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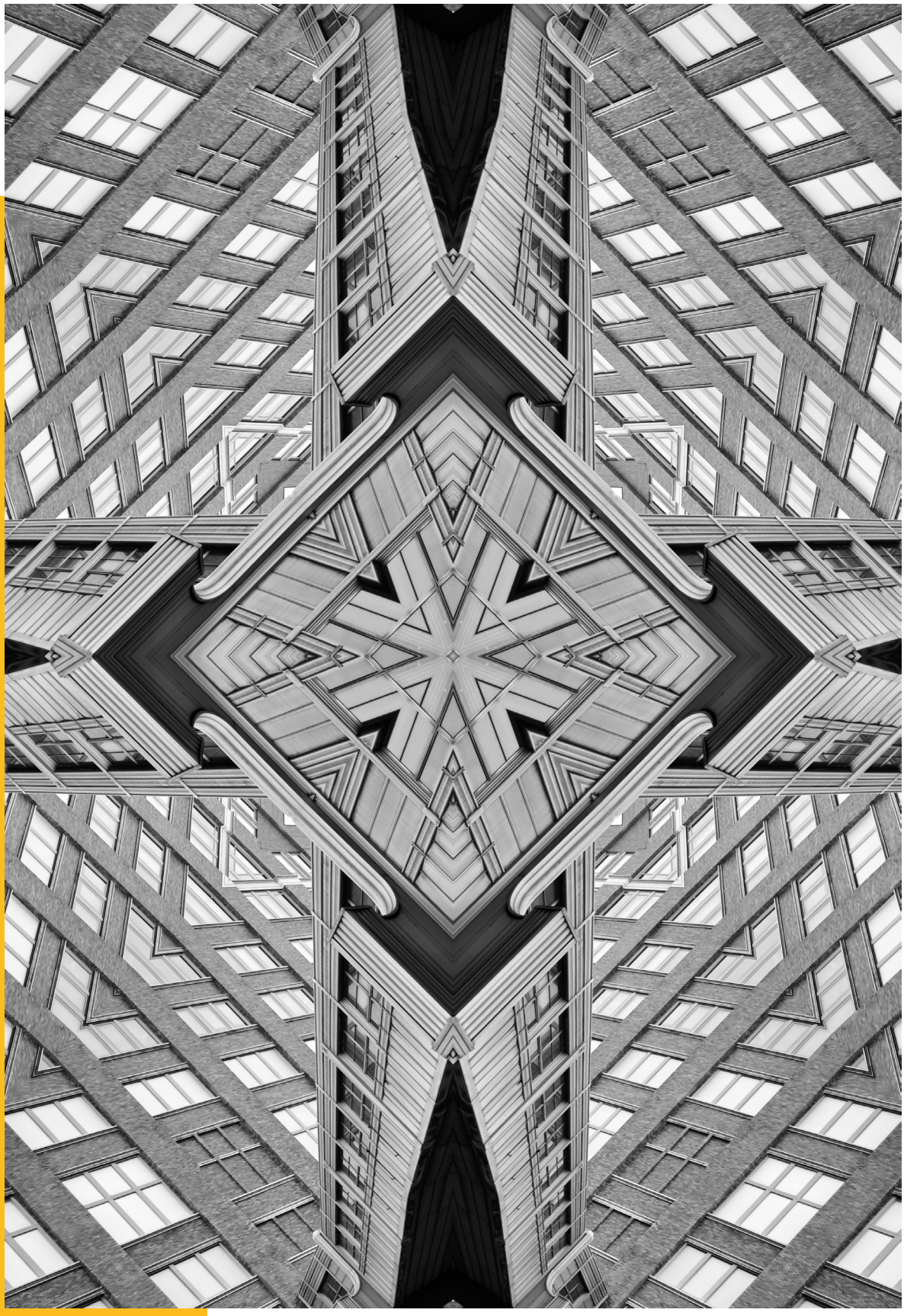

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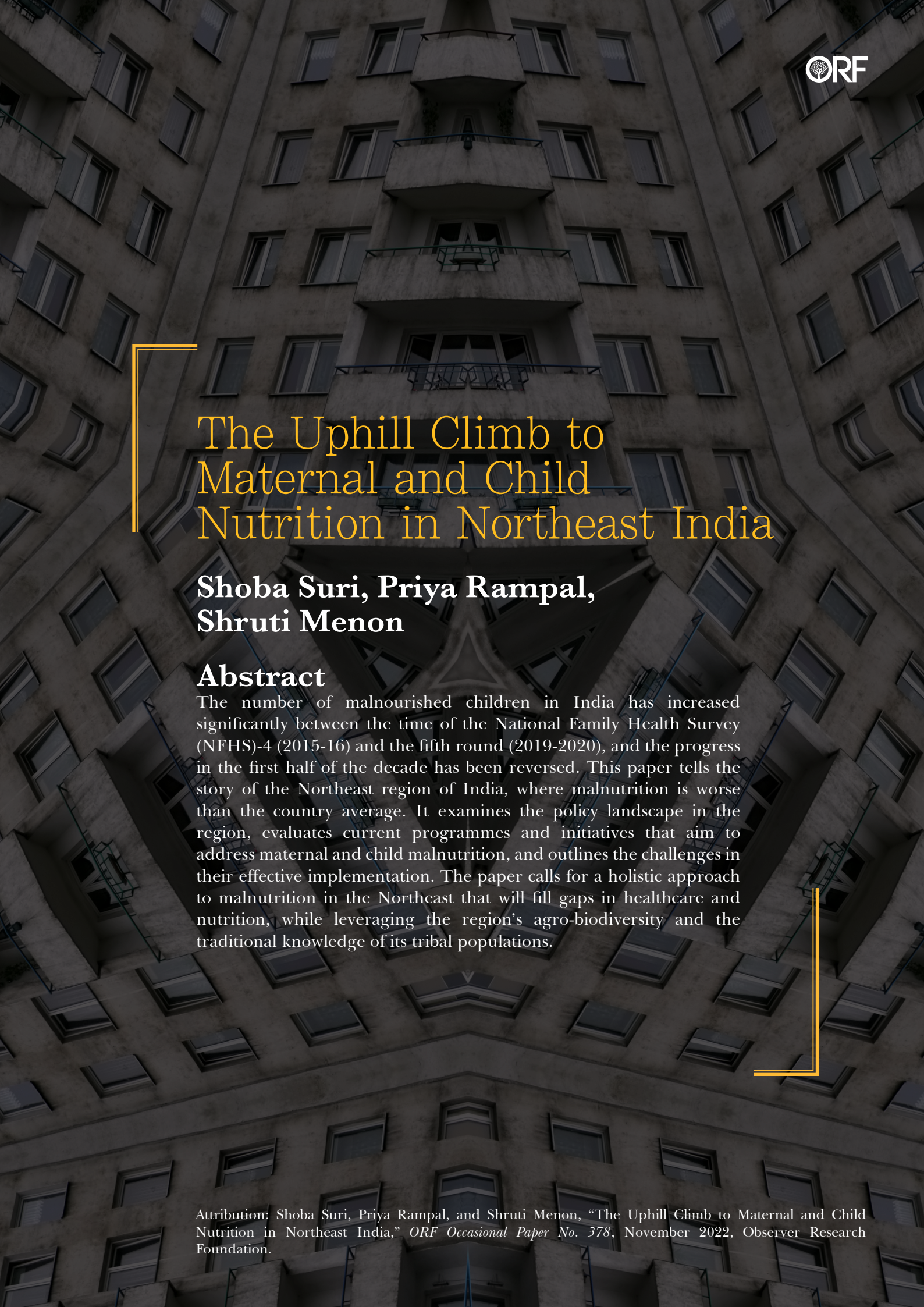

The Uphill Climb to Maternal and Child Nutrition in Northeast India

Shoba Suri, Priya Rampal, Shruti Menon

Abstract

The number of malnourished children in India has increased significantly between the time of the National Family Health Survey (NFHS)-4 (2015-16) and the fifth round (2019-2020), and the progress in the first half of the decade has been reversed. This paper tells the story of the Northeast region of India, where malnutrition is worse than the country average. It examines the policy landscape in the region, evaluates current programmes and initiatives that aim to address maternal and child malnutrition, and outlines the challenges in their effective implementation. The paper calls for a holistic approach to malnutrition in the Northeast that will fill gaps in healthcare and nutrition, while leveraging the region's agro-biodiversity and the traditional knowledge of its tribal populations.

