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An analysis of nutritional security in India: Determinants and challenges

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Abstract

India has one-third of the world's stunted children and the most malnourished children overall. The twin burden of malnutrition is brought on by low levels of under nutrition and rising levels of over nutrition. The triple burden of malnutrition is now being revealed to exist in India as well. Despite the reported strong rates of economic expansion, the levels of malnutrition are serious cause for concern. The need for a multi-sectoral strategy that focuses on the causes of malnutrition is widely acknowledged as being necessary for achieving nutritional security. In this study, we re-examine the current nutritional status in India, its drivers, and difficulties using national representative data from National Family Health Survey (NFHS-4) and previous literature. Malnutrition rates are declining, but the numbers are still very high. Although there appear to be an acceptable number of government initiatives and programmes that are helpful, their full potential is not being used as a result of different issues. India must take a truly multi-sectoral and integrated approach if it is to meet its nutrition targets.

Keywords: Nutrition security, child health, sustainable development goals, malnutrition

Introduction

Malnutrition in all of its forms must be addressed, as is now well understood. Malnutrition has long-term, detrimental, and largely irreversible impacts on young children, including stunted cognitive growth, decreased economic production, lower educational attainment, and a higher risk of developing a chronic illness as an adult ^[1]. The Sustainable Development Goals (SDGs) of the 2030 Agenda have put nutrition as one of the most central goals, with at least 12 of the 17 SDGs containing indicators relevant to nutrition. This is done in recognition of the tremendous relevance of nutrition to the development of a nation as well as the global economy.

However, despite the robust economic expansion in 2018, undernourishment rose for the third consecutive year ^[2]. Around 821 million people worldwide are thought to suffer from chronic food insecurity. Even if malnutrition has decreased over time, it nevertheless persists at alarmingly high levels, despite the fact that hunger is on the rise. 151 million children under the age of 5 are stunted globally, despite the fact that the percentage fell from 32.6 to 22.2 percent. Around 7.5 percent of children under five were afflicted by waste, while 38.3 million were determined to be overweight ^[3].

India also has a concerning condition and performs poorly in terms of malnutrition. Despite the fact that between 2006 and 2014, the prevalence rates dropped from 48 to 39 percent. According to NFHS-4, 42.4% of children under the age of five are underweight and 19.8% are obese, both of which represent decreases from NFHS-3 data. Nevertheless, the figures are startling, with 97 million children underweight, 25.5 million wasting, and 46.4 million stunted children under the age of five. India continues to have the highest rates of child malnutrition in the world, with one in three children being either stunted or underweight ^[4]. India currently has to contend with both under nutrition and over nutrition, which is reflected in overweight, obesity, and related non-communicable diseases ^[5].

It is crucial to comprehend and examine India's nutritional situation given the severe malnutrition that exists there. This essay calls attention to them. The paper's key objectives are to: (i) highlight probable causes and drivers of malnutrition; (ii) examine the conceptual framework for activities to achieve nutritional security; and (iii) highlight determinants and drivers of malnutrition in the context of India. The paper's primary points are distilled in the conclusion section.

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Data Sources and Methodology

The secondary data are the foundation of the investigation. The National Family Health Survey (NFHS)'s several quinquennial surveys on the causes of malnutrition, NFHS3 and NFHS4, conducted in the years 2005–2006 and 2015–2016, respectively, provide the information on India's dietary intake. The information provided by NFHS in its several rounds primarily focuses on the nutrient intake of families in terms of protein, fat, and carbohydrates, as well as how these nutrients are converted into energy units in terms of calories derived through consumption of various food types 109 products. Between 2005–2006 and 2015–2016, the trend analysis of states was done in terms of calorie, protein, and fat consumption per capita and per consumer unit. For the years 2005-2006 to 2015-16, the percentages of calories and protein consumed from various dietary items have also been calculated. Additionally, calculations of the percentage changes in home meals during the last 18 years have been made for comparable large states, as well as for the rural and urban sectors. The next section presents the findings and a commentary.

Results and Discussion

It is imperative to look at the changes in the nutritional intake among inhabitants across major states of India.

