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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 West Bengal

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 variability in state-level changes in the determinants of nutrition and in the coverage of health and nutrition interventions. Although all 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 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 West Bengal.

West Bengal, situated in the north-east of India, accounts for 2.6 percent of the area of the country and includes 23 districts (Government of West Bengal 2017). The state is home to over 91 million people (7.54 percent of the population of India), of which 76.26 percent is literate (Census of India 2011). West Bengal has a sex ratio of 950 females per 1,000 males (Census of India 2011).

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

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 the National Family Health Survey-4 used the Census 2011 district boundaries, this Policy Note reports information for only 19 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 of nutrition (Black et al. 2013). For intervention coverage, we chose to examine a set of nutrition-specific interventions across the lifecycle for which data are currently available. These include interventions

affecting pregnant women, newborn babies, infants, and children.

FINDINGS

Trends in nutrition outcomes and variability in outcomes by district

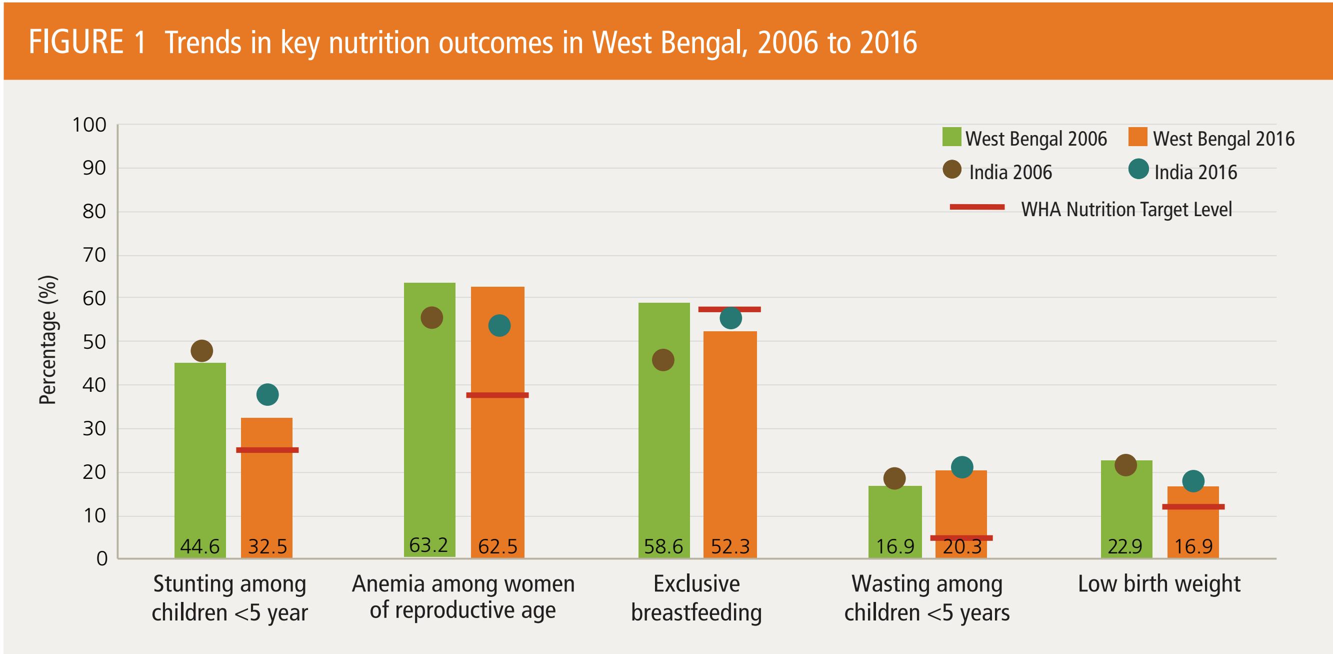
Overall, there have been improvements in nutrition outcomes in West Bengal between 2006 and 2016. Stunting prevalence fell from 44.6 percent to 32.5 percent (Figure 1). Anemia among women of reproductive age decreased slightly from 63.2 percent to 62.5 percent during this period. Wasting, however, increased from 16.9 percent to 20.3 percent in the last ten years. The prevalence of low birth weight fell by 6 percentage points, from 22.9 percent in 2006 to 16.9 percent in 2016. However, prevalence of exclusive breastfeeding showed a reverse trend, declining from 58.6 percent to 52.3 percent.

Stunting prevalence among children below 5 years varies among districts, ranging from only 23.3 percent in Nadia to 45.5 percent in Puruliya (Map 1). Stunting is higher than 30 percent (rated as high) in 12 out of 19 districts. Anemia among women has high variability across districts with the lowest prevalence in Kolkata (46.4 percent) and highest in Puruliya (80 percent). More than half of the districts (12 out of 19) have very high (> 60 percent) prevalence of anemia. Wasting ranges from 10.7 percent (Nadia) to 34.6 percent (Puruliya) (Map 3). The prevalence of wasting is very high (>15 percent) in most of the districts (14 out of 19). Severe wasting ranges from 2.4 percent in Nadia to 11.3 percent in Puruliya (Map 4). Data on exclusive breastfeeding (EBF) rates are available for only four districts. Among these four districts, prevalence of exclusive breastfeeding is lowest in Puruliya (50.7 percent) and highest in Uttar Dinajpur (67.8 percent) (Map 5). Puruliya performs most poorly on all nutrition outcomes (stunting, wasting, severe wasting, and anemia among women of reproductive age).