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Introduction

Malnutrition has serious long-term consequences for the motor, sensory, cognitive, social, and emotional development of children.[1,2] It undermines educational advancement and productivity that in turn adversely affects future incomes. Malnourished children are at greater risk of disease and more likely to grow up as malnourished adults.[3] Globally, in 2021, 149.2 million children under five years were stunted, 45.4 million were wasted, and 38.9 million were overweight.[4] Estimates peg the cost of malnutrition to the global economy at USD 3.5 trillion per year.[5]

India, as per the *Global Nutrition Report 2021*, has fallen behind on five of the six maternal, infant and young children nutrition targets aimed at reducing stunting, wasting, anaemia, low birth weight, and childhood obesity.[6] These targets are correlated: empirical studies have proven how maternal malnutrition increases the likelihood of low birth-weight infants and, in turn, prolonged malnutrition in those children as they grow up. Today, one in every four Indian women of reproductive age are undernourished and two in every four are anaemic.[7] Among pregnant women, anaemia has risen to 52.2 percent in 2019-20 from 50.4 percent in 2015-16.[8]

Maternal undernutrition is estimated to account for 20 percent of childhood stunting.[9] Poor nutrient intake combined with low education and low socio-economic status adversely impacts women's care-seeking behaviour, which then affects the body mass index (BMI) of pregnant women, and foetal growth, and contributes to stunting in children. For this reason, maternal nutrition forms an integral part of programmes for preventing child undernutrition during the first 1,000 days of life.[10,11,12]

Various studies have pointed out that investing in child nutrition and health leads to future gains.[13] These benefits are three-fold: first, productivity gains that enhance physical capacity to perform tasks, and improve cognitive development and school enrolment;[14,15] second, savings of resources that otherwise would have to be allocated to the care of unhealthy neonates, infants, and children;[16] and third,

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intergenerational benefits through which subsequent generations become healthier and therefore more productive.[17] Improved maternal health therefore helps break the intergenerational cycle of poverty and poor health. Indeed, there is a clear economic case to investing in nutrition: for India, for example, every dollar invested in nutrition interventions, brings a return of up to USD 38.6.[18]

Both NFHS[19] and CNNS[20] data confirm that India is suffering the triple burden of under-nutrition (underweight, stunted, and wasted children), over-nutrition (obese children), and micronutrient deficiencies (vitamins A, B-12, and D-3, and minerals such as iron, zinc, calcium, and magnesium).[21] Of over two billion people suffering from micronutrient deficiencies globally,[22] nearly half are in India.[23] Studies have shown that India loses 4 percent of gross domestic product (GDP) due to child malnutrition.[24]

The rest of this paper focuses on the state of malnutrition in India's Northeast, where the patterns are worse than the country average. It examines the policy landscape in the region, evaluates programmes and initiatives designed to promote maternal and child nutrition, and outlines the challenges in their effective implementation.

> "There is an economic case to investing in nutrition: every dollar India invests in nutrition interventions, brings a return of USD 38.6."

Spotlight on Northeast India

1. Child Survival and Maternal Mortality

THE NORTH EASTERN REGION (NER) COMPRISES eight relatively small states—Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura. It is uniquely placed in terms of geography, demography, biodiversity, and cultural traditions. Between them, these eight states share over 4,500 km of international borders with China, Bhutan, Nepal, Myanmar and Bangladesh, accounting for 98 percent of India's borders in the northeast. Only a narrow land corridor, commonly known as the 'chicken neck', connects seven of the eight states to mainland India. The mighty Brahmaputra River flows through the region, which abounds in forests and mountain ranges. Two-thirds of the area is hilly terrain, with altitudes rising to over 7,000 metres above mean sea level.

Barring Assam and Tripura, the population density across the northeastern states is well below the national average of 451.5 people per square kilometre. About 80 percent of this population are rural. Home to over 220 ethnic groups, these states have large tribal populations, sparsely spread across remote, far-flung areas, making healthcare delivery particularly challenging. Despite high literacy rates in most of the states, they face a significant shortage of trained doctors, midwives and nurses, with human resource gaps reaching as high as 66 percent.[25]

Efforts are ongoing to strengthen the healthcare system.[26] These initiatives have resulted in certain measurable progress in maternal and child health outcomes. At the same time, intra-state differences persist, reflecting the inequitable patterns of development across the country as well.

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Across India, the neonatal mortality rate (NMR), infant mortality rate (IMR), and under-5 mortality rate (U5MR) have all shown a decline in the last five years, between NFHS-4 and NFHS-5: from 29.5 per 1,000 live births to 25, from 40.7 to 35.2, and from 49.7 to 42, respectively. Among the northeastern states, Assam, Sikkim, Arunachal Pradesh, and Nagaland witnessed a notable reduction in NMR, IMR and U5MR from NFHS-4 to NFHS-5. Of these states, Sikkim recorded the lowest infant and child mortality rates, performing better than the all-India figures (see Figure 1).

Figure 1: Infant and Child Mortality Rates (%)

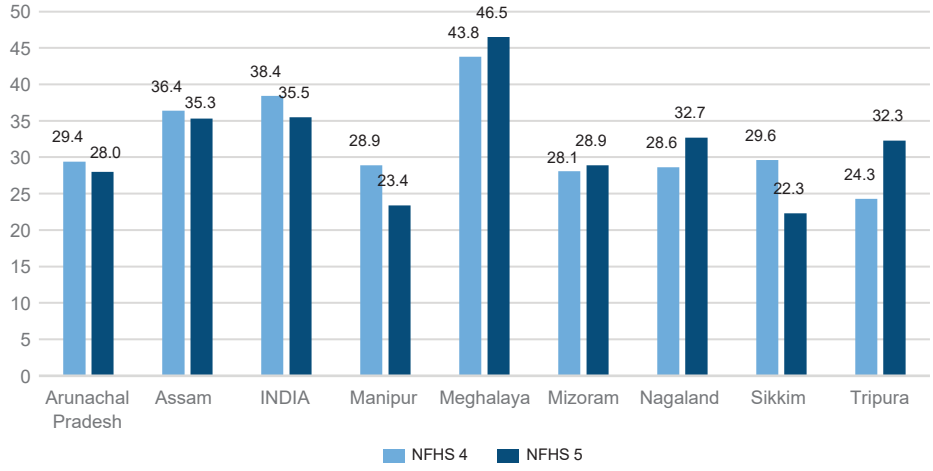
While Mizoram achieved a significant reduction in IMR and U5MR, it showed a marginal increase (0.2 percent) in NMR. However, Manipur, Meghalaya and Tripura have recorded a sharp rise across all indicators of child mortality, with the largest increases in Tripura.

Maternal mortality ratio (MMR), meanwhile, has dropped from 130 per 100,000 live births in 2014-16 to 103 in 2017-19.[27] While recent MMR data for northeastern states are not available, there are some figures for Assam: its MMR is 205 per 100,000 live births—the highest in the country.

2. Childhood Malnutrition

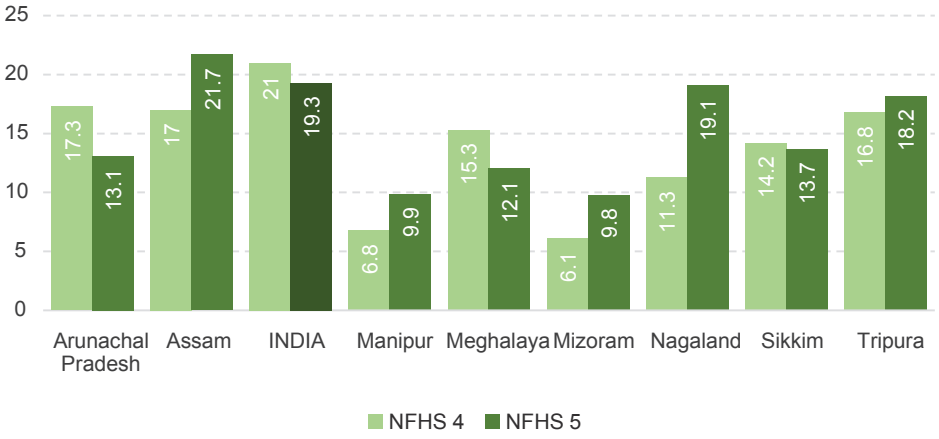
In the northeast, stunting (see Figure 2) was highest among under-five children in Meghalaya (46.5 percent) and lowest in Sikkim (22.3 percent). Sikkim and Manipur, along with Bihar, are the only three states which reported a decline of stunting by at least 3 percentage points in NFHS-5 when compared to NFHS-4. In contrast, 13 states and union territories across India saw a rise in the percentage of stunted children, including Mizoram (28.9 percent), Nagaland (32.7 percent) and Tripura (32.3 percent). Tripura saw an 8-percentage point increase in stunting.

Figure 2: Stunting in Children Under-Five (%)



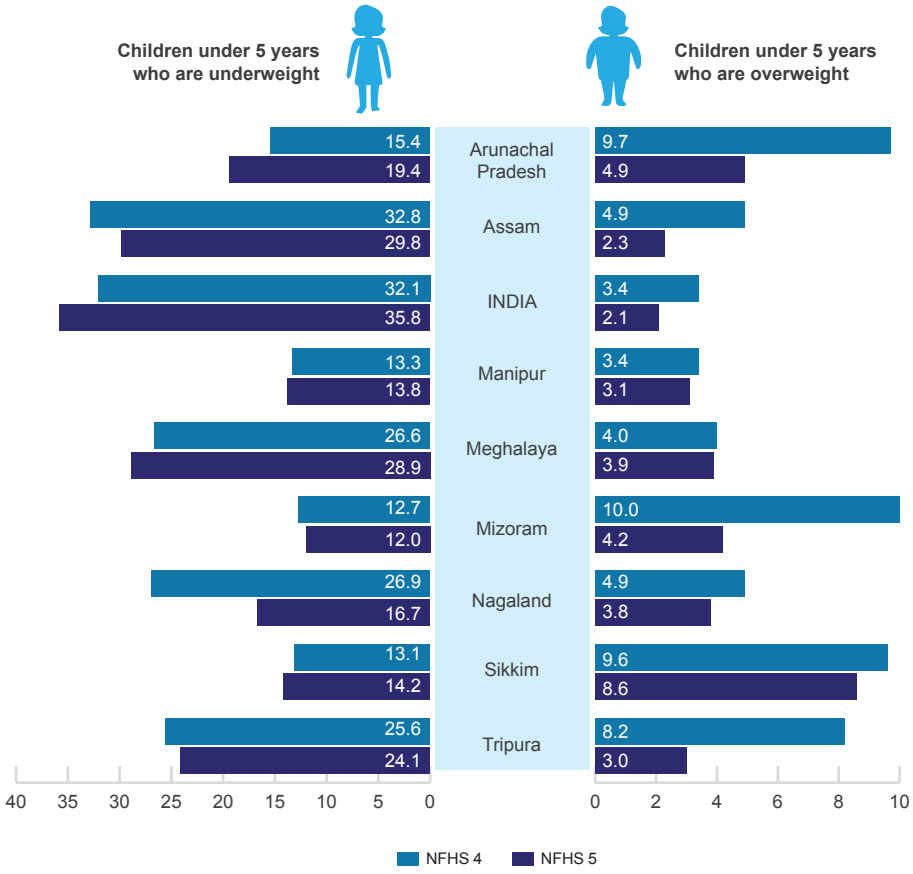
Wasting also showed a significant increase in the states of Nagaland, Manipur, Mizoram and Assam (see Figure 3) as compared to 2015-16. Assam's prevalence rate of 21.7 percent was higher than the national average of 19.3 percent. Nagaland showed a steep rise of 7.8 percentage points from NFHS-4 and was second highest at 19.1 percent, followed by Tripura at 18.2 percent.