Nutritional status of children

Stunting in children under the age of five is a sign of chronic energy insufficiency and insufficient access to food in the home. Over time, India's prevalence rates for stunting have improved. According to NFHS-4, 37.6% of children under the age of five had stunting, down from 48.9% in NFHS-3. However, this has not kept up with economic expansion, and there are still the most stunted children in the world (46.8 million children), accounting for one-third of all stunted children worldwide under the age of five [3]. In India, acute malnutrition remains a major problem. Twenty one percent of children under the age of five were judged to be underweight for their height in 2015–16. The percentage has slightly increased from 20% in 2005–2006. Wasting is a sign of current nutritional condition and can be brought on by severe illness, famine, or a combination of the two. In India, one in five kids is said to be squandered. Nearly 31% of the world's wasted children live in India, making it the country with the highest number [2]. In 2015–16, 37% of children under the age of five were underweight, down from 43% in 2005–06. There is evidence that overweight children are more likely to become overweight adults. Two percent of pre-school children in India are overweight.

Table 1: Trends in nutrition status of children, 2005-06 and 2015-16.

	NFHS-3 (2005-06)			NFHS-4 (2015-16)		
	Stunted	Wasted	Underweight	Stunted	Wasted	Underweight
Urban	39.6	16.9	32.7	31	20	29.1
Rural	51.7	20.7	45.6	40.2	21.4	38.3
Total	48.9	19.8	42.9	37.6	21	36.7

Table 1 displays the dietary trends by place of residence. It may be seen that youngsters are more likely to be underweight overall when they reside in rural locations. The prevalence of wasting has grown between NFHS 3 and NFHS 4, whereas stunting and underweight rates have reduced. Urban and rural areas both adhere to this pattern.

A number of the most important determinants of child nutrition have been identified in the literature, including the aforementioned residence, mother's education level, mother's nutritional health, and household affluence. In Table 2, these data are displayed for NFHS-4. It is clear that maternal education and child malnutrition are negatively

associated. The prevalence of malnutrition is highest among children born to mothers who never went to school, and it diminishes as the number of years of schooling rises. The nutritional condition of mothers reveals similar correlations, with offspring of underweight mothers more likely to be malnourished. Stunted births affect up to 47% of babies born to underweight mothers. Given the strong association between being overweight and higher levels of household income, it's probable that rates are lower for obese mothers. This finding is proved by contrasting the levels of hunger with the wealth index. Higher-income households have fewer malnourished children.

Table 2: Children's nutritional status by family background, 2015–2016.

	Stunted	Wasted	Underweight	Overweight
Residence				
Urban	30.9	20	29.4	0.8
Rural	42.3	21.9	39.1	0.4
Mother's schooling				
No Schooling	51.7	21.9	46.1	0.3
<5 years complete	44.9	22.1	42.1	0.4
5-7 years complete	38.9	21.2	36.1	0.4
8-9 years complete	35.5	20.6	32.1	0.5
10-11 years complete	29.8	19.8	28.5	0.7
12 or more years complete	24.8	18.2	21.8	1
Mother's nutritional status				
Underweight (BMI<18.5kg/m2)	46.8	25.9	46.7	0.2
Normal (BMI 18.5-24.9 kg/m2)	38.4	21.4	33.9	0.5
Overweight (BMI>25.0 kg/m2)	27.1	14.3	21.7	1.1
Wealth index				
Lowest	51.4	24.8	47.6	0.3
Second	42.9	22.7	40.8	0.4