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

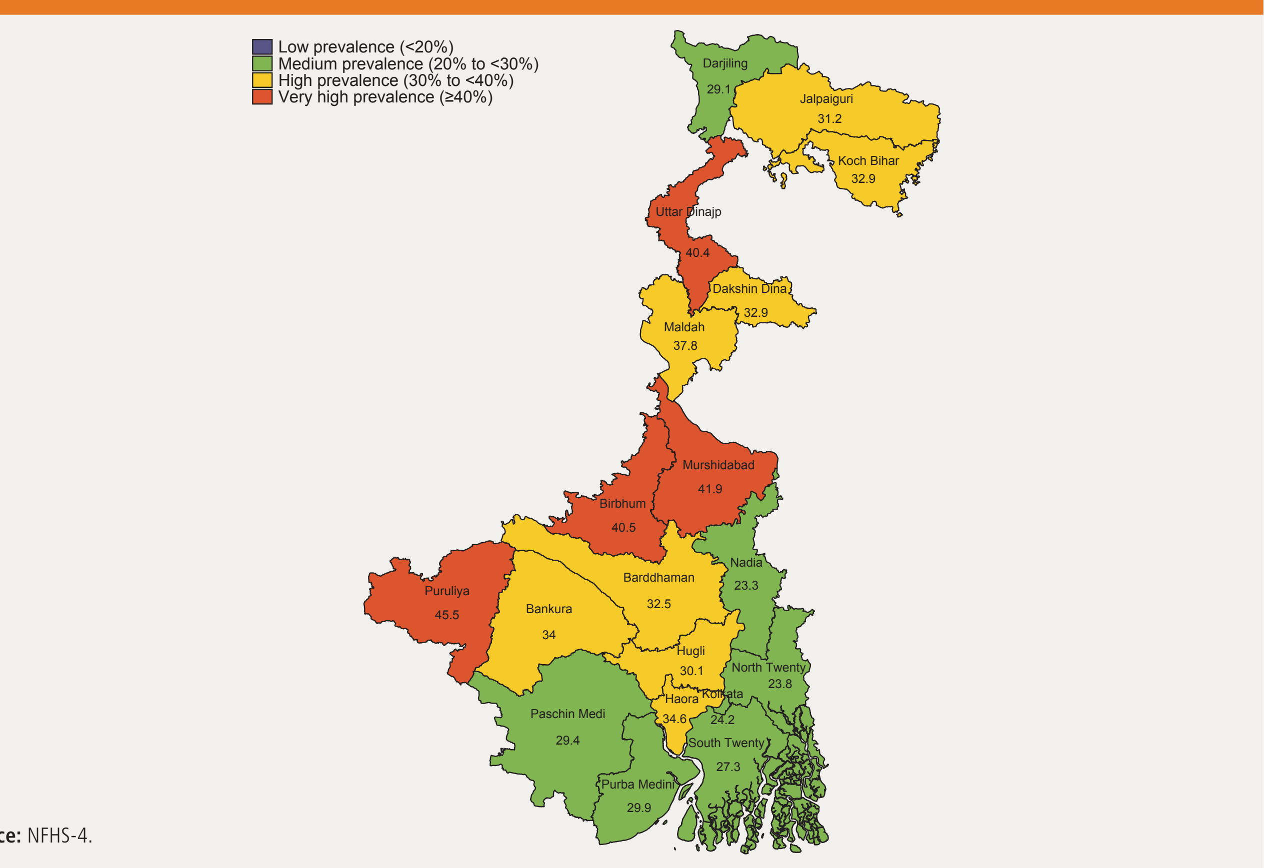
FIGURE 1 Trends in key nutrition outcomes in West Bengal, 2006 to 2016



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

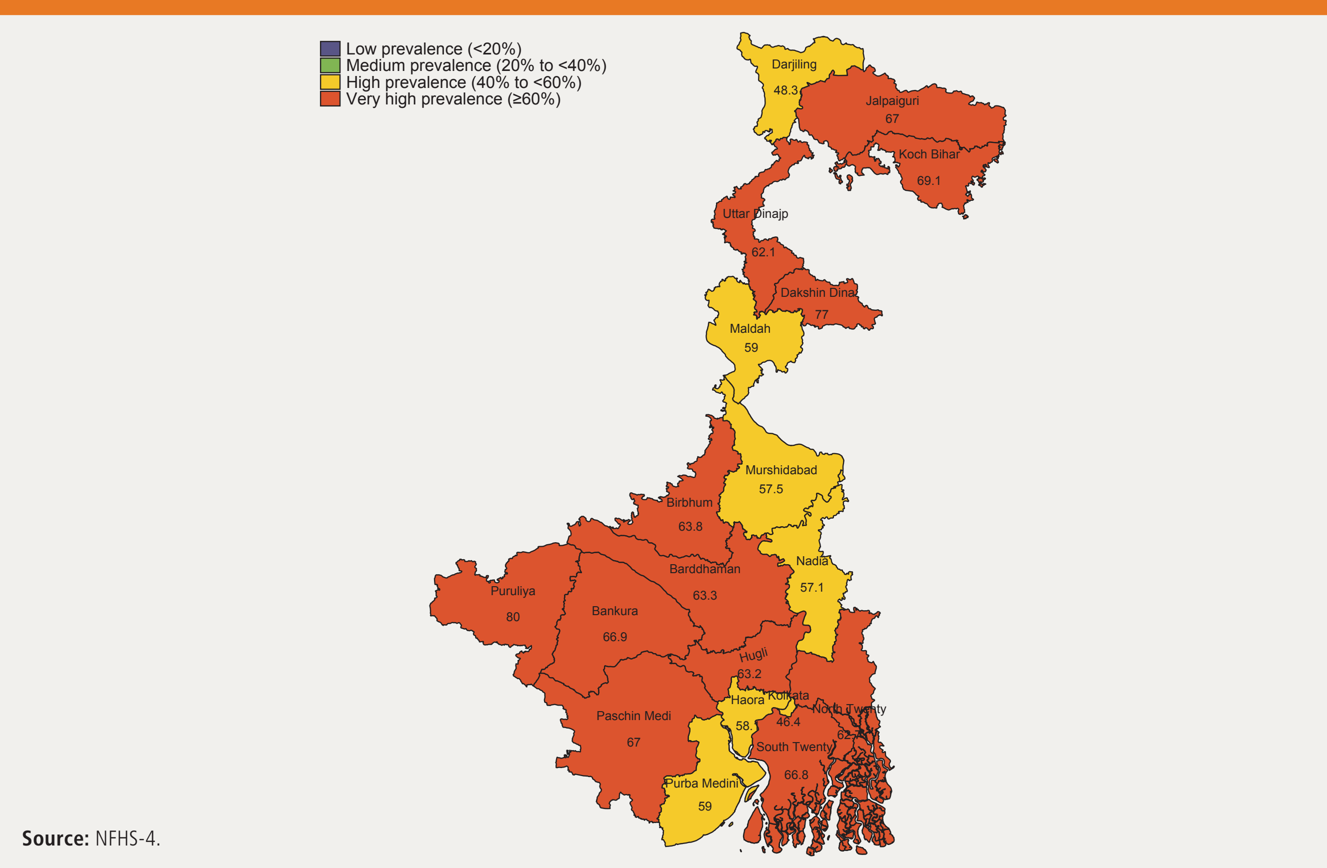
Note: A set of global nutrition targets for maternal, infant and young child nutrition were endorsed by the World Health Assembly (WHA) in 2012. The red lines represent the WHA targets to be achieved by the state, by 2025. The baseline reference year for these targets is 2012. The state baseline estimates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



