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

Policy Note

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Improving Nutrition in Mizoram

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 Mizoram.

Mizoram is situated in the hills of north east, flanked by Bangladesh on the west and Myanmar on the east and south. The state is spread across an area of 21,087 square km and is divided into eight districts and 26 blocks. As of 2011, Mizoram had a population of over one million (1,091,014) and a sex ratio of 975 females per 1000 males (Mizoram State Unit 2017).

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

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 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

The changes in nutrition outcomes in Mizoram between 2006 and 2016 have been largely positive (Figure 1). Stunting prevalence declined from

39.8 percent in 2006 to 28 percent in 2016. Wasting prevalence decreased from 9 percent to 6.1 percent, and severe wasting fell from 3.6 to 2.3 percent for the same period. Low birth weight prevalence declined from 7.6 percent to 2.2 percent. Exclusive breastfeeding (EBF) for children under six months increased from 46.1 percent to 60.6 percent. Prevalence of anemia among women of reproductive age declined from 38.1 percent to 22.5 percent (IIPS 2008 and IIPS 2017).

Stunting among children under five years varies across districts, ranging from 23.7 percent in Aizawl to 36.9 percent in Saiha (Map 1). In four out of eight districts of Mizoram, prevalence of stunting in 2016 was between 30 percent and 40 percent, while in others it was between 20 percent and 30 percent.

There is a wide variability in the prevalence of anemia among women of reproductive age across Mizoram (Map 2), ranging from 18.5 percent in Aizawl to 38.5 percent in Kolasib.

The prevalence of wasting (Map 3) among children under five years of age ranges from 2.3 percent (Aizawl) to 12 percent (Lawangtlai). Aizawl has the lowest prevalence of severe wasting (0.8 percent) while Lawangtlai has the highest (5.9 percent), as seen in Map 4. Lawangtlai district suffers from the multiple burden of stunting and wasting.

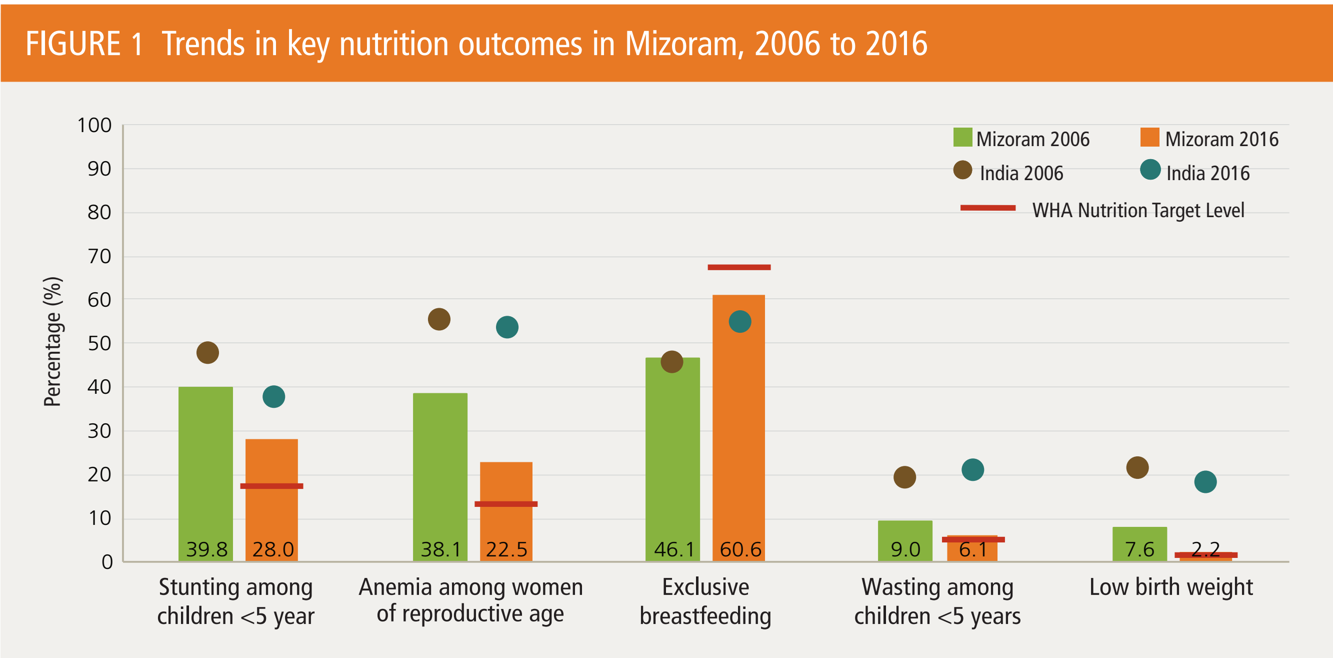
Data on EBF is available for 7 out of 8 districts in Mizoram (Map 5). Among the 7 districts, Saiha has the highest prevalence of exclusive breastfeeding (75.9 percent) and Lawangtlai has the lowest prevalence (42.6 percent).

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.

Changes in the ***immediate determinants*** of nutrition in Mizoram are described in Figure 2. The prevalence of low body mass index (<18.5 kg/m^2) among women was low in 2006 (14.4 percent) and it declined further to 8.3 percent by 2016. Early initiation of breastfeeding improved slightly from 65.5 percent to 70.2 percent during this period. Complementary feeding is a key concern. Timely introduction of complementary foods (between 6

FIGURE 1 Trends in key nutrition outcomes in Mizoram, 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.

