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NUTRITIONAL STATUS OF WOMEN AND CHILDREN IN NORTH EASTERN STATES

Malini L Tantri[1], Channamma Kambara[2] and Harshita Bhat[3]

Abstract

This paper aims to explore the nutritional and health status and patterns of children and women in eight North Eastern States using health and nutritional indicators. It also looks into the economic and development indicators to find any impact on nutritional indicators. North East India has witnessed gradual economic progress over the years, but the fruits of growth and development have not been reflected in the nutritional status among children and women. The study finds, with the help of a conceptual model of malnutrition and a composite table of all the parameters, that Sikkim which is a small state in the North Eastern Region (NER) has had the best performance currently as well as in the past in terms of women and children nutritional parameters. It has also exhibited positive results in terms of literacy, poverty and unemployment. In contrast, Assam, which is a large state in the North East with the biggest share of GSDP from NER, has not been able to utilise its economic growth to better the health and nutrition among its women and children.

Introduction

India has been portrayed as a highly globalised poster state since the initiation of economic reforms by the Government of India in 1991 (Arora, 2012). It was one of the fastest-growing economies and the fifth-largest economy of the world (Economic Survey, 2019-20, 2020). The GDP value of India represented 2.31% of the world economy in 2019 and GDP based on PPP, India represented 8.27% of the world economy in 2020 (Singh & Neog, 2020).

Despite consistent economic growth, India hasn't fared well in respect of various forms of development parameters. For instance, India was ranked 130 out of 189 countries according to the Human Development Index (HDI) for the year 2017-2018 with the least contribution from the Education Index. To make the situation a bit complex, different states have exhibited different growth and development trajectories over the years. Goa, Delhi and Chandigarh had figured in very high HDI category for 2017-18 and among them, only Delhi had found itself in a very high HDI category for 2011-12. Further, in 2011-12, only 7 Indian states figured in high HDI category, while for 2017-18, the number had increased to 14 states in this category. Out of the 14 states, 7 states/UTs like Andaman & Nicobar Islands, Haryana, Karnataka, Meghalaya, Mizoram, Punjab, Sikkim, Telangana and Uttarakhand have experienced an upgradation from the medium HDI category. Five out of the eight North Eastern states (NESs) have figured in the medium category of HDI. Madhya Pradesh, Mizoram and Manipur have displayed a mixed scenario of growth and development. They were the top three states with the highest growth of SGDP for 2019-20 as well as high and medium HDI scores.

One of the immediate fallouts of the regional imbalance is the steep increase in out-migration. According to Census 2011, there were 454 million migrants in India based on the place of the last

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residence, marking an increase from 30% of the total population in 2001 to 37% in 2011 (Das, 2020). While two-thirds of the 2011 migrants were women, who usually migrate at the time of marriage, 141 million migrants were men, with work and employment being their main reasons for migration (Lei, Desai, & Chen, 2020). Maharashtra attracted most number of migrants, followed by Delhi (Jha & Kawoosa, 2019). Uttar Pradesh and Bihar accounted for a disproportionately high number of out-migrants, who constitute at least one-third of the population in metropolitan cities like Mumbai and Delhi. Uttar Pradesh, Bihar, Rajasthan and Madhya Pradesh together account for 50% of India's total inter-state migrants. Maharashtra, Delhi, Gujarat, Uttar Pradesh and Haryana housed 50% of the country's inter-state migrants (Lei, Desai, & Chen, 2020). Such migration can be observed in districts and villages that depend heavily on agriculture for income and livelihood (Mamgain & Reddy, 2015). Under such circumstances, the quality of employment and well-being is a concern with the lack of job avenues (Marchang, 2019), thus leading to out-migration. North East Indian States too had experienced a significant agriculture and service sector expansion on the one hand and out-migration of the youth in search of better employment opportunities for improving their economic well-being, on the other hand. Despite a high literacy rate in this region, it is characterised by a lack of adequate avenues for higher or technical education or vocational training. Further, there is a mismatch between the demand in the job market and the potential of the local educational system in terms of meeting the requirements of the new economy occupations and professional service sectors. This weak educational base of the region was an important factor that influenced the migration decisions of the educated and ambitious youth to urban centres in pursuit of higher learning or jobs (Remesh, 2012; Lyndem & De, 2004)

One of the striking features characterising the dichotomy of growth and development is the overall status of nutrition in India. Although household surveys point to slower rates of per capita consumption growth *vis-a-vis* the national accounts estimates, these slower growth rates have been associated with a substantial decrease in poverty since the early 1980s. Yet, the per capita calorie intake of nutrients was decreasing, whereas the intake of fat was unambiguously increasing (Deaton & Dreze, 2002). Another distressing development was seen in respect of anthropometric indicators (weight for age, height for age etc.,) of nutrition in adults, with children being the worst affected in the world (Joe, *et al*, 2019). In addition, the progress of these indicators has also been very slow. Undernutrition levels in India also remained high compared to most countries of Sub-Saharan Africa, and it was interesting to note that these countries were much poorer than India (Deaton & Drèze, 2009). Malnutrition, along with poverty and infections, is a vicious circle affecting the entire population. In particular, malnutrition in children is the most unfortunate and widely spread disorder, which could be attributed to a combination of inadequate dietary intake and infections. Children are generally most vulnerable to adverse environments besides being very sensitive to dietary changes. Thus, they had been greatly affected by illness and malnutrition (Bourke, Berkley, & Prendergast, 2016). In India, 28.5% of the under-five population was found to be wasted (moderate and severe), 37.9% stunted and 36.3% underweight, respectively (Pathak, Mahanta, Arora, Kalita, & Kaur, 2020). Malnutrition was one of the major underlying causes of at least 50% of deaths among children under five (D'Rozario, 2001). National Family Health Survey 5 (NFHS-5) data showed that 52% of children under the age of 5 in India

were stunted (reflecting chronic malnutrition), 17.5% were wasted (reflecting acute malnutrition) and 53.4% were underweight.

Apparently, there aren't many studies that have examined the status of nutrition/malnutrition in respect of NER, which, on the one hand, reveals a dichotomy between growth and development and, on the other, has a high level of out-migration. Therefore, this paper investigated the trend and pattern of nutritional status of women and children concerning North East India and also explored the underlying factors that perhaps explain the same. The analysis was based on secondary data available from various rounds of the NFHS survey, the Economic Survey of India and other supporting secondary literature. The rest of this paper is organised as follows. The following section provides a brief outline of key growth and economic parameters related to NERs. The third section discusses the nutritional status of women and children in NER, followed by a conceptual model of malnutrition which looks into basic, immediate and underlying factors of malnutrition. And the last section summarises the paper with key policy suggestions.

The dichotomy of Growth and Development Parameters characterising North East Indian States

North East Indian States, which are officially known as the North Eastern Region (NER) are the easternmost states representing a strategic geo-political administrative division of the country. Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim are the eight states located in the North East and are unique not only because of their location, but also their cultural and historical heritage. They are known as 'eight siblings' and referred to as 'eight sisters' or 'seven sisters and one brother'. The states are characterised by distinct cultures and multiple ethnic groups. According to the Census of 2011, the total population of all the north eastern states stood at 21,68,37,959, with Arunachal Pradesh accounting for the highest population and Sikkim for the lowest with a majority of the male population. The percentage of the population below the poverty line is higher than the country average among Arunachal Pradesh, Assam, Manipur (rural and urban), Mizoram (rural) and Nagaland (urban), with the workforce participation being less than 50%, except in Nagaland and Sikkim. The workforce participation rate[4] in rural areas is more than that of urban areas and all the NESs are above the all-India rate of 41.8% (rural) and 35.31% (urban). The high rates of workforce participation indicate a lower dependency on the region, which is a sign of better utilisation of human resources. These indicate that the unemployment rate in NESs is greater in urban areas than rural areas and is highest in Nagaland, followed by Tripura. The Indian economy experienced high rates of GDP growth of 7.21% in 2019-20, while Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura achieved growth rates of 10.99, 8.37, 14.0, 7.89, 14.94, 11.34, 8.47 and 12.11, respectively, which are above the national average of 7.21, with Manipur and Tripura being the big gainers. The Estimates of Average Monthly Per Capita Expenditure (MPCE) as per MRP* 2011-2012 amounted to Rs. 1, 287.17 at all India level, whereas, as per NER, it was Rs.1, 367.86.

[4] Also known as the labour force participation rate is a measure of the proportion of a country's working-age population that engages actively in the labour market, either by working or looking for work; it indicates the size of the supply of labour available to engage in the production of goods and services, relative to the population at working age. (As defined by ILO)

Table 1: Selected Development Indicators for India and North Eastern States

Indicators	All India	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura
GSDP/GDP 2019-20 (Current prices) (Rs. crore)	20339849	2804613	33523811	3179030	3471570	2514857	2953593	3080899	5585694
GSDP/GDP 2018-19 (Current prices) (Rs. crore)	18971237	2526824	30933632	2786985	3217582	2187897	2652742	2840243	4982332
*Per capita NSDP/NDP 2019-2020 (Current prices) (Rs.)	134186	169742	86801	84746	87170	187327	120518	403376	125675
*Per capita NSDP/NDP 2018-2019 (Current prices) (Rs.)	125883	154652	81034	75229	82653	164429	109198	375773	113016
Growth rate of GSDP/GDP in 2019-20 (per cent)	7.21	10.99	8.37	14.0	7.89	14.94	11.34	8.47	12.11
Estimates of Average Monthly Per Capita Expenditure (MPCE) as per MRP* 2011-2012 (rural)	1287.17	1455.87	1056.98	1334.55	1315.11	1384.44	1756.7	1445.06	1194.14
Estimates of Average Monthly Per Capita Expenditure (MPCE) as per MRP* 2011-2012 (urban)	2477.02	2241.63	2090.18	1448.91	2293.82	2426.53	2279.42	2528.11	1996.66
Number of Population Below Poverty Line 2011-12 (Rural) (lakhs) (Tendulkar Methodology)	2166.58	4.25	92.06	7.45	3.04	1.91	2.76	0.45	4.49
Number of Population Below Poverty Line 2011-12 (Urban) (lakhs) (Tendulkar Methodology)	531.25	0.66	9.21	2.78	0.57	0.37	1	0.06	0.75
Percentage of population below poverty line 2011-12 (Rural)	25.7	38.93	33.89	38.8	12.53	35.43	19.93	9.85	16.53
Percentage of population below poverty line 2011-12 (Urban)	13.7	20.33	20.49	32.59	9.26	6.36	16.48	3.66	10.48
Workforce participation rate 2011 (%) (Rural)	41.8	44.1	38.7	46.9	41	48	54	53.3	41.1
Workforce participation rate 2011 (%) (Urban)	35.31	36.97	36.41	41.41	35.63	40.98	37.44	41.9	36.76
Unemployment rate 2011-12 (%) (Rural)	1.7	1.7	4.5	2.6	0.4	1.8	15.1	1	10.5
Unemployment rate 2011-12 (%) (Urban)	3.4	4.8	5.6	7.1	2.8	5	23.8	2.3	25.2

