

## **A Study on Performance of Indian States on Targeting Malnutrition among Children under Age 5 Years**

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**Abstract:** While there is a decline in percentage of under nutrition measured by stunting, wasting and underweight among children under age 5 years in India but the rate of fall is not satisfactory and there is a long way to go to achieve the nutritional targets. This paper attempts to examine the trends in child malnutrition. The latest government data NFHS 4 is analyzed to spot the improvement in nutritional indicators among children and its possible determinants. There is a huge variation in proportion of undernourished children across states. The relative performances of states in reducing malnutrition among children have been mixed. Undernourishment is higher among rural than urban children. Data reveals an improvement in key indicators over the period from 2005-06 to 2015-16. However the improvement is not large and leaves a scope for increase in access and reach out to basic health services and nutritional wellbeing of children and women

**Keywords:** Under nutrition, Underweight, India

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### **I. INTRODUCTION**

Malnutrition is a state that can be defined in different ways. According to UNICEF (1998) it results from inadequate intake of micronutrients or from disease factors particularly some sort of infectious diseases that affect dietary intake, digestion, utilization of nutrients and other processes. It can take a variety of forms such as vitamin A deficiency, iodine deficiency, iron deficiency, protein –energy malnutrition. Some of these nutrients like iodine, vitamin A cannot be made by human body itself and is needed in small amount but its deficiency has large negative impact on an individual's health

Ramchandran (2008) analyzed the data trends from National Family Health Survey NFHS 2, NFHS 3 and National Nutrition Monitoring Bureau (NNMB) on nutritional status of adults and pointed out the trends in increased obesity in India. He studied the association between nutrient intake, Dietary energy intake from the nutrients and nutritional status across different states in India.

In the available literature on the determinants of child malnutrition, 'child' refers to either children under 3 years or 5 years. A child who eats enough to satisfy immediate hunger can still be malnourished (UNICEF, 1998). According to Ramchandran (2008), children under 5 years are one of the most nutritionally vulnerable segments of the population. Nutrition during the first five years has an impact not only on growth and morbidity during childhood, but also acts as a determinant of nutritional status in adolescent and adult life. He pointed out that growth during infancy (0-12 months) is associated with child's birth weight, adequacy of infant feeding and absence of infection. Low birth weight leads to high neonatal and infant mortality, lower trajectory of growth during childhood and adolescence, and increased risk of non-communicable diseases during adult life.

According to Menon (2012) in developing countries there are two most commonly used measure of malnutrition. They are status of micronutrients like iron, vitamin A status, and iodine. In the existing literature, malnutrition among children under five years of age is mostly estimated through these three anthropometric measures. They are low height-for-age (stunting), low weight-for-height (wasting) and low weight-for-age (underweight). According to WHO Expert Committee (1995) report on the interpretation of anthropometry different aspects of nutritional status of children are captured by these three measures.

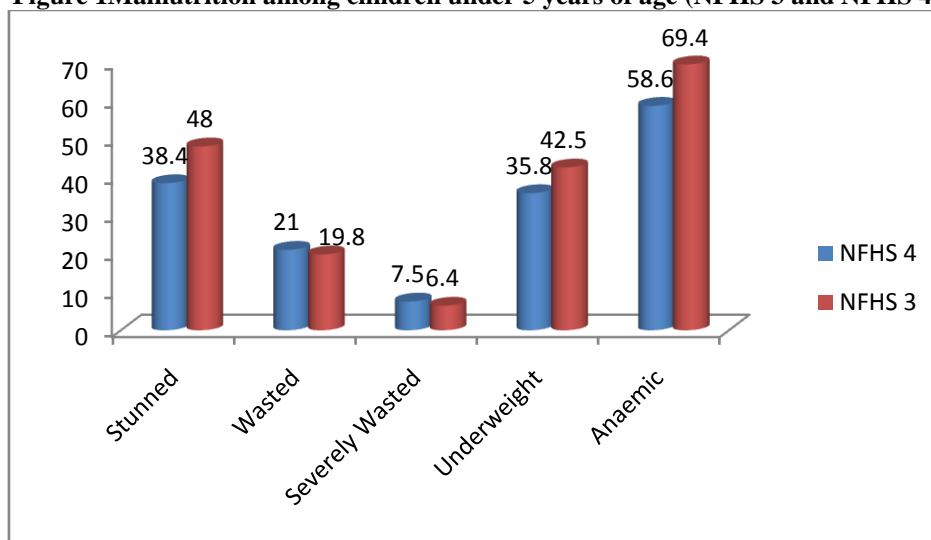
Malnutrition accounts for 54 percent of child mortality across the world and childhood underweight for children under the age of 5 years accounts for 35 percent of all deaths of children. One third of world's malnourished children are from India despite of around 50 percent increase in its GDP since 1991. Out of these 50 percent children suffers from being underweight and one third of children (wealthier) suffers from over nutrition. The scenario is changing because of a new kind of dual burden of malnourishment among children as well as adults (WHO, 2017). The Indian scenario though have shown decline in the percentage of malnourished children over the years but still there remain a lot of scope for further improvement according to the latest figures provided by e National Family Health Survey -4.

