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Targeting the Lagging Behind: Child Undernutrition in Aspirational Districts of India

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Abstract

Although India has shown sustained socio-economic development, child malnutrition remains a major public health concern with pronounced regional disparities. The Government of India launched the Aspirational District Programme (ADP) in 2018 to accelerate development in socioeconomically lagging behind districts. The present study assesses the level, trends and determinants in child nutritional status in aspirational and non-aspiration districts in India. Two rounds of National Family Health Survey (NFHS- 4 and 5) were used for the present study. Child malnutrition was assessed using standard anthropometric indicators—stunting, wasting and underweight. Descriptive statistics and multivariate logistic regression techniques were used for the data analysis. Further, Blinder–Oaxaca decomposition analysis was applied to identify factors contributing to nutritional gaps between aspirational (ADs) and non-aspiration districts (Non-ADs). Findings reveal a consistently higher prevalence of stunting, severe stunting, underweight and severe underweight among children in ADs compared with Non-ADs. Children in aspirational districts had significantly higher odds of stunting and underweight even after controlling other background characteristics. Maternal education, maternal nutritional status, household wealth, caste affiliation, birth order and low birth weight emerged as key determinants of undernutrition. Districts with initially high prevalence of undernutrition demonstrated greater improvements over time, whereas districts with lower baseline prevalence showed stagnation or deterioration. Decomposition results indicate that maternal and household characteristics account for a substantial share of nutritional disparities across districts. The study underscores that strengthening maternal nutrition, education and targeted programme implementation is critical to achieving equitable reductions in child undernutrition and meeting national and global nutrition targets.

Keywords: Aspiration and Non-Aspiration districts, Stunting, Underweight, India.

I. Introduction

SDG target 2.2 clearly highlighted "End all forms of malnutrition, including its achievement by 2025, an internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons". Worldwide, recent data on nutritional status of children suggest that about 149 million children under 5 are estimated to be stunted, 45 million to be wasted and about 38.9 million to be overweight (Development Initiatives, 2021). Nearly 90 per cent of chronically undernourished (stunted) children from the developing world belong to Asia and Africa (UNICEF, 2014). Around 45 per cent of deaths among children under 5 years of age are linked to under nutrition and most of them are from low and middle-income countries (WHO, 2021). South Asia has the highest number of undernourished people (255 million) (Grebmer et al., 2020), with 33.2 per cent and 14.9 per cent under-five children stunted and wasted, respectively (UNICEF et al., 2020). Of the 107 countries included in the 2020 Global Hunger Index (GHI) report, India recorded the highest prevalence of

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wasting (17.3%), and stunting (34.7%) among under-five children. India ranks 94th in the GHI, far below its neighbouring countries of Pakistan (88th), Bangladesh (75th), Nepal (73rd) and Sri Lanka (64th) (Grebmer et al., 2020).

Malnutrition among children is one of the biggest public health problems in India. During childhood, it leads to poor growth and increased risk of mortality and morbidity in later stages of life. Adequate nutrition is essential for the growth and development of a child, as well as lifelong wellbeing (UNICEF, 2019). When an individual's diet is inappropriate, or if he fails to receive the required amounts of nutrients, this results in malnutrition. An excessive intake of nutrients results in over-nutrition and a deficiency leads to undernutrition (Shetty, 2006). Several studies have estimated the burden of child malnutrition for Indian states and regions, along with its risk factors and its clustering. However, there are hardly studies focusing on Aspirational Districts of India where there is the massive gap between the most advanced and least advanced regions. Hence, the Government of India launched the Aspirational District Programme (ADP) in January 2018 to address the issue of socioeconomic inequalities by improving the performance of districts in pockets of underdevelopment. It aims at inclusive development for all, with special reference to the underdeveloped areas of the nation and is expected to improve the HDI rank of the country, as well as help achieve the SDGs. The National Institution for Transforming India (NITI Aayog) has identified 117 "aspirational districts" based on a composite index of socioeconomic status, key health and education sector performance, and state of basic infrastructure to encourage greater attention to uplift these lagging districts (Paul et al., 2018). Of these, the highest weight (30%) has been given to health and nutrition. The fruit of development has failed to secure a better nutritional status of children in the country (Pathak & Singh, 2009; Rajaram et al., 2007; Svedberg, 2006), though India has made economic progress.