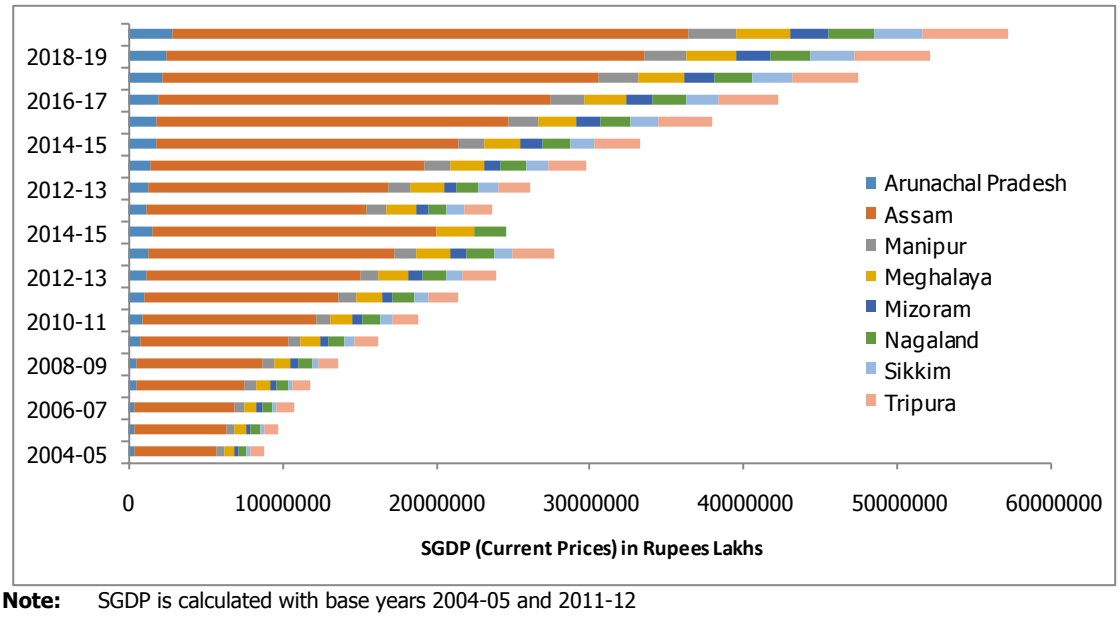
Note: GSDP/GDP 2011-12 base series *All-India Per Capita NNI (2011-12 base) Consumption Expenditures (Rupees per month per person) at Current Prices

Source: Ministry of Statistics and Programme Implementation; NSSO 68th Round, July 2011-June 2012; Niti Aayog State Specific Poverty Lines, Number & Percentage of Population below Poverty Line by States – 2004-05 & 2009-10 and 2011-12

With a total land area of 2,62,179 square kilometres, these states account for 7.9% of the total geographical area of India. This region is well endowed with natural resources like oil and gas, agro-horticultural resources, mineral deposits, immense hydroelectric potential and rich forest resources. However, despite being endowed with abundant natural resources, the region has lagged behind many other Indian States in respect of vital development indicators.

The North Eastern States' respective State Gross Domestic Product (SGDP) has shown an improvement over the years. In the case of Assam, SGDP at current prices for the period 2004 to 2020 had remained highest for most of the period, with the service sector followed by the agricultural sector contributing significantly to SGDP while the contribution of transport, storage and communication sectors had been insignificant over the period. The sub-sectors of the latter had also performed poorly over the years. Yearly growth of agriculture and allied activities, manufacturing, transport and services sectors has gradually increased over time, leading to an increase in the SGDP of Assam. Sikkim, a small state, witnessed an increased SGDP over time, but very low, compared to other North Eastern States, with the contribution of transport, storage and communication sectors being abysmally low with an almost horizontal growth over the period from 1999 to 2010, as compared to the other sectors of NER[5]. For all the NER states, the highest contribution to SGDP has come from the tertiary sector --- Hotels and restaurants, public administration, real estate etc.---, followed by the secondary sector, except Nagaland with a poor infrastructure base and industrial development. The primary or agricultural sector and transport, storage and communication sectors take a backseat In terms of contributing to SGDP. However, there is a positive growth trend in the tertiary and secondary sectors of these economies.

Figure 1: Gross State Domestic Product (at Current Prices)



Note: SGDP is calculated with base years 2004-05 and 2011-12

Source: Handbook of Statistics on Indian States (2021), Reserve Bank of India

[5] The graphs depicting the contribution of various sectors of the economy are presented in Appendix 1

Concerning the HDI scores of NESs, the latest data available indicate that for 2017-18, Sikkim, Mizoram and Meghalaya had high HDI scores (0.700-0.799), which were above India's HDI score of 0.672. Mizoram, Sikkim and Assam have improved their HDI scores significantly since 2011-12 by over 7%, whereas, the other states have managed to improve by 3% to 5%. In comparison to all the states in India, Assam, Manipur, Nagaland and Tripura have been classified under the medium HDI category despite improving their HDI score over 2011-12. Sikkim is the largest gainer in terms of HDI out of all the Indian states, followed by Mizoram and Assam. Assam still has a long way to go as it is currently ranked 28 in India. A further understanding of whether the projected growth of these states has helped improve the nutritional status of NER is presented in the next section.

Table 2: Human Development Index Related to North Eastern States

States	HDI Score 2017-18	HDI score 2011-12	Difference in HDI Score	Score difference rank	Rank HDI 2017-18	Rank HDI 2011-12	Difference in HDI rank
Arunachal Pradesh	0.648	0.603	0.045	14	30	29	-1
Assam	0.651	0.579	0.072	3	28	34	6
Manipur	0.686	0.643	0.043	15	21	23	2
Meghalaya	0.704	0.664	0.04	17	17	16	-1
Mizoram	0.747	0.671	0.076	2	10	14	4
Nagaland	0.678	0.655	0.023	32	23	21	-2
Sikkim	0.764	0.686	0.078	1	5	11	6
Tripura	0.667	0.616	0.051	9	25	27	2
INDIA*	0.672	0.635	0.037	0.037	130	134	4

Note: *India's HDI rank and the score is in comparison to other countries of the world.

Source: Gendering Human Development, Ministry of Statistics and Programme Implementation

Nutritional Status of Women and Children in North Eastern States

The relationship between food security and human development is based on the availability of and access to food. Malnutrition is the result, when these prerequisites of food security are flawed which, in turn, impedes human development (Bano, 2021).

Simply put, Nutritional status means the presence or absence of malnutrition. The term malnutrition applies to both underweight and overweight populations. Malnutrition is defined as any disorder of nutrition status, including disorders resulting from deficiency of nutrient intake, impaired nutrient metabolism, or overnutrition (Huhmann, 2011). Anthropometric evaluation is an essential feature of (geriatric) nutritional evaluation for determining malnutrition, being overweight, obesity, muscular mass loss, fat mass gain and adipose tissue redistribution (Sánchez-García, *et al*, 2007). It includes weight, height, body mass index (BMI), body circumference (arm, waist, hip and calf), waist-to-hip ratio (WHR), elbow amplitude and knee-heel length (Sánchez-García, García-Peña, *et al*, 2007). Height for age refers to low height for age (stunting). Weight for height (wasting) is an age-independent measure which refers to the ratio of weight to height. Weight for age refers to the weight that is less than expected for age due to insufficient food or illness and is the most common indicator used in measuring malnutrition in children, as their weight changes more significantly than adults.

The magnitude of under nutrition is assessed by comparing food energy intake with proposed norms. Many studies argue that there has been no consensus on the most widely used norms of the level of calorie intake required for overcoming malnutrition. In addition, the studies also argue that food energy intake is a weak measure of nutritional status since nutritional status also depends on non-nutrient attributes (Martorell & Ho, 1984; Gillespie & McNeill, 1994). Radhakrishna & Ravi, (2004) pointed out that states like Kerala and Tamil Nadu with low level of food energy intake also had lower incidences of malnutrition. And on the other hand, states like Rajasthan and Uttar Pradesh experienced a higher calorie intake as well as a higher burden of malnutrition in the 1990s. While India has achieved some success in income poverty reduction, it has not been very successful in reducing malnutrition. The overall reduction in malnutrition has been very slow. In this context, this study looks at the picture of the nutritional status of women and children of North Eastern Indians.

