

Improving Nutrition in Goa

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 Goa.

Goa, situated in the western coastal region of India, is a small state comprising of only two districts. It is the fourth smallest state in India by population and has the highest proportion of urban population (62.2 percent). As of 2011, only 5 percent of Goa's population lives below poverty line (BPL), thus making it the state with the lowest proportion of BPL population (Reserve Bank of India 2015). With a literacy rate of 88.7 percent, Goa is the fourth most literate state in the country (Census of India 2011). The state has a sex ratio of 973 females for 1000 males (Census of India 2011).

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

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.

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

Overall, there have been improvements in nutrition and health outcomes in Goa between 2006 and 2016, and the state currently performs better than national average on all indicators except wasting (Figure 1). Stunting prevalence among children under five years declined from 25.6 percent to 20.1 percent. Prevalence of anemia among women of reproductive age declined from 38 percent to 31.3 percent. Exclusive breastfeeding (EBF) for children under six months increased drastically from 17.7 percent to 60.9 percent. During the same time period, prevalence of low birth weight reduced from 22.2 percent to 16.7 percent. However, wasting is a key concern as it increased by 7.8 percentage points (from 14.1 to 21.9 percent) between 2006 and 2016.

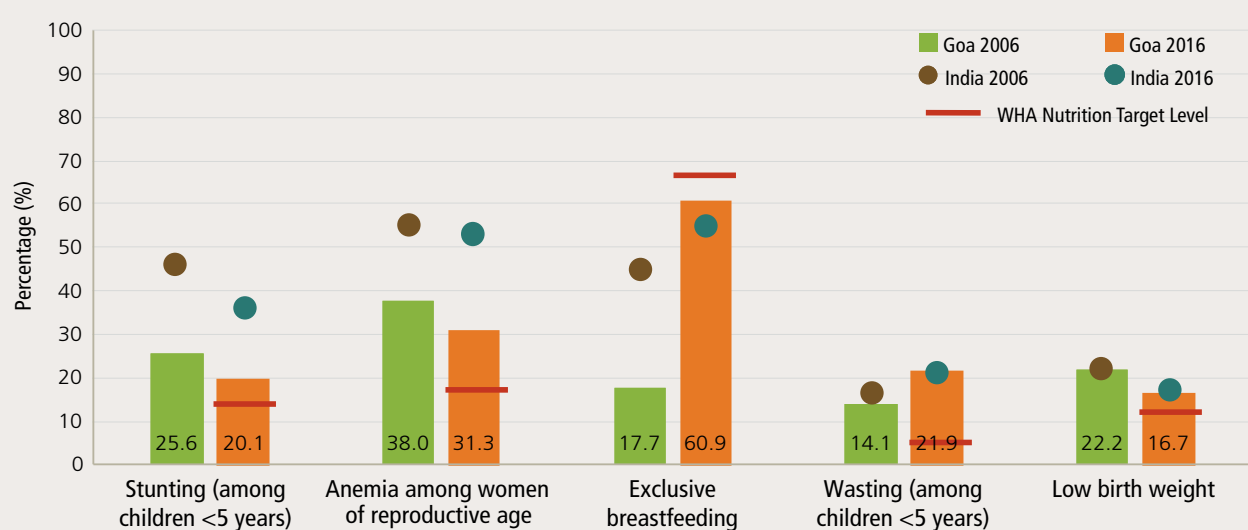
Between the two districts in Goa, South Goa is a better performer in indicators of childhood stunting and anemia among women of reproductive age (Figure 2). However, South Goa has a much higher prevalence of childhood wasting (27.7 percent vs. 17.5 percent) and severe wasting (12.5 percent vs. 7.2 percent) than North Goa.

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 Goa are described in Figure 3. The prevalence of low body mass index (<18.5 kg/m²) among women declined substantially from 27.9 percent to 14.7 percent between 2006 and 2016. Early initiation of breastfeeding has improved in the last decade from 59.7 percent in 2006 to 73.3 percent in 2016. However, complementary feeding is a key concern. In 2016, only 10.4 percent of children (between 6 and 23 months of age) received an adequate diet. Data on timely introduction of complementary foods (between 6 and 8 months of age) is not available for 2016.

