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

Policy Note

No. 19 | NOVEMBER 2017

Improving Nutrition in Punjab

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 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 Punjab.

Punjab, situated in the north-western plains of India, accounts for 1.5 percent of the area of the country and includes 22 districts (Government of Punjab 2017). The state is home to more than 27 million people (2.3 percent of the population of India) of which 75.8 percent are literate (Census of India 2011). Punjab has a sex ratio of 895 females per 1,000 males (Census of India 2011). The state, largely agricultural, contributes to nearly two thirds of the total production of food grains and a third of the total production of milk in the country (Government of Punjab 2017). The per capita income in Punjab is twice the national average (Government of Punjab 2017).

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

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 2013–2014) (Ministry of Women and Child Development 2015) for indicators that are currently not available in NFHS-4 fact sheets. We used summary data reported in the NFHS-4 district-level fact sheets to examine inter-district variability. Since National Family Health Survey-4 used the Census 2011 district boundaries, this Policy Note reports information for only 20 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, changes in nutrition outcomes in Punjab between 2006 and 2016 have been mixed. While stunting prevalence fell from 36.7 percent in 2006 to 25.7 percent in 2016 (Figure 1), wasting increased from 9.2 to 15.6 percent. Of greatest concern is anemia among women of reproductive age, which increased from 38 percent to 53.5 percent in the last ten years. The prevalence of low birth weight decreased by 7 percentage points, from 27.7 percent in 2006 to 20.7 percent in 2016 and the prevalence of exclusive breastfeeding increased from 35.7 to 53 percent in the same period.

Stunting among children less than five years of age varies moderately among districts, ranging from 17.6 percent in Patiala to 34.8 percent in Faridkot (Map 1) and is higher than 30 percent for 3 districts (Ludhiana, Muktsar and Faridkot). The prevalence of anemia among women of reproductive age is higher than 40 percent for all the districts and higher than 50 percent for more than half of the districts in Punjab (Map 2). Anemia among women has high variability across districts with the highest prevalence (74.5 percent) in Rupnagar and lowest (40.9 percent) in Patiala. The prevalence of wasting ranges from 9.5 percent (Tarn Taran) to 22.6 percent (Faridkot) (Map 3), and 12 districts have very high prevalence of wasting (≥15 percent). Severe wasting ranges from 1.2 percent (Sahibzada Ajit Singh Nagar) to 12.5 percent (Firozpur) (Map 4). Exclusive breastfeeding (EBF) rates are only available for 8 out of 20 districts. Among these districts, EBF is highest in Bathinda (72.5 percent) and lowest in Faridkot (45.1) (Map 5).

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

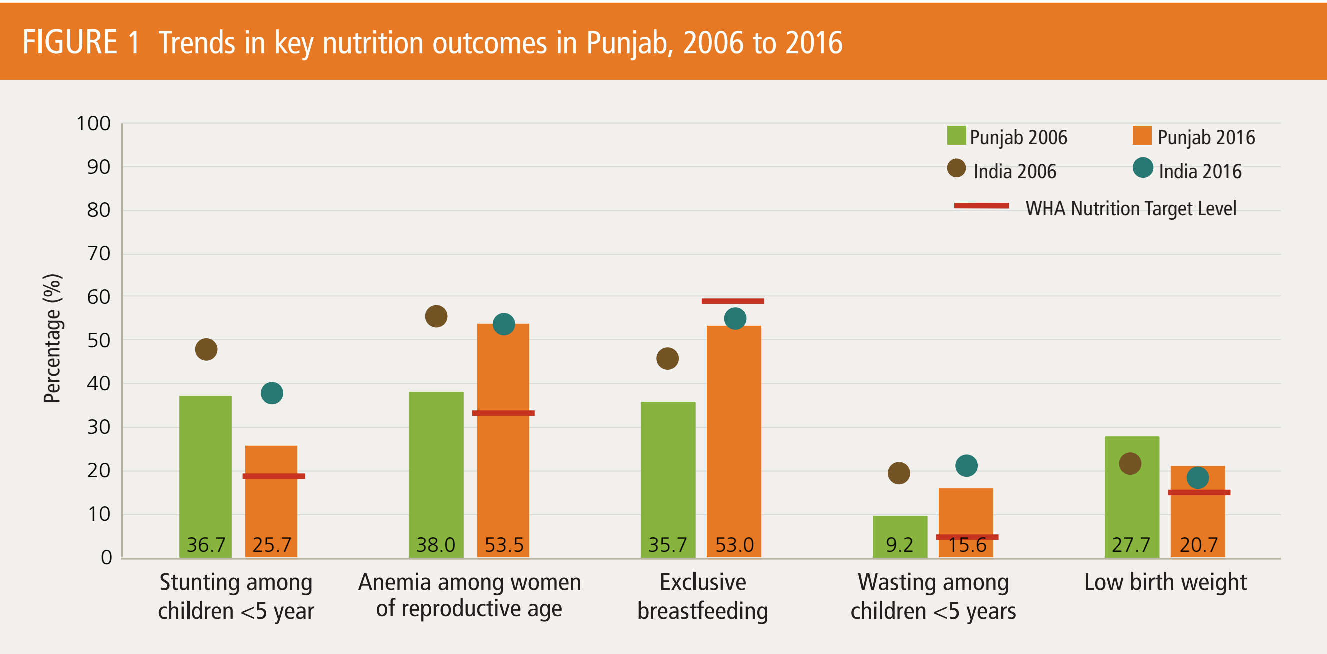
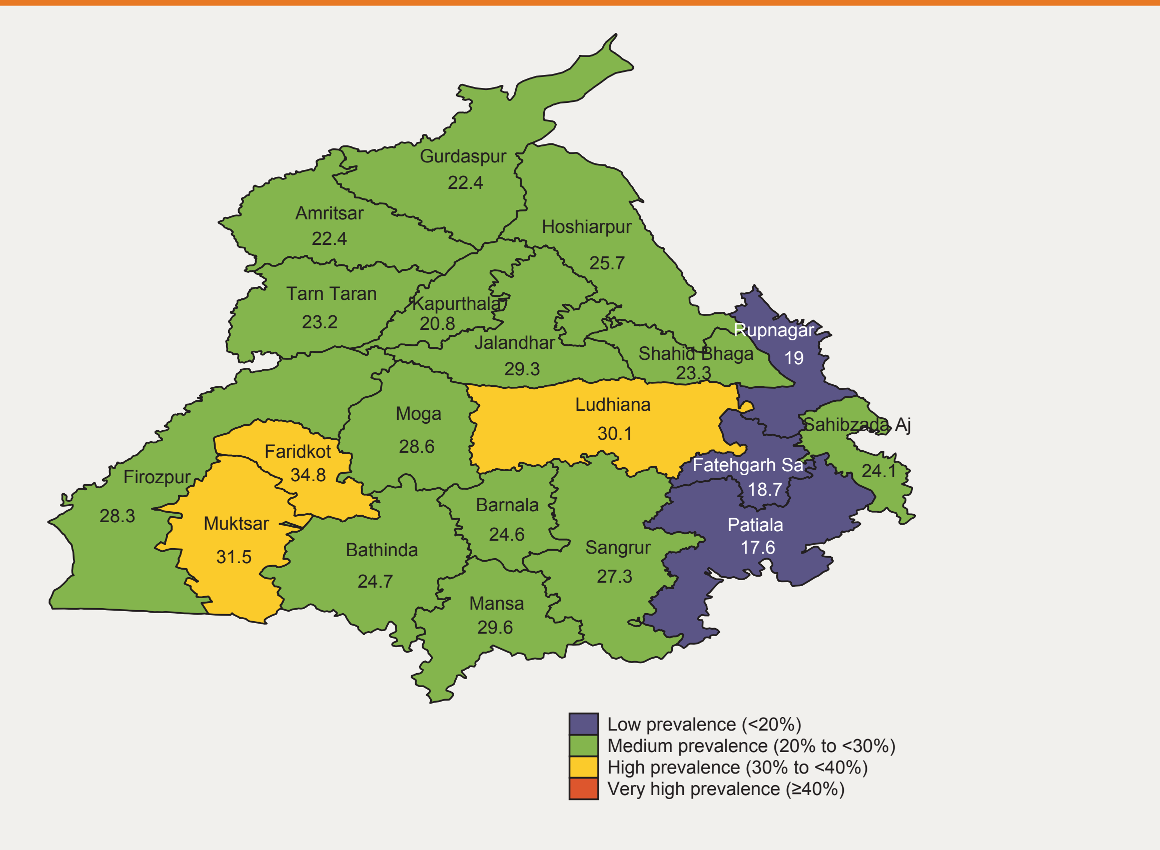