India presents a typical scenario of South-Asia, fitting the adage of 'Asian Enigma' (Ramalingaswami et al., 1996) where progress in childhood malnutrition seems to have sunken into an apparent undernutrition trap, lagging far behind the other Asian countries characterized by similar levels of economic development (Claeson et al., 2000; Gragnolati et al., 2005; Svedberg, 2007; UNICEF, 1990). Recent evidences from NFHS-5 India level fact sheet on child nutritional indicators suggest marginal improvement in nutritional indicators comparing with NFHS-4 (IIPS & ICF, 2021; IIPS & ICF, 2017). Such marginal improvement in child health indicators calls for further investigation to identify pockets of concern. Hence, the present study tries to assess the situation of child nutritional status and identify the potential risk factors affecting child nutritional status in aspirational districts. Further, it also tries to measure the extent of factors contributing in the gap of child malnutrition between Aspiration and Non-Aspiration districts. This will have an important policy implication with regard to the programme implementation and evaluation.

II. Data and Methods

Data

This study used data from the fifth and the most recent round of the National Family Health Survey (NFHS-5) conducted in 2019–21. NFHS used the two-stage stratified sampling method for sample selection. The detailed strategy for calculation of weights is given in the NFHS-5 report (IIPS, 2021). The heights and weights of children aged 0–59 months and women aged 15–49 years were measured (IIPS & ICF, 2017). The survey collected data for a total of 232,920 children aged 0–59 months from aspirational districts (ADs) and non-aspirational districts (non-ADs). The sample selection criteria were as follows: children born in the last five years and living with a mother whose height and weight were measured, and the measurements were within plausible limits, i.e., if height, weight or age information were not provided, or the value was not missing but was not in the plausible limit and hence excluded from the analysis as the z-scores are sensitive to changes in age.

Dependent variables

Three anthropometric indicators, i.e., stunting (height-for-age), wasting (weight-for-height) and underweight (weight-for-age), were used to assess the undernutrition status of children aged 0–59 months (Agho et al., 2019). Stunting and wasting are measures of chronic and acute nutritional deficiencies respectively, and underweight refers to the composite measure of both acute and chronic statuses. In DHS surveys, these indicators are evaluated using WHO child growth standards, which are expressed in standard deviations (SD or Z-scores) from the mean of the standard population (WHO, 2019). Child's level of undernutrition was considered as the outcome variable. In general, there are four ordinal categories: well-nourished (>–1SD), mildly undernourished (–2SD to –1SD), moderately undernourished (–3SD to –2SD) and severely undernourished (less than –3SD). For instance, regarding wasting, a child is said to be well-nourished if his/her weight-for-height Z-score is above –1SD from the median of the reference population of the WHO child growth standard. Similarly, if a child with a weight-for-height Z-score is in the interval –2SD to –1SD, –3SD to –2SD or less than –3SD, the child is classified as mildly, moderately or severely wasted, respectively (WHO, 2009). For this study, the analysis is presented for child malnutrition in terms of stunted and severely stunted, wasted and severely wasted and underweight and severely underweight.

Independent variables

Child, mother and household level characteristics were included as covariates. The child characteristics included age, sex, birth order (1, 2, 3 and 4+) and size at birth (smaller than average and above average). Maternal characteristics included educational level (no education, primary, secondary, and higher), anemia status, nutritional status (in terms of BMI) and media exposure (yes and no). Household characteristics included place of residence (rural and urban) and social group (Scheduled Castes [SCs], Scheduled Tribes [STs], Other Backward Classes [OBCs] and Others, i.e., non-SC/ST/OBC), religion and household size.