Figure 3: Wasting in Children Under-Five (%)



The prevalence of underweight in children below five across the northeast was found to be lower than the all-India average of 35.8 percent, while that of overweight children was above the all-India average of 2.1 percent (see Figure 4). The underweight children metric showed wide variation across the northeast, with Assam having the highest prevalence at 32.8 percent, and Manipur the lowest at 12.7 percent. In contrast, Assam has the lowest prevalence of overweight children (2.3 percent) in the region, while Mizoram has the highest (10 percent). As with wasting among children, Nagaland showed a notable increase in the prevalence of underweight children between NFHS-4 and NFHS-5 (10.2 percent). The same pattern was seen in both Mizoram and Tripura.

Figure 4: Percentage of Underweight and Overweight Children (Under-Five)



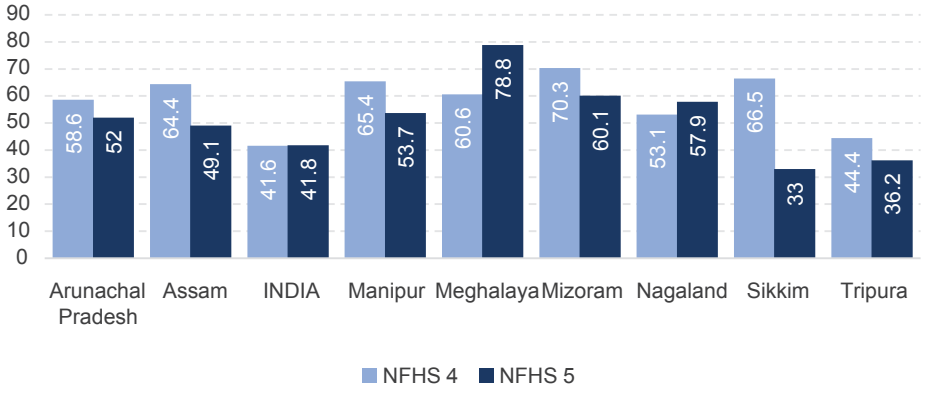
3. Infant and Young Child Feeding Practices

Infant and young child feeding (IYCF) practices are evaluated across a range of indicators such as exclusively breastfed (EBF) infants below six months, early initiation of breastfeeding (EIBF), introduction to

complementary feeding (CF), and minimum acceptable diet (MAD). Across India, EBF increased from 54.9 percent to 63.7 percent between NFHS-4 and 5, while MAD rose from 9.6 percent to 11.3 percent (see Figures 6 and 9).

In the northeast, early initiation of breastfeeding (see Figure 5) shows a decline in six of the eight states, the maximum in Sikkim (33.5 percent), and Assam (15.3 percent); the only exceptions are Meghalaya and Nagaland.

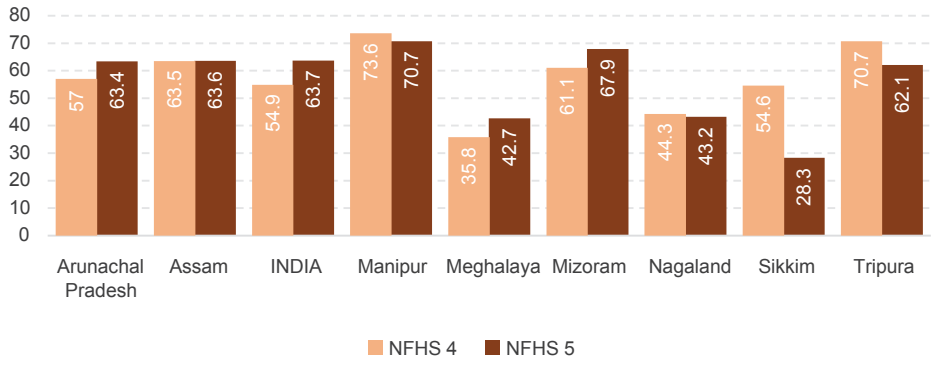
Figure 5: Early Initiation of Breastfeeding (%)



Note: 'Early initiation' means within one hour of delivery.

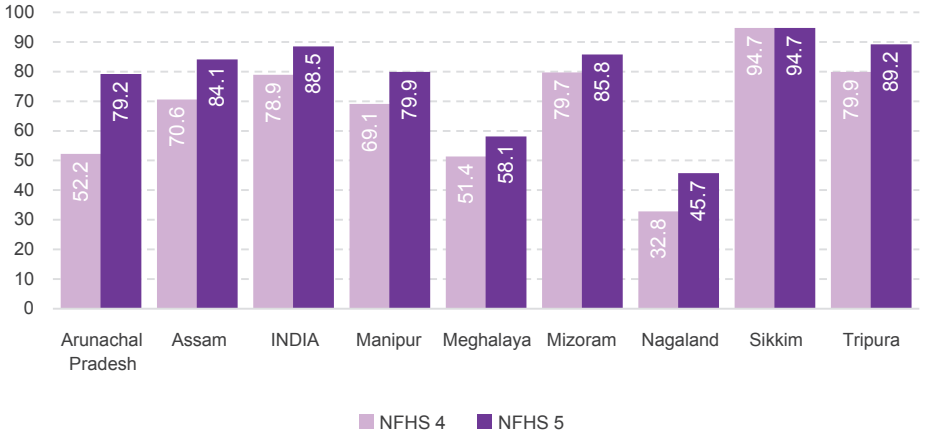
In EBF rates (see Figure 6), Sikkim, Tripura and Manipur show a significant decline, with Sikkim dropping over 26 percentage points. At 28.3 percent, EBF is the lowest in Sikkim, much lower than the all-India average of 63.7 percent.

Figure 6:
Exclusive Breastfeeding Rates (%)



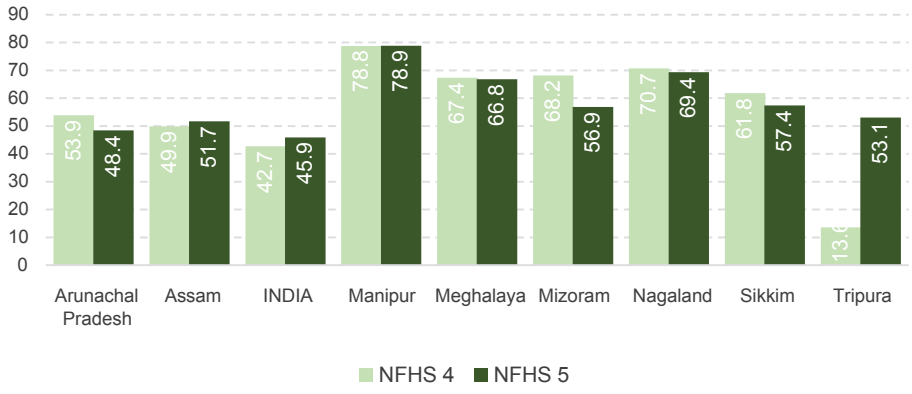
The practice of institutional delivery has increased in all the states between NFHS-4 and NFHS-5, though in Meghalaya and Nagaland it remains well below the all-India figure (see Figure 7). Sikkim shows the highest institutional delivery at 94.7 percent, much higher than the national average of 88.6 percent.

Figure 7:
Trends in Institutional Births (%)



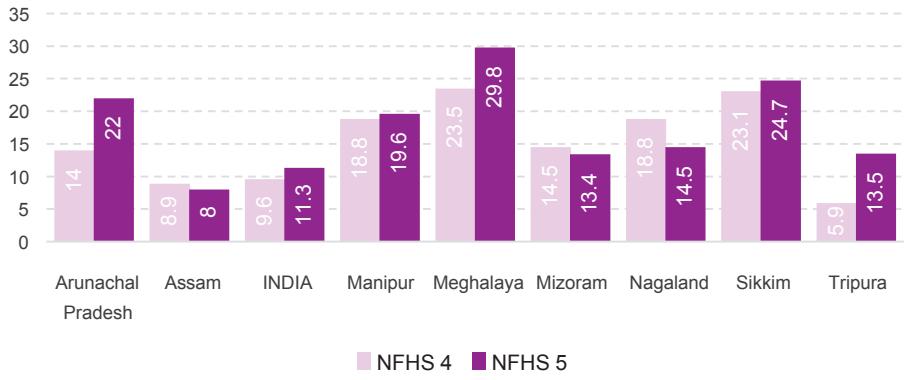
The timely introduction of complementary feeding at six to eight months (see Figure 8) and diet adequacy (see Figure 9) are important indicators of child feeding practices. Meghalaya, Mizoram, Nagaland, Sikkim, and Arunachal Pradesh showed a marginal decline in the practice of timely introduction of semi-solid food, while Tripura showed an increase of 39.5 percentage points.