FIGURE 1 Trends in key nutrition outcomes in Punjab, 2006 to 2016

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

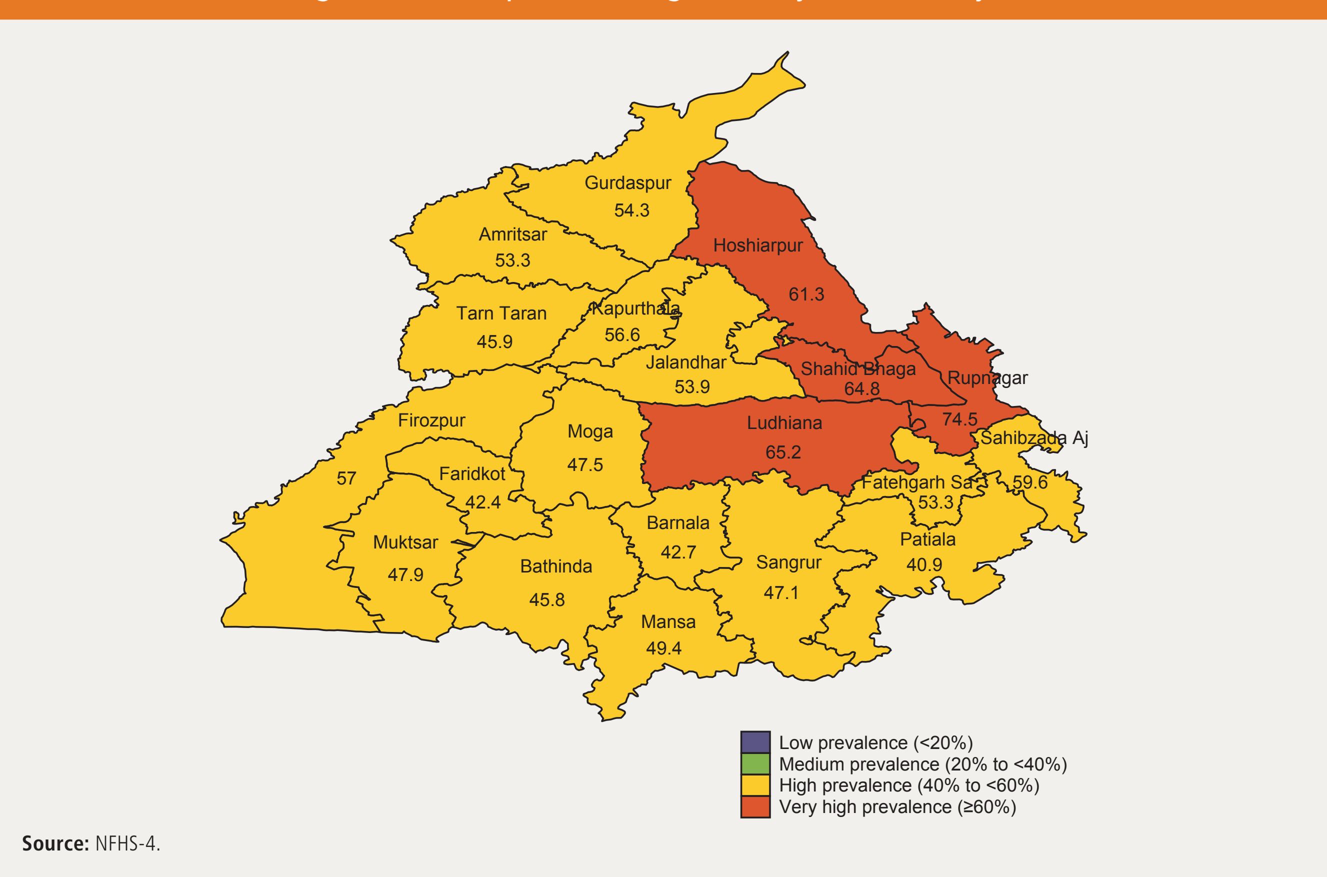
Note: A set of global nutrition targets for maternal, infant and young child nutrition were endorsed by the World Health Assembly (WHA) in 2012. The red lines represent the WHA targets to be achieved by the state, by 2025. The baseline reference year for these targets is 2012. The state baseline estimates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