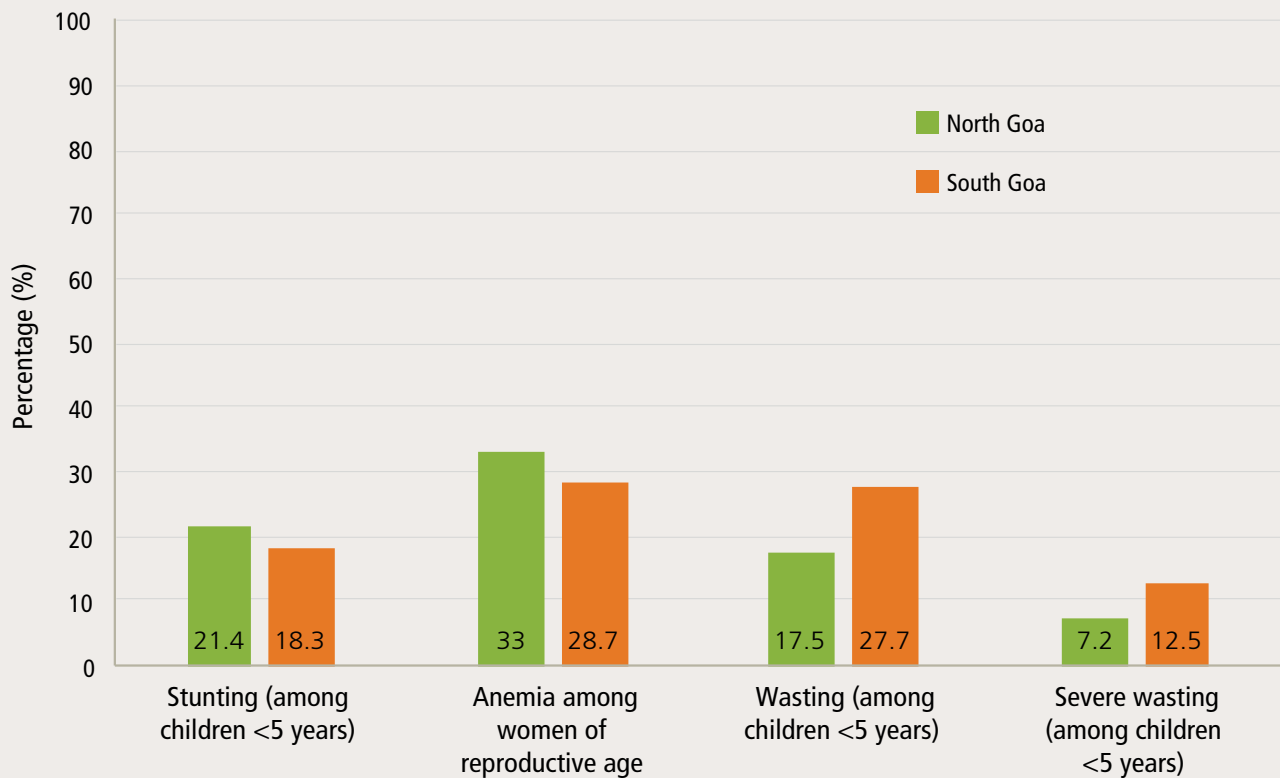
FIGURE 1 Trends in key nutrition outcomes in Goa, 2006 to 2016