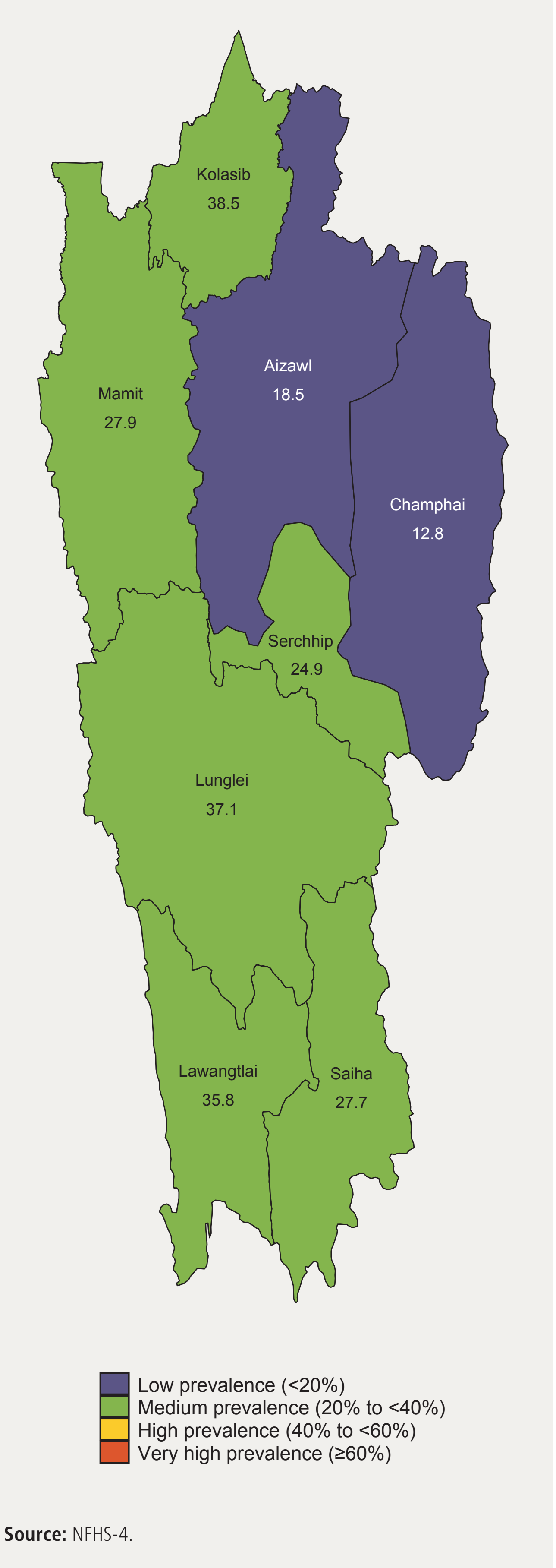
MAP 1 Stunting (among children <5 years) in Mizoram in 2016, by district

Kolasib 25.6
Mamit 31.2
Aizawl 23.7
Champhai 32.9
Serchhip 25.6
Lunglei 25.3
Lawangtlai 35.3
Saiha 36.9

Low prevalence (<20%)
Medium prevalence (20% to <30%)
High prevalence (30% to <40%)
Very high prevalence (≥40%)

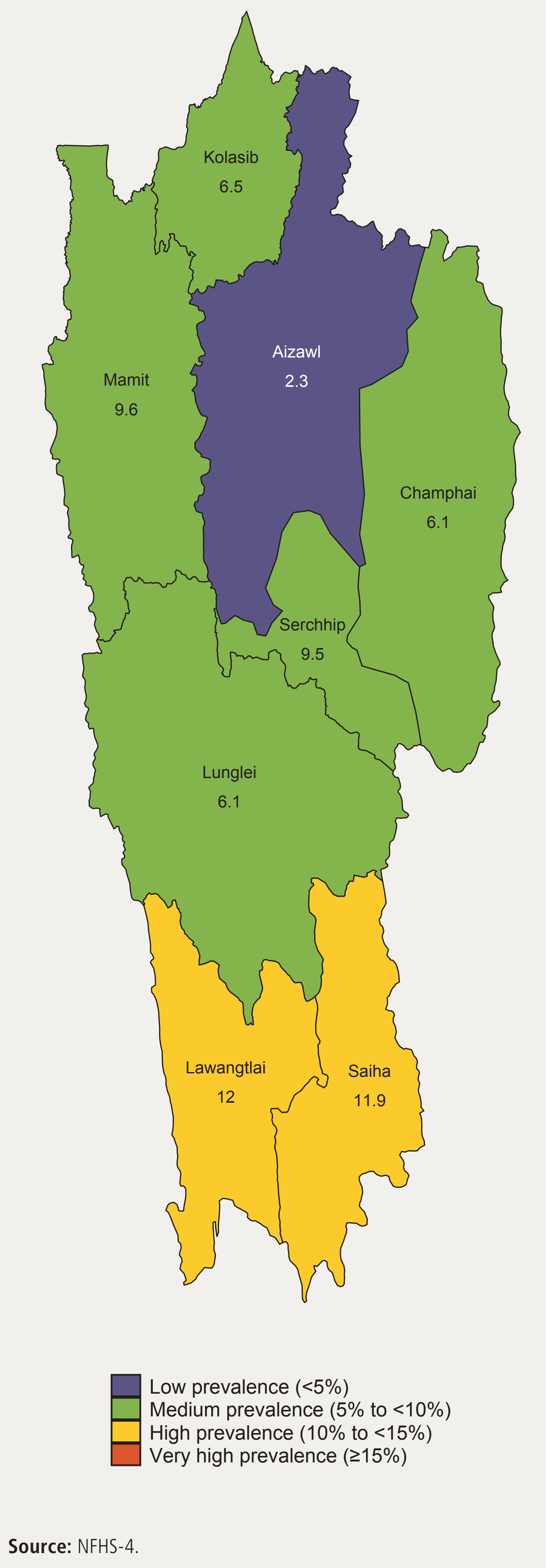
Source: NFHS-4.