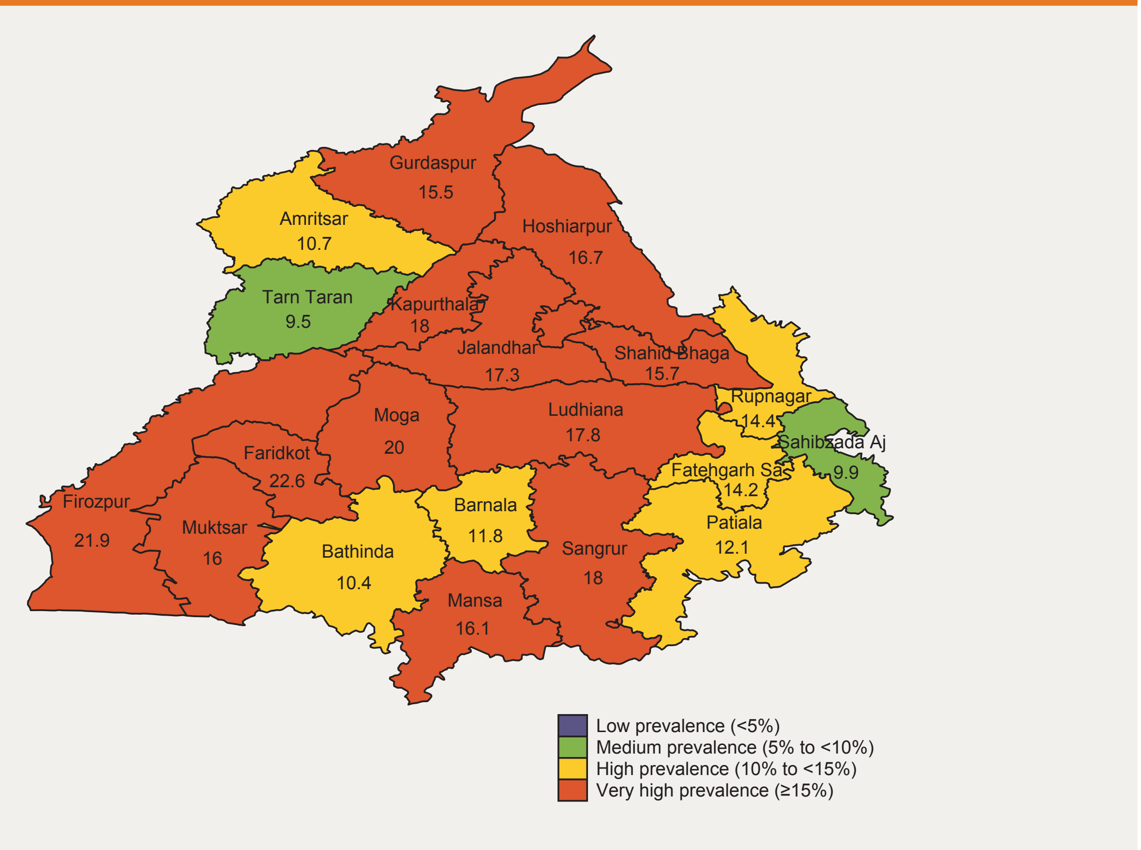
Source: NFHS-4.

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



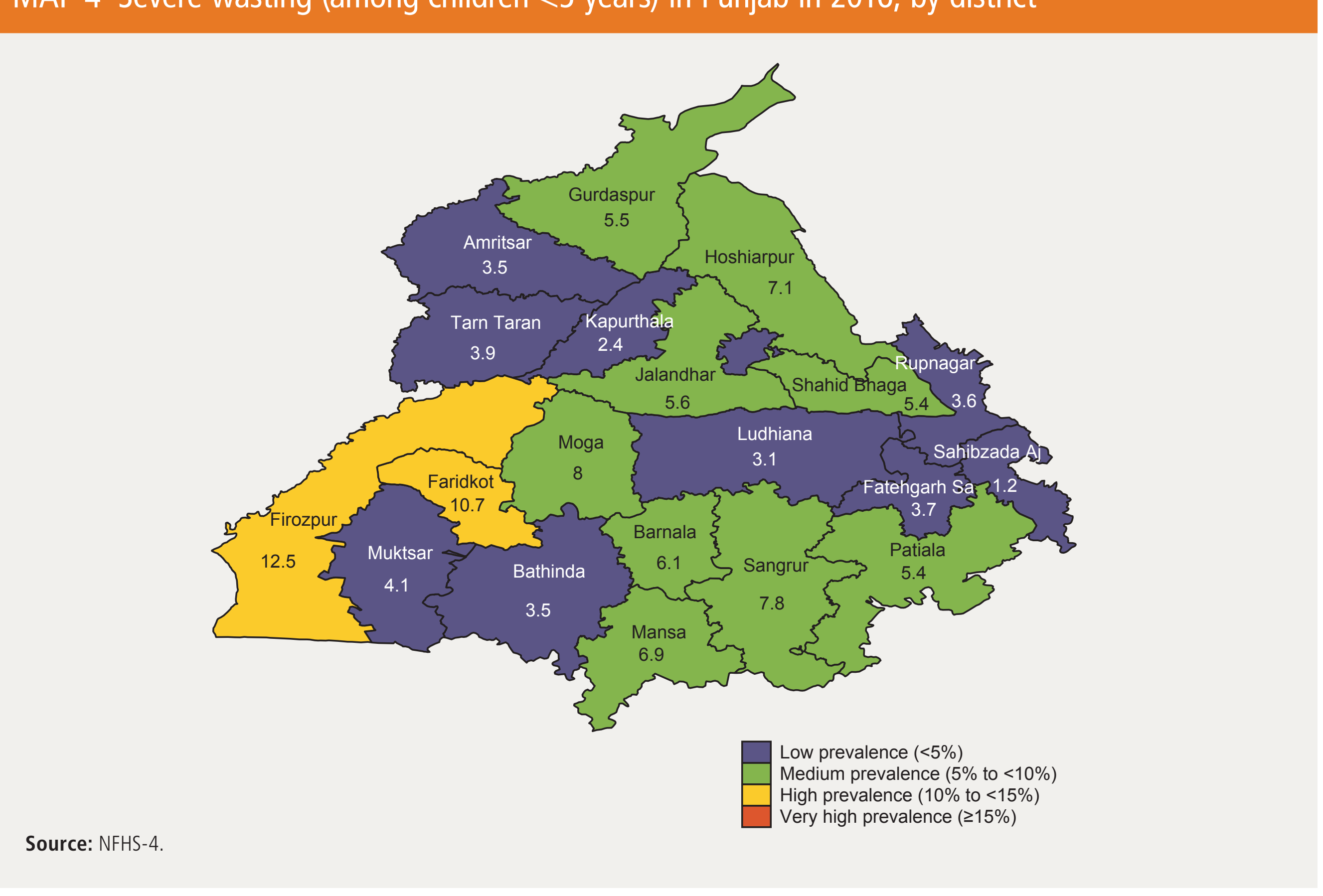
Source: NFHS-4.