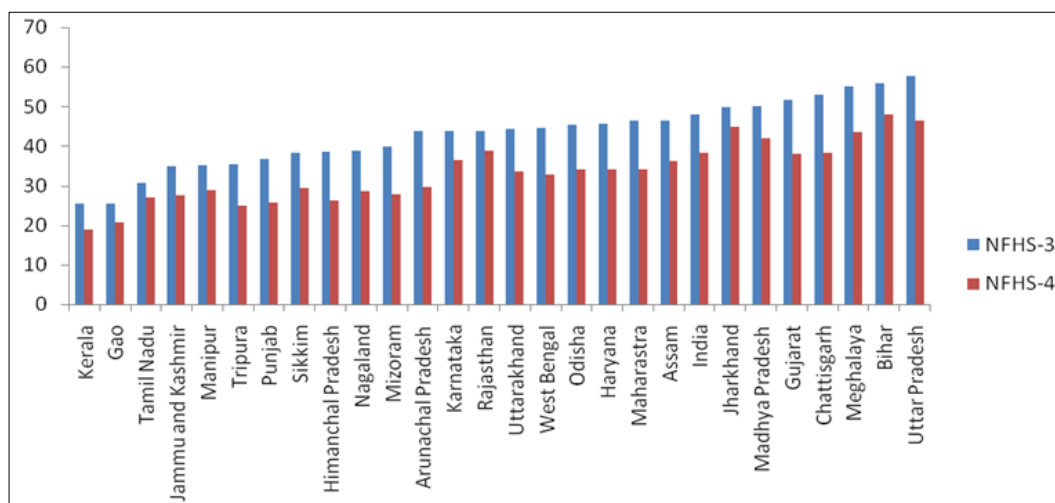
Middle	36.5	21.2	33.5	0.4
Fourth	29.2	19.8	27.6	0.7
Highest	22.6	16.9	20.1	1.1

Adults' nutritional status

Anaemia and overweight and obesity are two key issues with adult nutritional levels. According to NFHS 4, which is an increase from NFHS 3, about 22% of women are overweight or obese. Prevalence of overweight or obesity grew from 9.6% in 2005-2006 to 19% in 2015-16. Anaemia continued to affect a lot of women on a general level at the same time. According to NFHS-4, 24% of men and 56% of women in the age range of 15 to 49 have anaemia.

Inter-state variations

While the overall malnutrition rates in India represent the big picture, it's also critical to consider interstate differences. In terms of both economic and development indicators, India is a heterogeneous nation with significant differences amongst the states.



The progression of childhood stunting between 2005–2006 and 2015–2016 is shown in Figure 1. Stunting rates vary greatly among the states, with Kerala having a rate of 25.5 percent and Uttar Pradesh having a rate of 57.8 percent, but they are all improving. According to the data, this drop in stunting is unevenly distributed throughout the states, with certain states-such as Gujarat, West Bengal, Arunachal Pradesh, and Chhattisgarh-registering a significantly bigger decline than others.

All the dietary indices show similar variability between states and UTs. Indian States and Union Territories' (UTs)' population nutrition status is shown in Table 3. For each sign of malnutrition, the red cells show the poorest results, and the blue cells show the best results. From the table, the following conclusions are being formed.

- The states with the highest rates of stunting in children under the age of five are Bihar, Uttar Pradesh, Jharkhand, and Meghalaya. The states with the highest rates of waste include Gujrat, Dadra and Nagar Haveli, Jharkhand, and Karnataka. When it comes to the prevalence of underweight, Bihar, Uttar Pradesh, and Jharkhand do the worst.
- More than half of the population is affected by anaemia, which affects not just children but also women who are of reproductive age. All indices of child malnutrition have significant prevalence rates in the state of Jharkhand as well as the UTs of Chandigarh and Dadra & Nagar Haveli.
- The greatest rates of adult obesity and overweight are seen in Chandigarh, Lakshadweep, Andaman & Nicobar Island, and Delhi.

Table 3: Nutritional status of India, by state and UTs, 2015-16.