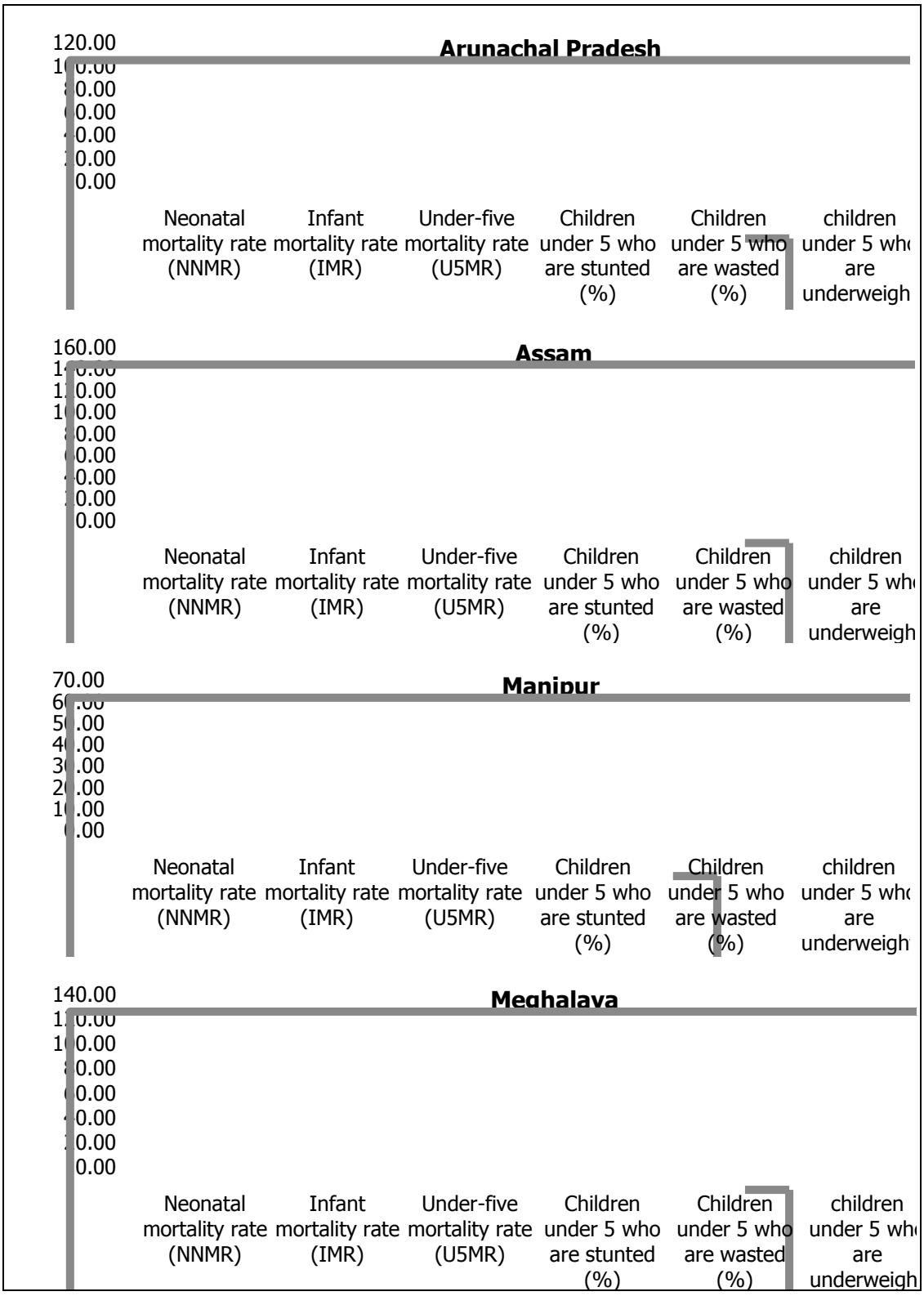
Over the years, there has been some improvement in the quality of child healthcare, but India's health parameters when compared to its neighbouring countries are very poor. According to a UNDP Human Development Report, India has the highest population of undernourished children in the world. Furthermore, countries like Bangladesh, Ethiopia and Nepal are some of the underdeveloped countries and on the same level as India, which is considered one of the fastest-growing economies. Bangladesh had performed better in terms of reducing the Infant Mortality Rate (Lalneizo & Reddy, 2010). National Family Health Survey (NFHS) provides reliable data on nutritional status. A comparison of NFHS 1, 2, 3, 4, and 5 indicates that there has been a 21.3% reduction in underweight prevalence in children less than 5 years of age in India. During 1992-93 (NFHS-1), Assam had the highest per cent of children under the age of 5, who were underweight (50.40). Also in 2019-20, the rate was above the country's percentage of children under 5, who were underweight (India-32.10, Assam-32.80). Arunachal Pradesh and Tripura had remarkably declined their per cent of underweight children over the period from 1992-93 to 2019-20, even more than the country's average, which was among the states with high percentage of underweight children. In the case of Nagaland, it had been able to reduce the percentage of underweight children by only 1.8%. .

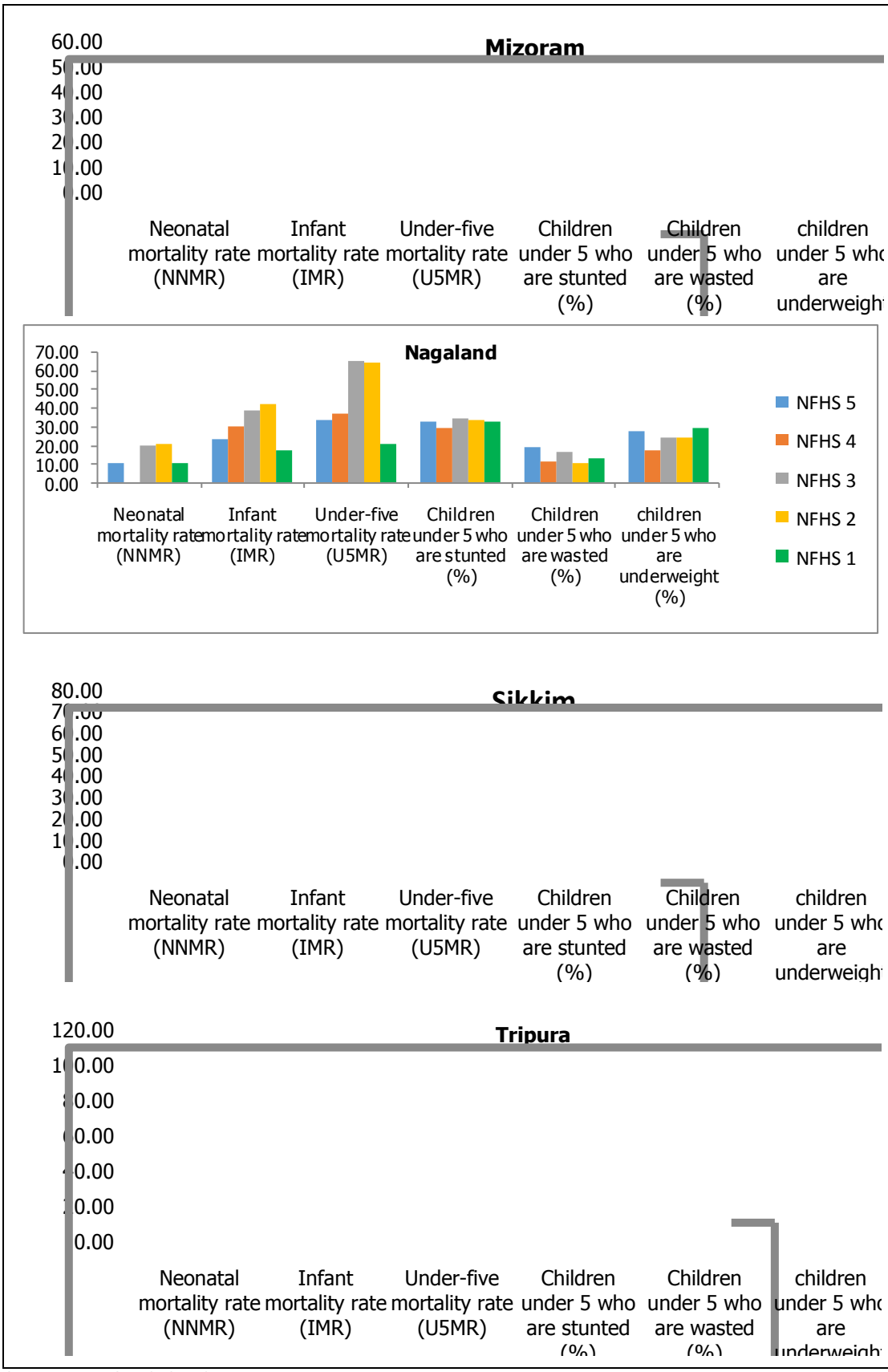
Wasting in children under the age of 5 or acute malnutrition in India, according to NFHS-5, is 19.30% and in NESs like Assam, it is above the national average (21.70%). All the above indicators are an outcome of poorly implemented and monitored nutrition-related programmes. Acute malnutrition had increased by 1.8% since 1992-93. NESs except Mizoram, Meghalaya and Nagaland had managed to reduce the rates by around 6% to 7%. Assam also had observed a sharp increase in acute malnutrition by 10% over the period from 1992-93 to 2019-20. In the case of stunting in children less than 5 years, all NESs and India had been able to reduce it, except Nagaland where stunting had increased very marginally by 0.30%. Arunachal Pradesh had performed much better in terms of reducing stunting in children by 25.90%, than the country as a whole (16.50%).

There are certain states with a good performance, whereas, on the other hand, there are some states with non-availability or inadequate food or access to food. Undernutrition accounts for 45% of deaths in children globally due to insufficient nutrients intake. Adequate diets with healthy feeding practices are important aspects of stronger immunity among children. According to the Global Hunger

Index, India had been ranked 94 out of 107 countries, much behind Nepal, Bangladesh and Pakistan (Ngaihte & Kaur, 2020).

Figure 2: Nutritional Status of Children in North East India





Source: NFHS 1, 2, 3, 4 & 5

Existing literature on women and nutrition has most often relied on indicators of empowerment like women's education (Smith & Haddad, 2000; Haddad, 2000; Berti, Krasevec, & FitzGerald, 2007) and control over income. There are very few studies, specifically in the Indian context, that explore women's nutritional status. At the national level, nutritional components have been accounted for by exposure of women to land reforms (Ghosh, 2007) and agricultural employment (Agarwal, 1986). Most have treated household expenditure and equality as proxy indicators for nutrition and health (Gillespie, Harris, & Kadiyala, 2012). In this section, we look at the status of health and nutrition of women in NESs using secondary data from NFHS.

Lack of adequate health services and food security tend to accentuate the problem of under nutrition and malnutrition. According to NFHS-5, the Body Mass Index (BMI)[6] reduced from 36.30% in NFHS-2, to 18.70 % of Indian women in the age group 15-49 which is below normal. Tripura, Mizoram, Meghalaya and Manipur have achieved a reduction of over 10%. The percentage of women with a high-risk waist-to-hip ratio is observed to be highest for Arunachal Pradesh, despite it being one of the NESs with a relatively less population. All NESs except Mizoram, display percentages above the country average for women with high-risk waist-to-hip ratio. Anaemia during pregnancy increases risk of premature birth and in some cases even death of infants. The percentage of the pregnant population having anaemia has shown a reduction for NESs since 1998-99, not exceptionally though. As for the all-India estimate, pregnant women, who are anaemic, are continuously increasing, while in the case of Nagaland, pregnant women with anaemia are significantly less as compared to the other states of North East India. Tripura and Assam also exhibit higher estimates of anaemic pregnant women than the country average.