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



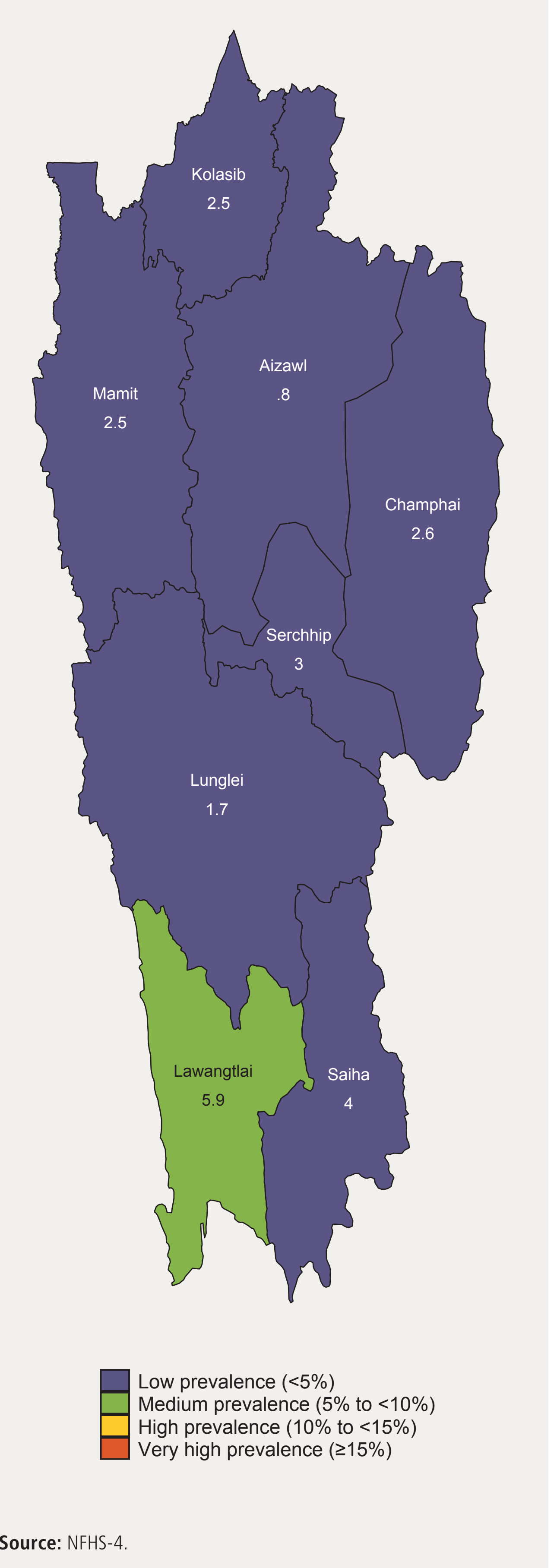
Source: NFHS-4.

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



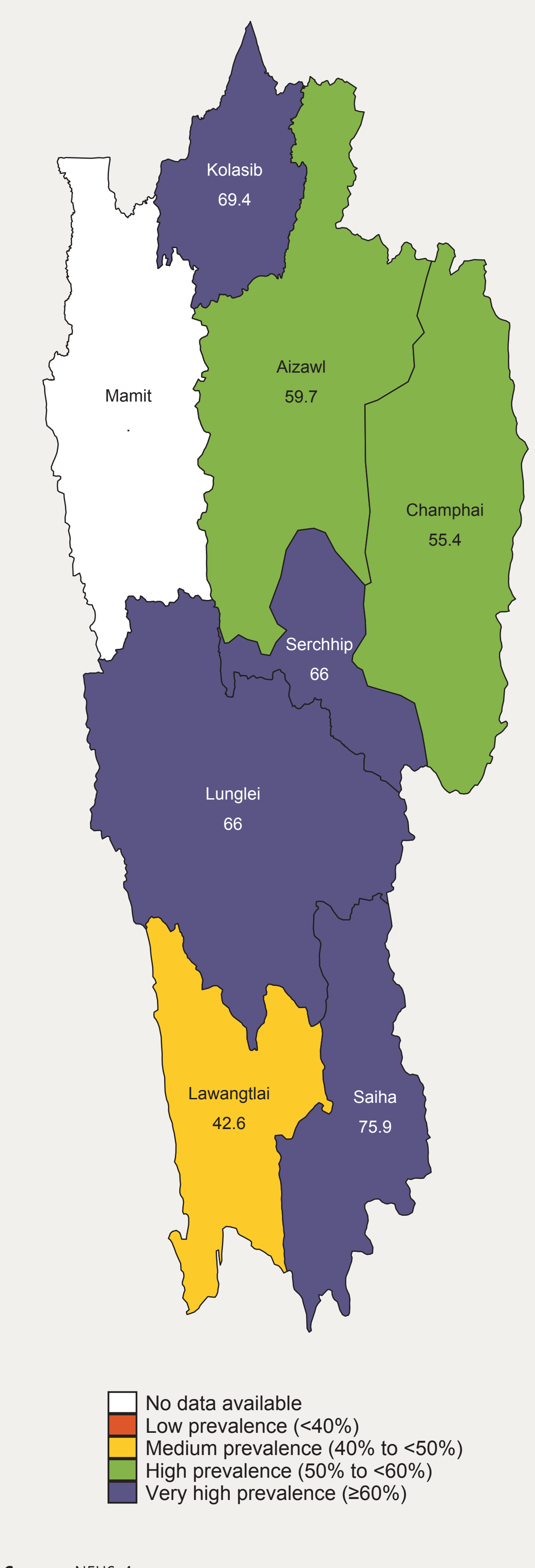
Source: NFHS-4.

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



Source: NFHS-4.

MAP 5 Exclusive breastfeeding in Mizoram in 2016, by district



Source: NFHS-4.

and 8 months of age) declined from 81.4 percent to 67.9 percent. In 2016, only 14.6 percent of children (between 6 and 23 months of age) received an adequate diet.

The proportion of children with diarrhea declined from 11 percent in 2006 to 7.6 percent in 2016, while the proportion of children with acute respiratory infection fell from 4.1 percent to 2.2 percent over the same period.