We begin with analysis of health and nutritional status of children under age 5 in India and will also identify the pattern across states. The focus will be on key indicators of health and the factors affecting them. The results would give an insight on overall health scenario of India, further across states and rural urban divide. A comparison of these key indicators will be made between NFHS 3 and NFHS 4 which will thus highlight the pattern and change in the health scenario over this span. . The analysis is based on data on NFHS-4 (2015-16) which covers health dimensions of children in the age group of 0-5 years across India.

**Trends In Malnutrition Among Children**

We look at the change in percentage of malnourished children in India by comparing the data of NFHS 3 and NFHS 4. Figure 1 shows that the percentage of stunted children under 5 years of age has fallen to 38.4 percent from 48 percent (fall of 9.6 percentage point). Severely wasted and wasted have shown a slight increase of 1.8 percentage point from 19.8 to 21. Underweight ,the most comprehensive measure have shown the maximum fall of 10.8 percentage point from 69.4 percent according to NFHS 3 (2005-06) to 58.6 in NFHS 4 (2015-16).

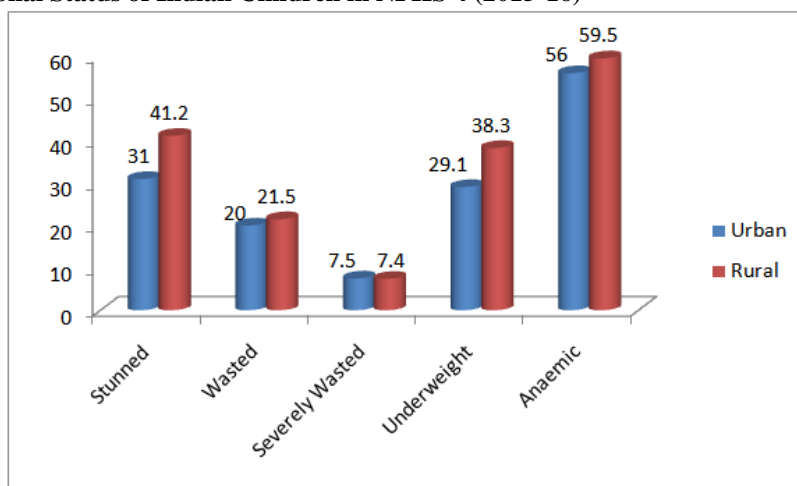
**Figure 1Malnutrition among children under 5 years of age (NFHS 3 and NFHS 4)**



Source Based on NFHS4 and NFHS 3

All basic measures of malnutrition among children show that undernourishment is higher among rural than urban children (Figure2). The proportion of malnourished children is much higher in rural areas than in urban India. The rural urban difference in child malnutrition is greater among stunted and underweight children. 41.2 percent of rural children are stunted as opposed to 31percent of urban children in 2015-16. The percentage of underweight children is 29.1percent in urban areas against 38.3percent in rural areas.