[6] BMI in NFHS 1 is not available

Table 3: Nutritional Status of Women in North East India

Indicators (age 15-49 years)	Year	Women whose BMI is below normal (BMI <18.5 kg/m) (%)	Women who are overweight or obese (BMI ≥25.0 kg/m) (%)	Women who have high risk waist-to-hip ratio (≥0.85) (%)	Pregnant women who are anaemic
Arunachal Pradesh	2019-20	5.70	23.90	68.90	27.90
	2015-16	8.50	18.80	na	37.80
	2005-06	15.50	10.50	na	51.80
	1998-99	10.70	5.10	na	49.20
Assam	2019-20	17.60	15.20	67.20	54.20
	2015-16	25.70	13.20	na	44.80
	2005-06	36.50	9.00	na	72.00
	1998-99	27.10	4.20	na	62.30
Manipur	2019-20	7.20	34.10	65.70	32.40
	2015-16	8.80	26.00	na	26.00
	2005-06	13.90	17.60	na	36.40
	1998-99	18.80	10.80	na	36.70
Meghalaya	2019-20	10.80	11.50	60.60	45.00
	2015-16	12.10	12.20	na	53.30
	2005-06	13.70	7.10	na	60.20
	1998-99	25.80	5.80	na	58.60
Mizoram	2019-20	5.30	24.20	47.60	34
	2015-16	8.40	21.00	na	27.00
	2005-06	15.30	12.00	na	51.70
	1998-99	22.60	5.30	na	45.70
Nagaland	2019-20	11.10	14.40	62.00	22.20
	2015-16	12.30	16.20	na	32.70
	2005-06	15.90	8.90	na	na
	1998-99	18.40	8.20	na	38.20
Sikkim	2019-20	5.80	34.70	75.60	40.7
	2015-16	6.40	26.70	na	23.60
	2005-06	9.60	19.50	na	62.10
	1998-99	11.20	15.70	na	47.60
Tripura	2019-20	16.20	21.50	62.50	61.50
	2015-16	18.90	16.00	na	54.40
	2005-06	35.10	7.80	na	57.60
	1998-99	35.20	8.40	na	53.60
India	2019-20	18.70	24.00	56.70	52.20
	2015-16	22.90	20.60	na	50.40
	2005-06	33.00	14.80	na	57.90
	1998-99	36.20	10.60	na	49.70

Note: NA - Not Available

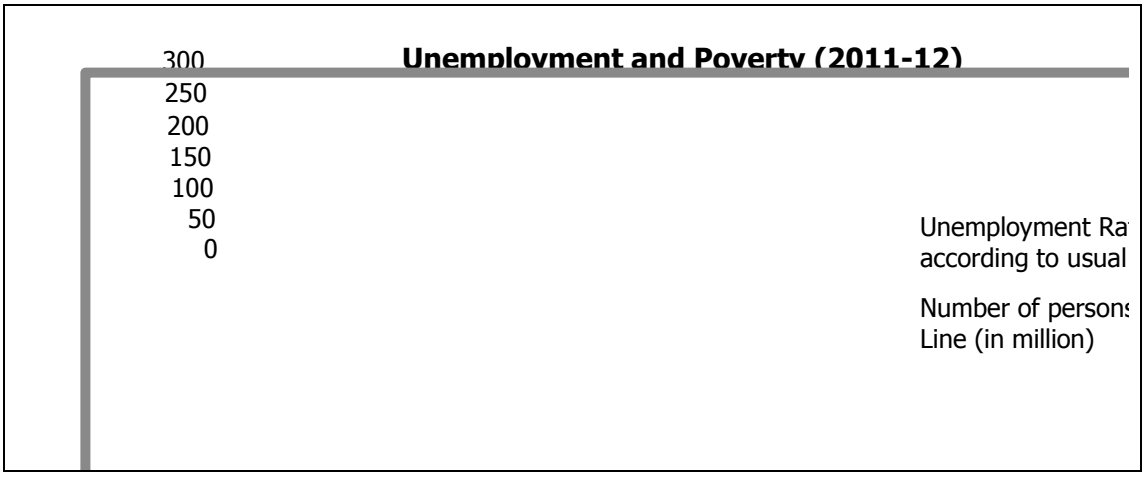
Source: NFHS 1, 2, 3, 4 & 5

Along with adequate diet and nutrient intake, at the micro level, factors like drinking water, sanitation and education play a key role in shaping nutritional levels. The conceptual model of malnutrition is a useful tool which helps to understand many factors that have an impact on nutritional status. There are three levels of casualty of malnutrition: **basic**, **immediate** and **underlying**[7]. The basic causes of malnutrition are related to potential resources and the social, political, ideological and economic contexts like poverty, agriculture, public distribution systems, water and environmental sanitation, education and communication, control and use of resources etc. The immediate causes of malnutrition include inadequate dietary intake and diseases and both are relative to make each other; this is also referred to as the infection-malnutrition cycle. The underlying determinant of undernutrition includes three main causes --- inadequate household food security, inadequate care and inadequate health services and an unhealthy household environment.

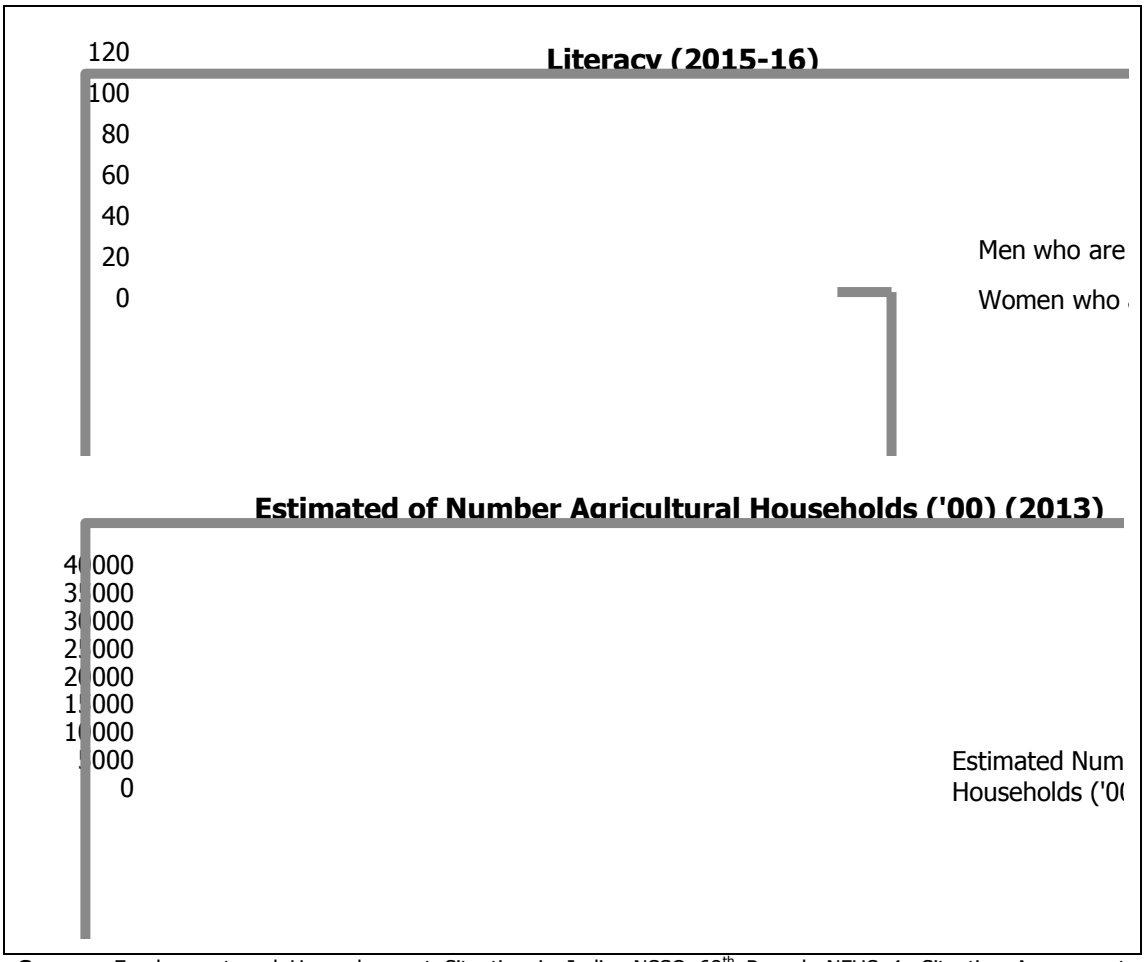
Basic Factors

The basic determinants of nutrition such as poverty, unemployment and literacy also shape the nutritional status of the population. Such conditions can make people more vulnerable or strong. In 2015-16, 68.4% of women in India were literate. Also, the literacy gap between men and women is getting narrower. Despite growth in literacy, the rate of unemployment (per 1000) in India is 27. Among the NESs, it is highest in respect of Nagaland, which also accounts for high literacy rates. This could mean that human resources are under utilised, with lack of jobs for the educated population in this state. In contrast, Sikkim and Meghalaya display low unemployment rates and high literacy rates. The number of households dependent on agriculture in Nagaland is less than 5,000, which indicates that people are either unemployed or employed in other sectors of the economy. Poverty is abysmally low in most NESs when compared to India where the number of people below the poverty line is 269.78.