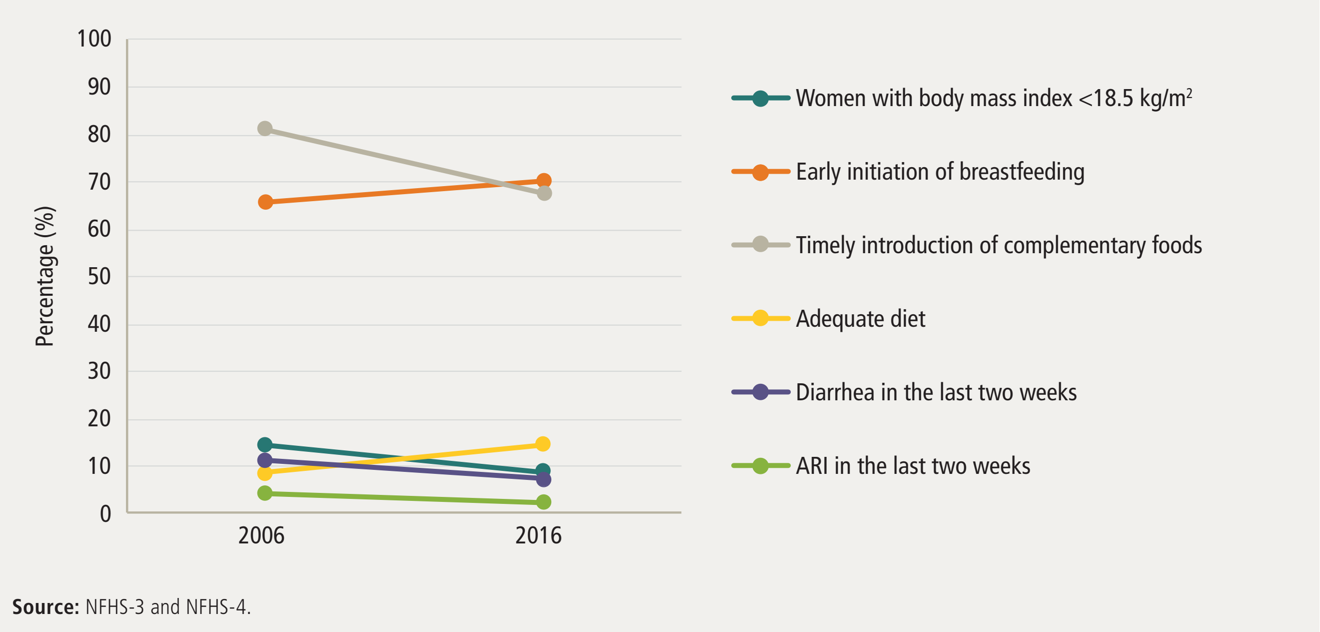
Coverage of ***nutrition-specific interventions*** in Mizoram improved considerably over the last decade (Figure 3). Changes in interventions related to care during pregnancy in the last decade have been positive. The proportion of women who received any antenatal care (ANC) during first trimester increased from 42.9 percent to 65.7 percent, and the proportion of women who received at least 4 ANC visits increased from 45.6 percent to 61.7 percent. Coverage of iron-folic acid (IFA) consumption increased from 17.8 percent to 53.8 percent.

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, crossing 80 percent. Institutional delivery increased from 59.8 percent to 80.1 percent and births assisted by health professionals increased from 65.4 percent to 83.8 percent.

Nutrition interventions focusing on children have improved over the last ten years. The proportion of children who received vitamin A supplements increased from 40.2 percent in 2006 to 68.6 percent in 2016. The proportion of children with diarrhea who received oral rehydration salts (ORS) also improved greatly (from 48.3 percent to 69.9 percent). Although the proportion of children who were fully immunized increased slightly from 46.5 percent to 50.5 percent, half the population of children did not receive all the requisite vaccinations in 2016.

Between 2006 and 2016, the coverage of food supplementation declined for pregnant women (from 54.5 percent to 44.1 percent) and lactating mothers (from 54.6 percent to 46.4 percent), while it increased for children under 3 years (from 55.7 percent to 63.4 percent).