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



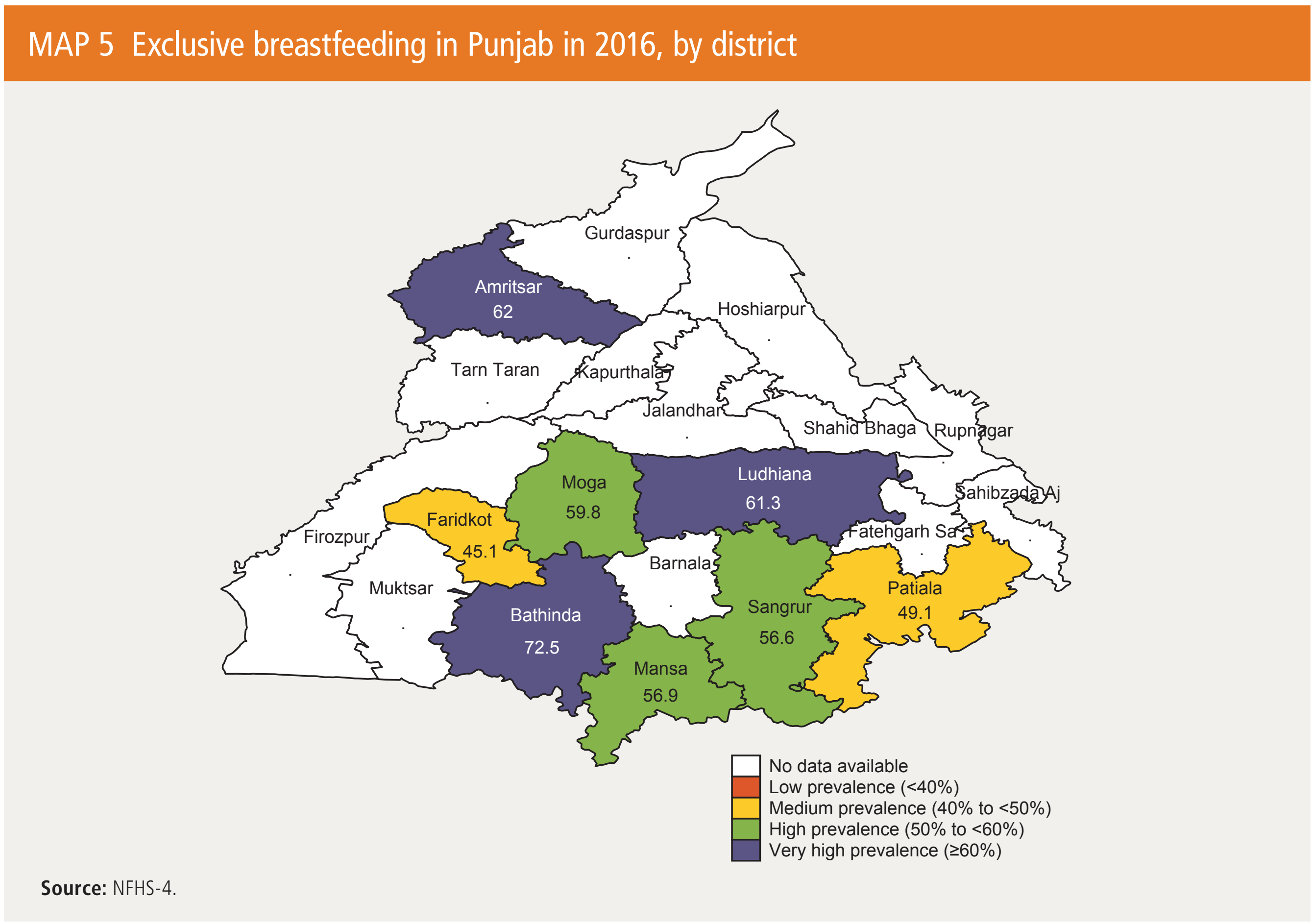
Source: NFHS-4.

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



Source: NFHS-4.

MAP 5 Exclusive breastfeeding in Punjab in 2016, by district



Source: NFHS-4.

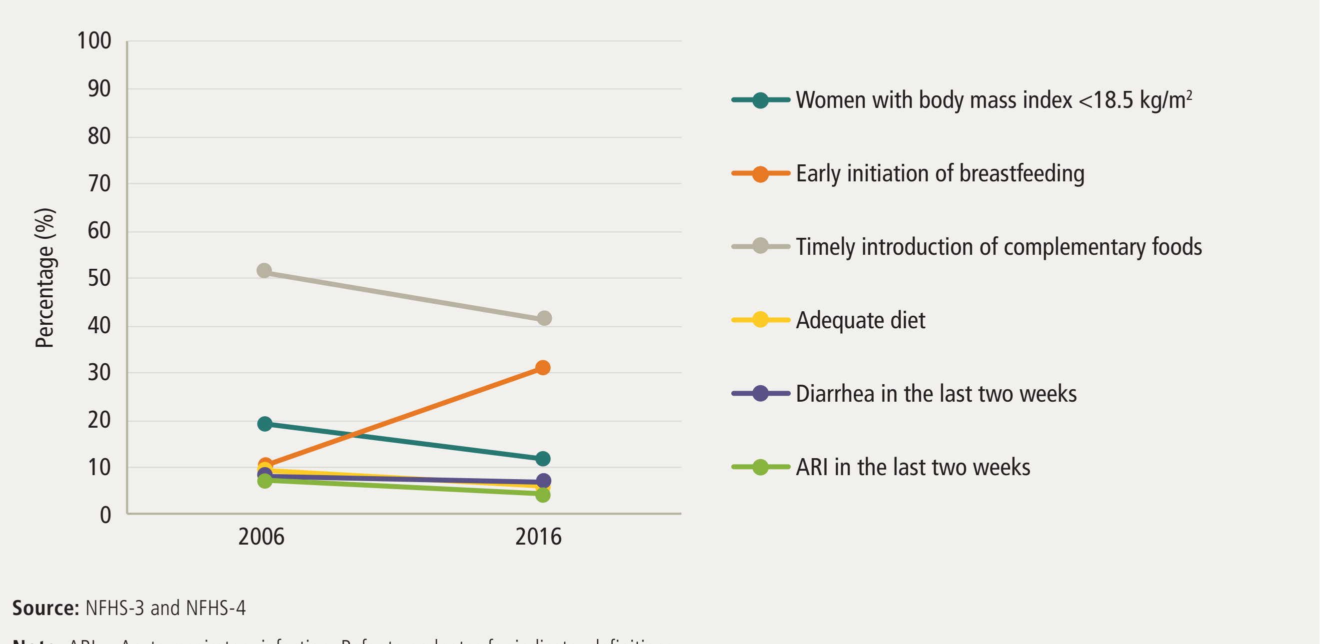
underlying determinants in this Note because data on those are not available at this time.

Changes in the ***immediate determinants*** of nutrition in Punjab are described in Figure 2. The proportion of women with low body mass index (BMI <18.5 kg/m^2) declined from 18.9 percent in 2006 to 11.7 percent in 2016. Early initiation of breastfeeding increased nearly three-fold in the last decade (from 10.3 percent to 30.7 percent), but around 70 percent of children are still not breastfed within an hour of birth. The proportion of children with diarrhea has declined marginally (from 7.8 to 6.6 percent), and the proportion of children with acute respiratory infection (ARI) declined from 6.9 to 4.1 percent in the last ten years.