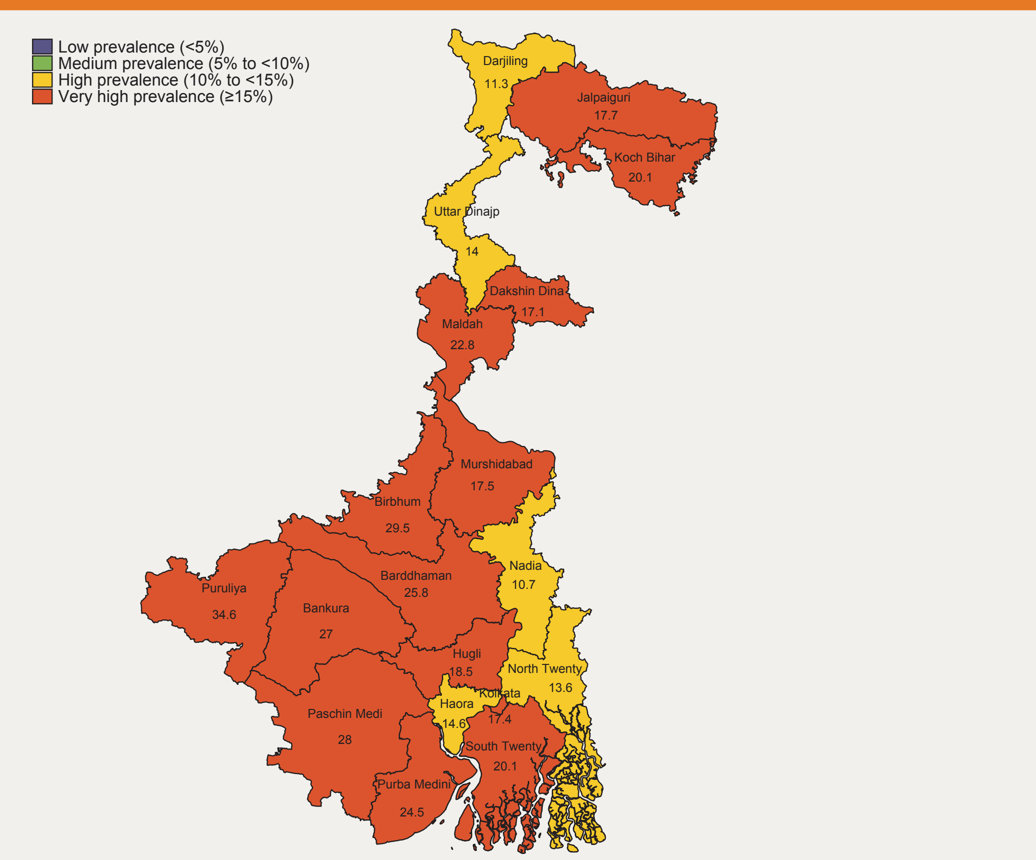
Source: NFHS-4.

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



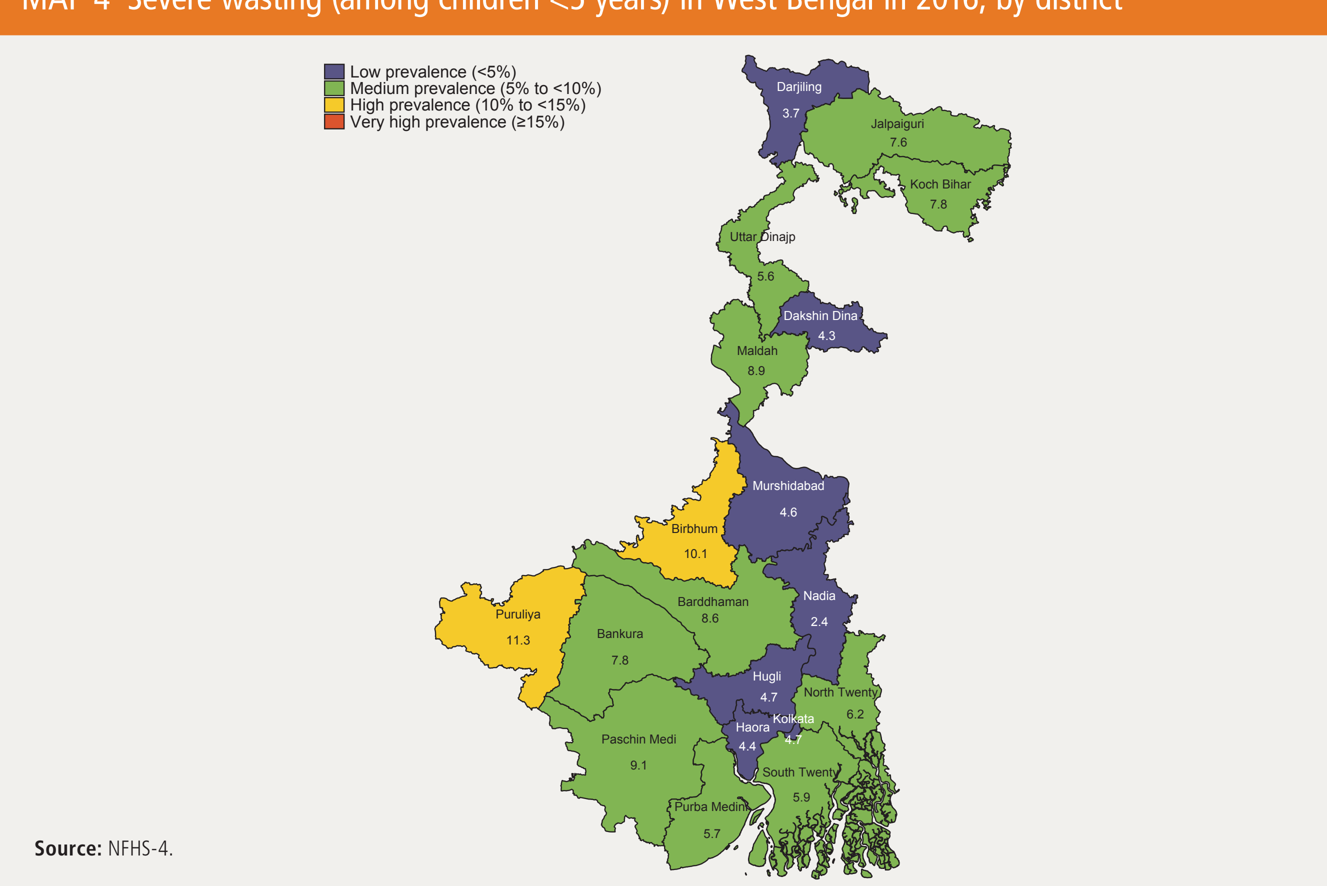
Source: NFHS-4.