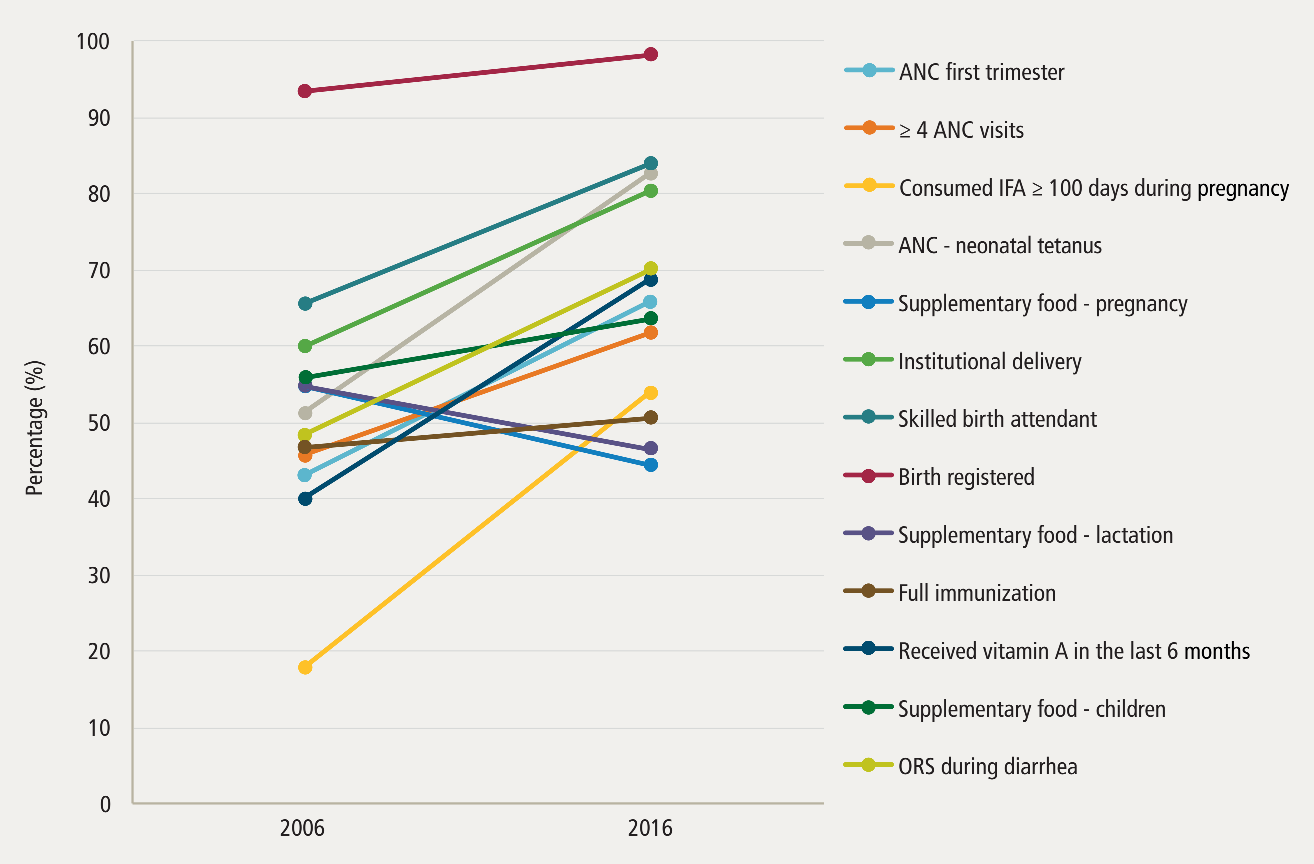
FIGURE 2 Changes in immediate determinants of nutrition in Mizoram, 2006 to 2016



Source: NFHS-3 and NFHS-4.

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

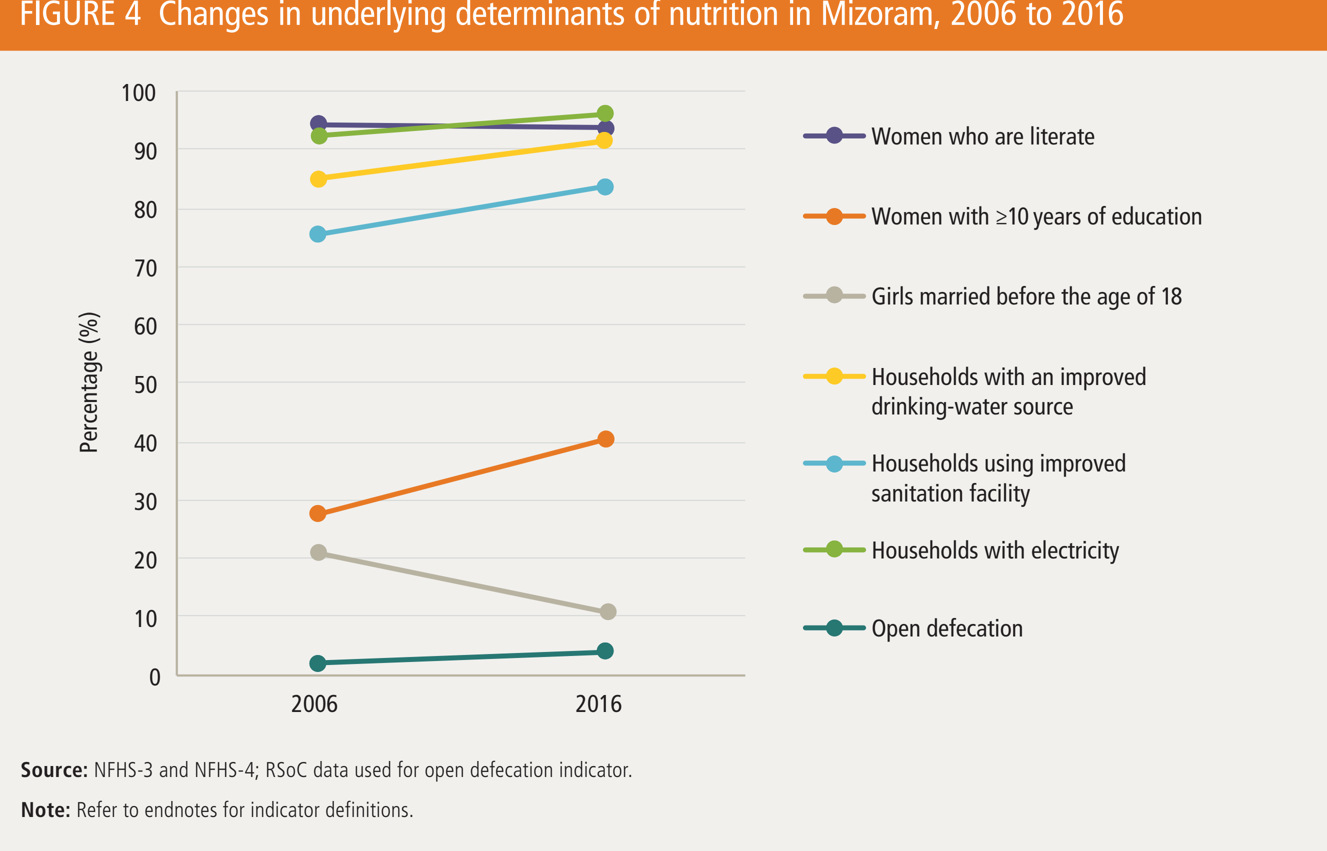
FIGURE 3 Changes in coverage of nutrition-specific interventions along the continuum of care in Mizoram, 2006 to 2016



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 Mizoram, 2006 to 2016



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

Note: Refer to endnotes for indicator definitions.