**Figure 2: Nutritional Status of Indian Children in NFHS 4 (2015-16)**



Source: Based on NFHS 4

### Trends And Levels Of Key Indicators Related To Child Health In India

Let us first understand the progress made, if any over the two periods belonging to NFHS 4 and NFHS 3 with respect to some key indicators of child health in India. Consider table 1 which shows data on some important indicators on child's health and nutritional status for the two periods 2015-16(NFHS3) and 2005-16(NFHS 4). It is evident from the table 1 that there is limited access and clearly a lack of reach to basic health services for children and women.

**Table 1: Key indicators of child Health: 2015-16 and 2005-06**

Key Indicators of Child Health and Nutritional status NFHS-4(2015-16) and NFHS 3 (2005-06)	Urban	Rural	NFHS 4	NFHS 3	Change
<i>Child Immunization</i>					
Children age 12-23 months fully immunized (BCG, measles, and 3 doses each of Polio and DPT (%)	63.9	61.3	62	43.5	18.5
Children age 12-23 months who have received BCG (%)	93.2	91.4	91.9	78.2	13.7
Children age 12-23 months who have received 3 doses of polio vaccine (%)	73.4	72.6	72.8	78.2	-5.4
Children age 12-23 months who have received 3 doses of DPT vaccine (%)	80.2	77.7	78.4	55.3	23.1
Children age 12-23 months who have received measles vaccine (%)	83.2	80.3	81.1	58.8	22.3
Children age 12-23 months who have received 3 doses of Hepatitis B vaccine (%)	63.3	62.5	62.8	n.a	n.a
Children age 9-59 months who received a vitamin A dose in last 6 months (%)	62.9	59.1	60.2	16.5	43.7
Children age 12-23 months who received most of the vaccinations in public health facility (%)	82.1	94.2	90.7	82	8.7
Children age 12-23 months who received most of the vaccinations in private health facility (%)	16.7	3.4	7.2	10.5	-3.3
<i>Treatment of Childhood Diseases (children under age 5 years)</i>					
Prevalence of diarrhoea (reported) in the last 2 weeks preceding the survey (%)	8.2	9.6	9.2	9	0.2
Children with diarrhoea in the last 2 weeks who received oral rehydration salts (ORS) (%)	58.5	47.9	50.6	26	24.6
Children with diarrhoea in the last 2 weeks who received zinc (%)	23.7	19.1	20.3	n.a	n.a
Children with diarrhoea in the last 2 weeks taken to a health facility (%)	74.1	65.8	67.9	61.3	6.6
Prevalence of symptoms of acute respiratory infection (ARI) in the last 2 weeks preceding the survey (%)	2.3	2.9	2.7	5.8	-3.1
Children with fever or symptoms of ARI in the last 2 weeks preceding the survey taken to a health facility (%)	80	70.8	73.2	69.6	3.6
<i>Child Feeding Practices and Nutritional Status of Children</i>					
Children under age 3 years breastfed within one hour of birth (%)	42.8	41.1	41.6	23.4	18.2
Children under age 6 months exclusively breastfed10 (%)	52.1	55.9	54.9	46.4	8.5
Children age 6-8 months receiving solid or semi-solid food and breastmilk10 (%)	50.1	39.9	42.7	52.6	-9.9
Breastfeeding children age 6-23 months receiving an adequate diet10,11 (%)	10.1	8.2	8.7	n.a	n.a
Non-breastfeeding children age 6-23 months receiving an adequate diet10,11 (%)	16.9	12.7	14.3	n.a	n.a
Total children age 6-23 months receiving an adequate diet10,11 (%)	11.6	8.8	9.6	n.a	n.a
Children under 5 years who are stunted (height-for-age)12 (%)	31	41.2	38.4	48	-9.6
Children under 5 years who are wasted (weight-for-height)12 (%)	20	21.5	21	19.8	1.2
Children under 5 years who are severely wasted (weight-for-height)13 (%)	7.5	7.4	7.5	6.4	1.1
Children under 5 years who are underweight (weight-for-age)12 (%)	29.1	38.3	35.8	42.5	-6.7
<i>Maternity Care</i>					
Mothers who had antenatal check-up in the first trimester (%)	69.1	54.2	58.6	43.9	14.7
Mothers who had at least 4 antenatal care visits (%)	66.4	44.8	51.2	37	14.2
Mothers who consumed iron folic acid for 100 days or more when they were pregnant (%)	40.8	25.9	30.3	15.2	15.1
Mothers who had full antenatal care8 (%)	31.1	16.7	21	11.6	9.4
Registered pregnancies for which the mother received Mother and Child Protection (MCP)(%)	87.7	90	89.3	n.a	n.a
Mothers who received postnatal care from a doctor/nurse/LHV/ANM/midwife/other	71.7	58.5	62.4	34.6	27.8
Mothers who received financial assistance under Janani Suraksha Yojana (JSY) for births delivered in an institution(%)	21.4	43.8	36.4	n.a	n.a
Women whose Body Mass Index (BMI) is below normal (BMI < 18.5 kg/m2)(%)	15.5	26.7	22.9	35.5	-12.6
All women aged 15 - 49 years who are Anaemic	50.8	54.3	53.1	55.3	-2.2
Pregnant Women aged 15 - 49 years who are Anaemic	45.8	52.2	50.4	57.9	-7.5
Non Pregnant women aged 15 - 49 years who are Anaemic	51	54.4	53.2	55.2	-2