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



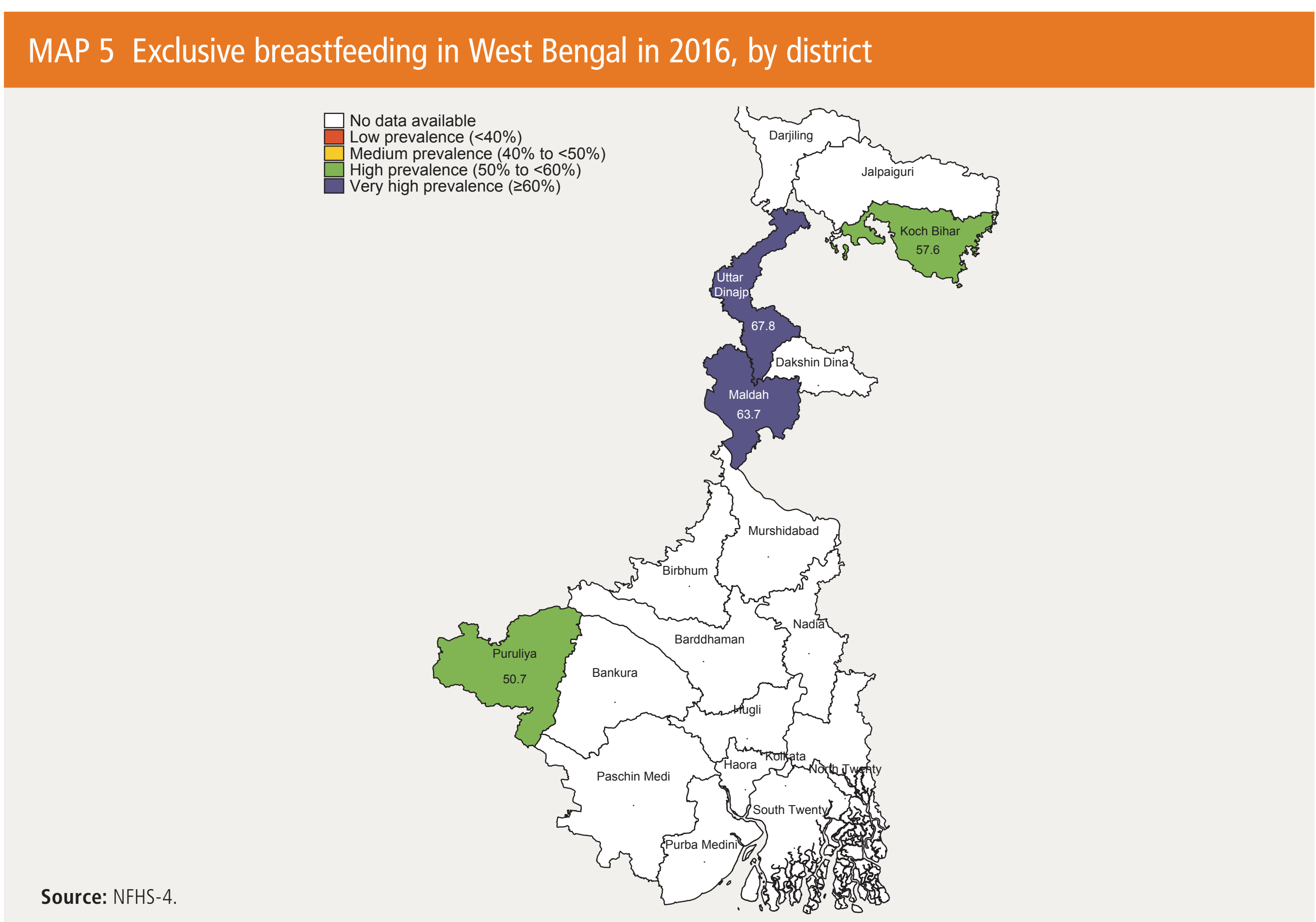
Source: NFHS-4.

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



Source: NFHS-4.

MAP 5 Exclusive breastfeeding in West Bengal in 2016, by district



Source: NFHS-4.

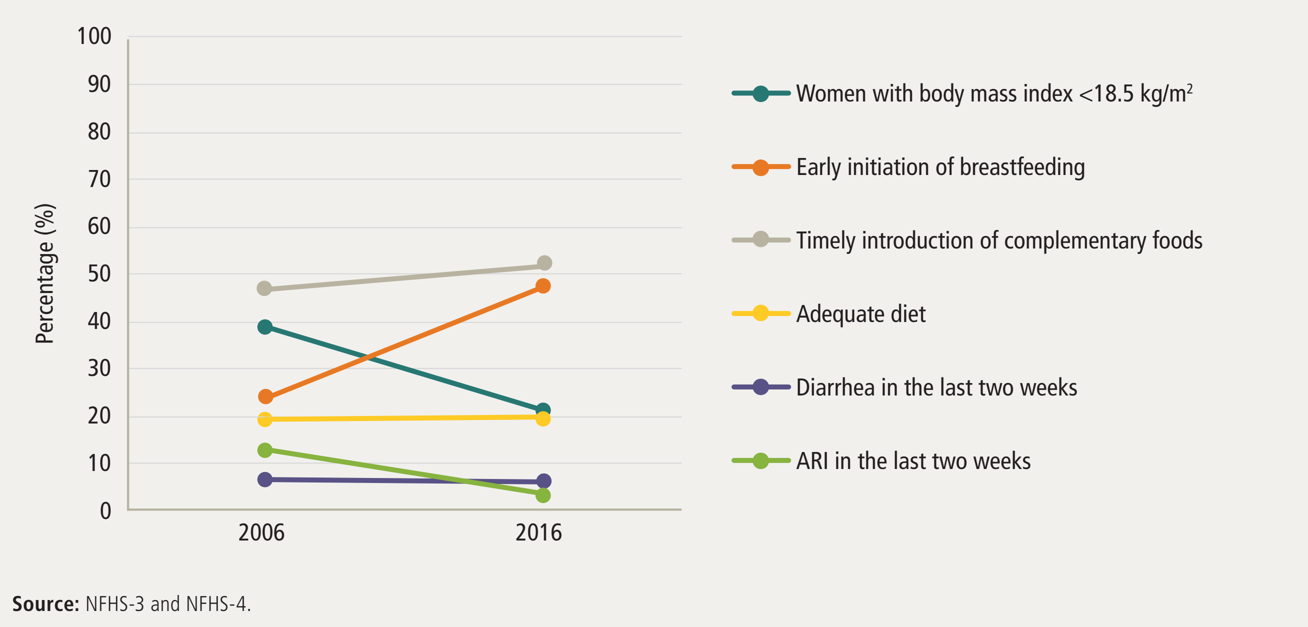
examine coverage data on programs to improve the underlying determinants in this Note because data on those are not available at this time.

Changes in the **immediate determinants** iof nutrition in West Bengal are described in Figure 2. The proportion of women with low body mass index (BMI <18.5 kg/m^2) decreased from 39.1 percent in 2006 to 21.3 percent in 2016. Early initiation of breastfeeding doubled in the last decade (from 23.7 percent to 47.5 percent). However, more than over 50 percent of children are still not breastfed within an hour of birth. Child morbidity declined in the last ten years, from 6.5 percent to 5.9 percent for diarrhea and from 13 percent to 3.3 percent for acute respiratory infection (ARI)

Timely introduction of complementary foods (between 6 and 8 months of age) improved slightly (from 47.1 percent to 52 percent). In 2016, only 19.6 percent of children (between 6 and 23 months of age) received an adequate diet.

