

Child Undernutrition in India

A Tale of Two Surveys

SUNNY JOSE

The child undernutrition estimates from the Comprehensive National Nutrition Survey, 2016–18 reveal that many Indian states have made substantial decline, reversing their poor past record in wasting, ranging from 7 to 14 percentage points within just 30 months. Is it really possible to make such a large decline in such a short span of time? Or, does this point to an anomaly in data or estimation?

The Comprehensive National Nutrition Survey (CNNS), 2016–18 report provides the latest estimates on child undernutrition in India. A comparison of these estimates with that of the National Family Health Survey-4 (NFHS-4), 2015–16 brings out some incongruous results. This is especially so for wasting, in which, many states have performed phenomenally well reversing their previous poor record. The extent of decline in wasting is as high as 10 to 14 percentage points in some states within a short span of 30 months. These imply at least two things. For one, if CNNS estimates were true, it means that many Indian states might have made unprecedented progress in reducing child undernutrition within the last 30 months. For another, these estimates hint at the likelihood of an anomaly in data, implying the CNNS might have underestimated child undernutrition in India.

The CNNS 2016–18 report, brought out by the Ministry of Health and Family Welfare, Government of India, assumes salience, especially against two aspects. One, the latest Global Hunger Index (GHI),

2019 ranks India 102nd out of 117 countries. Categorized as “serious,” India stands between Niger and Sierra Leone, and far behind other South Asian countries with a singular exception of Afghanistan (108th).¹ The GHI is based on four indicators, of which two are child undernutrition (stunting and wasting). The GHI 2019 report states that India has the highest level of wasting (20.8%) among all the 117 countries (von Grebmer et al 2019: 14). Also, as per the prevalence threshold of stunting, India belongs to the “very high” category of stunting prevalence (de Onis et al 2019: 177).

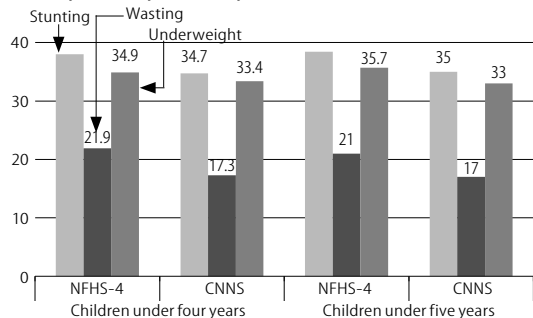
Two, India’s past performance in reducing child undernutrition was rather mixed. Between 2005–06 and 2015–16, stunting and underweight children declined by 9.6 to 6.8 percentage points, respectively. By contrast, wasting has increased, though marginally, during this period. This varying performance notwithstanding, the levels of child undernutrition remain high despite a reasonable decline in stunting and underweight. Hence, greater commitment and effective measures were called for in accelerating its performance so as to meet the targets of the Sustainable Development Goals. These factors make the CNNS report (2016–18) timely and important.

The CNNS was conducted in all the states of India from February 2016 to October 2018, about 22 months after the

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Sunny Jose (sunnyjose@gmail.com) is with the Council for Social Development, Hyderabad.

Figure 1: Percentage of Children Undernourished in India, NFHS-4, 2015–16, and CNNS, 2016–18



Source: Estimated from NFHS-4 data and CNNS report.

Table 1: Percentage of Children under Four Years Undernourished in India by Region, Social and Wealth Groups

Region	Stunting			Wasting			Underweight		
	NFHS-4	CNNS	Decline	NFHS-4	CNNS	Decline	NFHS-4	CNNS	Decline
Rural	40.6	37	3.6	22.4	17.6	4.8	37.3	35.7	1.6
Urban	31.0	27.3	3.7	20.6	16.3	4.3	28.4	25.9	2.5
Social groups									
Scheduled Tribes	43.3	41.5	1.8	28.4	21.9	6.5	44.5	41.5	3.0
Scheduled Castes	42.4	39.3	3.1	22.3	16.1	6.2	38.5	36.1	2.4
Other Backward Classes	38.3	34.8	3.5	21.4	17.1	4.3	34.6	33.1	1.5
Others	30.2	26.8	3.4	19.6	16.5	3.1	27.5	27.2	0.3
Wealth groups									
Poorest	50.7	49.2	1.5	25.7	21.1	4.6	48.1	48.1	0.0
Poorer	42.9	41.1	1.8	22.5	19.2	3.3	39.2	38.6	0.6
Middle	36.1	35.6	0.5	21.0	17.2	3.8	32.3	33.6	-1.3
Rich	29.0	28.0	1.0	19.7	16.4	3.3	26.4	27.5	-1.1
Richest	22.5	19.4	3.1	18.4	12.6	5.8	19.9	19.0	0.9

Source: Same as in Figure 1.