Complementary feeding for infants six months and older is of great concern in Punjab, as it is for India. Timely introduction of complementary foods (between 6 and 8 months of age) declined over the last decade (from 50.9 to 41.1 percent). In 2016, only 5.9 percent of children (between 6 and 23 months of age) received an adequate diet.

The coverage of all ***nutrition-specific interventions*** in Punjab improved during the last decade (Figure 3). During pregnancy, the proportion of women who received antenatal care (ANC) during the first trimester improved by 15 percentage points, reaching 75.6 percent in 2016. The proportion of women who received at least 4 ANC visits increased from 60.2 percent to 68.5 percent. Iron and folic acid (IFA) consumption during pregnancy improved from 13.2 percent in 2006 to 42.6 percent in 2016, but it is still far from optimal. Interventions related to delivery, such as institutional deliveries, births assisted by health professionals and birth registered, improved substantially with 22 to 39 percentage points increase, reaching above 90 percent in 2016. Coverage of food supplementation increased for pregnant women (from 7.5 to 14.9 percent), lactating women (from 5.5 to 15.5 percent) and children (from 12.6 to 23.1 percent) between 2006 and 2016, but the overall coverage of food supplementation remains very low for all the beneficiaries. Nutrition interventions focused on children have improved in the last ten years. The proportion of children receiving vitamin A supplementation increased

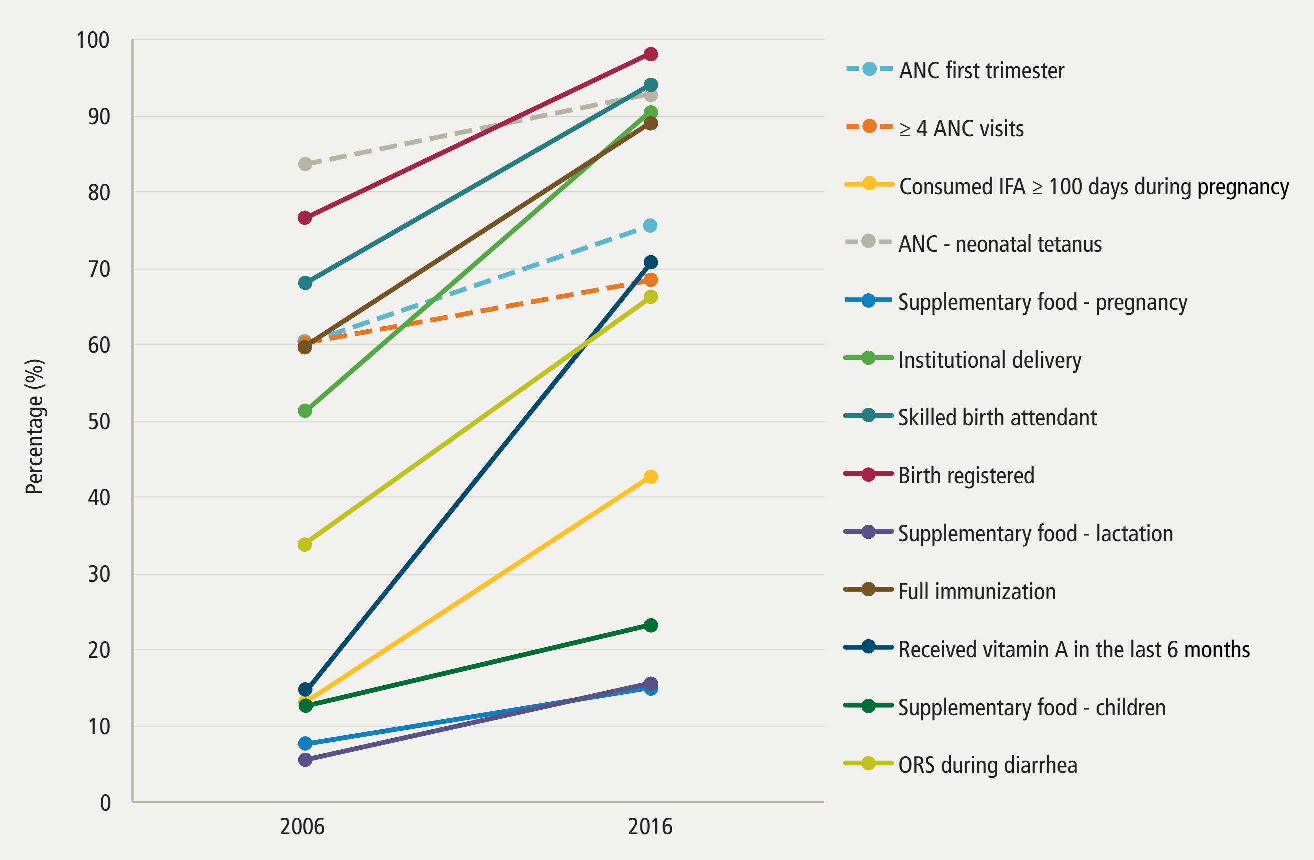
FIGURE 2 Changes in immediate determinants of nutrition in Punjab, 2006 to 2016