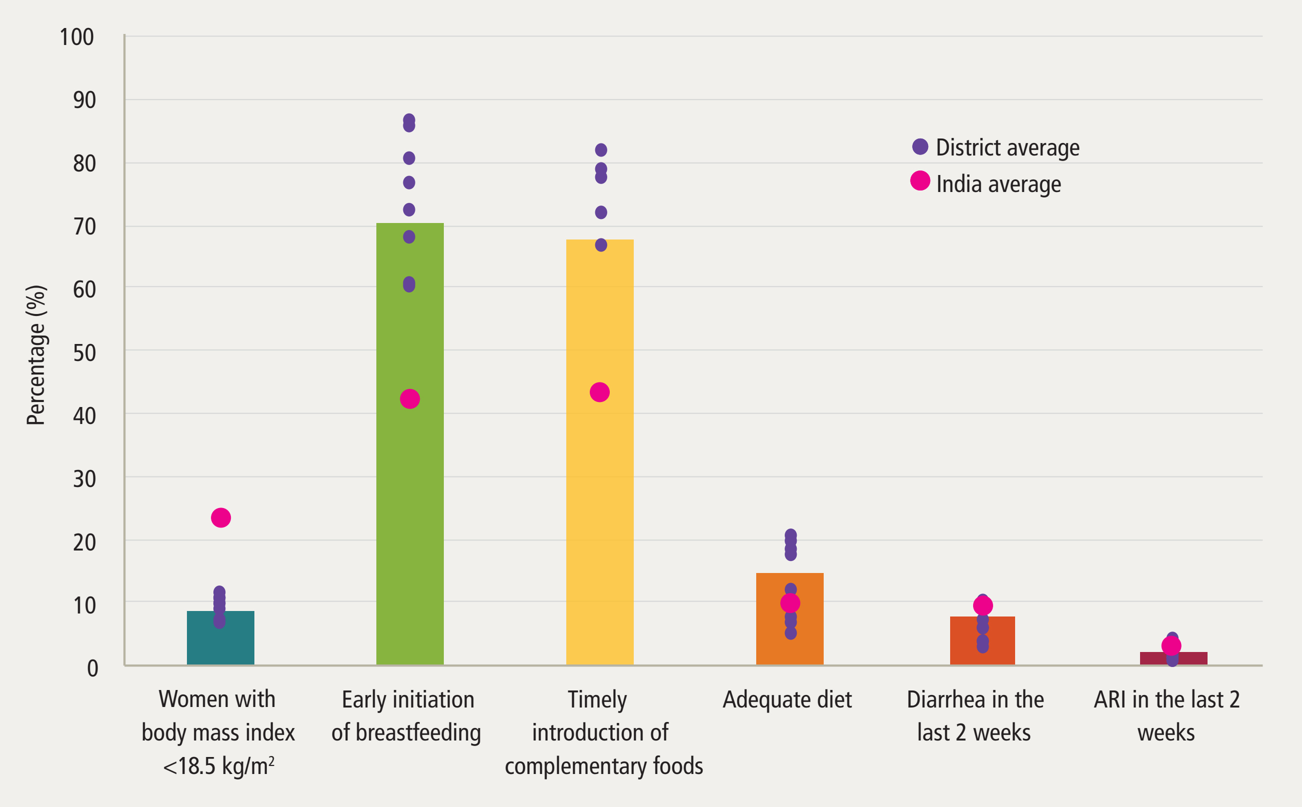
In the last decade, Mizoram experienced improvements in all the ***underlying determinants*** of nutrition (Figure 4), except a slight decline in the number of literate women. The proportion of literate women was high in 2006 (94 percent), but declined slightly to 93.5 percent in 2016. There was improvement in the proportion of women with more than 10 years of education (from 27.5 percent to 40.2 percent) and the proportion of girls who were married before 18 years of age declined from 20.6 percent to 10.8 percent. During the same period, access to improved sanitation facilities increased from 75.5 percent to 83.5 percent, and households having an improved drinking water source increased from 85 percent to 91.5 percent. The proportion of households with access to electricity was already very high in 2006 (92.4 percent). It further increased to 95.9 percent in 2016.

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

In Figures 5, 6, and 7, 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 eight districts in Mizoram, there is a high degree of inter-district variability for many key determinants (that is, early initiation of breastfeeding, timely introduction of complementary food, pregnancy care, full immunization, institutional delivery, delivery assistance by skilled birth attendant, vitamin A and zinc during diarrhea, women with more than 10 years of education, and improved sanitation). In contrast, there is little inter-district variability for some other determinants, either because levels are very good (for example, diarrhea and ARI in the last 2 weeks, mother and child protection card, and birth registration) or because challenges are uniform across all districts (for example, adequate diet among children 6–23 months old, and girls married before the age of 18).

For many determinants (for example, women with low BMI, early initiation of breastfeeding, timely introduction of complementary foods, pregnant women who received an ANC during the first trimester, IFA during pregnancy, birth registration, availing cash transfers using JSY, ORS and zinc during diarrhea, women's literacy, girls married before the age of 18, households with electricity