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

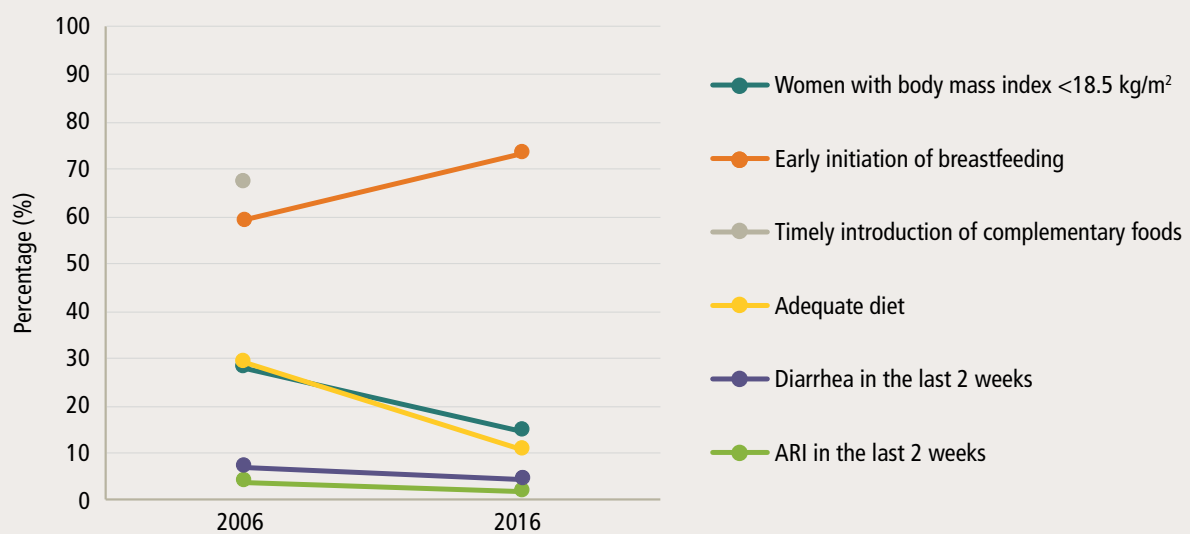
Note: A set of global nutrition targets for maternal, infant and young child nutrition were endorsed by the World Health Assembly (WHA) in 2012. The red lines represent the WHA targets to be achieved by the state, by 2025. The baseline reference year for these targets is 2012. The state baseline estimates are based on the NFHS-4 (2016) as there is no survey data for 2012. Child overweight data is not available. Refer to endnotes for indicator definitions.

FIGURE 2 Nutrition outcomes in Goa, by district



Source: NFHS-4

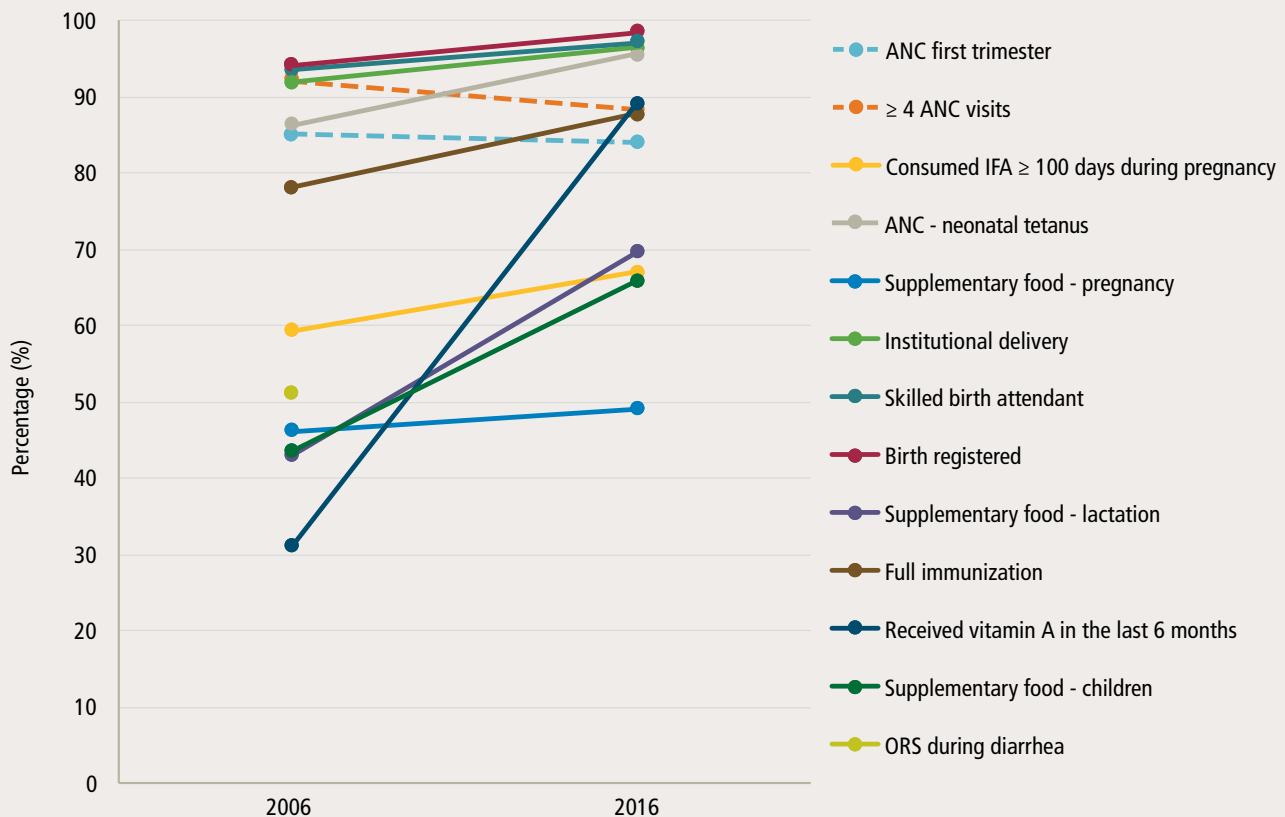
FIGURE 3 Changes in immediate determinants of nutrition in Goa, 2006 to 2016