Changes in the coverage of **nutrition-specific interventions** are described in Figure 3. Between 2006 and 2016, overall, there have been improvements in prenatal care. The proportion of women who received antenatal care (ANC) during first trimester improved by 16.3 percentage point (from 38.6 percent to 54.9 percent), and the proportion of women who received at least 4 ANC visits increased by 37 percentage points (from 39 percent to 76.5 percent). Although consumption of iron and folic acid (IFA) supplements during pregnancy increased from 14.3 percent to 28.1 percent, it is still very low. Interventions related to delivery, such as institutional deliveries and births assisted by health professionals, increased by 33 to 34 percentage points, reaching between 75 to 82 percent in 2016. Birth registered increased from 75.8 percent in 2006 to 96.9 percent in 2016. In addition, the coverage of food supplementation improved considerably for all the beneficiary groups; from 23.1 percent to 55.6 percent for pregnant women,

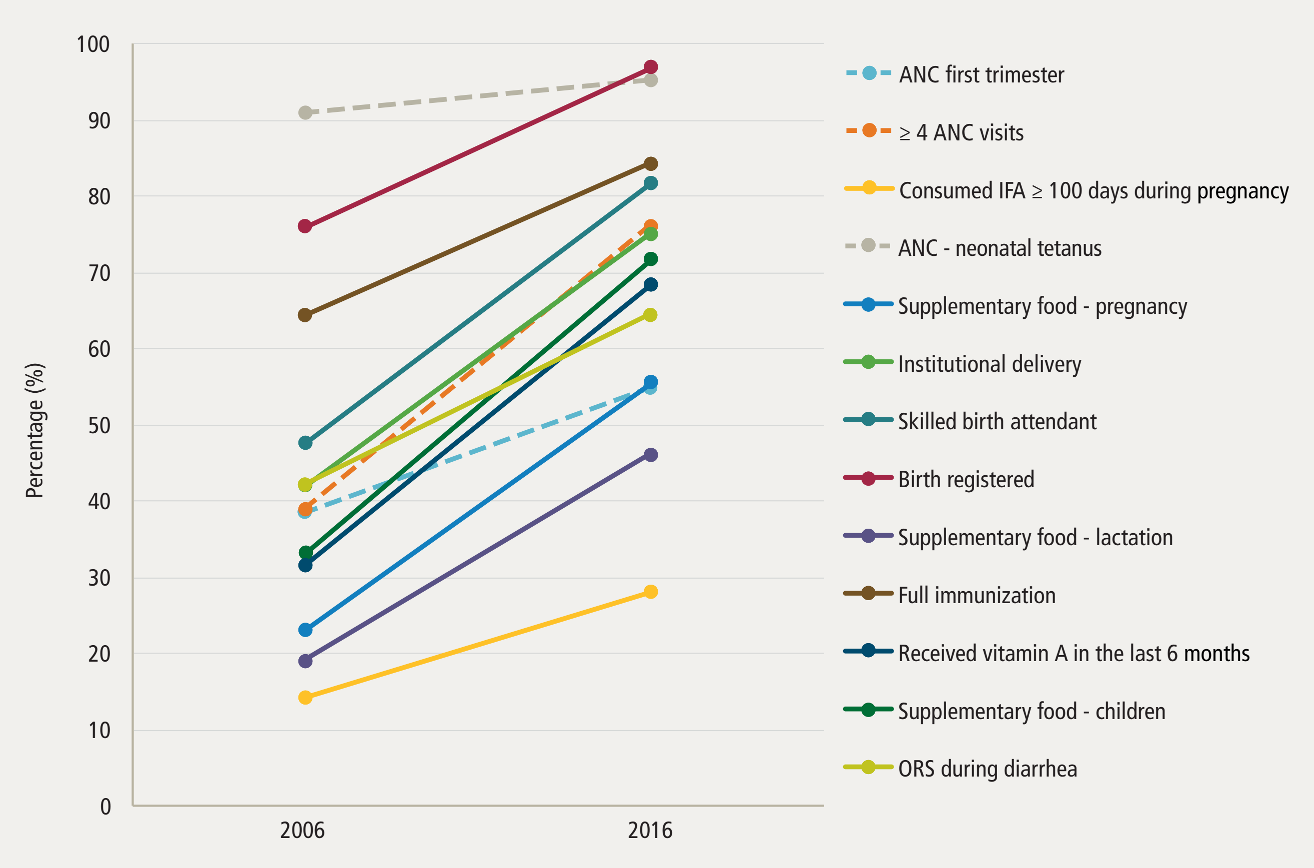
FIGURE 2 Changes in immediate determinants of nutrition in West Bengal, 2006 to 2016



Source: NFHS-3 and NFHS-4.

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

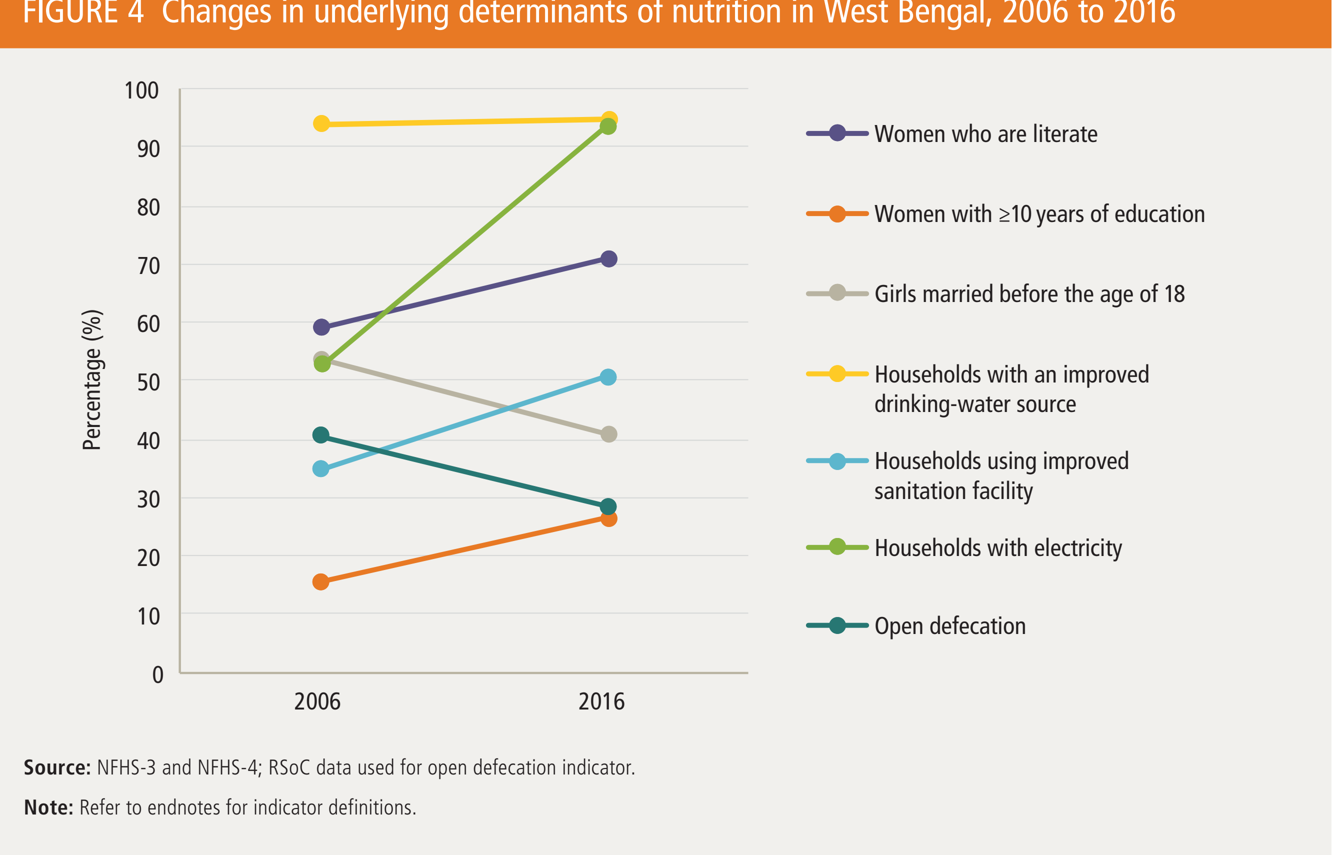
FIGURE 3 Changes in coverage of nutrition-specific interventions along the continuum of care in West Bengal, 2006 to 2016