Figure 3: Changes in the Basic Determinants of Nutrition in North East India



[7] For details, refer to Planning Commission, 2010



Source: Employment and Unemployment Situation in India, NSSO 68th Round; NFHS 4; Situation Assessment Survey of Agricultural Households (Jan-Dec 2013), National Sample Survey Office (NSSO)

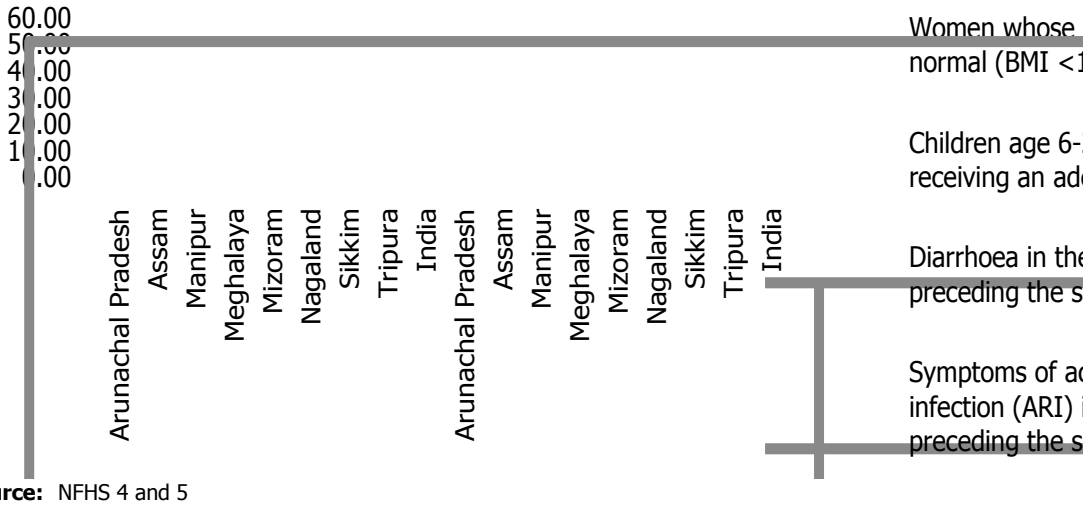
Immediate Factors

Health and nutrition-related interventions aim at improving food, healthcare and the environment for women and children. Among women, 18.7% of the population displayed a Body Mass Index (BMI) less than 18.5 kg/m for 2019-20. Since 2015-16, the percentage of women with a low BMI had been reducing for the entire NESs (see Figure 3). Among children aged 6-23 months, only 11.3% received an adequate diet in India. The situation has since improved, but not significantly. All the NESs except Assam are above the national average. In fact, in Meghalaya, 29.8% of children in the age group of 6-23 months received an adequate diet. Hence, the priority must be to improve the provision of a minimum acceptable diet for children since it is at this age that malnutrition develops with age among newborns.

In India, 2.1% of children less than 5 years of age show symptoms of Acute Respiratory Infection (ARI), while advice or treatment is sought through health facilities for 97.9% of children. State-wise level of ARI was below 5.0% for most Indian states and NESs. But Assam had the worst figure. The percentage of children with ARI which was 50.8% in 2015-16 had increased to 53.5% in 2019-20. Around 5.1% of population was affected by diarrhoea. The prevalence of diarrhoea had shown

a decline for NESs during 2015-16 and 2019-20, while an increase for a few states like Assam, Sikkim and Tripura.

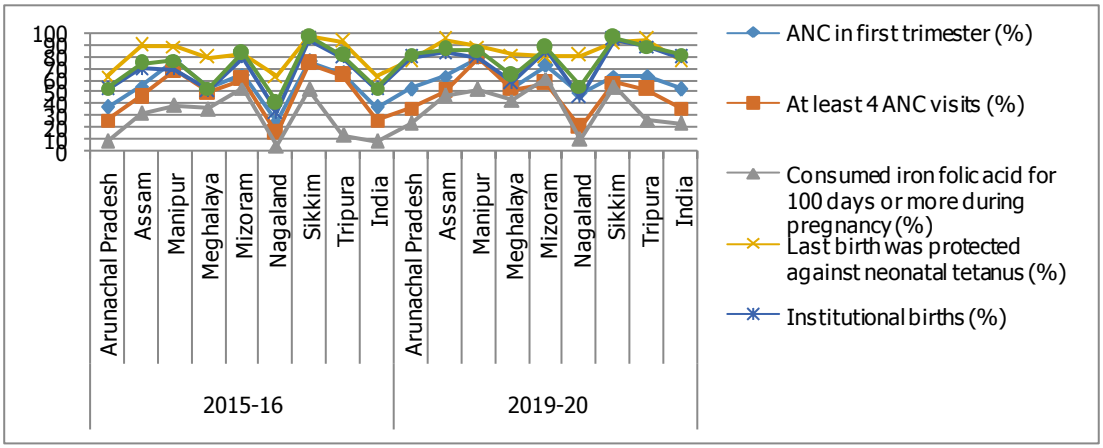
Figure 4: Changes in the Immediate Determinants of Nutrition in North East India



Source: NFHS 4 and 5

Along with optimal feeding practices, maternal health is crucial. It is a predictor of child health. Access and availability of health services such as Iron Folic Acid (IFA) and Antenatal Care (ANC) play a pivotal role in both mother and child. In 2015-16, only 8.3% of mothers consumed IFA for 100 days or more, when they were pregnant (India). For 2019-20, the percentage had risen to 23.8 which too is not exceptionally good. Six of the 8 NESs have performed above the national average with Mizoram accounting for 61.9%. Women having ANC in India in the first trimester was 53.1% whereas those with at least 4 ANC visits was 36.5%. Five NESs accounted for at least 4 ANC above 60%, whereas others for around 50% (see Figure 5). More than 70% of pregnant women have availed medical facility for giving birth in India as well as in NESs, except Nagaland and Meghalaya (45.7% and 58.1%, respectively). The same is the case with births attended to by skilled health professionals. Mothers with last birth protected against neonatal tetanus had shown a promising picture for India and all NESs. In addition, all NESs remained above the national average of 76.9%.

Figure 5: Changes in the Coverage of Nutrition-Specific Interventions along the Continuum of Care in North Eastern States



Source: NFHS 4 and 5

Underlying Factors

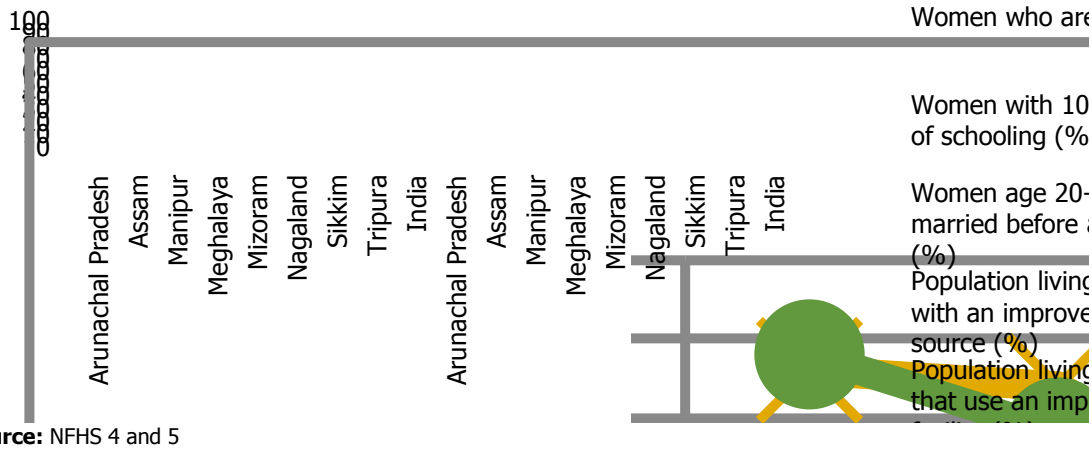
Inadequate and unsafe drinking water, poor sanitation and unhygienic practices lead to many diseases, especially among children, due to their low immunity and high susceptibility towards infection. According to NFHS 5, in India, access to improved drinking water has reached a high level of 95.9% with more than half of the Indian households accessing improved sanitation (70.2%). In 2015-16, Sikkim achieved an improved drinking water supply that was almost universal (97.8%) but it had reduced by 5% points during 2019-20. Manipur, among all the Indian states as well as NESs, had the lowest percentage of the population with access to safe drinking water in the last two NFHS periods (2015-16, 2019-20).

India can achieve a lot of progress in improving its nutritional and health status by making improved sanitation facilities available. In India, 29.8% of the population had either no access to sanitation or practised open defecation (NFHS 5), (which was more than 50% during 2015-16). Mizoram and Sikkim had the highest percentage of the population with access to improved sanitation facilities (see Figure 5). In 2014, the Government of India launched Swachh Bharat Mission to improve hygiene and sanitation. According to recent reports, the programme has succeeded in building around 90 million toilets in India (Food and Nutrition Security Analysis, India, 2019). The use of improved drinking water by 95.9% of households and efficient use of health facilities had also contributed to lower levels of ARI and diarrhoea among under-5 children in India (see Figure 3). Electricity is crucial for running all the appliances. In India, 96.8% of households have access to electricity. Households with electricity access in Sikkim, Nagaland, Tripura and Mizoram were almost universal.

Women's education has a positive impact on the health status of children. Since 2015-16, there had been an increase in the percentage of women with 10 or more years of schooling. In 2015-16, out of the total population of India, 68.4% of women were literate and in 2019-20, it had increased by 3.1%. Also, the literacy gap between men and women has been narrowing over the years. However, marriage at an early age among women is a constraint to their education and health. The government of India, in 2021, increased the minimum age of marriage for women to 21 years. Figure 5 indicates

that around 20-30% of women in the North Eastern States in the age group of 20-24 are married before 18 years. In India, the rate is 23.3% and Tripura stands at 40.1%, which is also one of the states with a high female literacy (above 80%).

Figure 6: Changes in the Underlying Determinants of Nutrition in North East India



Source: NFHS 4 and 5

With this backdrop, it becomes important to investigate the status of nutritional intake for the NESs. The Indian Council of Medical Research (ICMR) has recommended dietary requirements and intake across sex and the nature of work as is given in Table 4.

Table 4: ICMR Recommended Dietary Guidelines

Group	Particulars	Net energy kilocalories/day
Man	Sedentary work*	2320
	Moderate work^	2730
	Heavy work#	3490
Woman	Sedentary work	1900
	Moderate work	2230
	Heavy work	2850
Children	1-3 years	1060
	4-6 years	1350
	7-9 years	1690
Boys	10-12 years	2190
Girls	10-12 years	2010
Boys	13-15 years	2750
Girls	13-15 years	2330
Boys	16-17 years	3020
Girls	16-17 years	2440
Note: *Sedentary worker category consists of teachers, retired personnel, priests, computer professionals, housewives, etc.		
^Moderate worker category consists of agricultural labourers, industrial labourers, goldsmiths, fishermen, masons, servants etc.		
#Heavy worker includes stone cutter, blacksmiths, mine workers, wood cutters		

Source: ICMR Manual of Dietary Guidelines for Indians

Urban areas were slightly better off in nutritional intake than rural areas in respect of NER. The state-wise data on calorie, protein and fat intake revealed that there had been a decrease in their consumption in the NESs, except Sikkim and Tripura as both the states had shown slight improvement in calories, protein and fat intake in rural and urban areas.