Source: NFHS-3 and NFHS-4

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

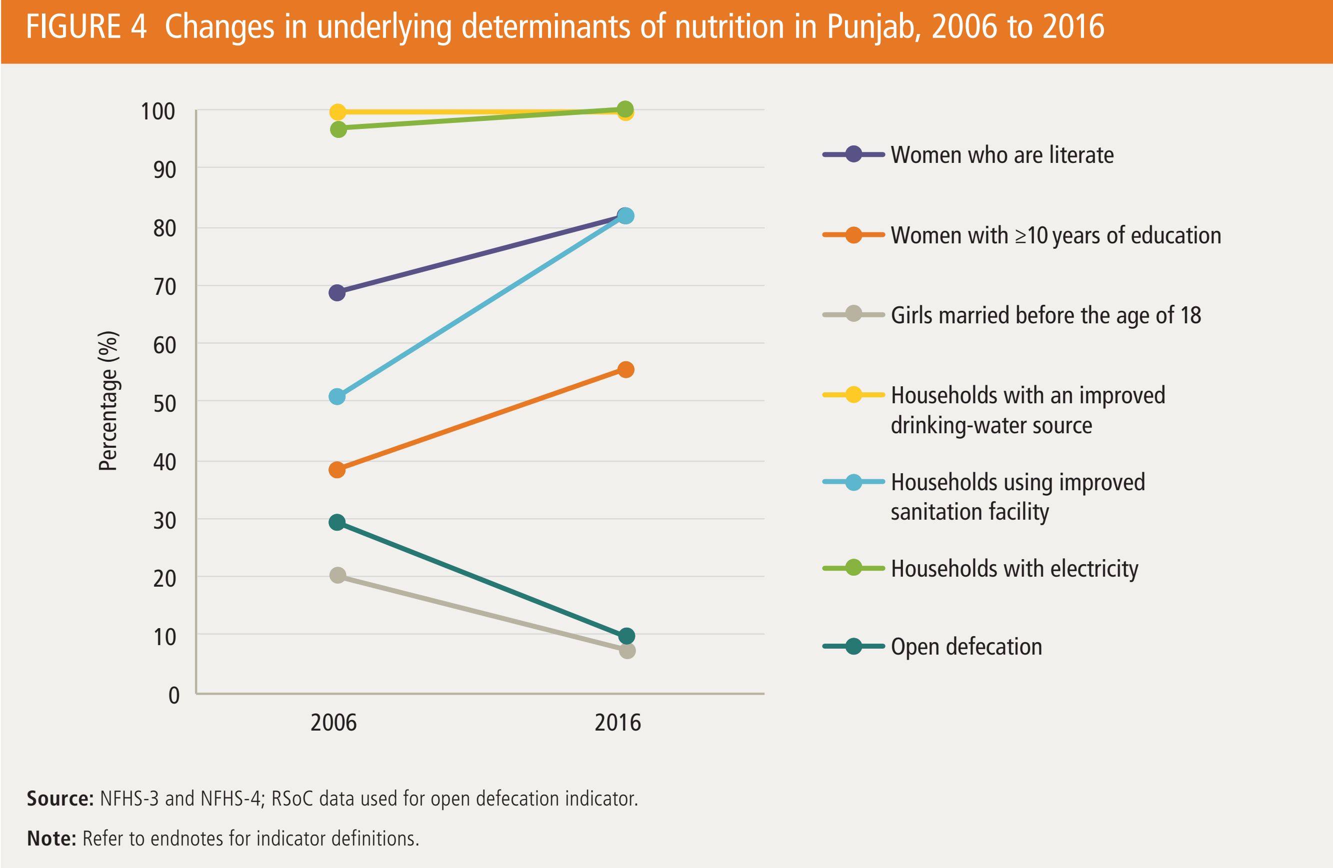
FIGURE 3 Changes in coverage of nutrition-specific interventions along the continuum of care in Punjab, 2006 to 2016



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

Note: ANC = Antental 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 Punjab, 2006 to 2016



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

Note: Refer to endnotes for indicator definitions.

greatly from 14.6 to 70.6 percent, and children with diarrhea who received ORS also increased from 34.1 to 66.2 percent. The proportion of children who were fully immunized increased substantially (from 60.1 percent to 89.1 percent).

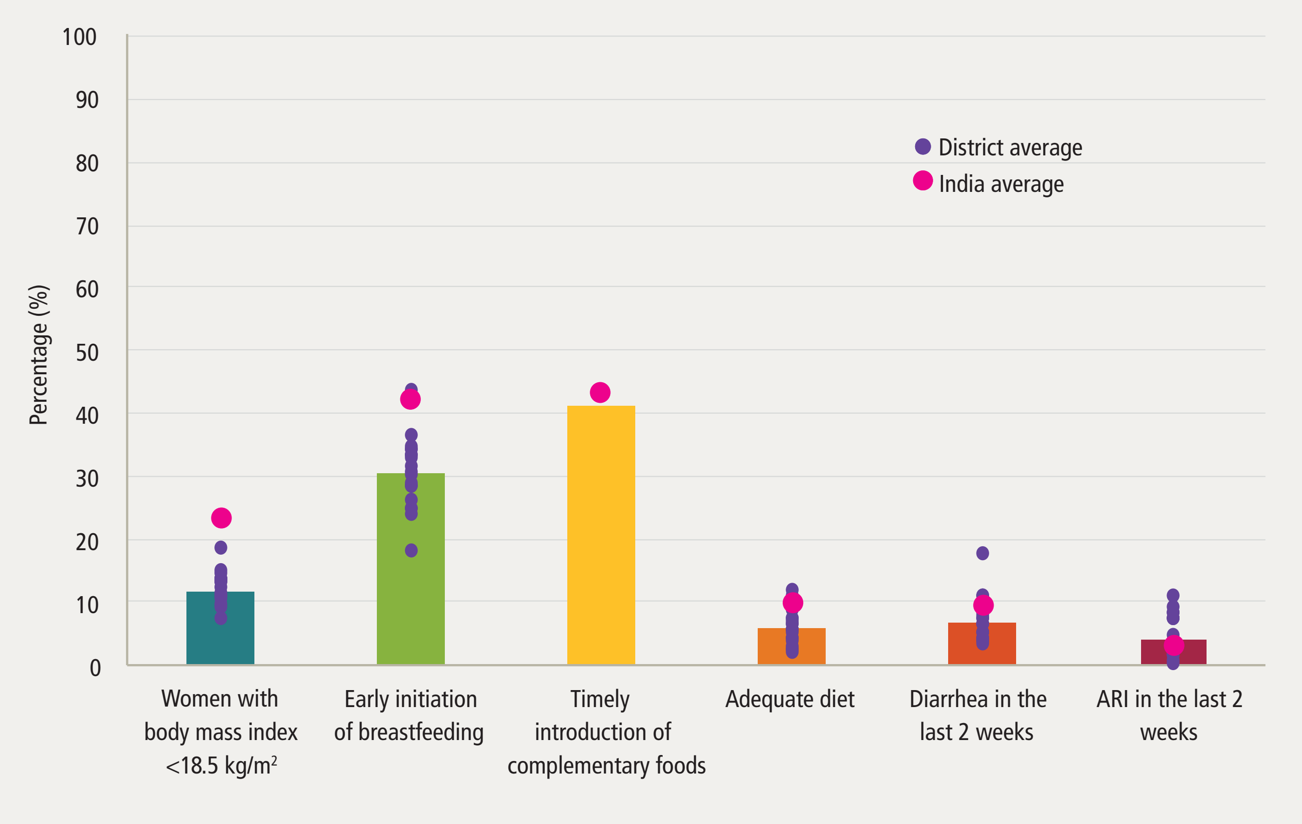
Changes in ***underlying determinants*** of nutrition are presented in Figure 4. Between 2006 and 2016 there has been an increase in the proportion of women who are literate (from 68.7 to 81.4 percent) and the proportion of women with more than 10 years of education (from 38.4 percent to 55.1 percent). Prevalence of early marriage in girls (below the age of 18) decreased considerably, from 19.7 percent in 2006 to 7.6 percent in 2016.

Proportion of households with an improved drinking water source and electricity has remained high (above 90 percent) in the last decade in Punjab. Households using improved sanitation facility improved substantially from 50.5 to 81.5 percent. Punjab has done well in improving sanitation and only 9.7 percent of the population in Punjab defecates in the open (RSoC 2013–14).