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 West Bengal, 2006 to 2016



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

Note: Refer to endnotes for indicator definitions.

from 19.3 percent to 46.5 percent for lactating women, and from 33.3 percent to 71.9 percent for children. Nutrition interventions focused on children have improved in the last ten years. The proportion of children receiving vitamin A supplementation doubled (from 31.7 percent to 68.4 percent) and those who were fully immunized improved substantially as well (from 64.3 percent to 84.4 percent). Proportion of children with diarrhea who received oral rehydration salts (ORS) increased from 42.3 percent to 64.7 percent,

Changes in the **underlying determinants** of nutrition are presented in Figure 4. Between 2006 and 2016 there has been an increase in the proportion of women who are literate (from 58.8 percent to 71 percent) and the proportion of women with more than 10 years of education (from 15.7 percent to 26.5 percent). Early marriage in girls declined by 12.6 percentage points, from 53.3 percent to 40.7 percent.

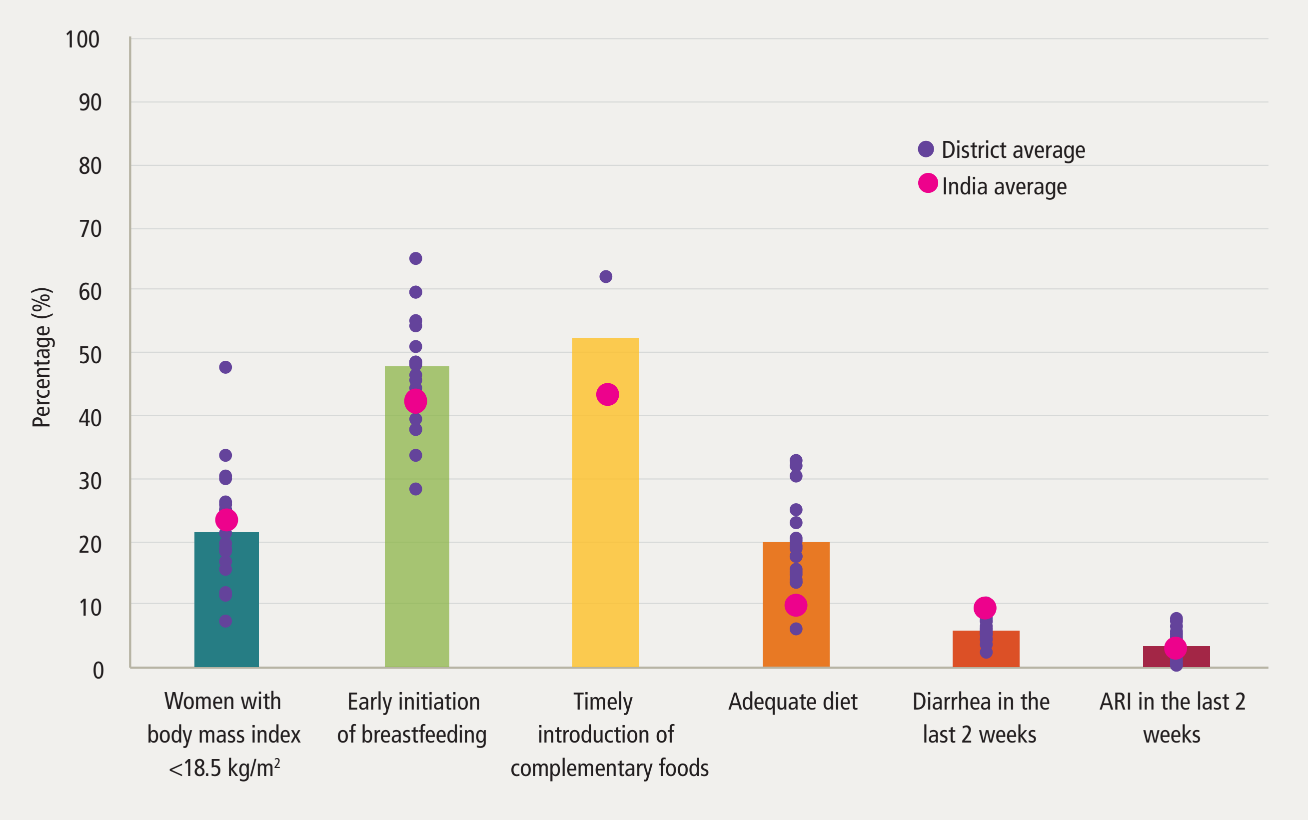
The state demonstrated improvements in infrastructure between 2006 and 2016. Households with an improved drinking-water source increased slightly from 93.7 percent in 2006 to 94.6 percent in 2016, while households with electricity improved substantially from 52.5 percent to 93.7 percent during this period. Households using improved sanitation facility increased from 34.7 percent to 50.9 percent. Open defecation rates declined by 12.1 percentage points, from 40.4 percent to 28.3 percent (RSoC 2013–14).

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

The 11 districts of West Bengal, for which NFHS-4 data is available, cover a range of socio-economic characteristics. Among these districts there is a high degree of variability for most of the immediate and underlying determinants as well as on the coverage of interventions. There is a limited inter-district variability for indicators that are mostly high across districts (use of Mother and Child Protection (MCP) card, ANC tetanus, and birth registered), and also for child morbidity, which is uniformly low across districts.