Source Based on NFHS 4 and NFHS 3

Let us analyze the access to and reach of basic health services to children by comparing these indicators over the two time periods. Clearly there is an improvement in these important indicators on health between 2015-16 and 2005-06. The percentage of fully immunized children have increased by approximately 18 percent over these ten years. However in 2015-16 still only 62 percent of the children are fully immunized (NFHS 4).

In 2015-16, for instance only 50.6 percent of children with diarrhoea in last 2 weeks received ORS compared to 26 percent in 2005-06. These figures though indicate an improvement (24.6percent) to some extent but still there is a long way to go for providing a universal access to children of these basic health facilities. Frequent illness in early childhood and lack of proper treatments leads to high malnutrition among children. The

current figures on these indicators clearly points out that the improvement achieved over the years is not satisfactory and there is a need to increase the coverage further to target the problem. The government needs to strengthen the health facilities and increases the accessibility of services through educating the people about basic health care and improving the infrastructure for these basic facilities. Another instance is that despite highlighting the importance of breastfeeding only 41.6 percent children were breastfed within an hour of birth and only 54.9 percent children were exclusively breastfed for the first six months in 2015-16. In both this indicator there is a percentage increase from 23.4 percent for children who were breastfed within an hour of birth and 46.4 per cent children who were exclusively breastfed for the first six months in 2005-06. Surprisingly we have seen a fall of around 9 percent in the percentage of children age 6 to 8 months receiving solid and semisolid food along with breast milk. Other than this all other key indicators have shown an improvement in 2015-16 in comparison to 2005-06. The data suggests that there is a need to inform people about the benefits of planned nutrition pattern for children through advertisement and advertising. Also in urban areas there is a need to ensure greater time availability of working mother for children in first few months of early childhood to encourage a balanced diet for them

Maternity health is directly related to child malnutrition. The status of women health significantly impacts the health and wellbeing of children. The maternity care indicators have also shown an improvement in these two periods. Mothers who received postnatal care from a doctor/nurse/LHV/ANM/midwife/other have shown a significant increase from 34.6 percent in 2005-06 to 62.4 percent in 2015-16. The rural percentage stands much below to that of urban areas with respect to this indicator. All other indicators of maternity health have also shown moderate improvement. In 2015-16 only 58.6 percent mothers had antenatal check-up in the first trimester. The data shows that almost one fourth of women are undernourished and has a BMI of less than 18 kg/m<sup>2</sup> which suggests poor health scenario of Indian women. This is definitely a big miss for health department despite improvement over the years and suggests limited reach of public health services and access to health benefits.

The high level of malnutrition in rural areas as compared to urban areas can partially be explained by looking at these key indicators as the value of these factors are consistently low in rural areas except for exclusively breastfed children and mothers who received financial benefits under JSY for birth delivered in an institution. 43.8 percent of women in rural areas obtained benefits from this scheme. This highlights the achievement of the scheme in maternity care but still the percentage of beneficiaries is low and point out towards its limited reach out to women.