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

The 20 districts of Punjab, for which NFHS-4 data is available, cover a range of socio-economic characteristics. As seen in Figures 5-7, among these districts there is a high degree of inter-district variability for many of the determinants (that is, care during pregnancy, full immunization, vitamin A supplementation women's education, etc.). There is less inter-district variability for determinants where levels are high across majority of districts (that is, deliveries in health facilities, births assisted by a health professional and birth registered, household access to improved sources of drinking water and electricity). For some indicators,for example, early initiation of breastfeeding, adequate diet among children 6–23 months, and Janani Surkasha Yojana, most districts in Punjab are doing worse than the national average. For others, such as women with low BMI (<18.5 kg/m^2), ANC, care during delivery, full immunization, vitamin A supplementation and diarrhea in children, most districts within Punjab are doing better than the national average.

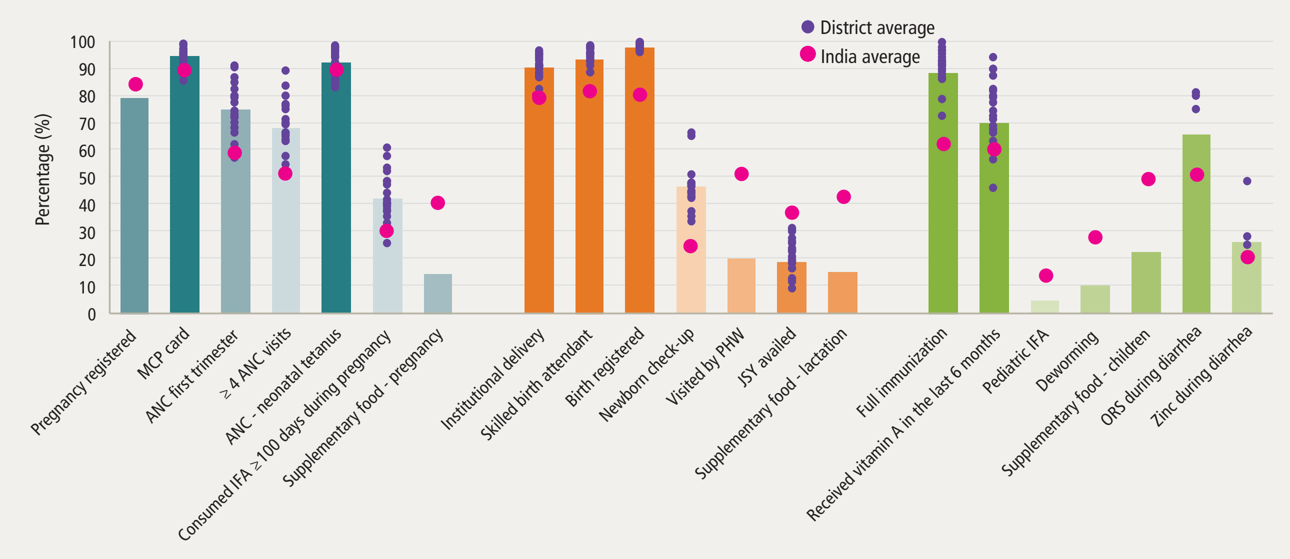
FIGURE 5 Inter-district variability in immediate determinants in Punjab, in 2016



Source: NFHS-4.

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

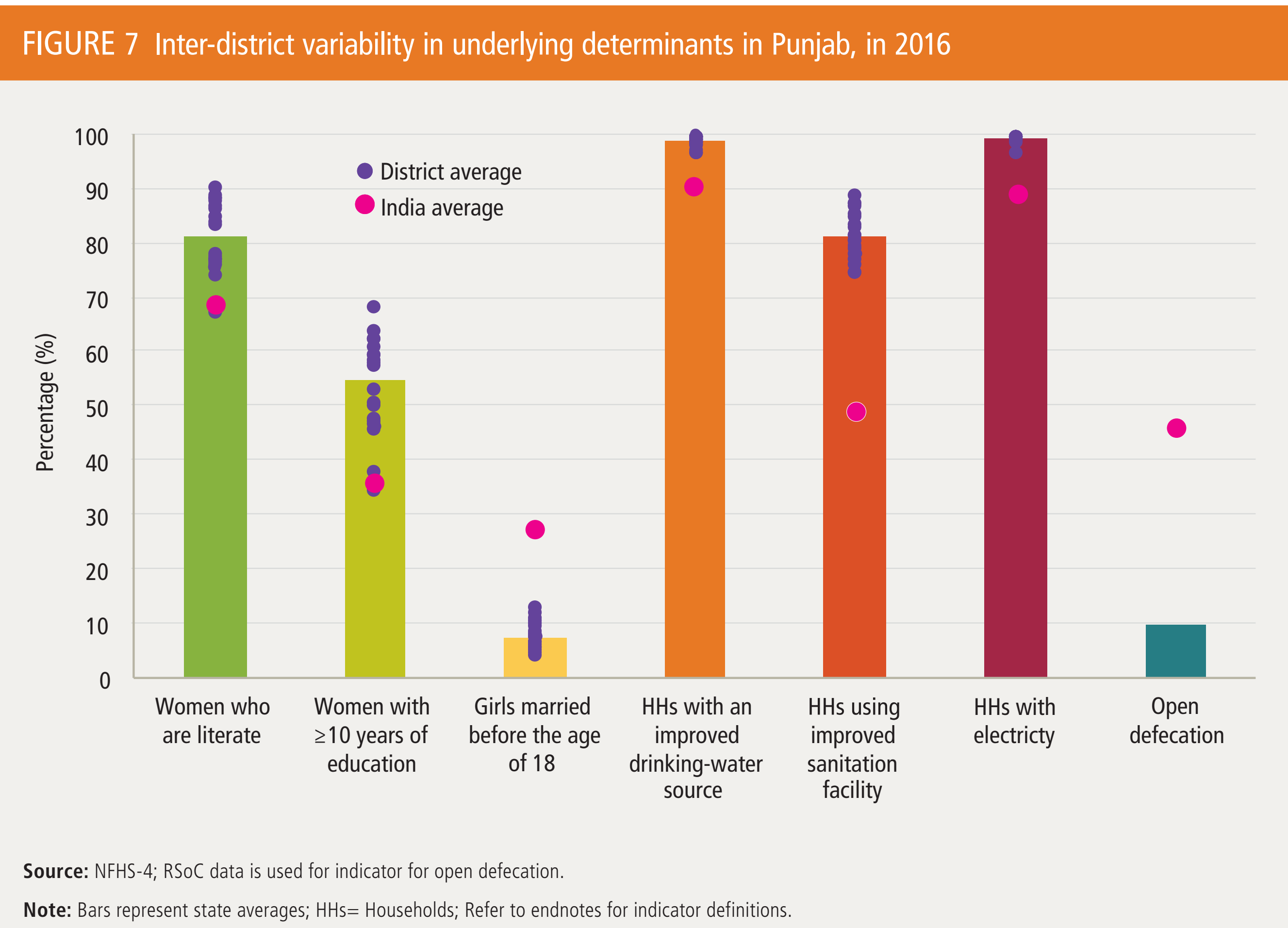
FIGURE 6 Inter-district variability in coverage of selected interventions in Punjab, in 2016



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

Note: Bars represent state averages; As RSoC data is not representative at the district-level, district variablity is unavailable for these indicators; ANC= Antenatal care; IFA= Iron and folic acid; JSY= Janani Suraksha Yojana; ORS= Oral rehydration 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 Punjab, 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.