Figure 8: Introduction to Complementary Feeding for Infants



MAD (or diet adequacy) is a composite indicator of diet diversity and frequency of feeding. Wide variation is seen across the northeastern states from 8 percent to 29.8 percent. Assam, Mizoram, and Nagaland show a decline. A study among tribal children of Northeast found that complementary feeding practices were inadequate.[28] However, all states barring Assam have done better on this score than the national average.

Figure 9: Percentage of Children Ages 6-23 Months Receiving Minimum Adequate Diet



Overall, the indicators show that IYCF practices have deteriorated between the two rounds of NFHS, albeit with state-wise variations. In the CNNS survey (2016-18) comparing minimum adequate diet availability across Indian states, Sikkim performed the best among northeastern states at 36 percent, while Mizoram ranked last with only 2.8 percent of children aged 6–23 months receiving MAD. Data from NFHS-5 shows Sikkim at 24.7 percent, with Meghalaya doing better at 29.8 percent.

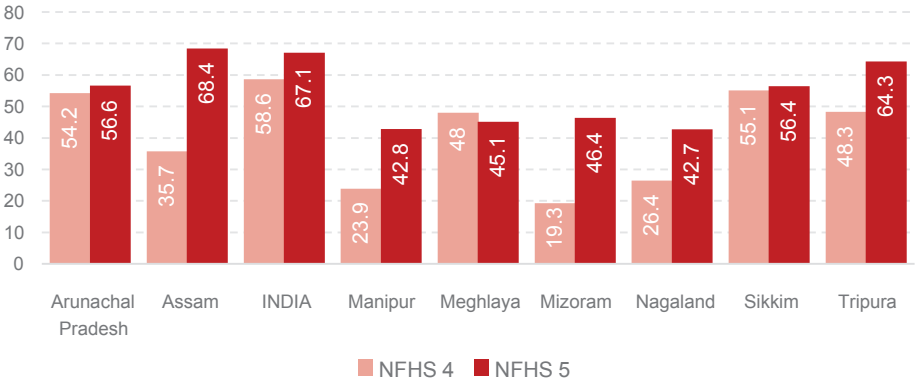
4. Micronutrient Deficiency in Children Under-Five

Indians consume far less micronutrients in their diets than what is recommended for optimum health. Only 70 percent of the population consume even 50 percent of their recommended daily intake.[29] Micronutrient deficiency is widespread, with more than 75 percent of pre-schoolers suffering from vitamin A deficiency and about 57 percent having iron-deficiency anaemia.[30]

Iron-Deficiency Anaemia

As in the rest of India, there is widespread anaemia (see Figure 10) among children aged 6-59 months in the northeastern states. All of these states, except Meghalaya, showed an increase in anaemia prevalence in the last five years, with Assam highest at 68.4 percent (a 32.7 percentage-point rise from 2015-16). Tripura is not far behind at 64.3 percent (a 16-percentage point rise over the same period).

Figure 10: Under-Five Children Who are Anaemic (%)



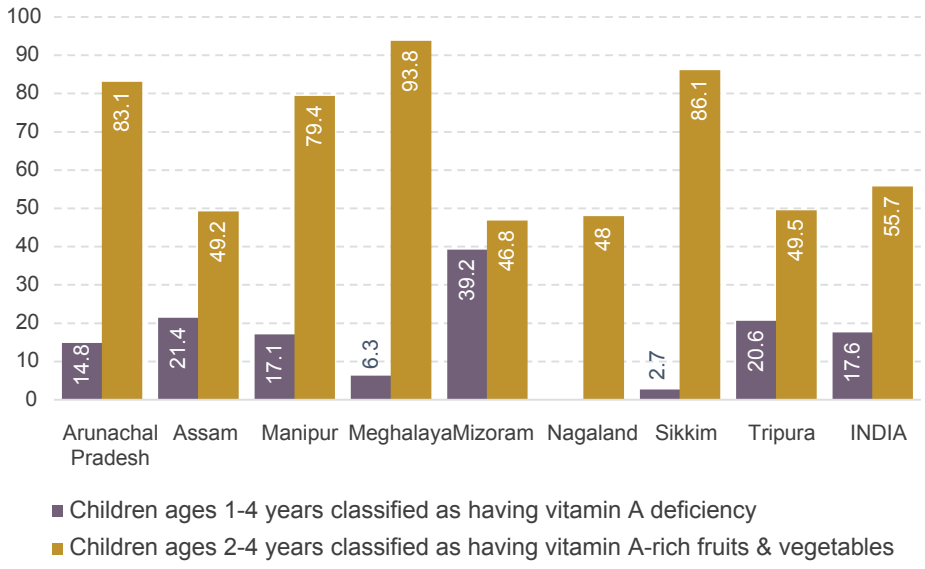
Note: 'Anaemic' is defined using the measure: haemoglobin <11.0 grams per decilitre

Among women too, in the age group 15-49 years, there has been a significant rise in anaemia between NFHS-4 and NHFS-5 from 53 percent to 57 percent. Maternal anaemia in turn affects pregnancy outcomes and subsequent child health. [31,32]

Vitamin A Deficiency

Vitamin A deficiency (VAD) leads to 330,000 child deaths every year in India.[33] It can cause irreversible childhood blindness and impaired immunity. Vitamin A supplementation (VAS), a necessary child survival intervention,[34] shows wide interstate variation. According to CNNS data, 18 percent of children aged between one and four years and 22 percent of those between five and nine years were vitamin A deficient. About 16 percent of adolescents (10-19 years) also showed signs of VAD.

Figure 11: Vitamin A Deficiency and Consumption of Vitamin A-Rich Fruits and Vegetables

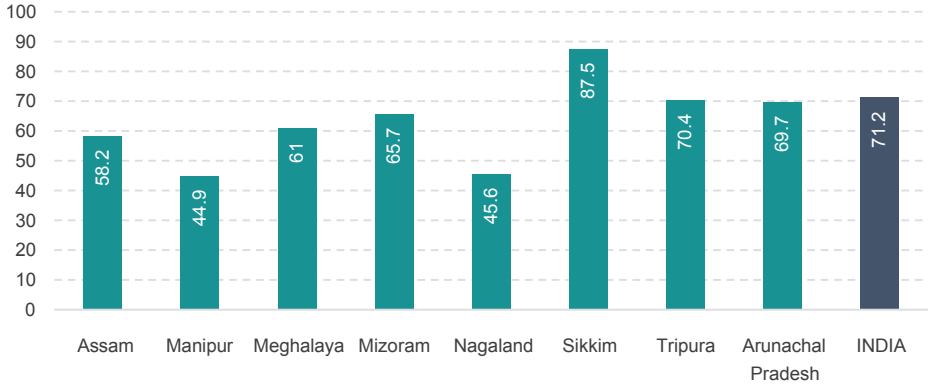


**No data available for Nagaland on children aged 1-4 years with vitamin A deficiency*

Among northeastern states, the highest prevalence of Vitamin A deficiency in children between one and four years was found in Mizoram at 39.2 percent, and the lowest in Sikkim at 2.7 percent. (For older children, between five and nine years, the percentage was even higher in Mizoram at 46 percent.) Meanwhile, consumption of vitamin A-rich foods by children aged two to four was highest in Sikkim (86.1 percent), followed by Mizoram (83.4 percent), Arunachal Pradesh (83.1 percent), and Manipur (79.4 percent).

According to NFHS-5, 71.2 percent of children across India aged 9-35 months received a vitamin A dose in the six months before the survey. In the northeast, Sikkim, Tripura, and Arunachal Pradesh show high VAS coverage at 87.5 percent, 70.4 percent, and 69.7 percent, respectively. VAS coverage in Sikkim was significantly higher than the India average of 71.2 percent. The lowest coverage was in Manipur at 44.9 percent (see Figure 12).

Figure 12: Children Aged 9-35 Months Who Received Vitamin A Supplements (NFHS-5 2019-21)



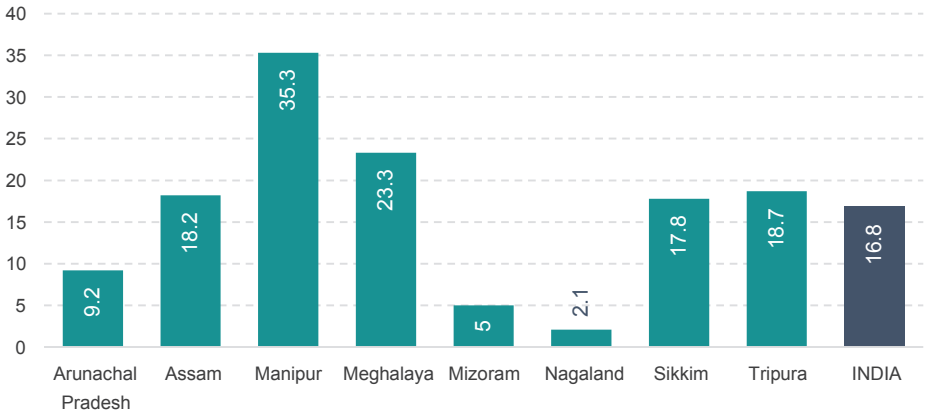
Note: They received Vitamin A supplements in the six months prior to the survey.

Zinc Deficiency

Apart from vitamin A and iron deficiencies, the CNNS reports the prevalence of zinc deficiency at 18.9 percent among children aged one to four, and 31.7 percent among adolescents across India.

In the northeastern states, zinc deficiency among five- to nine-year-olds ranges from 2.1 percent in Nagaland and 5 percent in Mizoram to 35.3 percent in Manipur. Five of the eight states have a prevalence rate higher than the national average of 16.6 percent[35] (see Figure 13).