Table 2: Wasting of Children under Four Years in Indian States, 2015–16 and 2016–18

States	Wasting (%)				Completion of Survey		
	NFHS-4	CNNS	Decline	Decadal Decline	NFHS-4	CNNS	Gap (in Months)
Andhra Pradesh	18.1	17.1	1	–	August 2015	December 2016	16
Arunachal Pradesh	17.7	6.8	10.9	-2.1	December 2016	October 2018	22
Assam	17.6	19.4	-1.8	-3.2	March 2016	November 2016	8
Bihar	21.9	14.5	7.4	7.4	August 2015	December 2016	16
Chhattisgarh	24.4	19.3	5.1	-3.9	June 2016	April 2018	20
Goa	22.7	15.8	6.9	-10.6	April 2015	September 2016	17
Gujarat	27.9	17	10.9	-8.7	June 2016	March 2018	21
Haryana	21.7	11.7	10	-1.2	June 2015	June 2017	24
Himachal Pradesh	14.0	11.0	3	6.3	August 2016	October 2016	2
Jammu and Kashmir	12.5	14.9	-2.4	3.7	November 2016	August 2018	21
Jharkhand	29.7	29.1	0.6	3.4	December 2016	July 2017	7
Karnataka	25.5	19.3	6.2	-7.1	July 2015	September 2018	38
Kerala	16.7	12.6	4.1	-0.9	October 2016	April 2018	18
Madhya Pradesh	27.2	19.6	7.6	9.8	July 2015	February 2017	19
Maharashtra	25.9	16.9	9	-9.4	September 2015	May 2017	22
Manipur	6.6	6.0	0.6	3	December 2015	February 2018	26
Meghalaya	16.1	14.7	1.4	16	September 2015	October 2018	37
Mizoram	6.8	5.8	1	1.3	October 2016	June 2016	0
Nagaland	11.4	12.9	-1.5	3.5	October 2016	May 2017	7
Odisha	21.3	13.9	7.4	-0.1	July 2016	February 2018	19
Punjab	16.8	6.7	10.1	-7.1	June 2016	March 2018	21
Rajasthan	23.5	14.3	9.2	-2.4	July 2016	January 2017	6
Sikkim	15.6	6.9	8.7	-3.1	July 2015	October 2018	39
Tamil Nadu	20.2	20.7	-0.5	1.7	June 2015	August 2018	38
Telangana	18.7	17.9	0.8	–	May 2015	July 2016	14
Tripura	17.6	12.8	4.8	6.5	August 2015	May 2018	33
Uttar Pradesh	19.3	18.5	0.8	-2.8	September 2016	September 2016	0
Uttarakhand	19.9	5.9	14	-1.6	July 2015	February 2018	31
West Bengal	20.3	20.1	0.2	-2.8	July 2015	October 2018	39
India	21.9	17.3	4.6	-1	December 2016	October 2018	22

Decadal decline is between 2005–06 (NFHS-3) and 2015–16 (NFHS-4).

Source: Same as in Figure 1.

completion of the NFHS-4 in December 2016. The CNNS covers dimensions of nutrition, some of which are new and important. In this regard, it heralds a new beginning in the collection of national-level nutrition data. Like the NFHS-4, the CNNS also brings out estimates on aspects of child undernutrition, such as stunting (low height-for-age), wasting

(low weight-for-height) and underweight (low weight-for-age). However, the CNNS follows an age-grouping (0–4 years) different from that of the NFHS-4 (0–5 years), except in tangentially mentioning levels of undernutrition among children under five years. Hence, we will be discussing the decline in child undernutrition primarily for children under four years.

Comparison of Estimates

Figure 1 presents the prevalence rates of stunting, wasting and underweight, both for children under four years and under five years in India. It shows that stunting and underweight among children under five years have come down by 3.4 percentage points and 2.7 percentage points, respectively, from 2015–16 to 2016–18. It, thus, appears that India has both sustained and accelerated the progress it made in reducing stunting and underweight in the last decade. Interestingly, the extent of decline in wasting is larger than that of stunting and underweight: about 4 percentage points within 20 months or 2 percentage points per year. This is indeed a remarkable achievement especially against the fact that the NFHS-4 reported a marginal increase in wasting among children under five years in the last 10 years: from 19.8% in 2005–06 to 21% in 2015–16.