LOOKING FORWARD: IMPLICATIONS & RECOMMENDATIONS

In the era where India has now embraced the sustainable development goals, it is an opportune time for Punjab 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 significant improvements in the coverage of some nutrition-specific interventions, especially antenatal care, care during delivery, full immunization and vitamin A supplementation. These improvements seem to commensurate with the impressive progress in stunting reduction in Punjab. However, the state has not made improvements in wasting, which has actually shown a reverse trend in the last ten years. The prevalence of anemia in women of reproductive age is a great concern as it increased by 15 percentage points in the last decade and is affecting more than half of the women in Punjab in 2016.

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, efforts are needed to strengthen and sustain antenatal care. Further improvement is required in the coverage of IFA consumption which has seen progress in the last ten years but is still far from optimal. Interventions related to delivery have made tremendous progress and it is improrant for Punjab to sustain the achieved progress. With low coverage of early initiation of breastfeeding (30.7 percent), timely introduction of complementary foods (41.1 percent) and extremely low coverage of children with adequate diet (6.6 percent), Punjab needs to invest significant efforts to promote and support optimal feeding practices. Supplementary food requires special attention as it is still very low for all the beneficiaires (pregnant women, lactating women and children) . For other postnatal care, such as full immunization, vitamin A supplementation and ORS during diarreha, Punjab has made good progress – the state should ensure that these efforts sustain. On underlying determinants, Punjab has done well in improving sanitation, early marriage in girls and female literacy over time. Greater efforts can be made to improve the status of women with over ten years of

education. Finally, the inter-district variability across outcomes and multiple determinants calls for district-specific strategies to bridge these gaps.

Alongside investments in improving early nutrition, it is also important for Punjab to consider the challenge of non-communicable diseases. As Figure 8 shows, the challenge is fast growing in Punjab, with 31.3 percent of women and 27.8 percent of men being overweight or obese, which is much higher than the national average. The prevalence of overweight or obesity is even higher than 40 percent in Rupnagar (for women) and in Patiala (for men). High blood pressure and high blood sugar are other significant public health challenges in Punjab. This suggests that Punjab needs to consider ways to simultaneously address undernutrition and emerging non-communicable diseases related to nutrition.

NOTES

1. Punjab currently consists of 22 districts. Since National Family Health Survey-4 used the Census 2011 district boundaries, this Policy Note reports information for only 20 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.

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.

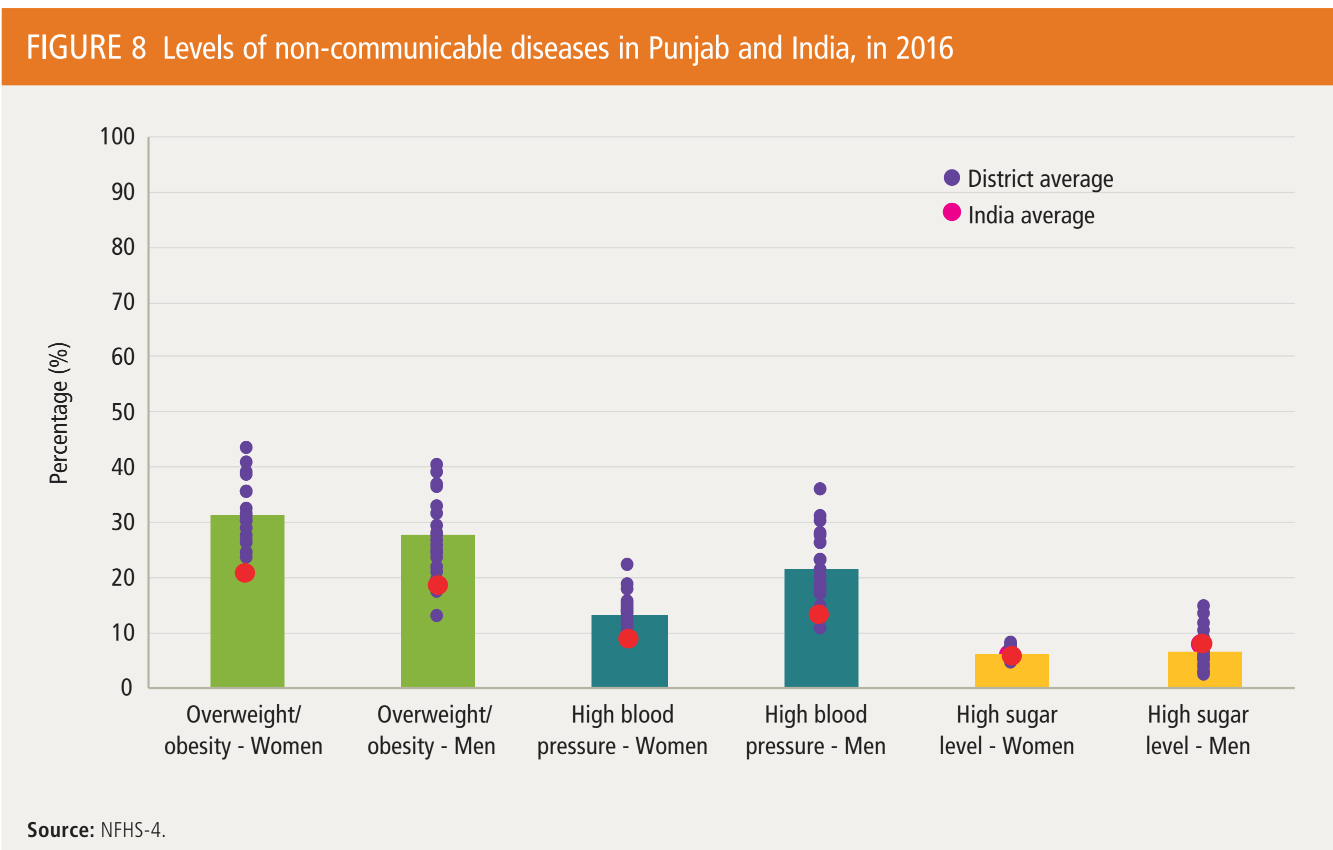
Deworming: Percentage of children 6–59 months old who were given deworming medication in the last 6 months.

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.

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



Source: NFHS-4.

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

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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