Table 5: Per capita and Per Consumer Unit Intake of Calories, Protein and Fat Per Day

States	Year	Calorie		Protein		Fat	
		Rural	Urban	Rural	Urban	Rural	Urban
Arunachal Pradesh	**2011-12**	1876	2083	47.4	53.3	18.2	28.2
	2004-05	2320	2263	67.7	93.3	33.6	44.7
Assam	**2011-12**	2010	2038	49.3	52.1	26.1	37.1
	2004-05	2067	2143	52.7	55.9	26.7	36.8
Manipur	**2011-12**	1974	1914	46.7	45.9	15.5	17.4
	2004-05	2299	2168	59.6	52.5	27.6	18.5
Meghalaya	**2011-12**	1686	1755	41.6	46	21.6	27.8
	2004-05	1900	1898	50.8	50.6	25.6	37.3
Mizoram	**2011-12**	2037	2166	48.1	53.5	25.4	38
	2004-05	2437	2360	77.2	67.6	43.4	50.9
Nagaland	**2011-12**	1901	1970	51.5	54	14.2	18.5
	2004-05	2044	2418	65.7	73.9	20.2	50.3
Sikkim	**2011-12**	2015	1958	51.5	50.8	44.6	46.6
	2004-05	1928	1922	49.9	51.5	36.7	40.7
Tripura	**2011-12**	2256	2252	54.5	56.9	27.4	35.1
	2004-05	1862	2092	47.1	56.9	21.9	35.1

Source: NSS0 Round 68 and 61: Nutritional Intake in India, 2011-12, 2004-05

Multiple burdens of malnutrition are reflected in the coexistence of any two or all three forms of malnutrition: stunting, wasting and underweight. Among children aged 0-5 years, 6.5% of the children were stunted, wasted as well as underweight; 18.4% children were stunted and underweight; and 8.2% children were wasted and underweight in India. It also reveals that after disaggregating the coexistence of these three conditions, 13.6% children were only stunted (against 38.4% overall prevalence of stunting); 2.6% were only underweight (against 35.7% overall prevalence of underweight) and 6.3% were wasted t (against 21.0% overall prevalence of wasting). Most of the North Eastern States experience an increased burden of malnutrition. According to the anthropometric indicators (stunted, wasted and underweight), undernutrition among children is unacceptably high. Mizoram (1.4%) and Manipur (1.4%) were among the states with the lowest burden of multiple malnutrition, while Assam (4.5%) Tripura (3.4%) and Meghalaya (3.2%) with the highest multiple burden of malnutrition among the states in the NER.

Table 6: Multiple Burdens of Malnutrition in North Eastern States 2015-16

States (per cent)	Only Stunted	Only Wasted	Only Underweight	Stunted and underweight	Wasted and Underweight	Stunted, wasted and underweight
Arunachal Pradesh	17.3	8.7	1.1	9.7	6.3	2.3
Assam	15.6	5.7	2.3	16.2	6.7	4.5
Manipur	18.5	3.3	1.3	9	2.2	1.4
Meghalaya	22.2	6.5	1.6	18.4	5.7	3.2
Mizoram	19.4	2.3	1	7.3	2.4	1.4
Nagaland	16.8	4.9	1.1	9.2	3.8	2.6
Sikkim	21.2	8.4	1.8	6.6	4	1.8
Tripura	10.1	5.9	2.4	10.8	7.6	3.4
All India	13.6	6.3	2.6	18.4	8.2	6.5

Source: Food and Nutrition Security Analysis, Ministry of Statistics and Programme Implementation and The World Food Programme

Table 7: Comparison of various parameters

Parameters	Best	Moderate	Worst
Basic Determinants	Sikkim	Nagaland	Assam
Immediate Determinants	Mizoram	Manipur	Tripura
Underlying Determinants	Mizoram	Manipur	Assam
Conceptual Model Overall	Sikkim	Manipur	Assam
Nutrition	Sikkim	Manipur	Assam
Children Health	Arunachal Pradesh	Manipur	Meghalaya
Women Health	Mizoram	Manipur	Arunachal Pradesh
Households with drinking, sanitation and electricity facilities	Arunachal Pradesh	Sikkim	Assam
All	Sikkim	Manipur	Assam

Note: The extended version of this table is provided in Appendix 1

Source: Authors' compilation

A composite picture of the indicators reveals a lot about the region as a whole. The states had registered varied performances concerning each other over the years. Yet, it is important to investigate the overall nutritional status of the eight states and the region as a whole. For this purpose, a composite table was created with all the indicators with a bifurcation of states among three categories --- best performers, moderate and worst performers.

The best performers in the North East were Sikkim, Mizoram and Arunachal Pradesh which are poles apart in many ways. Sikkim is a small state in the NER with 0.1% contribution to the country's population whereas Arunachal Pradesh has the highest land area with 1.38% of the country's population. The analysis shows that Mizoram has good health conditions for women among the eight states. The overall performance of Manipur had been moderate. In most of the indicators, Assam had the worst conditions or characteristics in comparison to other NESs despite it being one of the states to make the highest contribution to GDP from this region (see Figure 1). It is also one of the states with the highest land area. Sikkim followed by Mizoram and Arunachal Pradesh had shown the best performance in most of the parameters. Tripura has not stood out exceptionally in any of the

parameters but when indicators for this state were observed individually some progress could be noticed.

In nutritional parameters, Sikkim and Assam held the highest and the lowest positions, respectively, while Manipur performed moderately. Assam had a higher percentage of neonatal and infant mortality, stunting of children under 5, women with low BMI etc. Children's and women's health was seen to be the best in Arunachal Pradesh and Mizoram respectively. Mortality rates among children were lesser in Arunachal Pradesh with children receiving adequate diet. Women of Mizoram had better pregnancy care when compared to other states. Electricity, drinking water and sanitation have become basic necessities. The Table shows that Arunachal outperformed other NESs in these facilities whereas Manipur and Assam were moderate and poor in this zone.

A comparison between the conceptual model of malnutrition and the other indicators shows that there isn't much difference in the states' performances. In terms of basic determinants of malnutrition, Sikkim had the best performance in terms of the unemployment rate, poverty and literacy whereas the number of agricultural households was low. This has been reflected in Sikkim's health and nutritional aspect, when looked at the composite table, and thus, led to its best performance overall. Manipur had moderate performances in all the parameters except in basic determinants of malnutrition and households with drinking, sanitation and electricity facilities. In basic determinants, Manipur had the highest poverty rate along with high literacy rates and moderate unemployment rates. Manipur had a mixed result in households with drinking, sanitation and electricity facilities where it had performed the best in sanitation, moderate in drinking water and worst in electricity. Mizoram had best performance in terms of immediate factors of malnutrition. It had also topped the list of underlying factors of malnutrition in which literacy and population with drinking, sanitation and electricity facilities were good. Total children (age 6-23 months) receiving an adequate diet was the worst in Mizoram which is an immediate factor of malnutrition. From Table 6, it can be observed that Mizoram is one of the states with the highest stunting among children. This state has the highest literacy among women in the North East as well as in India but this has not been reflected in terms of child health and nutrition. Assam has had a disappointing performance in all parameters including the conceptual model of malnutrition. It has the most number of agricultural households and high rates of poverty and unemployment with low literacy levels which is the reason for its backwardness in health and nutritional parameters. To summarise, Sikkim has proven to be a strong state despite its size whereas Assam needs a lot of improvement.

Summary

In conclusion, the study finds that Sikkim with its less population and size has had a significant level of growth in women and children's health. It is also one of the states with high literacy and low poverty and unemployment rates. This has been affecting positively the nutritional status of the state. Manipur had moderate performances in all the parameters except in basic determinants of malnutrition and households with drinking, sanitation and electricity facilities. In basic determinants, Manipur had the highest poverty rate along with high literacy rates and moderate unemployment rates. Whereas Mizoram, which is one of the states with the highest literacy in India as well as in the North East, had

the worst performance in children's health and one of the best in women's health. Assam had portrayed a disappointing picture when we take all the parameters. It being the biggest state in terms of GSDP, size and population, it had portrayed low literacy rates, high unemployment and poverty rates and bad women and children health. Therefore, overall, Sikkim had been the best performer, Manipur performed moderately and Assam had the worst performance.