Figure 13:
Zinc Deficiency in Children Ages 5-9 Years (CNNS 2016-18)



5. Maternal Health and Nutrition

The percentage of underweight women (15-49 years) with BMI below 18.5, has declined substantially in India from 22.9 percent (NFHS-4) to 18.3 percent (NFHS-5). That of overweight women with BMI above 25 has increased from 20 percent to 24 percent (see Figure 14).

Figure 14: Malnourished Women of Reproductive Age, all-India

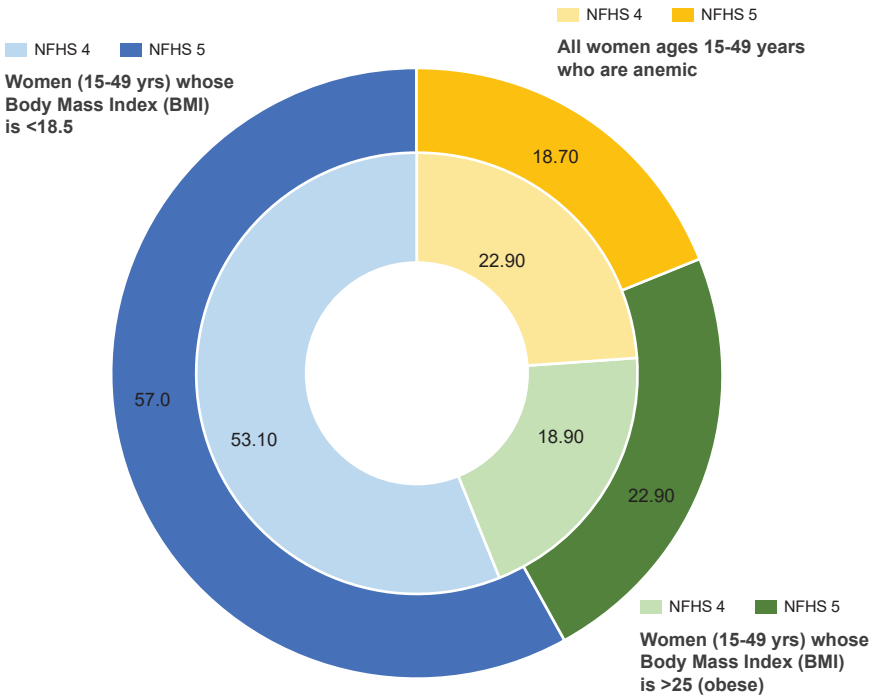


Figure 15: Malnourished Women of Reproductive Age, Northeast India

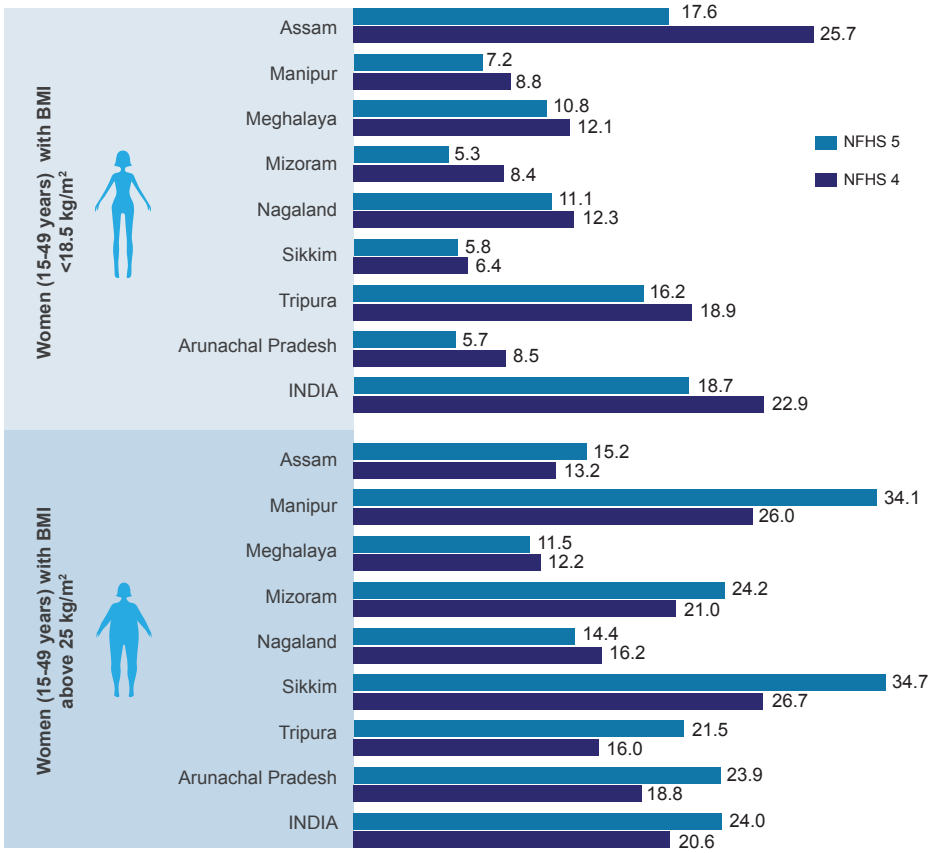
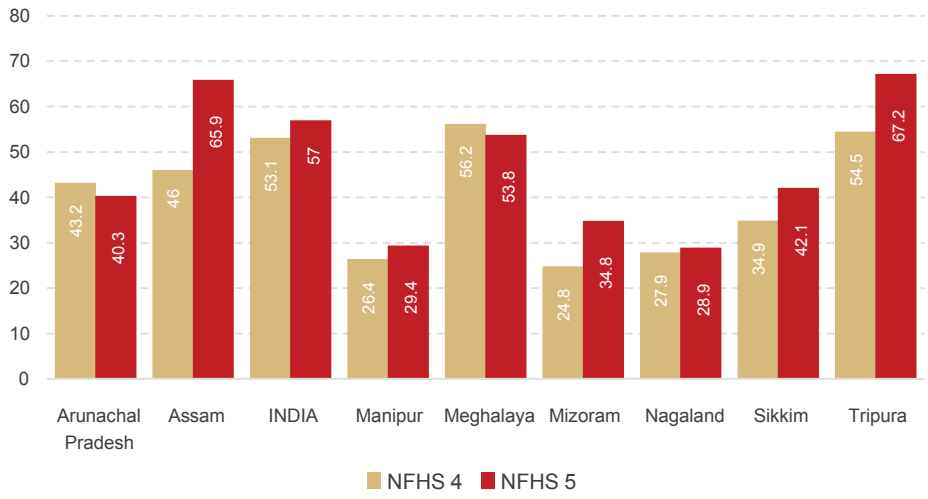


Figure 15 shows a heartening trend: the percentage of underweight women (BMI below 18.5) has been declining across all the eight northeastern states between NFHS-4 and NFHS-5, and in every case, has fallen below the national average. With obesity, the picture is more mixed: it has reduced only in Meghalaya and Nagaland, while rising in the other six states.

As Figure 16 shows, anaemia among women of reproductive age has increased across India, including in six of the eight northeastern states. The worst-off are Tripura at 67.2 percent and Assam at 65.9 percent. Meghalaya is the only state which shows improvement across all three parameters—the numbers of underweight, overweight and anaemic women have all reduced in the last five years. However, a separate study, restricted to the Khasi tribe alone—the biggest tribe in the state comprising 57 percent of its population—has found high prevalence of anaemia among women and children below five—at 83 percent and 68 percent, respectively.[36] While Assam witnessed the sharpest decline in the percentage of underweight women from 25.7 percent to 17.6 percent, it also saw a significant rise in anaemia among women from 46 percent to 65.9 percent.