For some indicators, for example, adequate diet in children, use of MCP card, women who received at least 4 ANC visits, birth registration, full immunization and vitamin A supplementation, most districts

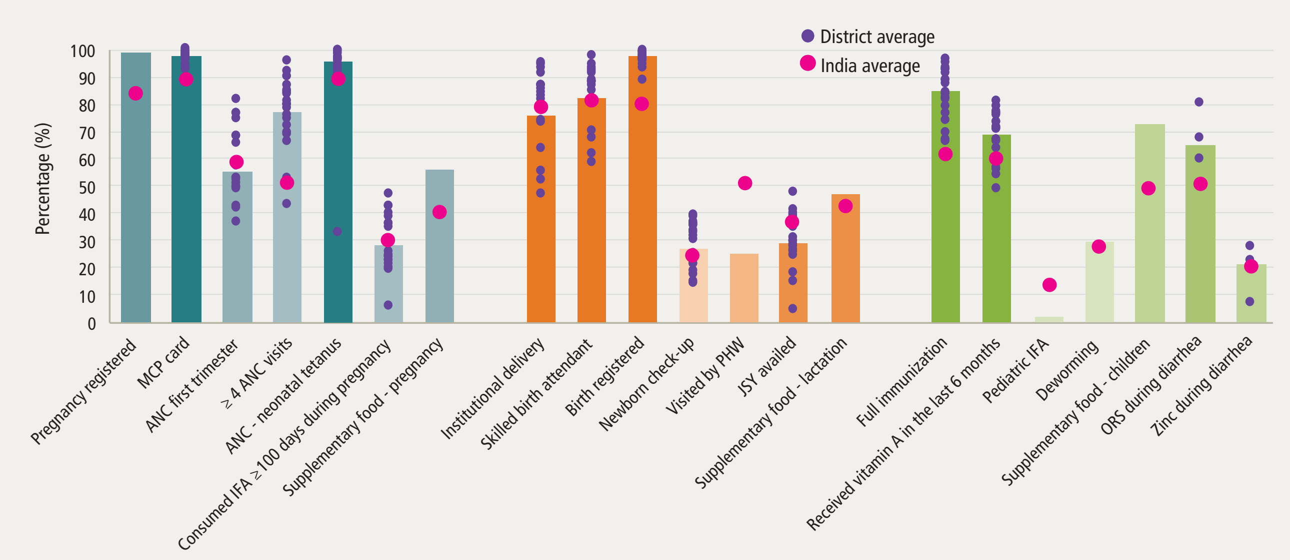
FIGURE 5 Inter-district variability in immediate determinants in West Bengal, in 2016



Source: NFHS-4.

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

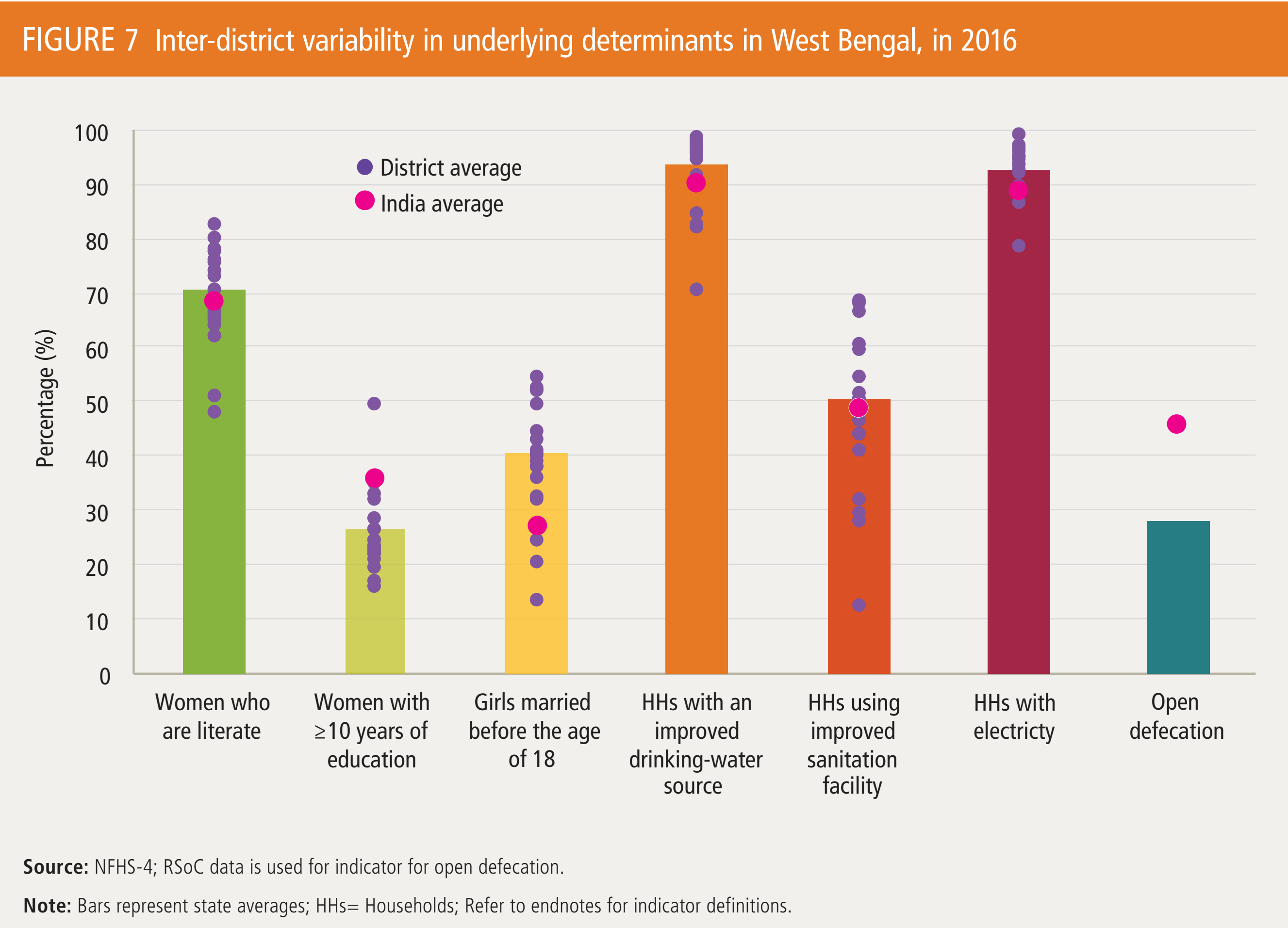
FIGURE 6 Inter-district variability in coverage of selected interventions in West Bengal, in 2016



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 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 West Bengal, 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.

of West Bengal perform better than the national average. For some other indicators, for example, use of Janani Suraksha Yojana (JSY), and women with over ten years of education, most districts perform poorly compared to the national average. For rest of the indicators, such as women with low body mass index (BMI <18.5 kg/m2), early initiation of breast-feeding, IFA consumption during pregnancy, the coverage for most districts in West Bengal is nearly close to the national average.