### **Malnutrition Among Children Under 5 Years Of Age: State Level Analysis**

Table 2 shows the state wise data on proportion of Children under 5 years of age in India who are stunted, wasted and underweight. There is a huge variation in proportion of undernourished children across states. The percentage of underweight children is as high as 47.8 percent in Jharkhand to as low as 12 percent in Mizoram, besides the north eastern states the lowest percentage of underweight children is in Kerala (16.1 percent). The percentage of underweight children is less than 20 percent in North eastern states of Arunachal Pradesh(19.4 percent), Nagaland(16.7 percent), Sikkim(14.2 percent), Manipur(13.8 percent), Mizoram(12 percent), Jammu and Kashmir(16.6 percent) and Kerala(16.1 percent) and it is as high as more than 40 percent in Jharkhand(47.8 percent), Bihar(43.9 percent), Madhya Pradesh(42.8 percent) and Uttar Pradesh(39.5 percent). In 2005-06(NFHS 3) Madhya Pradesh (60 percent) had the highest percentage of underweight children followed by Jharkhand(56.5 percent), Bihar(55.9 percent) and Chhattisgarh (47.1 percent). States such as Punjab (21.6 percent) Goa and Tamil Nadu (23.8 percent), Chandigarh(24.5 percent), Delhi (27 percent) and Haryana(29.4 percent) has between 20 to 30 percent of their children as underweights and form the middle rung states for proportion of underweight children.

Focusing solely on chronic malnutrition states like Bihar (48.3 percent) ,Jharkhand (45.3 percent), Uttar Pradesh(46.3 percent) , Madhya Pradesh(42 percent), Meghalaya(43.8 percent) consists of maximum proportion of more than 40 percent stunted children. On the other hand Kerala (19.7 percent), Goa (20.1 percent), Andaman and Nicobar (23.3 percent), Punjab (25.7 percent), Himachal Pradesh(26.3 percent) and Tamil Nadu(27.1 percent) consist of lowest percentage of stunted children. The percentage of stunted children is highest in Bihar (48.3 percent), Jharkhand (45.3 percent) and Uttar Pradesh (46.3 percent) and is lowest in Kerala (19.7 percent), Goa (20.1 percent) and Andaman and Nicobar (23.3 percent). The proportion of wasted Children is highest in Gujrat (26.4 percent) followed by Karnataka(26.1 percent) and Madhya Pradesh (25.8 percent). Interestingly the extent of wasting among children is only 17.9 percent in Uttar Pradesh which means the state which has one of the highest proportion of underweight and stunted children has lesser extent of wasting among children. On the other hand wasting is less in states of Mizoram (6.1 percent), Manipur (6.8 percent) and Chandigarh (10.9 percent).

Since underweight as a measure of malnutrition captures the elements of both stunted and wasted we classify the states on the basis of proportion of underweight children as top rung, upper middle rung, Lower

middle rung and bottom rung on the basis of extent of malnutrition among children as follows. The top rung consists of those states which has the lowest level of malnutrition among children under 5 years of age. These states are Mizoram (2 percent), Manipur (13.8 percent), Sikkim (14.2 percent), Kerala (16.1 percent), Jammu and Kashmir (16.6 percent), Nagaland (16.7 percent) and Arunachal Pradesh (19.4 percent), and the upper Middle rung consists of states where proportion of underweight children is between 20 percent to 25 percent. These states are Himachal Pradesh (21.2 percent), Punjab (21.6 percent), Andaman and Nicobar (21.6 percent), Tamil Nadu (23.8 percent), Goa(23.8 percent), Tripura(24.1 percent) and Chandigarh(24.5 percent). The states with 25 percent to 35 percent proportion of underweight children makes the lower middle rung- Uttrakhand (26.6 percent), Delhi,(27 percent), Telangana (28.4 percent), Meghalaya (28.9 percent), Haryana(29.4 percent), Assam(29.8 percent), West Bengal(31.6 percent), Andhra Pradesh(31.9 percent), Odisha(34.4 percent).The bottom rung are the states with maximum number of underweight children. These states are the following- Karnataka (35.2 percent), Maharashtra (36 percent), Rajasthan36.7 percent), Chhattisgarh (37.7 percent), Gujrat (39.3 percent), Uttar Pradesh (39.5 percent), Madhya Pradesh(42.8 percent), Bihar(43.9 percent), Jharkhand(47.8 percent).