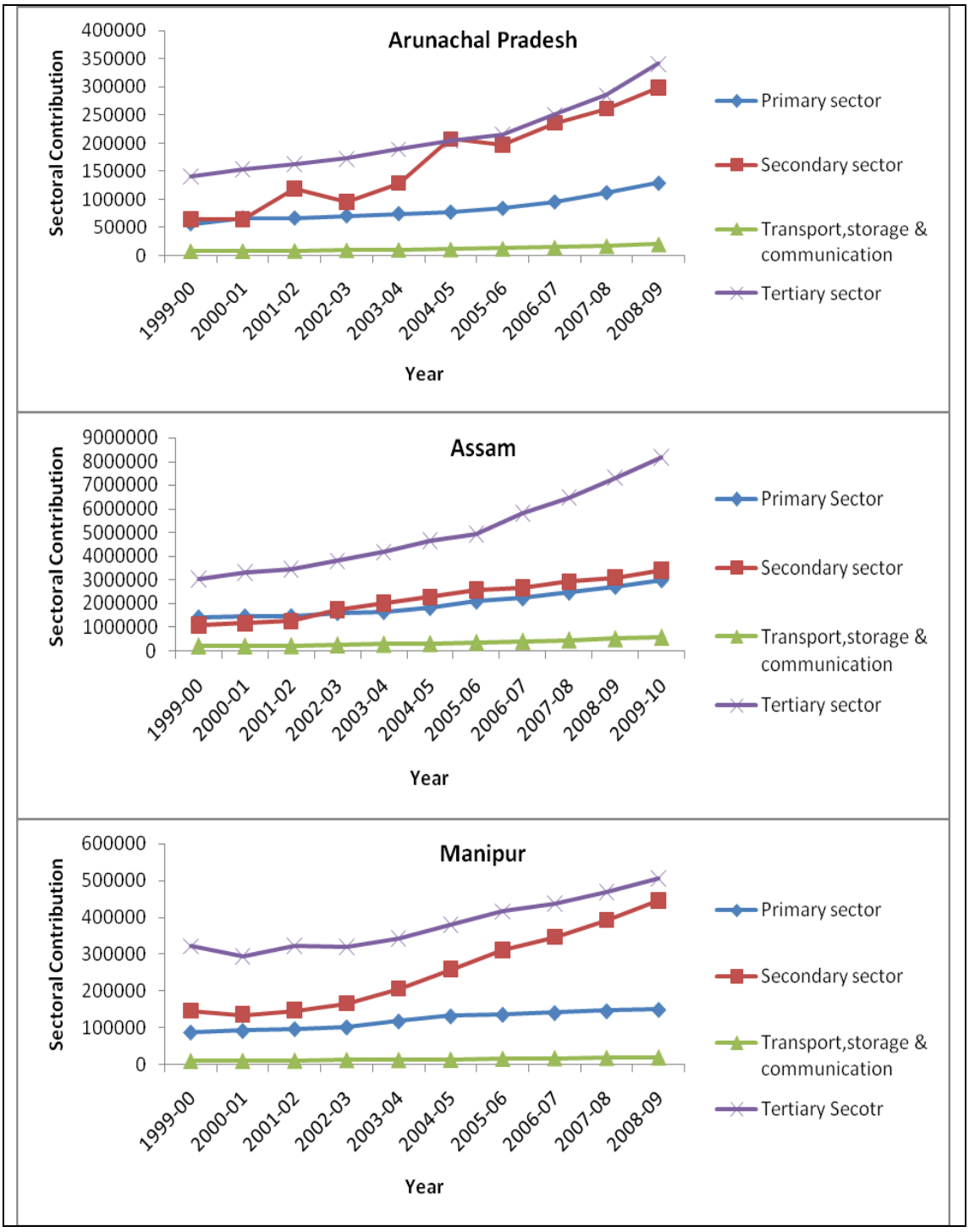
At a micro level, other factors which could impact the nutritional levels and immunity like drinking water sources, sanitation and education have significantly improved. However, there may be scope for improvement, especially, in sanitation. Better sanitation facilities have a strong correlation with lesser cases of diarrheal illnesses and decreased nutrition (Ngaihte & Kaur, 2020). According to a report by ICMR-NIN, "What India Eats" has shown that North Eastern India consumed the highest total calorie and carbohydrates and comparatively had a higher proportion of people with hypertension. The report noted that a significant percentage of the urban population consumed chips, biscuits, chocolates, sweets and juices. Easy accessibility to processed foods containing high amounts of sodium and fats catalyses the vulnerability to lifestyle-related diseases and calls for not only adequate diets for the populations but a balanced one too. This ensures the well-being of an individual in addition to immunity (Hemalatha, Laxmaiah, Sriswan, Boiroju, & Radhakrishna; Food and Nutrition Security Analysis, India, 2019).

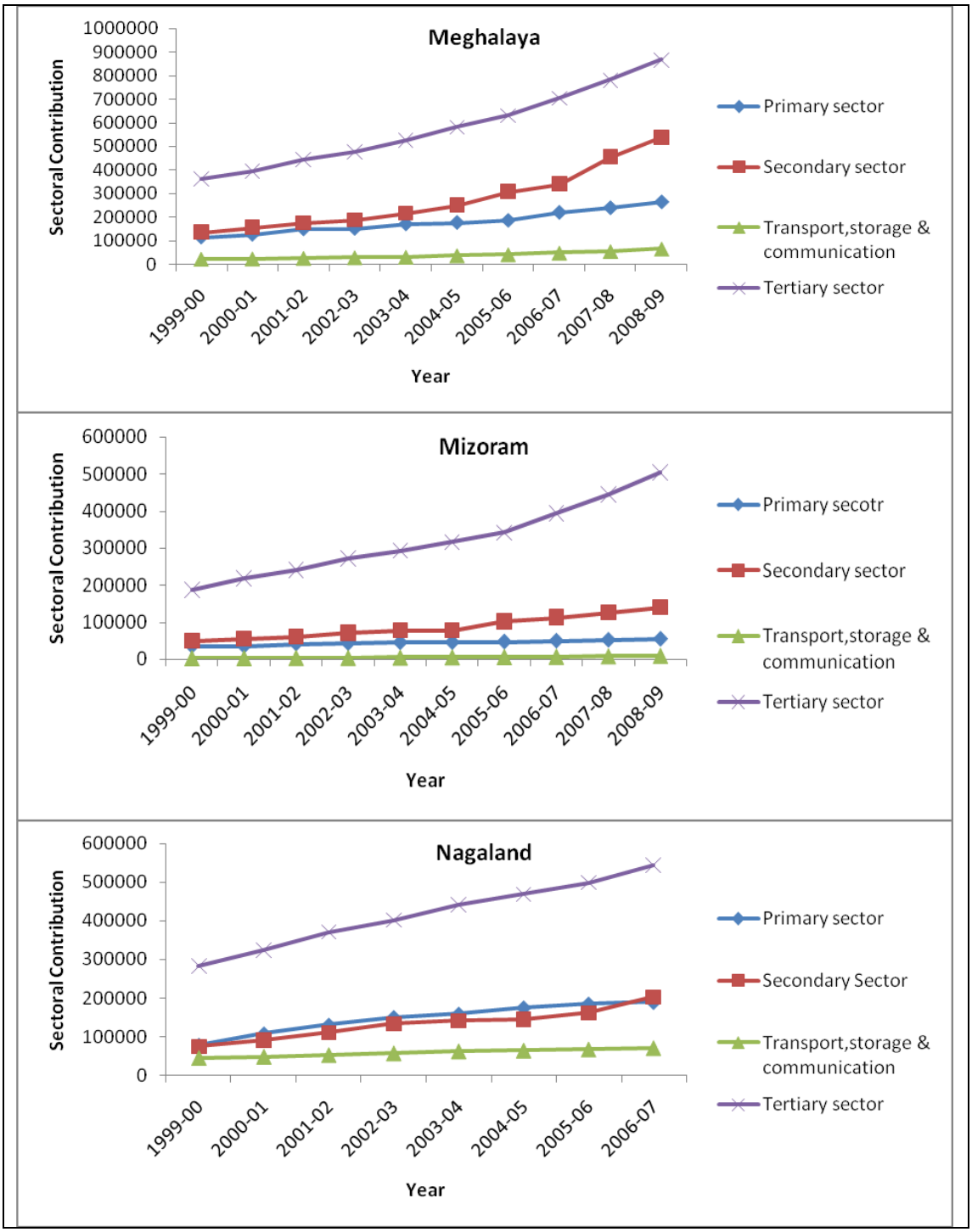
The POSHAN Abhiyaan, the Government of India's flagship programme, aims at improving nutritional outcomes among pregnant women, lactating mothers and children by reducing the level of stunting, underweight, anaemia and low birth weight by 2022. The data has shown that the outlaid budget has been meagerly utilised by the North Eastern States, except for Mizoram which had utilised 65.12% as of 2019. Investing in nutrition assures substantial economic returns. It also improves cognitive skills and educational performance and thus better chances of progressive income in adult livelihood. The Government, with its commendable efforts in food security as part of Aatma Nirbhar package and strengthening the health of frontline workers, had played a crucial role during the pandemic. There exists a pool of schemes like the Public Distribution System, Mid-Day Meals and Integrated Child Development Scheme linking health and nutrition- related policies together. But there are unaddressed issues such as leakages, quality of food, inadequate or less motivated human resources, etc. During the pandemic, several states experimented with delivering dry rations at home. However, cash transfers and delivering hot meals or dry rations to the child's house does not automatically ensure the consumption by the sole beneficiary which poses threats to nutritional results. Moving forward towards a post-pandemic period, strengthening these institutions, especially at the grassroots level for sustaining nutritional efforts, is crucial. As for the POSHAN Abhiyaan, its dashboard indicates 'below average' participation for all NESs except for Assam. Active community support strengthens such programmes.

India has made some achievements in reduction of poverty but has not been very successful in reducing malnutrition. The overall reduction in malnutrition has been very sluggish. About half of the Indian population, especially children and women, are the most vulnerable groups who suffer from various forms of malnutrition, and a quarter of them suffer from severe malnutrition. It leads to retarding of human development. Malnutrition risk is higher among children whose mothers have

chronic energy deficiency which depends on their childhood nutritional status. The need of the hour is the availability and regularity of the Public Distribution System in villages, dry ration or cooked hot meals in Anganwadis or Schools etc., which is one way to overcome the issue. Monitoring of Process indicators must be a priority of the community leaders, administrators, people's representatives and the media.