India/States/UTs	Children under-5 years (%)				Adults (%)		
	Stunted	Wasted	Under weight	Anaemic (6-59 months)	Anaemic Women (15-49 years)	Overweight or Obese Women	Overweight or Obese Men
India	38.4	21	35.7	58.4	56	21.8	18.3
A and N Islands	23.3	18.9	20.9	49.2	65.7	31.8	37.2
Andhra Pradesh	31.4	17.2	31.9	58.6	60	32.9	33.5
Arunachal Pradesh	29.6	17.3	19.5	50.7	40.3	18.8	20.6
Assam	36.1	17	29.8	35.7	46.3	13.1	12.9
Bihar	48.1	20.8	43.9	62.5	60.3	11.7	12.6
Chandigarh	28.7	10.9	24.5	73.1	75.9	41.5	32
Chhattisgarh	38.2	23.1	37.7	41.6	46.9	11.9	10.2
Dadra and Nagar Haveli	41.7	27.6	37.9	84.6	78.5	19.2	22.9
Daman and Diu	23.4	24.1	26.7	73.8	58.9	31.6	30.7
Delhi	32.3	17.1	27	62.6	52.5	34.9	24.6
Goa	20.6	21.9	23.8	48.3	31.3	33.5	32.6
Gujarat	37.9	26.4	39.3	62.6	54.9	23.7	19.7

Haryana	34	21.2	29.4	71.7	62.7	21	20
Himachal Pradesh	26.1	13.7	21.2	53.7	53.4	28.6	22
Jammu and Kashmir	27.6	12.1	16.6	43.3	40.3	29.1	20.5
Jharkhand	44.9	29	47.8	69.9	65.2	10.3	11.1
Karnataka	36.4	26.1	35.2	60.9	44.8	23.3	22.1
Kerala	18.9	15.7	16.1	35.6	34.2	32.4	28.5
Lakshadweep	27	13.8	23.4	51.9	45.7	41.4	24.6
Madhya Pradesh	41.9	25.8	42.8	68.9	52.5	13.6	10.9
Maharashtra	34.2	25.6	36	53.8	48	23.4	23.8
Manipur	28.8	6.8	13.8	23.9	26.4	26	19.8
Meghalaya	43.5	15.3	29	48	56.2	12.2	10.1
Mizoram	27.9	6.1	11.9	17.7	22.5	21.1	21
Nagaland	28.5	11.2	16.8	21.6	23.9	16.2	14
Odisha	34.1	20.2	34.6	44.2	51	16.7	17.6
Puducherry	23.7	23.6	22	44.9	52.4	36.7	37.1
Punjab	25.6	15.6	21.6	56.6	53.5	31.3	27.8
Rajasthan	38.9	23	36.7	60.3	46.8	14.1	13.2
Sikkim	29.4	14.2	14.2	55.1	34.9	26.7	34.8
Tamil Nadu	26.9	19.7	23.8	50.7	55.1	30.9	28.2
Telangana	28.1	18	28.5	60.7	56.7	28.1	24.2
Tripura	24.8	16.8	24.1	48.3	54.5	16	15.9
Uttar Pradesh	46.3	17.9	39.5	63.2	52.4	16.5	12.5
Uttarakhand	33.6	19.5	26.6	59.8	45.2	20.4	17.7
West Bengal	32.8	20.3	31.5	54.2	62.5	19.9	14.2

Conclusion

This paper presented a summary of the malnutrition condition in India. The findings reveal that although malnutrition has decreased, a sizable fraction of the population continues to be underweight and anaemic. We want to emphasise three key conclusions from our study. First, while stunting rates are declining, they are still high when compared to other child nutrition measures. India is only second to Sudan, a country plagued by violence, in terms of kid waste rates. Despite having a far faster growth rate than Sub-Saharan Africa, India has significant rates of malnutrition that are almost twice as high. Second, there are a lot of anaemic women in India who are of reproductive age. Also quite common in children is anaemia. There is a pressing need to address this situation. While absolute hunger and poverty are the main topics of discussion and controversy when it comes to malnutrition, hidden hunger is a growing problem and a more complicated scenario. Food supplements can help with this in the short term, but in the long run, people-especially women-need to be empowered enough to manage their diets on their own. Since it is clear from the data above that undernourished mothers give birth to more undernourished children, reducing anaemia is a matter of urgent public health. Third, a key cause for concern is the rising prevalence of overweight and obesity, not just among children but also among adults. Childhood obesity has been shown to have long-term negative consequences on non-communicable and lifestyle diseases. It is crucial to implement reforms through raising awareness and passing laws to stop this trend as earnings rise and dietary patterns shift towards more packaged foods.

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