**Table 2: Malnutrition among children under 5 years across states**

Malnutrition Among Indian children Below 5 years			
NFHS 4	Stunted	Wasted	Underweight
Jharkhand	45.3	29	47.8
Bihar	48.3	20.8	43.9
Madhya Pradesh	42	25.8	42.8
Uttar Pradesh	46.3	17.9	39.5
Gujrat	38.5	26.4	39.3
Chattisgarh	37.6	23.1	37.7
Rajasthan	39.1	23	36.7
Maharashtra	34.4	25.6	36
Karnataka	36.2	26.1	35.2
Odisha	34.1	20.4	34.4
Andra Pradesh	31.4	17.2	31.9
West Bengal	32.5	20.3	31.6
Assam	36.4	17	29.8
Haryana	34	21.2	29.4
Meghalya	43.8	15.3	28.9
Telangana	28	18.1	28.4
Delhi	31.9	15.9	27
Uttrakhand	33.5	19.5	26.6
Chandigarh	28.7	10.9	24.5
Tripura	24.3	16.8	24.1
Goa	20.1	21.9	23.8
Tamil Nadu	27.1	19.7	23.8
Andaman and nicobar	23.3	18.9	21.6
Punjab	25.7	15.6	21.6
Himachal pradesh	26.3	13.7	21.2
Arunachal Pradesh	29.4	17.3	19.4
Nagaland	28.6	11.3	16.7
Jammu and Kashmir	27.4	12.1	16.6
Kerala	19.7	15.7	16.1
Sikkim	29.6	14.2	14.2
Manipur	28.9	6.8	13.8
Mizoram	28.1	6.1	12

Source Based on NFHS4, Series sorted on descending order of underweight children

**Rural Urban Differentials In Child Malnutrition**

If we look at the rural urban scenario of malnutrition among children (table 3) we find a greater proportion of underweight children in rural areas as compared to urban areas. The rural and urban differential in proportion of underweight children is highest in Gujrat (12.2 percent), Telangana (11), Jharkhand (10.5 percent), Odisha (9.6 percent), Chattisgarh (9.4 percent), Maharashtra (9.3 percent), Madhya Pradesh (8.5 percent) Rajasthan(7.7 percent) and Uttar Pradesh(7.3 percent). These are the states belonging to lower middle rung and bottom rung where there is greater percentage of under nourished children. The difference is lowest in Manipur (1.1 percent), Kerala (1.2 percent) and Haryana(1.4 percent)

**Table 3 Rural Urban Scenario of Child malnutrition: 2015-16**

Rural urban differentials in child malnutrition				
states	All Areas	underweight		Rural Excess over Urban
		Urban	Rural	
Jharkhand	47.8	39.3	49.8	10.5
Bihar	43.9	37.5	44.6	7.1
Madhya Pradesh	42.8	36.5	45	8.5
Uttar Pradesh	39.5	33.7	41	7.3
Gujrat	39.3	32	44.2	12.2
Chattisgarh	37.7	30.2	39.6	9.4
Rajasthan	36.7	30.7	38.4	7.7
Maharashtra	36	30.7	40	9.3
Karnataka	35.2	31.5	37.7	6.2
Odisha	34.4	26.2	35.8	9.6
Arunachal Pradesh	32.5	13.8	20.9	7.1
Andra Pradesh	31.9	28.4	33.1	4.7
West Bengal	31.6	26.2	33.6	7.4
Assam	29.8	21.4	30.8	9.4
Haryana	29.4	28.5	29.9	1.4
Meghalya	28.9	22.9	29.9	7
Telangana	28.4	22.1	33.1	11
Delhi	27	27.3	1.3	-26
Uttrakhand	26.6	25.6	27.1	1.5
Chandigarh	24.5	n.a	n.a	
Tripura	24.1	21.7	25	3.3
Goa	23.8	25.3	21.2	-4.1
Tamil Nadu	23.8	21.5	25.7	4.2
Andaman and nicobar	21.6	15.9	25.6	9.7
Punjab	21.6	22.4	21.1	-1.3
Himachal pradesh	21.2	17.1	21.6	4.5
Nagaland	16.7	13.6	17.9	4.3
Jammu and Kashmir	16.6	17	16.5	-0.5
Kerala	16.1	15.5	16.7	1.2
Sikkim	14.2	12	15.4	3.4
Manipur	13.8	13.1	14.2	1.1
Mizoram	12	8.5	15.7	7.2