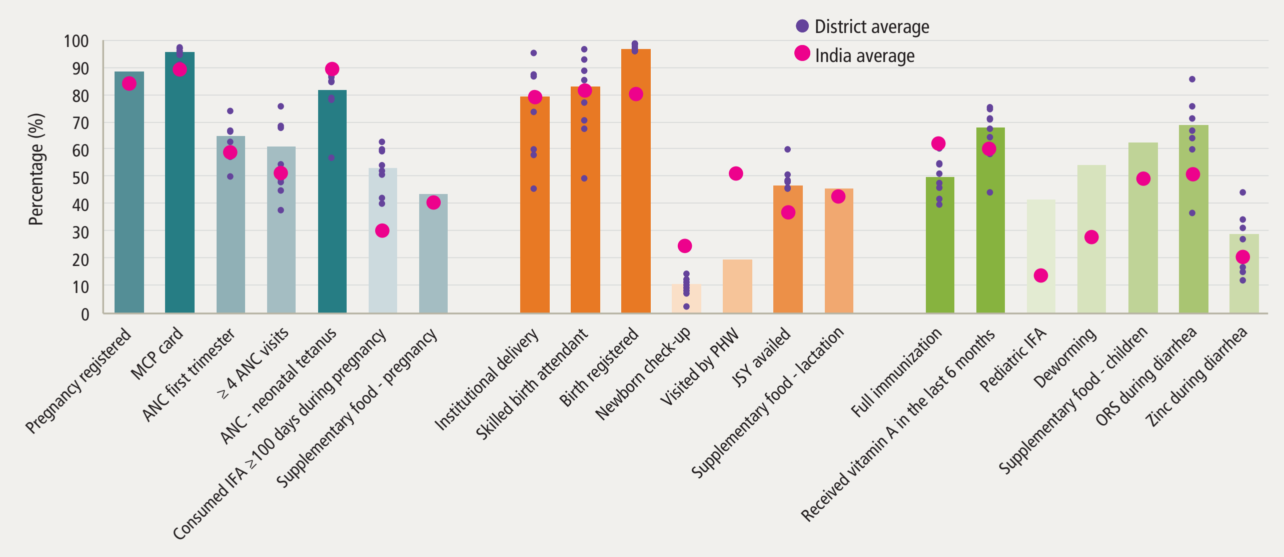
FIGURE 5 Inter-district variability in immediate determinants in Mizoram, in 2016



Source: NFHS-4.

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

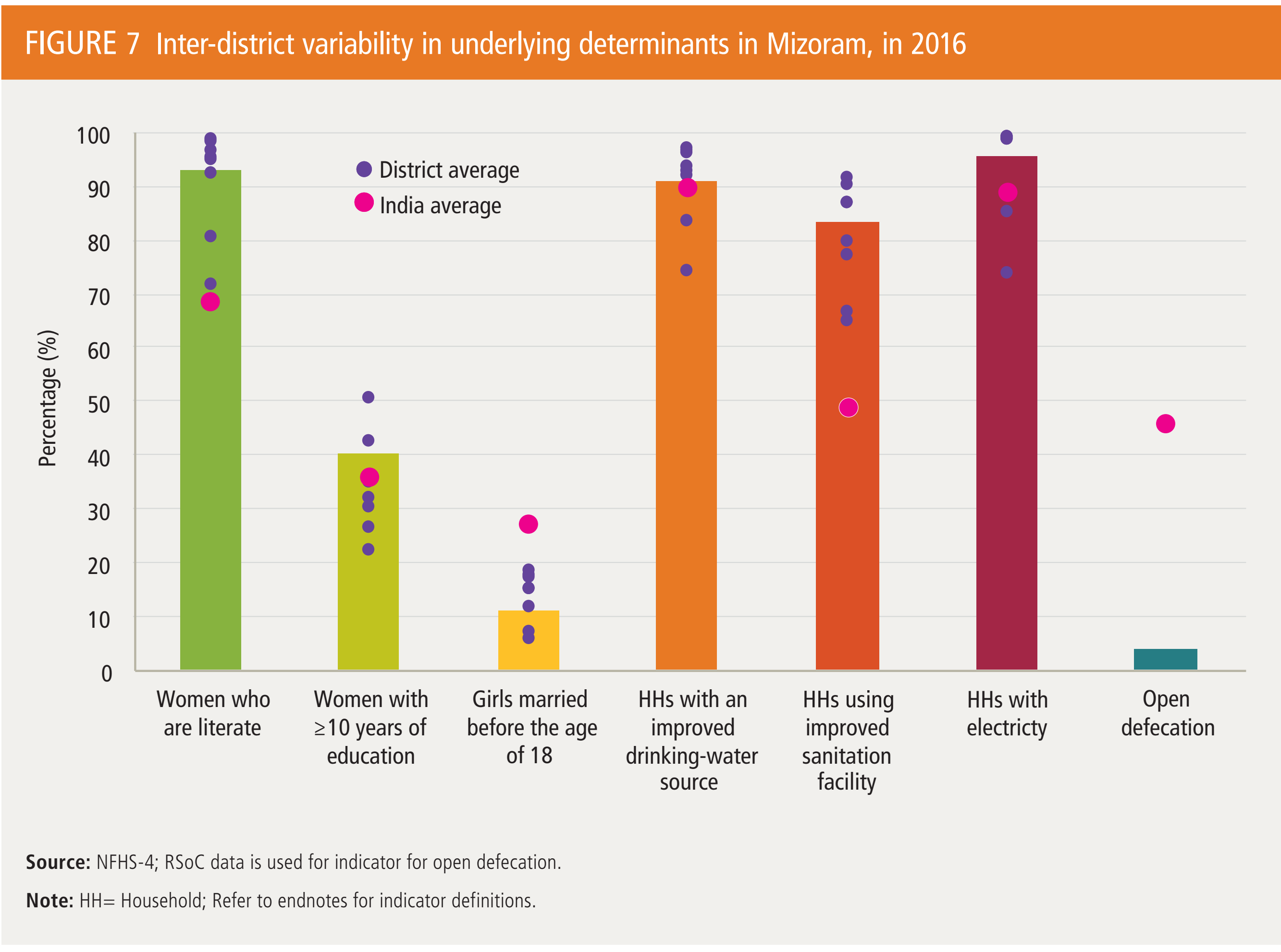
FIGURE 6 Inter-district variability in coverage of selected interventions in Mizoram, in 2016



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 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 Mizoram, in 2016



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

Note: HH= Household; Refer to endnotes for indicator definitions.

and improved sanitation), all or almost all districts in Mizoram are doing better than the national average. For some others, such as neonatal tetanus during ANC, full immunization and newborn check-up, all or most districts in Mizoram 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 Mizoram 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. Mizoram has performed well on several outcomes likes stunting, anemia among women of reproductive age, exclusive breastfeeding, wasting and low birth weight. Mizoram needs to ensure continued investments to sustain the good performance on these indicators. Moving forward, Mizoram should 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 have helped some districts perform well as it can offer useful insights for the poor performing districts to improve.