Figure 16: Anaemic Women (15-49 years) in Northeast India



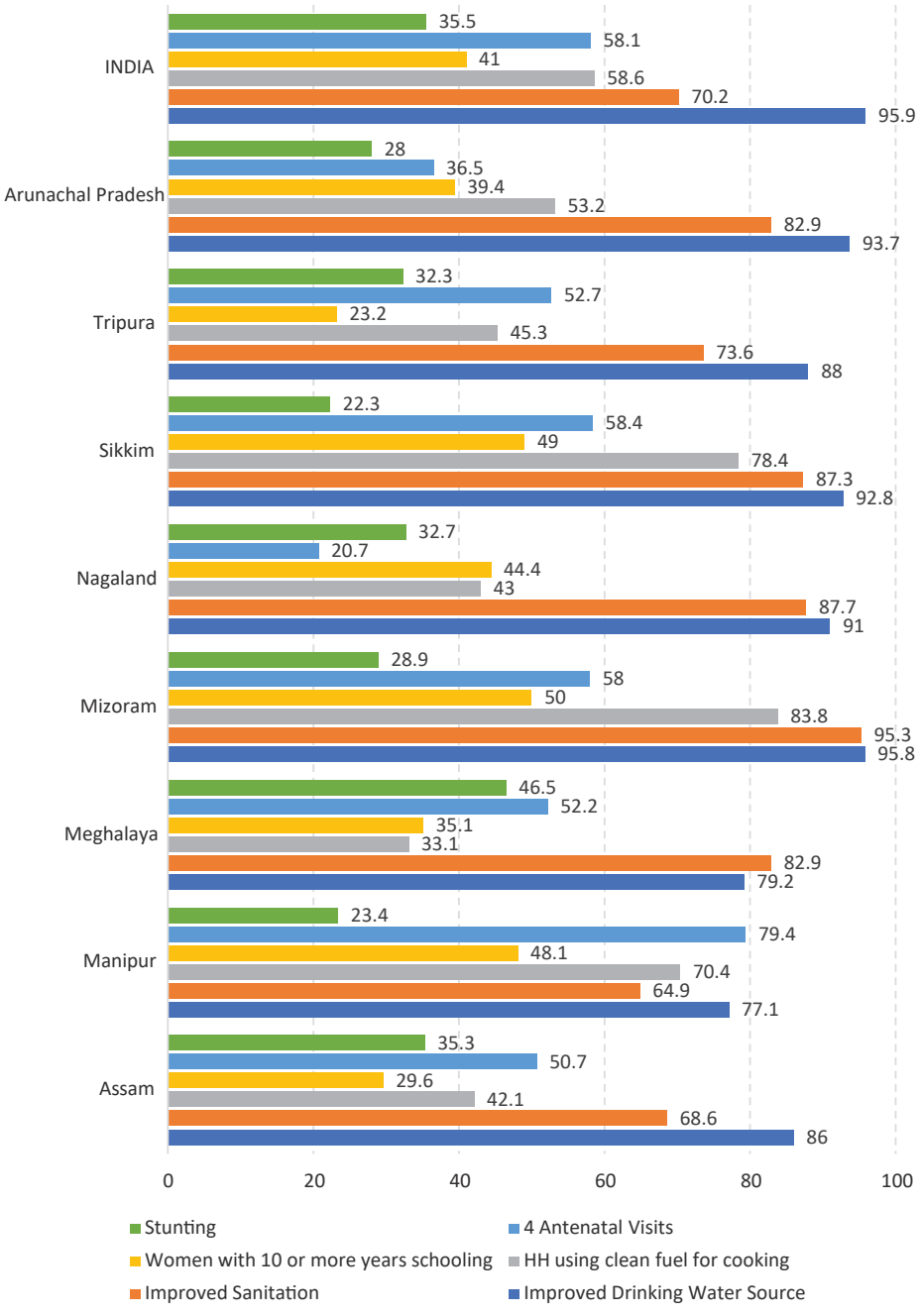
Spotlight on Northeast India

Multiple factors are responsible for stunting among children in the northeast—poor maternal health, lack of antenatal care facilities, poor feeding and insufficient infrastructure and healthcare facilities, lack of women's nutrition, and poor access to education, clean drinking water, and safe sanitation facilities.[37] A 2015 study on indigenous peoples of the northeast showed how health risks within the household environment (such as lack of proper toilet facilities, potable water and cooking fuel) impacted child malnutrition.[38] Immunisation and the quality of child feeding also mattered.

The data indicates (see Figure 17) better access to facilities and greater gender equality in the northeastern states than in India as a whole. Sikkim shows the lowest prevalence of stunting in children and highest rates of women's empowerment and quality of health determinants. Compared to the all-India average, Manipur, Mizoram and Sikkim are better-off on most indicators.

The data shows that improved maternal nutrition before conception, as well as during pregnancy and lactation, reduces stunting in babies.[39] Data for Sikkim, Manipur, and Mizoram reveals that the fewer the number of underweight mothers, the lower is the rate of stunting.[40]

Figure 17: Indicators of Stunting Among Children and Related Parameters



a The minimum prescribed by the World Health Organisation.

6. Dietary Practices of Women and Children

Being owners of their land, tribal communities in the northeast have access to and control over their resources, with customary laws protecting their forest reserves. Indigenous and traditional foods are an intrinsic part of local diets, ensuring sustainable access and adding to the nutritive value of daily diets.[41] About 10–15 percent of the wild foods from forests, which are known to reduce malnutrition and improve food security, find a market and form a source of income.[42] Some foods like bamboo shoots have been traditionally used by communities in the northeast to add the required macro and micronutrients to their diet.[43] Some of the traditional practices of the region are known to improve dietary diversity and food security.[44]

Traditional knowledge and beliefs further guide individual choices around food consumption; most communities have especially pronounced rules for pregnant women. Among the Karbi women of Assam, for example, animal flesh—mainly duck and pork—is avoided from conception till delivery, while eggs are avoided for the first three months. These foods, along with pineapple and papaya, are considered 'hot', which could cause bleeding or induce abortions. This belief is also held in Mizoram, among the Garos of Meghalaya, and some other parts of India. Pregnant Karbi women also restrict intake of 'sour' foods due to the same fear, and 'cold' foods like plantain flower, bottle gourd and white gourd which are linked to cough and cold. Consumption of salt and salt-substitutes is also limited to avoid hypertension. The Maram Nagas of Manipur also follow strict food taboos for pregnant women and lactating mothers to avoid pregnancy related complications and aid post-delivery recovery.[45-53]

There have been a few micro studies on the dietary practices and nutritional status of the Meitei community in Manipur, the Khasi tribe in Meghalaya (as mentioned earlier), the Chakhesang Naga tribe in Nagaland, and the Adi tribe in Arunachal Pradesh. A study among Meitei children and adolescents[46] showed stunting at 45 percent, wasting at 12 percent, and underweight at 27 percent; among women of reproductive age, about 7 percent were underweight

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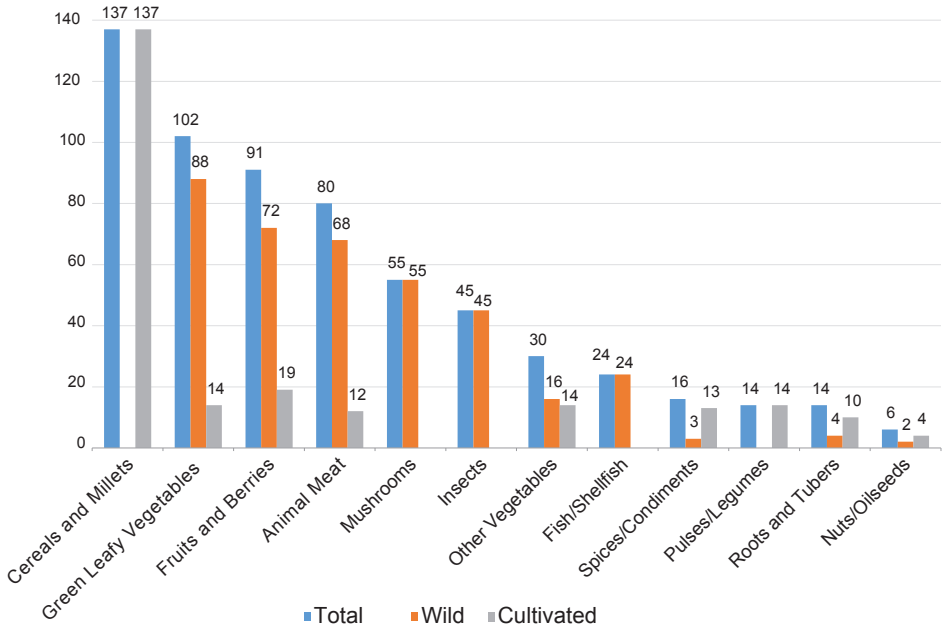
and 28 percent overweight. Using a 24-hour dietary recall across 240 households, the survey found that the consumption of rice, vegetables (especially roots and tubers) and fish was high compared to that of dairy products, fruits, fats and oils. The adequacy of various micronutrients, especially vitamins A and E, and calcium, in the Meitei diet was found to be low. This reinforces the findings of a 1994 study which observed low consumption of fruits, eggs and dairy products in the Meitei community and high prevalence of vitamin A deficiency.[47]

Children aged between four and ten from the Maram Naga tribe of Manipur were also found to be vitamin A deficient.[48] Another study from Manipur observed that adult women and children between the ages of eight and 17 did not consume milk and dairy products both due to their food habits and lack of availability.[49] Khasi schoolgirls from Meghalaya aged between four and 12 were also found to have poor nutrient intake.[50]

In contrast, the Chakhesang Naga tribe in Nagaland showed wide food diversity (see Figure 18), contributing to a healthier diet,[51] with high consumption of cereals and millets, green leafy vegetables, and fruits. However, intake of other vegetables and pulses and legumes was found to be low. The study reported satisfactory nutritional status of children under five with stunting at 22 percent, underweight at 14 percent, and wasting at 7 percent.

Figure 18: Food Diversity Among the Chakhesang Naga tribe in Nagaland



Source: Thingnganing Longvah et al, 2018

A study on the traditional food systems of the Adi tribe of Arunachal Pradesh found that the vast bio-cultural varieties of local plant species, which were staples in their diet, improved not only nutritional security for households but also generated income.[52]

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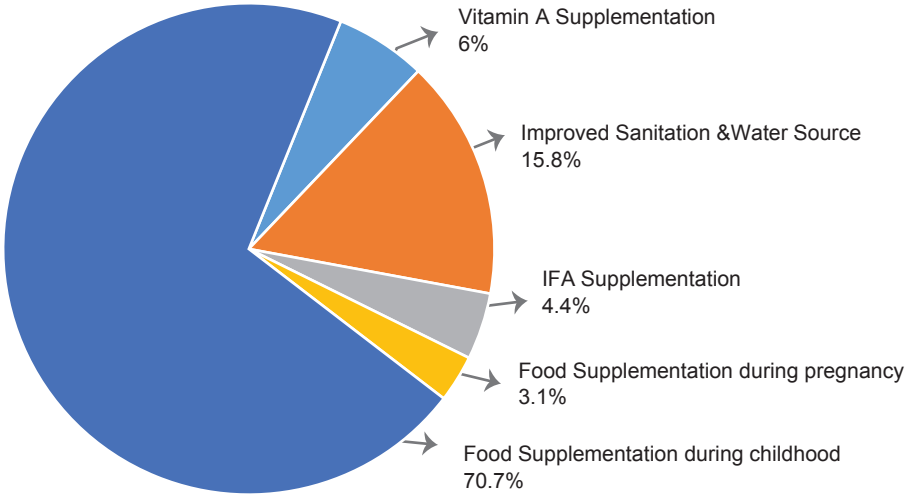
Yet despite their rich food biodiversity, the northeastern states are nutritionally vulnerable, with significant disparities in health outcomes. The food biodiversity can be leveraged to improve nutritional status and equity. In Jharkhand, such usage of indigenous foods across tribal communities has helped address malnutrition.[53] Various studies have called for improved awareness and the implementation of nutrition programmes by introducing locally available, nutritionally dense foods into the government nutrition programmes such as the Integrated Child Development Scheme (ICDS) or the Mid-Day Meal (MDM) scheme.