Source: NFHS-3 and NFHS-4.

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

FIGURE 4 Changes in coverage of nutrition-specific interventions along the continuum of care in Goa, 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.

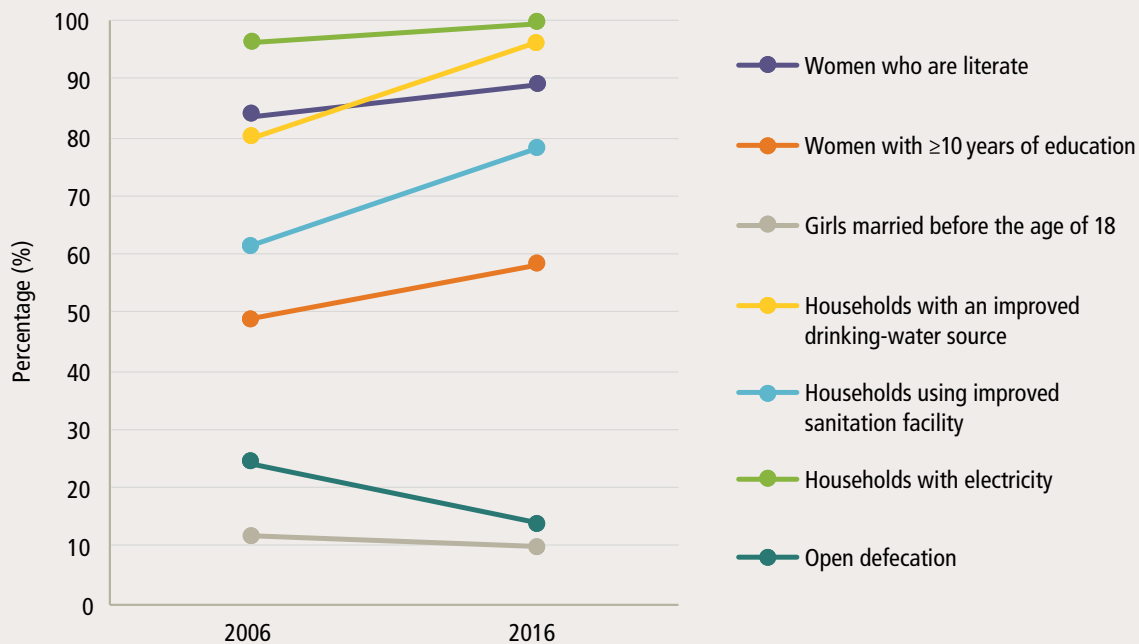
The disease burden has improved in Goa over the past decade. The proportion of children with diarrhea has declined from 6.8 percent in 2006 to 3.8 percent in 2016, and proportion of children with acute respiratory infection declined from 3.6 percent to 1.4 percent over the same time period.

Changes in **nutrition-specific interventions** in Goa are presented in Figure 4. Interventions related to delivery, such as birth registered, the proportion of women who delivered in health facilities and whose births were assisted by health professionals, already had high coverage (above 90 percent) in 2006 and improved further in the last decade, resulting in almost universal coverage in 2016.