Given the sustained progress in stunting and underweight and enhanced performance in wasting, it is important to ascertain whether such a decline has come along with an equality-enabling or inequality-increasing process. It seems that a sustained decline in stunting and underweight has not come out of an equality-enabling process. On the contrary, a relatively larger decline among advantaged social and economic groups suggests that the progress has led to an increase in inequality (Table 1). The poorest wealth groups and marginalised social groups, among whom such levels remain quite high, have fared rather poorly. The reverse holds good in wasting among social groups, whereas the richest wealth group maintains its relative better performance in wasting, followed by the poorest group. Overall, Table 1 also brings out the broad pattern observed above: larger decline

in wasting, followed by stunting and underweight in children.

A comparison between the NFHS-4 and the CNNS report brings out a rather unusually large decline in wasting in five states (Table 2, p 16): Uttarakhand (14 percentage points), Arunachal Pradesh (11 percentage points), Gujarat (11 percentage points), Punjab (10 percentage points) and Haryana (10 percentage points). Oddly, all these five states had witnessed an increase in wasting during the last decade, between 2005–06 and 2015–16, among children under four years. Gujarat, which registered an increase in wasting by 8.7 percentage points during the last 10 years, seems to have reversed its performance by a great margin (10.9 percentage points) after the NFHS-4 survey. This is equally true for Punjab. There are six more states, such as Rajasthan, Maharashtra, Sikkim, Madhya Pradesh, Bihar and Odisha,

with a decline ranging from 7 to 9 percentage points.

Note that the gap between the completion of the NFHS-4 (July 2016) and the CNNS (February 2018) in Uttarakhand is about 31 months, and the gap is even smaller in Arunachal Pradesh (22 months) and Gujarat (21 months). The case of Rajasthan is remarkable: just a six-month gap.² Viewed in another way, these states achieved an unprecedented degree of decline in wasting within just 30 months or lesser, which was not even possible for them to attain in a decade earlier. Is it really possible to make such a substantially large decline in wasting (which has been rather slow in the past) within such a short span of time?

Studies have established that wasting and stunting share common direct and underlying causes (WHO 2014; Briend et al 2015). The common or closely related

determinants of wasting and stunting have also been found in South Asian countries, including India (Martorell and Young 2012; Harding et al 2018). Hence, policy measures aimed at reducing wasting are most likely to contribute to reducing stunting as well. Indeed, it has been argued that policy interventions aimed separately at wasting and stunting are unnecessary and might impair progress on both fronts (Harding et al 2018). Since the determinants of wasting and stunting are almost similar and policy interventions might have had an impact on them simultaneously, how these states have performed in reducing stunting is of relevance here.

Surprisingly, there has been only a small reduction (3 percentage points) in stunting in Uttarakhand and no reduction in stunting in Arunachal Pradesh during this period (Table 3). What is more, stunting has gone up marginally in Gujarat, Haryana and Maharashtra. What can possibly explain this contrasting pattern? That is, an excessively large reduction in wasting coinciding with no or marginal decline in stunting? Since the determinants of wasting and stunting are largely similar, how come these states made an impressive decline in one aspect but not in the other? Is this the empirical reality as rightly captured by these surveys? Or, alternatively, do these estimates indicate a possibility of some sort of anomaly in the data? Specifically, did the NFHS-4 overestimate and the CNNS underestimate the prevalence of wasting?

One way to validate these contrasting—rather incongruous—patterns is to look at the states that made a relatively large decline in stunting, and see how they performed with respect to wasting. Yet again, the comparison throws a lot of surprises. Jammu and Kashmir emerges as the stellar performer with a whopping 11% decline in child stunting within 21 months. Oddly, wasting has increased in Jammu and Kashmir by 2 percentage points during this period. The next best performer in stunting is Jharkhand with 8.7 percentage points within just seven months, which is much higher than its decadal decline of 5.3 percentage points between

Table 3: Stunting and Underweight Children in Indian States, NFHS-4, 2015–16 and CNNS 2016–18