> “Indigenous foods are staples in the northeast, ensuring sustainable access and adding to the nutritive value of daily diets.”

Research shows that between 2006 and 2016, around 4.6 million cases of stunting were prevented by scaling up various interventions.[54] It is estimated that 85.6 percent of stunting cases can be prevented by using the Lives Saved Tool (LiST)-based modelling approach outlined in Figure 19.

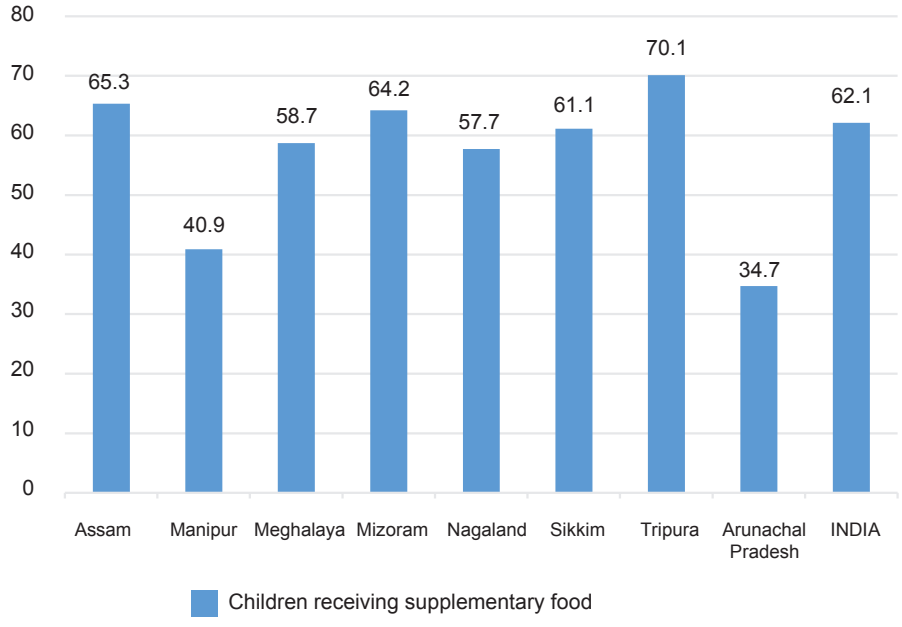
Figure 19: The Lives Saved Tool (LiST)-Based Approach to Preventing Stunting in Children Under-Five



Source: Adapted from https://www.orfonline.org/research/towards-a-malnutrition-free-india-63290/#_ednref13

The ICDS has been addressing food insecurity and the underlying causes of malnutrition in pregnant and lactating women and children below six years for decades. A pillar is supplementary nutrition, under which hot cooked meals and morning snacks are provided to children aged three to six for 300 days based on their malnutrition levels. They, along with pregnant women and lactating mothers are also given 'take home' rations (THR).

Figure 20: Children Under 6 Years Receiving Supplementary Food in Northeast India (NFHS-5 2019-21)



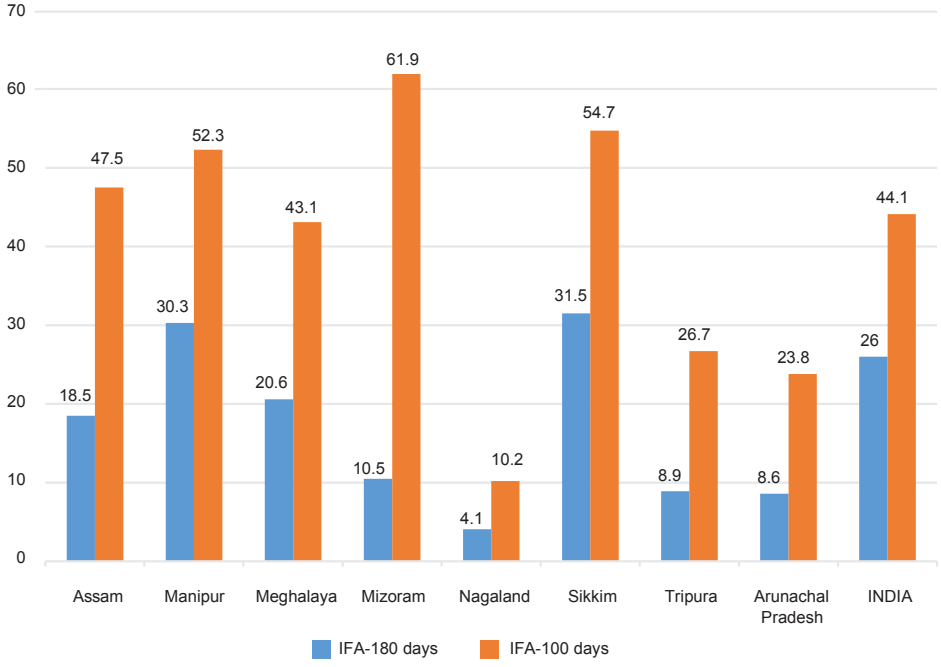
Current Policies and Programmes for Maternal and Child Nutrition

A study mapping the extent and equity of coverage of ICDS between 2006 and 2016 showed an increase in the mean proportion of pregnant and lactating women and children up to the age of 59 months utilising the programme's services.[55] However, the expansion of these services among households in the poorest (wealth) quintile continues to be low.[56] The use of supplementary food under the ICDS in the northeastern states shows wide variation in NFHS-5 from barely 35 percent in Arunachal Pradesh to 70 percent in Tripura (see Figure 20). Except for Assam, Mizoram and Tripura, in all the other states, children receiving supplementary food at anganwadi centres (AWCs) was below the national average. It was the same with pregnant women availing any service—including supplementary food—at the AWCs, which ranged from a low of 24 percent in Nagaland to 77 percent in Tripura against an all-India average of 66 percent.

How many women make the minimum four ANC visits during pregnancy? In the northeastern states, it varies from a low of 20.7 percent in Nagaland to a high of 79.4 percent in Manipur (see Figure 17). As part of the ANC package, a pregnant woman is entitled to 180 iron-and-folic acid (IFA) tablets. But there is a wide gap between the percentage of women who accept these tablets during their ANC visits and those who actually consume them. In Sikkim, for example, 94 percent of pregnant women received the IFA tablets, but only 55 percent took them once a day for 100 days, and even fewer—32 percent—did so for the entire course of 180 days (see Figure 21). Barring Manipur, where 30.3 percent of pregnant women took their full 180-day course of tablets, all states show lower percentage of IFA consumption than the national average of 26 percent. The lowest is in Nagaland at only 4.1 percent.

Thus there is much variation in the availability of services and their uptake across the northeast. Counselling of mothers and caregivers needs to improve.[57-58]

Figure 21: Consumption of IFA Tablets by Pregnant Women in Northeast India (NFHS-5 2019-21)



A child's health depends considerably upon the nutrition received in the 270 days between conception and birth. There are many factors responsible for stunting, but a study of the high and low burden stunting districts in India showed that the mother's BMI accounted for almost one-fifth of the difference between them.[59] In the northeast, a study of trends in under-nutrition from the NFHS-3 (2005-06) to NFHS-5 shows Meghalaya as a very high burden state with stunting above 40 percent in all its 11 districts. Stunting is also alarmingly high (30-40 percent) in more than half the districts of Manipur, Sikkim and Assam.[60]

Current Policies and Programmes for Maternal and Child Nutrition

Overall, there are major differences across maternal and child health indicators in the northeast, both among states, and among different districts of the same state. Sikkim performs the best on health and nutrition indicators, women's literacy and education; it is followed by Mizoram, although Mizoram does better on women's equality. There is no direct correlation between the gender gap and health and nutrition indicators. To reduce inter-district variability across the relevant indicators, states will need to adopt district-specific strategies.

With the launch of the Prime Minister's Overarching Scheme for Holistic Nutrition (POSHAN) Abhiyaan in March 2018, the government is seeking a convergence of nutrition-related policies. It has set defined targets for the reduction of stunting, undernourishment and anaemia among children, adolescent girls and women.[61] It utilises the existing structural arrangements of a number of ministries – not only health but also those dealing with agriculture, horticulture, the public distribution system, fortification, food processing and more, to improve dietary diversification. POSHAN also emphasises improvement in food and nutrition security through the national food security and horticulture missions, promoting homestead food production by setting up kitchen gardens in schools and ICDS centres, extending support for food production diversity, integrating household food and nutrition security considerations into the design of cropping and farming systems for large and small farmers, investing in strengthening systems for the supply of high-nutrient value foods and stabilising prices of cereals, pulses and high-value foods such as dairy, eggs, vegetables and fruits and fortified food items.[62,63]

Apart from the central programmes, the Assam government has encouraged women in village households to start 'nutrition gardens' during the pandemic to grow vegetables, and also to rear poultry. In September 2020, the Assam State Rural Livelihoods Mission (ASRLM) partnered with the United Nations Development Programme (UNDP) and a local NGO, the Seven Sisters Development Assistance (SeSTA), to promote high nutritional value

crops suited for local agro-climatic conditions, which also offer a higher return on investment within a short time.[64] A total of 350 households most affected by the pandemic across 15 villages in the districts of Bongaigaon, Goalpara and Majuli were chosen and provided technical assistance on organic inputs and manure use, as well as the required equipment such as rotavators. The families have earned a total of INR 17 lakh (USD 23,000) from vegetable sales so far.