Changes in interventions related to care during pregnancy in the last decade have been mixed. Coverage of antenatal care (ANC) was very high in 2006, but declined slightly over the next ten

years. Specifically, the proportion of women who received ANC during the first trimester declined from 85.7 percent to 84.4 percent and the proportion of women who received four or more antenatal visits declined from 92.4 percent to 89 percent, between 2006 and 2016. The proportion of women reporting consumption of at least 100 iron-folic acid (IFA) tablets increased from 59.6 percent in 2006 to 67.4 percent in 2016. Nutrition interventions focusing on children have improved in the last ten years. The proportion of children who received vitamin A supplements increased substantially from 31 percent to 89.5 percent, and children who were fully immunized increased from 78.6 percent to 88.4 percent. Between 2006 and 2016, the coverage of food supplementation improved for pregnant women (from 46.4 percent to 49.2 percent), lactating mothers (from 43.3 percent to 70.2 percent) and children (from 44 percent to 66.5 percent).

FIGURE 5 Changes in underlying determinants of nutrition in Goa, 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, several **underlying determinants** of nutrition improved in Goa (Figure 5). The proportion of households with access to electricity increased by 3.4 percentage points, reaching nearly 100 percent in electricity coverage. There was a considerable rise in the proportion of households with access to improved sanitation (from 60.9 percent to 78.3 percent) and improved drinking water (from 79.9 percent to 96.3 percent) during this period. There was also an improvement in women's literacy (from 83.6 percent to 89 percent) and the proportion of women with more than 10 years of education (from 48.9 percent to 58.2 percent). There was a decline in the proportion of girls who were married before 18 years (from 11.7 percent to 9.8 percent).

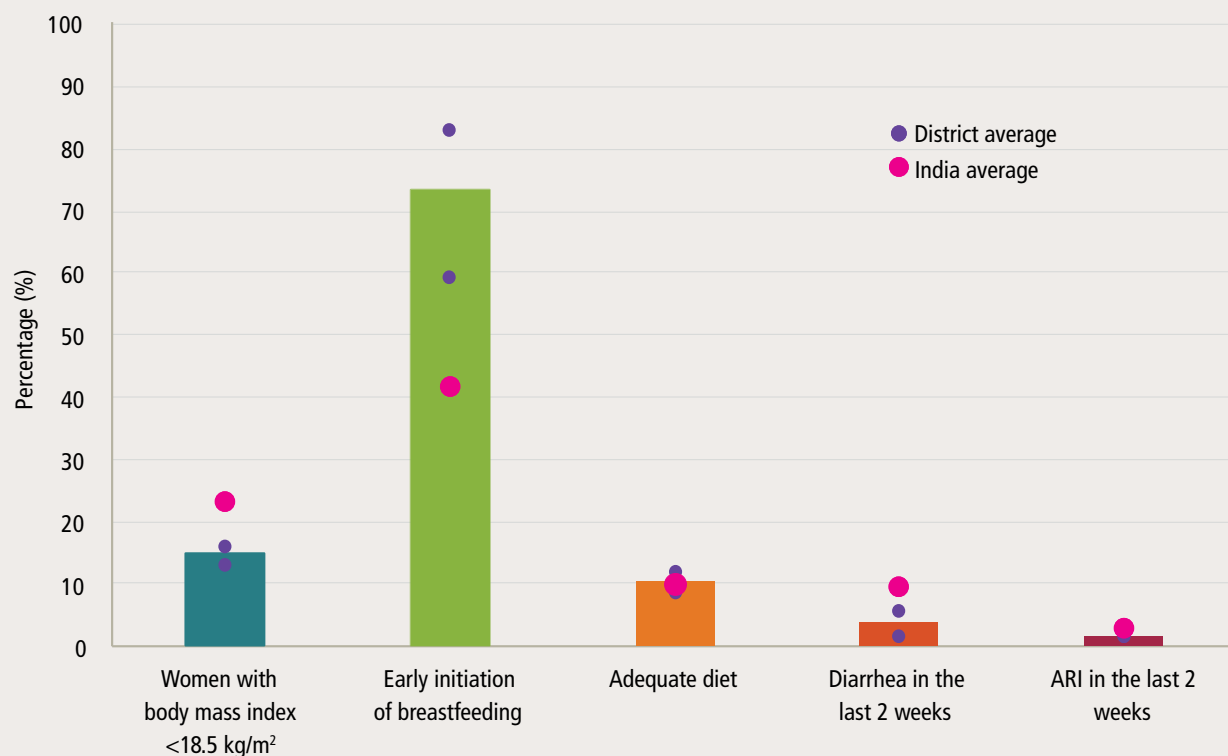
Inter-district variability in coverage of selected interventions in Goa, in 2016