Source NFHS 4

**Table 4: Improvement in Malnutrition among Children across States**

States	Stunned			Wasted			Underweight		
	NFHS 4	NFHS 3	Improvement	NFHS 4	NFHS 3	Improvement	NFHS 4	NFHS 3	Improvement
Jharkhand	45.3	49.8	4.5	29	32.3	3.3	47.8	56.5	8.7
Bihar	48.3	55.6	7.3	20.8	27.1	6.3	43.9	55.9	12
Madhya Pradesh	42	50	8	25.8	35	9.2	42.8	60	17.2
Uttar Pradesh	46.3	56.8	10.5	17.9	14.8	-3.1	39.5	42.4	2.9
Gujrat	38.5	51.7	13.2	26.4	18.7	-7.7	39.3	44.6	5.3
Chattisgarh	37.6	52.9	15.3	23.1	19.5	-3.6	37.7	47.1	9.4
Rajasthan	39.1	43.7	4.6	23	20.4	-2.6	36.7	39.9	3.2
Maharashtra	34.4	46.3	11.9	25.6	16.5	-9.1	36	37	1
Karnataka	36.2	43.7	7.5	26.1	17.6	-8.5	35.2	37.6	2.4
Odisha	34.1	45	10.9	20.4	19.6	-0.8	34.4	40.7	6.3
Arunachal Pradesh	29.4	43.3	13.9	17.3	15.3	-2	19.4	32.5	13.1
Andra Pradesh	31.4	n.a	n.a	17.2	na	n.a	31.9	n.a	n.a
West Bengal	32.5	44.6	12.1	20.3	16.9	-3.4	31.6	38.7	7.1
Assam	36.4	46.5	10.1	17	13.7	-3.3	29.8	36.4	6.6
Haryana	34	45.7	11.7	21.2	19.1	-2.1	29.4	39.6	10.2
Meghalaya	43.8	55.1	11.3	15.3	30.7	15.4	28.9	48.8	19.9
Telangana	28	n.a	n.a	18.1	n.a	n.a	28.4	n.a	n.a
Delhi	31.9	42.2	10.3	15.9	15.4	-0.5	27	26.1	-0.9
Uttrakhand	33.5	44.4	10.9	19.5	18.8	-0.7	26.6	38	11.4
Chandigarh	28.7	n.a	n.a	10.9	n.a	n.a	24.5	n.a	n.a
Tripura	24.3	35.7	11.4	16.8	24.6	7.8	24.1	39.6	15.5
Goa	20.1	25.6	5.5	21.9	14.1	-7.8	23.8	25	1.2
Tamil Nadu	27.1	30.9	3.8	19.7	22.2	2.5	23.8	29.8	6
Andaman and nicobar	23.3	n.a	n.a	18.9	n.a	n.a	21.6	n.a	n.a
Punjab	25.7	36.7	11	15.6	9.2	-6.4	21.6	24.9	3.3
Himachal pradesh	26.3	38.6	12.3	13.7	19.3	5.6	21.2	36.5	15.3
Nagaland	28.6	38.8	10.2	11.3	13.3	2	16.7	25.2	8.5
Jammu and Kashmir	27.4	35	7.6	12.1	14.8	2.7	16.6	25.6	9
Kerala	19.7	24.5	4.8	15.7	15.9	0.2	16.1	22.9	6.8
Sikkim	29.6	38.3	8.7	14.2	9.7	-4.5	14.2	19.7	5.5
Manipur	28.9	35.6	6.7	6.8	9	2.2	13.8	22.2	8.4
Mizoram	28.1	39.8	11.7	6.1	9	2.9	12	19.9	7.9