State	Stunting				Underweight			
	NFHS-4	CNNS	Decline	Decadal Decline	NFHS-4	CNNS	Decline	Decadal Decline
Andhra Pradesh	30.8	31.5	-0.7	—	30.9	33.5	-2.6	—
Arunachal Pradesh	28.1	28.0	0.1	11.9	19.1	15.5	3.6	12.0
Assam	35.6	32.4	3.2	9.6	28.7	29.4	-0.7	7.8
Bihar	47.2	42.0	5.2	6.6	42.8	38.7	4.1	13.2
Chhattisgarh	38.3	35.4	2.9	14.6	37.5	40.0	-2.5	10.0
Goa	21.4	19.6	1.8	3.6	23.3	20.3	3.0	-1.4
Gujarat	37.7	39.1	-1.4	13.4	38.0	34.2	3.8	5.7
Haryana	34.5	34.9	-0.4	11.5	28.9	28.8	0.1	11.6
Himachal Pradesh	24.9	28.4	-3.5	12.6	19.4	22.6	-3.2	16.6
Jammu and Kashmir	26.7	15.5	11.2	7.2	15.3	13.1	2.2	9.9
Jharkhand	44.9	36.2	8.7	5.3	46.7	42.9	3.8	9.6
Karnataka	36.9	32.5	4.4	6.8	34.3	32.4	1.9	2.0
Kerala	19.8	20.5	-0.7	4.9	16.3	18.7	-2.4	5.2
Madhya Pradesh	41.3	39.5	1.8	8.3	42.3	38.7	3.6	17.6
Maharashtra	33.9	34.1	-0.2	12.2	34.0	30.9	3.1	1.4
Manipur	28.6	28.9	-0.3	3.9	13.0	13.0	0.0	7.5
Meghalaya	41.6	40.4	1.2	10.8	27.3	29.6	-2.3	21.5
Mizoram	26.7	27.4	-0.7	11.1	12.2	11.3	0.9	4.0
Nagaland	26.4	26.2	0.2	11.5	15.4	16.3	-0.9	10.0
Odisha	34.0	29.1	4.9	12.2	33.6	29.2	4.4	7.8
Punjab	26.4	24.3	2.1	10.4	21.8	19.7	2.1	3.0
Rajasthan	38.4	36.8	1.6	4.7	35.8	31.5	4.3	3.0
Sikkim	25.6	21.8	3.8	7.7	13.3	10.8	2.5	5.5
Tamil Nadu	27.2	19.7	7.5	4.1	23.0	23.5	-0.5	4.7
Telangana	27.8	29.3	-1.5	—	27.5	30.8	-3.3	—
Tripura	22.5	31.9	-9.4	12.6	22.6	23.8	-1.2	15.8
Uttar Pradesh	45.5	38.8	6.7	10.1	39.0	36.8	2.2	2.8
Uttarakhand	33.2	29.9	3.3	8.5	25.4	18.7	6.7	9.3
West Bengal	32.2	25.3	6.9	11.9	30.6	30.9	-0.3	7.5
India	38.0	34.7	3.3	9.4	34.9	33.4	1.5	7.0

Decadal decline is between 2005–06 (NFHS-3) and 2015–16 (NFHS-4).

Source: Same as in Figure 1.

2015–16 and 2005–06. What is more, Jharkhand has hardly made any decline (0.6 percentage points) in wasting. This is also true for Tamil Nadu, which made a 7.5 percentage point decline in stunting and a 0.5 percentage point decline in wasting. Maharashtra and Kerala, however, present a different picture. They have reduced their wasting by 9 percentage points and 4 percentage points, respectively despite a marginal increase in stunting.

Concluding Observations

The CNNS estimates suggest that many Indian states have made huge declines in wasting among children under four years during the last 30 months. Two factors make this decline interesting, if not incongruous. Most of these states had a consistently poor record of reducing wasting in the last 10 years between 2005–06 and 2015–16. Also, they have made only a meagre or no decline in stunting during the last 30 months, despite the evidence establishing that wasting and stunting share common causes. This incongruous performance implies at least two possible occurrences. One, if the reported decline in wasting is true and has actually happened, it suggests that many Indian states

have made historically unparalleled progress in reversing their poor past record in reducing wasting. Hence, it is important to scrutinise as to what had enabled these states in making such a stellar performance in wasting but not in stunting. What were the policy measures initiated by these states that resulted in these outcomes in such a short time?

Two, development experience both from India and other countries suggests that such an excessively large and historically unparalleled decline in child wasting within a short span of 30 months is not possible under normal circumstances. Hence, we need to verify and validate that these estimates are actual rather than due to an anomaly in data quality. Specifically, we need to verify whether the CNNS has underestimated child undernutrition, especially wasting in India. Such validation would not only dispel any doubts regarding data quality, but also help identify the drivers of impressive progress in child wasting in India.

NOTES

- 1 The Global Hunger Index, 2019 ranks Sri Lanka 66th, Nepal 73rd, Bangladesh 88th and Pakistan 94th. Bhutan was excluded due to lack of comparable data.

- 2 The gap in duration of surveys is smaller in few states (Table 2). In Uttar Pradesh, for instance, both the NFHS-4 and the CNNS were completed in September 2016. But, these two surveys provide substantially varying stunting estimates: 45.5% and 38.8%, respectively.

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