This Note also highlights the inter-district variability in immediate determinants (Figure 6), coverage of health and nutrition interventions (Figure 7) and underlying determinants (Figure 8). Between the two districts in Goa, early initiation of breastfeeding is much higher (82.8 percent) in North Goa than in

South Goa (58.9 percent). North Goa also performs much better than South Goa on IFA consumption by pregnant women (88.6 percent vs 35.3 percent) and children who received health check-up (71.4 percent vs 16.2 percent). In contrast, there is little to no inter-district variability for most other determinants, mainly because of good performance of both the districts (for example, women who are literate, households with access to electricity, households with an improved drinking water source), or in a few cases, because of uniform challenges (for example, adequate diet among children 6–23 months old).

For most determinants and health and nutrition interventions (for example, infant and young child feeding practices, child morbidity, girls married before 18 years of age, households using improved sanitation, women with low body mass index), both districts in Goa are doing better than the national average. The only intervention with very low coverage (less than 10 percent) in both districts is Janani Suraksha Yojana (JSY). This is likely due to the low proportion of population in Goa living below poverty line (approximately 5 percent), which is a key eligibility criterion for being a JSY beneficiary.

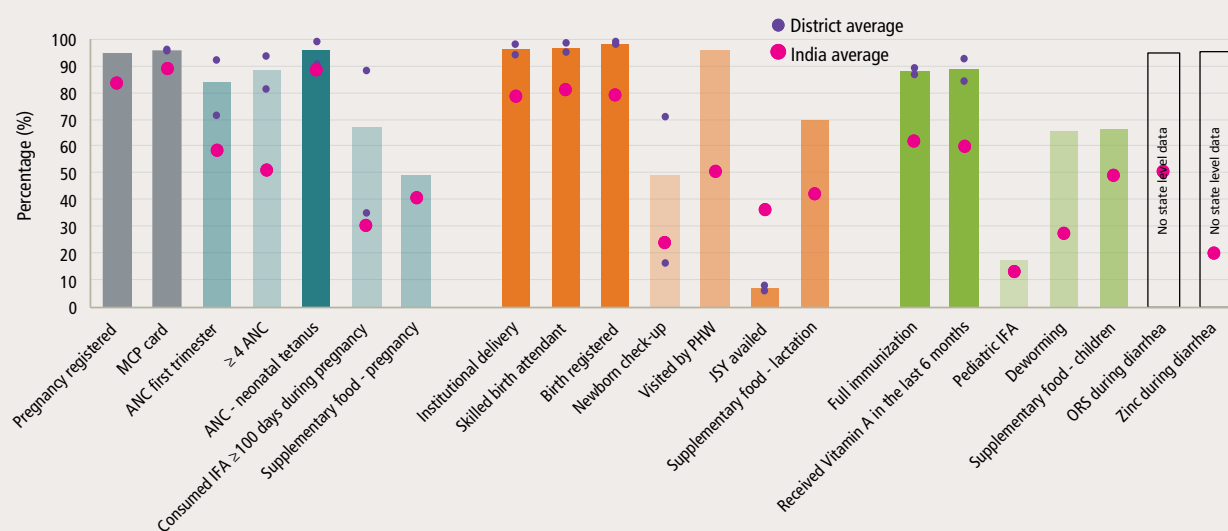
FIGURE 6 Inter-district variability in immediate determinants in Goa, in 2016



Source: NFHS-4.