LOOKING FORWARD: IMPLICATIONS & RECOMMENDATIONS

In an era where India has now embraced the sustainable development goals, it is an opportune time for West Bengal to set its own nutrition targets to be achieved by 2025 and to set in motion accelerated actions for improved nutrition. In the last ten years, the state has seen improvement in the coverage of most nutrition-specific interventions such as care during pregnancy and delivery, postnatal care and care for children. These improvements seem to commensurate with the progress made in the reduction of stunting and wasting. However, the state has not made much progress in reducing anemia among women which improved only marginally.

To achieve progress in nutrition, the state should invest in improving the coverage of interventions targeting the first 1000 days of life. On nutrition-specific interventions during pregnancy, efforts to improve ANC visits need to be strengthened as the coverage is still not optimal. In addition, special attention is required to improve the low IFA consumption (28.1 percent). West Bengal has made good progress in the coverage of food supplementation among all beneficiaries (pregnancy through early childhood). However, more efforts are required as nearly 50 percent of pregnant and lactating women are still not exposed to food supplementation. Interventions related to delivery (that is, institutional delivery and births assisted by health professionals) have made good progress in the last ten years, but it is important for West Bengal to make further improvements to achieve full coverage.

Investments are needed to strengthen the infant and young child feeding practices where the coverage is still far from optimal, especially for adequate diet (19.6 percent), early initiation of breastfeeding (47.5 percent) and exclusive breastfeeding (52.3 percent). For other postnatal interventions, such as vitamin A supplementation and ORS during diarrhea, the state has made significant progress. However, the coverage of these interventions is still below 70 percent indicating the need for continued investments to improve coverage. For underlying determinants, the state has made good progress in female literacy. However, only a third of women have ten or more years of education. Therefore, investments are required to improve women's education. Greater progress can be made to improve sanitation in the state. Finally, the inter-district variability across outcomes and multiple determinants calls for district-specific strategies.

Alongside investments in improving early nutrition, it is also important for West Bengal to consider the challenge of non-communicable diseases. As Figure 8 below shows, the challenge is fast emerging in West Bengal, with 19.9 percent of women and 14.2 percent of men being overweight or obese.

High blood pressure and high blood sugar are other emerging public health challenges. High blood pressure among women in West Bengal is higher than the national average. Also, high blood sugar levels among both women and men of West Bengal are higher than the national average. This suggests that West Bengal needs to consider ways to simultaneously address undernutrition and emerging non-communicable diseases related to nutrition.

NOTES

1. West Bengal currently consists of 23 districts. Since the National Family Health Survey-4 used the Census 2011 district boundaries, this Policy Note reports information for only 19 districts.

2. Indicator definitions, in alphabetical order:

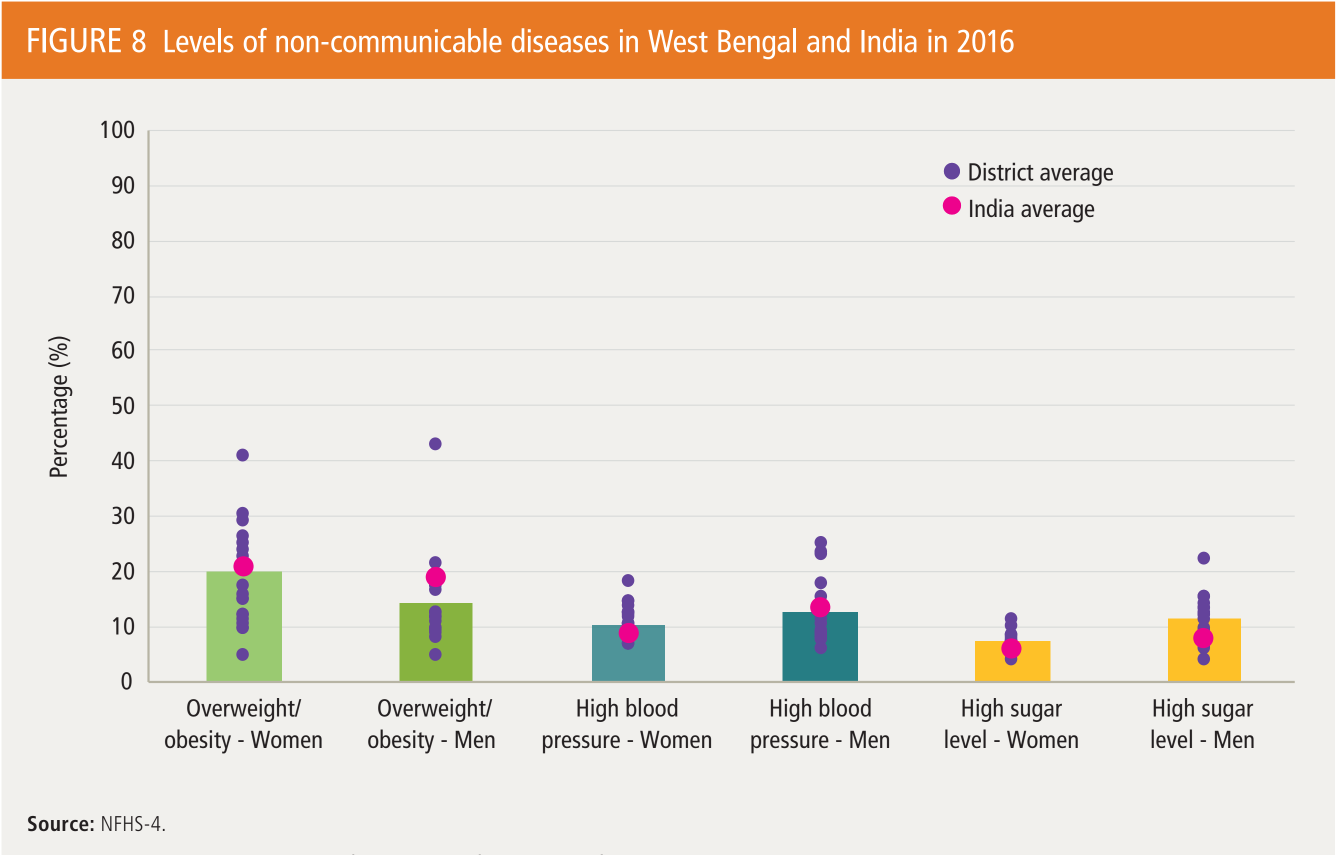
Acute respiratory infection (ARI) in the last two weeks: Percentage of children below 5 years of age with symptoms of ARI in 15 days preceding the survey.

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.

FIGURE 8 Levels of non-communicable diseases in West Bengal and India in 2016



Source: NFHS-4.

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

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).

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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