To achieve progress on nutrition, Mizoram should continue investments in improving the coverage of interventions targeting the first 1000 days of life. Although the state has better coverage than the national average on most interventions, efforts are required for further improvement. On nutrition-specific interventions during the pre-natal phase, special emphasis is needed to improve the coverage of ANC visits and IFA during pregnancy as more than a third of women do not have access to these services. The state needs to sustain their good progress on institutional delivery and work towards achieving universal coverage.

Significant efforts need to be taken to strengthen the coverage of several postnatal interventions. Only eleven percent of newborns received a check-up within two days after birth and only twenty percent were visited by a primary health worker. Half of the population of children were not immunized in 2016 and one third of the children had not received

vitamin A supplements. Given the low coverage of these services, state needs to undertake focused efforts to improve coverage. Promotion of appropriate complementary feeding practices for children are recommended as the state's performance on adequate diet for children is very poor. On underlying determinants, while the state's overall performance is better than the national average, efforts to increase the number of women with more than 10 years of education is required.

Alongside investments in early nutrition, it is also important for Mizoram, to consider the challenge of non-communicable diseases. As Figure 8 below shows, 21 percent of men and women in Mizoram are now overweight or obese, higher than the national average. The challenges of high blood pressure and high blood sugar are also emerging, especially high blood pressure among men which is at 17.9 percent. Therefore, Mizoram 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.

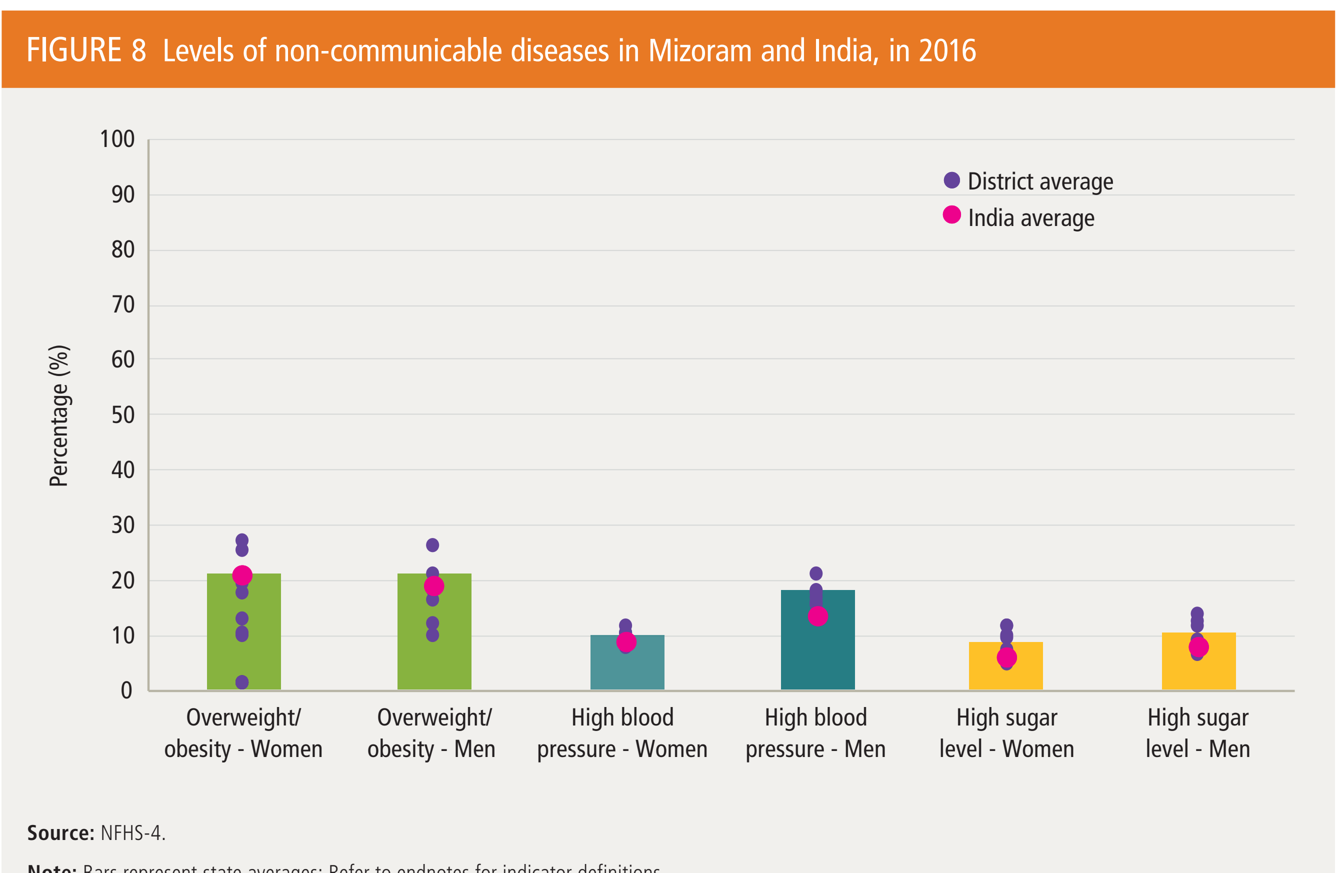
Consumed IFA ≥ 100 days during pregnancy: Percentage of mothers who took IFA supplements for at least 100 days for the last birth in the last 5 years.

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 Mizoram 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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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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