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

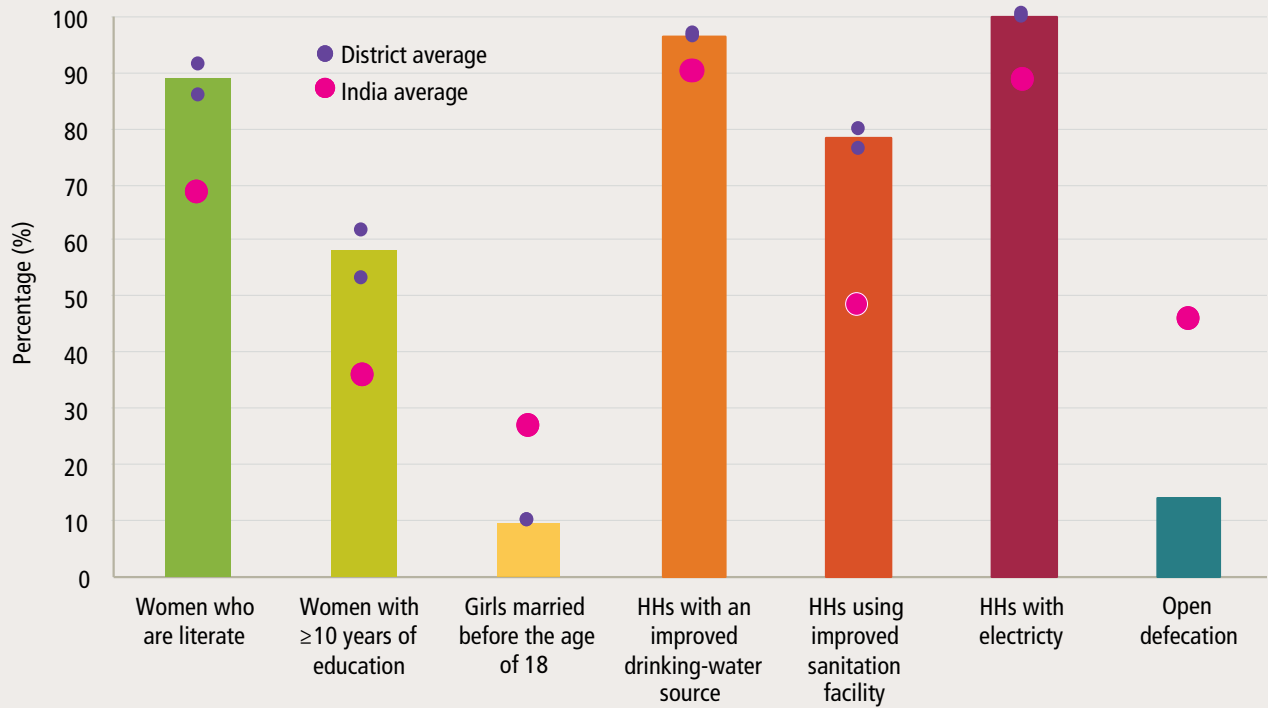
FIGURE 7 Inter-district variability in coverage of selected interventions in Goa, in 2016



Source: NFHS-4; RSoC data was used for indicators on pregnancy registration, food supplementation during pregnancy, lactating 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-Child Protection; PHW= Primary health worker; Refer to endnotes for indicator definitions.