Home gardens have historically been an important part of the traditional rural ecosystem of the northeast. Community-led organisations are trying to promote and expand such gardens by empowering local communities with relevant tools and training. In Lawngtlai, Mizoram's poorest and disaster-prone district, the district administration along with community NGOs and church elders have initiated the "Kan Sikul, Kan Huan" (or My School, My Farm) programme, encouraging every school, hostel and AWC to start their own kitchen gardens.[65]

The Centre and states jointly fund the POSHAN Abhiyaan, with the former contributing 60 percent. How well has the budget allocated under it been utilised in the northeastern states?[66,67] A 2020-21 report by the Centre for Policy Research showed that Meghalaya's utilisation of the Centre's share was highest at 92 percent, but it had spent only 60 percent of its own share.[68] The Centre also provides additional grants for innovative pilot programmes towards better nutrition outcomes.[69] In 2021-22, Sikkim was the only state to utilise 99 percent of its innovation grant.[70,71] It is likely that such innovation lies behind Sikkim's success in reducing stunting in children below five.

Another report, however, has claimed that all the northeastern states except Assam have displayed 'below average' participation in the POSHAN Abhiyan.[72] The challenges include not just delivering services to areas difficult to reach but also ensuring that cash transfers, hot meals or dry rations delivered to households go to the intended beneficiaries.[73]

Current Policies and Programmes for Maternal and Child Nutrition

The lockdowns during the Covid-19 pandemic posed further challenges for AWCs and other maternal and child services. A 2021 report on how the ICDS worked during the Covid-19 pandemic shows that the northeastern states have a mixed record in the implementation of one of its components, the take-home rations (THR) scheme. During the pandemic, beneficiaries found it difficult to collect their THRs and these had to be delivered to them. Nagaland was the only state which undertook daily deliveries, while Assam provided it weekly at times and fortnightly at others. Sikkim, Tripura, Manipur and Mizoram delivered THR in bulk only once a month or once in two months. In Meghalaya the beneficiaries had to continue to collect THR from AWCs, following the Covid-19 guidelines.[74]

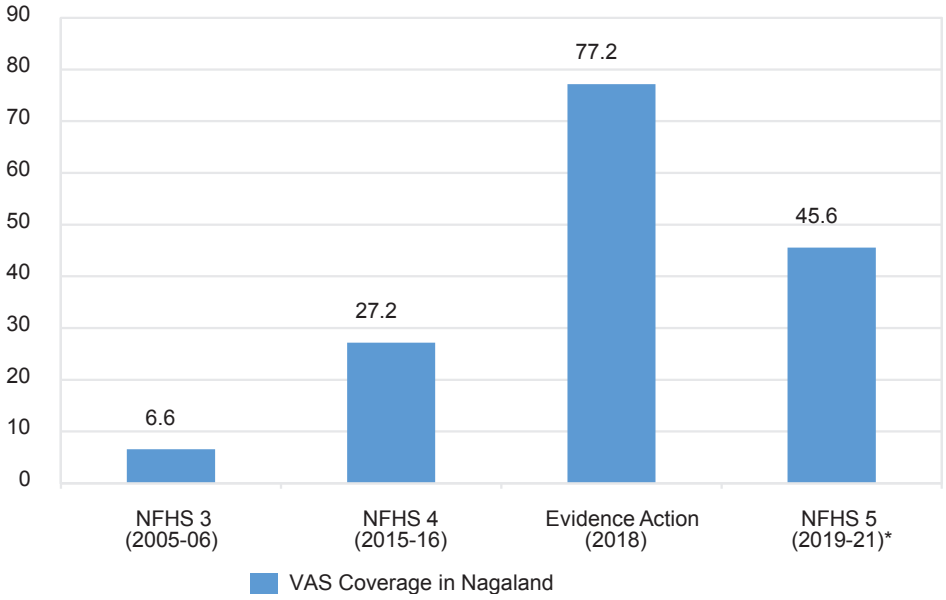
Northeastern states have used a number of innovative strategies to improve maternal and child health in recent years. In Manipur, during Covid-19, the Churachandpur district administration made additions to the THR package, distributing pulses, edible oil, rice, groundnut and micronutrient fortified dalia and khichdi to beneficiaries..[75] In Assam's Hailakandi district, from September 2019, the district authorities incorporated the 'dibbi adaan pradaan' (lunchbox exchange) initiative into the routine Village Health and Sanitation Day (VHSD) programme: once a week, alongside the routine lunch being provided by the school, students were encouraged to bring lunchboxes from home and share their contents with others. It not only promoted better nutrition but also diversified the menu on offer.[76] It showed how states can utilise community support for better coverage. In the tea garden areas of Assam, the Assam State Rural Livelihood Mission has started 'bagan bazars' (garden markets) since 2015, where groceries and nutritious foods are sold at reasonable prices.[77] Assam's tea garden workers are among the most nutritionally deficient populations, as a study undertaken for UNICEF in Dibrugarh district showed.[78] Run by women's self-help groups (SHGs), these also provide the women an opportunity for financial inclusion.

Current Policies and Programmes for Maternal and Child Nutrition

There are private efforts in the region too, by such organisations as the Global Alliance for Improved Nutrition (GAIN), the Coalition for Food and Nutrition Security (CFNS), the United Nations Children's Fund (UNICEF), and Nutrition International. GAIN's Workforce Nutrition programme, for instance, focuses on the tea gardens of Assam aiming to improve demand, access, and consumption of nutritious and safe foods by smallholders and workers in the tea supply chain.[79] In 2022, India's National Stock Exchange (NSE) Foundation and the Centre for Health Research and Innovation, an affiliate of the global NGO PATH, partnered with the Nagaland government to implement a centrally sponsored rice fortification programme across six districts.[80] Similar efforts on wheat fortification are in progress in Assam and Meghalaya. The global non-profit Vitamin Angels (VA) has been working throughout India – including the northeast – since 2010 to bring together community organisations, hospitals and health centres to support critical healthcare and nutrition services among underserved sections – especially pregnant women, infants and children below five – with special focus on vitamin A supplementation and de-worming.[81] Since 2016, VA has worked with the Nagaland government to improve vitamin A and deworming coverage across the state.

Figure 22 shows Nagaland's progress in vitamin A supplement coverage among children between nine and 59 months since the NFHS-3 in 2005-06. The third bar in the chart shows data from a 2018 survey by an independent NGO, Evidence Action India, across 30 villages in the districts of Mokokchung, Wokha, Kiphire and Peren. It found that 77.2 percent of the children had received vitamin A supplements in the past six months; 74.2 percent had been given de-worming medicine, while 43.5 percent had got them both. Using Lives Saved Tool (LiST) modelling, it has been estimated that the increased coverage averted 114 stunting cases, 25,017 diarrhoea cases, and saved nine lives.[82]

Figure 22: Vitamin A Supplementation Coverage Among Children Between 9-59 Months in Nagaland



**NFHS 5 data on VAS coverage is limited to children ages 9-35 months*

Vitamin Angels' achievement shows the role of NGOs, working closely with the state, in supporting the last-mile delivery of the Mothers, Infants and Youg Children's Nutrition (MIYCN) package.

Recommendations

This paper offers the following specific recommendations:

- Increased focus and investment in interventions targeting the first 1,000 days of an infant's life, starting with the onset of pregnancy.

- Effective communication to promote behaviour change following improved knowledge of MIYCN. Capacity building of frontline workers and community influencers is a must, in order to give them proper MIYCN counselling to translate their knowledge into action. Ensuring vibrant and active community support can catalyse behaviour changes, leading to healthy eating habits and improved health outcomes.

- Heightened efforts to address micronutrient deficiencies by providing supplements, such as vitamin A and iron tablets, among nutritionally vulnerable populations. Supply-side disruptions should be minimised with strategic use of data for proper planning and capacity-building of workers across the supply chain.

- Greater attention to tribal communities, including collection of disaggregated data on their performance across health and nutrition indicators, documenting and leveraging their traditional food systems.

- Harnessing the rich biodiversity of the Northeast to improve access to, and utilise locally available, sustainable, low-cost, nutritionally dense wild and cultivated foods.

- Creating strategies to strengthen inter-sectoral coordination and leverage the power of collaborations and convergence. State governments should work with local development organisations to design and implement relevant nutrition interventions.

Recommendations

- Strengthening the monitoring and evaluation of existing interventions by building on the existing health projects and the POSHAN Abhiyan.
- Nurturing communication channels to make them more effective in improving antenatal, prenatal, and postnatal care services, especially for women and children of low socio-economic status.
- Streamlining of states' procurement and supply chain mechanisms.
- Encouraging greater involvement of NGOs and local communities, especially in hard-to-reach geographies, to strengthen interventions.

Conclusion

This paper examined the nutrition policy landscape in the northeast region and evaluated current initiatives for maternal and child nutrition. Its focus, admittedly, was on the qualitative findings from quantitative exercises and did not employ statistical analyses of causal relationships. Moreover, the fifth round of NFHS does not include household-level information, thereby limiting the scope of the present analysis.

Nonetheless, the results of this evaluation make clear the imperative of improving the delivery of services for maternal, infant, and young children's nutrition across the northeast. The effort must be holistic. A primary, low-hanging fruit is the rich agro-biodiversity of the region, especially the traditional knowledge of women who forage for indigenous fruits and vegetables from forest areas or run their own kitchen gardens. Adequate policy support, documentation and nutrient characterisation of important local foods would help optimise the benefits of indigenous food systems, thereby paving the way for better nutrition and improved health outcomes.

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