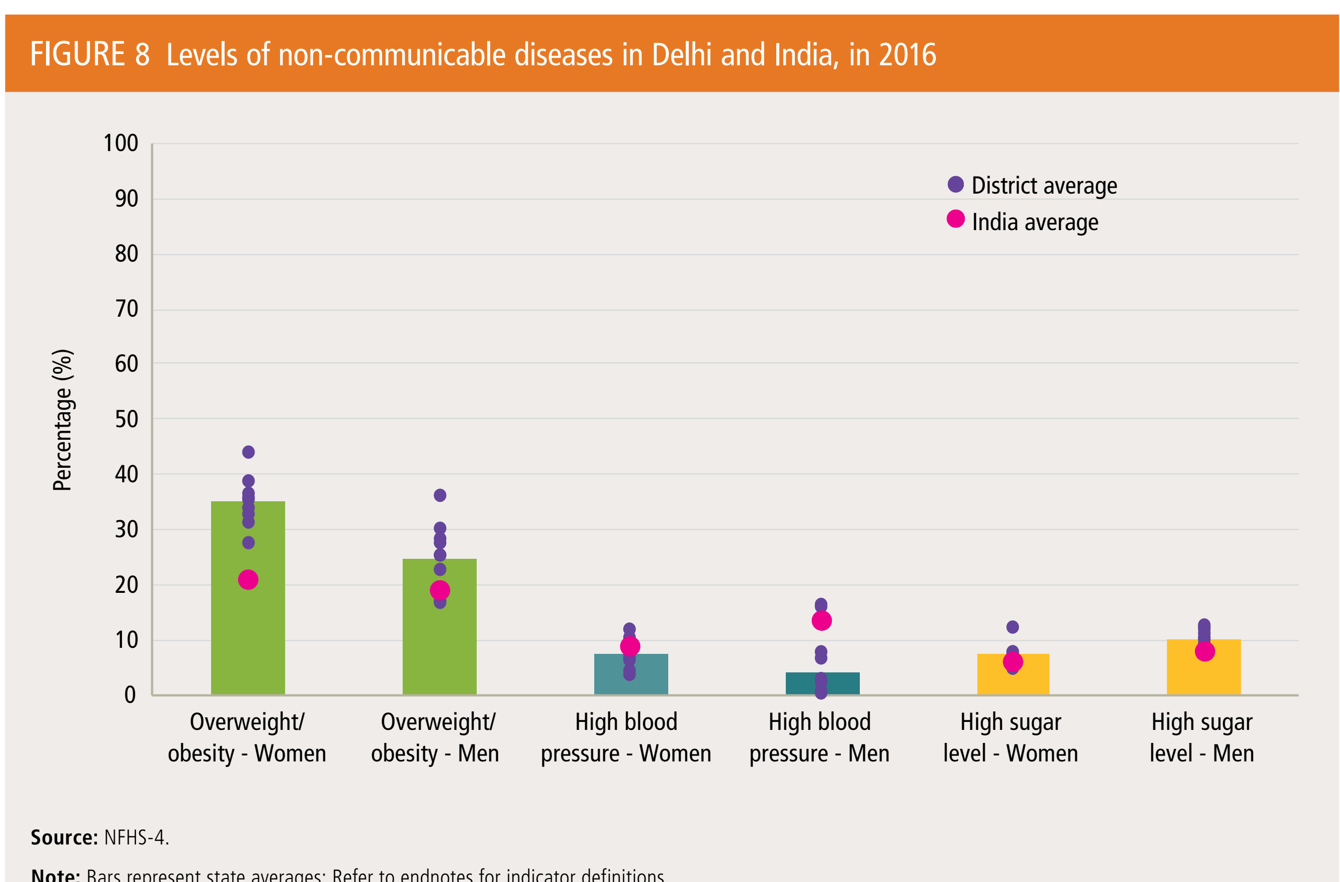
Consumed IFA ≥ 100 days during pregnancy: Percentage of mothers who took IFA supplements for at least 100 days for the last birth in the last 5 years.

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.

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



Source: NFHS-4.

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

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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Centre for Equity Studies

WRITTEN BY

Amrutha Jose Pampackal, Communications Specialist-I, IFPRI

Phuong Hong Nguyen, Research Fellow, IFPRI

Rasmi Avula, Research Fellow, IFPRI

Purnima Menon, Senior Research Fellow, IFPRI

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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.

CONTACT US

Email us at IFPRI-POSHAN@cgiar.org

IFPRI-NEW DELHI

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

NASC Complex, CG Block,
Dev Prakash Shastri Road,
Pusa, New Delhi 110012, India
T +91.11.66166565
F +91.11.66781699

IFPRI-HEADQUARTERS

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

2033 K Street, NW,
Washington, DC 20006-1002 USA
T. +1.202.862.5600
F. +1.202.467.4439
Skype: IFPRIhomeoffice
ifpri@cgiar.org
www.ifpri.org

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