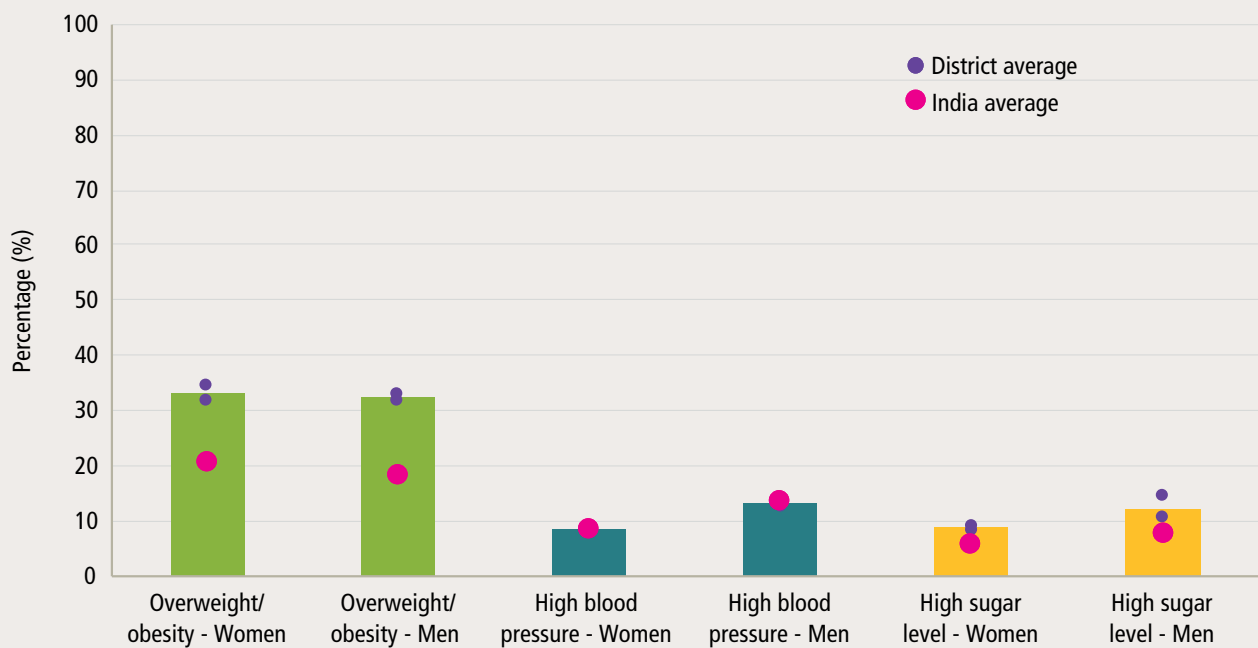
FIGURE 8 Inter-district variability in underlying determinants in Goa, in 2016



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

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

FIGURE 9 Levels of non-communicable diseases in Goa and India, in 2016



Source: NFHS-4.

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

LOOKING FORWARD: IMPLICATIONS & RECOMMENDATIONS

In the era of India's commitment to global nutrition targets, it is an opportune time for Goa to examine progress within and across the state towards reaching WHA targets on nutrition (Figure 1), to examine progress within the state, and to accelerate actions necessary to improve all forms of malnutrition. The state needs to tackle the issue of wasting and severe wasting in children as the prevalence of these indicators is high and has increased over the past decade. While the status of other nutrition outcomes are better than that of wasting, special efforts are still needed as the current levels are behind the WHA targets for 2025.

To achieve progress on nutrition, Goa should invest in improving the coverage of interventions targeting the first 1000 days of life and continue to invest in sustaining adequate delivery where coverage is already high. On nutrition-specific interventions, during the prenatal phase, special emphasis is needed on improving the consumption of IFA by pregnant women, reversing the declining trend in ANC visits during the first trimester and women who received at least 4 ANC visits. 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 taken on strengthening the coverage of several postnatal interventions, especially newborn check-ups, pediatric IFA and interventions to improve complementary feeding practices as the performance on these indicators is very poor. Considering that South Goa is much behind North Goa in coverage of newborn check-up, special attention to the southern district is recommended. On underlying determinants, while the state's performance is much better than the national average, it should aim for further improvement wherever possible.

Alongside investments in nutrition interventions for the first 1000 days, it is also important for Goa to actively consider the challenge of non-communicable diseases. As Figure 9 below shows, one in three women and men in Goa are now overweight or obese. The prevalence of obesity/overweight in Goa is much higher than the national average. The challenge of high blood pressure and high blood sugar is also emerging and needs to be tackled. Goa

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.

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/m².

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) < 18.5 kg/m²: Percentage of women 15–49 years old with BMI less than 18.5 kg/m².

Zinc during diarrhea: Percentage of children below 5 years of age who received zinc during diarrhea.

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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

SUGGESTED CITATION

Please cite this Note as: Pampackal, A.J., P.H. Nguyen, R. Avula, and P. Menon. 2017. *Improving Nutrition in Goa: Insights from Examining Trends in Outcomes, Determinants and Interventions between 2006 and 2016*. POSHAN Policy Note 11. New Delhi: International Food Policy Research Institute.

ACKNOWLEDGEMENTS

Financial support for this Policy Note was provided by the Bill & Melinda Gates Foundation through POSHAN, led by the International Food Policy Research Institute. The funder played no role in decisions about the scope of the analysis or the contents of this Note. We thank Abhilasha Vaid (IFPRI) for her help in reviewing this Note.

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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