Source Based on NFHS 4 and NFHS 3

### Performance Of States In Reducing Malnutrition Among Children

Table 4 confirms that the relative performances of states in reducing malnutrition among children have been mixed. Percentage of stunted children which measures chronic malnutrition has come down in all the states in last 10 years. The proportion of wasted children has increased in 15 states and this increase varies between 0.5 to 9.1 percent. Surprisingly the state with highest increase in percentage of wasted children is Maharashtra. Other twelve states have seen some fall in this proportion. The fall in proportion of wasted children between 2005-06 and 2015-16 is highest in Meghalaya(15.4 percent) followed by Madhya Pradesh(9.2 percent) and Tripura(7.8 percent) and it is lowest in Nagaland(2 percent), Manipur(2.2 percent) and Tamil Nadu(2.5 percent). Finally the measure which takes into account elements of both stunting and wasting have shown a decline in all the states with maximum fall in Meghalaya(19.9 percent) followed by Madhya Pradesh(17.2 percent) and lowest fall in Maharashtra(1 percent), Goa(1.2 percent) and Uttar Pradesh(2.9 percent) and Karnataka(2.4 percent).

## II. CONCLUSION

The percentage of stunted children under 5 years of age has fallen to 38.4 percent from 48 and the underweight, the most comprehensive measure have shown a fall from 69.4 percent according to NFHS 3 (2005-06) to 58.6 in NFHS 4 (2015-16). Though severely wasted and wasted have shown a slight increase of 1.8 percentage point. Undernourishment is higher among rural than urban children. Income differences and lack of some basic amenities might be the primary reasons for the differences.

Data reveals an improvement in key indicators over the period from 2005-06 to 2015-16. However the improvement is not large and leaves a scope for increase in access and reach out to basic health services and



nutritional wellbeing of children and women. It also suggests a greater lack of facilities in rural areas as compared to urban areas which can be taken as a partial explanation to high proportion of child under nutrition in rural India as compared to urban India.

States are classified in terms of percentage of malnourished children. States with maximum number of underweight children are Karnataka (35.2 percent), Maharashtra (36 percent), Rajasthan (36.7 percent), Chhattisgarh (37.7 percent), Gujrat (39.3 percent), Uttar Pradesh (39.5 percent), Madhya Pradesh (42.8 percent), Bihar (43.9 percent), Jharkhand (47.8 percent). The bottom rung and the lower middle rung are the states with a high proportion of approximately one third of child population being undernourished and needs immediate targeted attention in terms of improved reach out and access to basic health facilities along with comprehensive integrated food and health policies and food security. We suggest increased awareness towards children feeding and immunization practices among masses along with improved maternity care and focused health policies towards women wellbeing and nutritional status as core instruments to be adopted by the government sector along with some combined initiatives with the private players in the area integrated with food security programs, strengthen public distribution system and health care facilities to target the problem. The rural urban scenario of malnutrition among children shows a greater proportion of underweight children in rural areas as compared to urban areas. This differential in proportion of underweight children is highest in states belonging to lower middle rung and bottom rung where there is greater percentage of under nourished children.

If we look at the period of NFHS 3 and NFHS 4 it was found that the most comprehensive measure of malnutrition i.e percentage of underweight children have shown a decline in all states.. The fall in this period of 10 years has been less than 3 percent for many major states like Maharashtra (1 percent), Goa (1.2 percent) and Uttar Pradesh (2.9 percent) and Karnataka (2.4 percent). The proportion of wasted children has increased in 15 states; this increase varies between 0.5 to 9.1 percent though it has also decreased in 12 states. This fall cannot be treated as satisfactory and needs to be addressed with integrated policy framework.

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