Figure 7: Sectoral Contribution of SGDP in North Eastern States




Meghalaya
Sectoral Contribution
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
Year
Primary sector
Secondary sector
Transport,storage & communication
Tertiary sector
Mizoram
Sectoral Contribution
600000
500000
400000
300000
200000
100000
0
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
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2008-09
Year
Primary secotr
Secondary sector
Transport,storage & communication
Tertiary sector
Nagaland
Sectoral Contribution
600000
500000
400000
300000
200000
100000
0
1999-00
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2001-02
2002-03
2003-04
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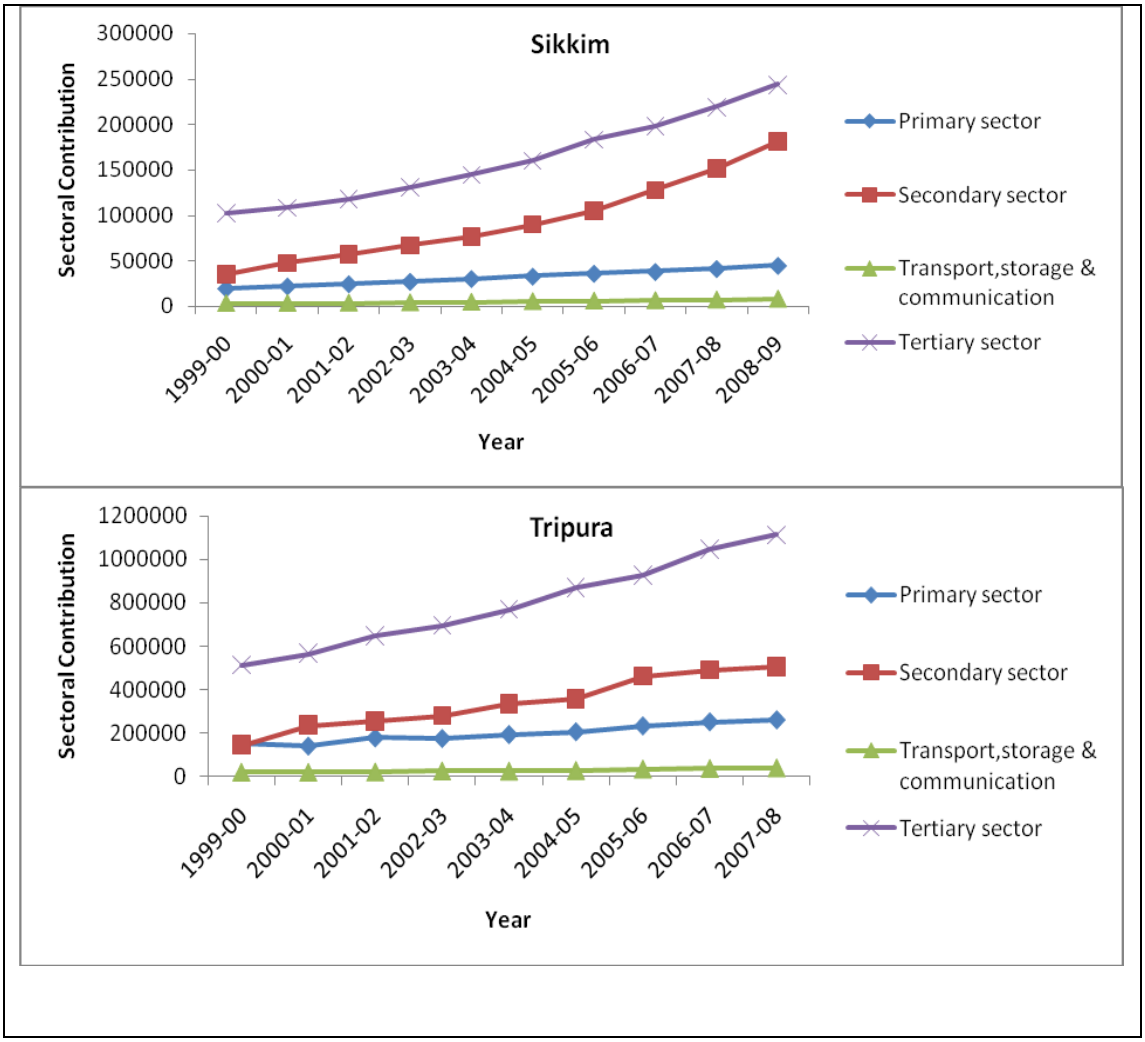
2005-06
2006-07
Year
Primary sector
Secondary Sector
Transport,storage & communication
Tertiary sector



Source: State Domestic Product (State series) 1999-2000, Ministry of Statistics and Programme Implementation

Table 8: Composite Table of All Indicators

Indicators	Best performer	Moderate performer	Worst performer
Neonatal mortality rate 2019-20	Sikkim	Mizoram	Meghalaya
	Arunachal Pradesh	Manipur	Assam
	Nagaland		Tripura
Infant mortality rate 2019-20	Sikkim	Nagaland	Assam
	Arunachal Pradesh	Manipur	Meghalaya
	Mizoram		Tripura
Under-five mortality rate 2019-20	Sikkim	Manipur	Assam
	Arunachal Pradesh	Nagaland	Meghalaya
	Mizoram		Tripura
Children under 5 who are stunted 2019-20	Sikkim	Mizoram	Nagaland
	Manipur	Tripura	Assam
	Arunachal Pradesh		Meghalaya
Children under 5 who are wasted 2019-20	Mizoram	Arunachal Pradesh	Tripura
	Manipur	Sikkim	Nagaland
	Meghalaya		Assam

children under 5 who are underweight 2019-20	Mizoram	Arunachal Pradesh	Meghalaya
	Sikkim	Tripura	Nagaland
	Manipur		Assam
Total children age 6-23 months receiving an adequate diet, (%) 2019-20	Meghalaya	Manipur	Mizoram
	Sikkim	Nagaland	Tripura
	Arunachal Pradesh		Assam
Prevalence of diarrhoea in the 2 weeks preceding the survey (%) 2019-20	Nagaland	Assam, Sikkim	Manipur
	Mizoram		Tripura
	Arunachal Pradesh		Meghalaya
Prevalence of symptoms of acute respiratory infection (ARI) in the 2 weeks preceding the survey (%) 2019-20	Mizoram	Tripura	Arunachal Pradesh
	Sikkim	Manipur	Meghalaya
	Nagaland		Assam
Only stunted 2015-16	Tripura	Arunachal Pradesh	Mizoram
	Assam	Manipur	Sikkim
	Nagaland		Meghalaya
Only wasted 2015-16	Manipur	Assam	Arunachal Pradesh
	Nagaland	Meghalaya	Sikkim
	Mizoram		Tripura
Only underweight 2015-16	Meghalaya	Mizoram	Sikkim
	Manipur	Assam	Nagaland
	Arunachal Pradesh		Tripura
Stunted and underweight 2015-16	Nagaland	Sikkim	Tripura
	Assam	Meghalaya	Manipur
	Arunachal Pradesh		Mizoram
Wasted and underweight 2015-16	Arunachal Pradesh	Manipur	Nagaland
	Meghalaya	Sikkim	Assam
	Tripura		Mizoram
Stunted, wasted and underweight 2015-16	Tripura	Arunachal Pradesh	Manipur
	Sikkim	Nagaland	Mizoram
	Assam		Meghalaya
Women whose BMI is below normal (BMI <18.5 kg/m) (%) 2019-20	Mizoram	Manipur	Nagaland
	Arunachal Pradesh	Meghalaya	Tripura
	Sikkim		Assam
Women who are overweight or obese (BMI ≥25.0 kg/m) (%) 2019-20	Meghalaya	Tripura	Mizoram
	Nagaland	Arunachal Pradesh	Manipur
	Assam		Sikkim
Women who have high risk waist-to-hip ratio (≥0.85) (%) 2019-20	Mizoram	Tripura	Assam
	Meghalaya	Manipur	Arunachal Pradesh
	Nagaland		Sikkim
Pregnant women aged 15-49 who are anaemic 2019-20	Nagaland	Mizoram	Meghalaya
	Arunachal Pradesh	Sikkim	Assam
	Manipur		Tripura
Mothers who had an antenatal check-up in the first trimester (%) 2019-20	Manipur	Sikkim	Meghalaya
	Mizoram	Tripura	Arunachal Pradesh
	Assam		Nagaland
Mothers who had at least 4 antenatal care visits (%)	Manipur	Tripura	Assam
	Sikkim	Meghalaya	Arunachal Pradesh
	Mizoram		Nagaland

Mothers who consumed iron folic acid for 100 days or more when they were pregnant (%) 2019-20	Mizoram	Assam	Tripura
	Sikkim	Meghalaya	Arunachal Pradesh
	Manipur		Nagaland
Mothers whose last birth was protected against neonatal tetanus (%) 2019-20	Tripura	Manipur	Nagaland
	Assam	Meghalaya	Mizoram
	Sikkim		Arunachal Pradesh
Institutional births (%) 2019-20	Sikkim	Assam	Arunachal Pradesh
	Tripura	Manipur	Meghalaya
	Mizoram		Nagaland
Births attended by skilled health personnel (%) 2019-20	Sikkim	Assam	Arunachal Pradesh
	Tripura	Manipur	Meghalaya
	Mizoram		Nagaland
Per capita per consumer unit intake of calories (rural) 2011-12	Tripura	Assam	Nagaland
	Mizoram	Manipur	Arunachal Pradesh
	Sikkim		Meghalaya
Per capita per consumer unit intake of calories (urban) 2011-12	Meghalaya	Mizoram	Arunachal Pradesh
	Manipur	Nagaland	Sikkim
	Tripura		Assam
Per capita per consumer unit intake of protein (rural) 2011-12	Tripura	Assam	Arunachal Pradesh
	Nagaland	Mizoram	Manipur
	Sikkim		Meghalaya
Per capita per consumer unit intake of protein (urban) 2011-12	Meghalaya	Tripura	Manipur
	Arunachal Pradesh	Nagaland	Assam
	Mizoram		Sikkim
Per capita per consumer unit intake of fat (rural) 2011-12	Sikkim	Mizoram	Arunachal Pradesh
	Tripura	Meghalaya	Manipur
	Assam		Nagaland
Per capita per consumer unit intake of fat (urban) 2011-12	Manipur	Nagaland	Mizoram
	Meghalaya	Sikkim	Arunachal Pradesh
	Tripura		Assam
Women who are literate (%) 2019-20	Mizoram	Manipur	Tripura
	Sikkim	Nagaland	Assam
	Meghalaya		Arunachal Pradesh
Women with 10 or more years of schooling (%) 2019-20	Nagaland	Tripura	Manipur
	Assam	Mizoram	Sikkim
	Meghalaya		Arunachal Pradesh
Women aged 20-24 years married before age 18 years (%) 2019-20	Arunachal Pradesh	Tripura	Sikkim
	Assam	Meghalaya	Mizoram
	Nagaland		Manipur
Population living in households with an improved drinking-water source (%) 2019-20	Meghalaya	Sikkim	Assam
	Arunachal Pradesh	Manipur	Tripura
	Mizoram		Nagaland
Population living in households that use an improved sanitation facility (%) 2019-20	Manipur	Meghalaya	Nagaland
	Assam	Sikkim	Arunachal Pradesh
	Tripura		Mizoram
Population living in households with electricity (%) 2019-20	Arunachal Pradesh	Mizoram	Manipur
	Nagaland	Tripura	Assam
	Sikkim		Meghalaya

Source: Authors' compilation

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