Statistical analysis

Univariate, Bi-variate and multivariate analysis have been performed for data analysis. The sample characteristics, as well as descriptive analysis such as prevalence data were calculated for all variables, for stunted and severe stunted, wasted and severely wasted, and underweight and severely underweight for the children of ADs and non-ADs (Appendix Tables A, B, C and D). While understanding the child nutrition status in aspirational districts of India, a series of logistic regression models have been employed. A goodness of fit test (the likelihood-ratio test) was used to compare the models and to understand if the explanatory variables in each successive model fit significantly better than the previous model.

An attempt has been made to locate the districts which have performed low and moderately over a period of time in reduction of stunting, wasting and underweight. The performance has been assessed using percentage change from NFHS-4 to NFHS-5. All the 114 districts were arranged in descending order according to their performance and divided into quartile, i.e., first quartile (high performing districts), second quartile, third quartile (moderately performing districts) and fourth quartile (low performing districts). The QGIS maps have been used for presentation.

An additional attempt has been made to understand the pattern of change occurring in prevalence of child nutritional outcome (stunting, wasting and underweight) from NFHS-4 to NFHS-5. The prevalence of child nutritional outcome arranged in descending order for NFHS-4 and divided into quartiles and the average change in child nutritional outcome for NFHS-5 has been presented. Similarly, ICDS services for both the rounds were calculated. This includes free nutrition supplements, growth monitoring, immunization and nutrition counselling to mothers. The ICDS services are provided through community based Anganwadi centers which is a Government of India welfare programme that provides food, preschool education and primary healthcare to children under 6 years of age and their mothers. For analysis, five indicators were considered, viz., nutritional support to child, growth monitoring (weighted), counselling received by mothers after child weighted, and received health check-up and immunization services.

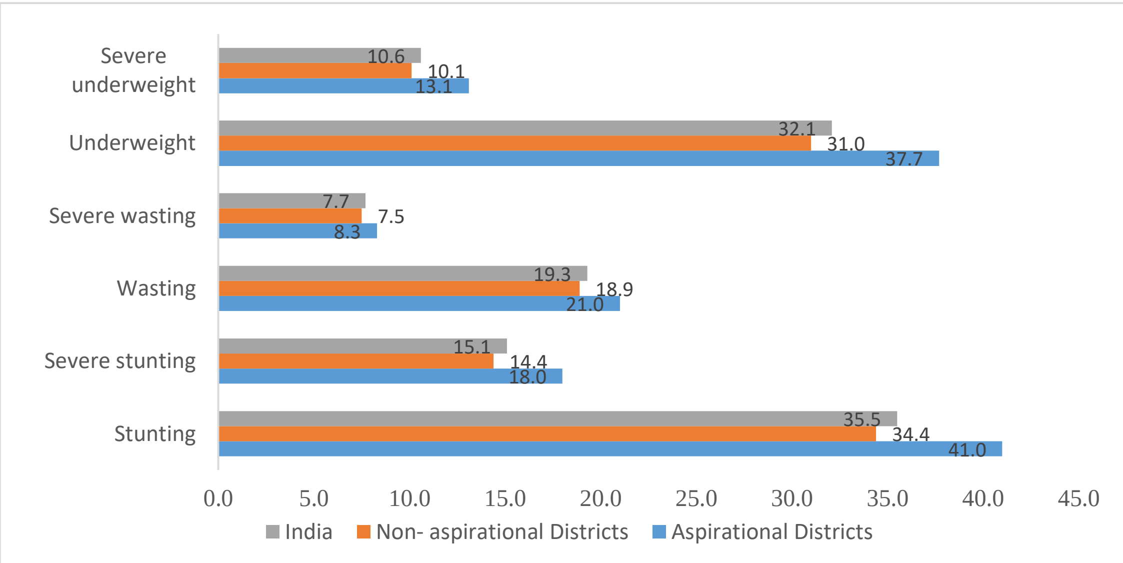
Finally, in order to understand the contributing factors between high and low prevalent districts, Blinder–Oaxaca decomposition technique was used to decompose the gap in average z-scores of stunting (weight-for-age), wasting (height-for-age), and underweight (weight-for-height) between the group of districts with high and low prevalence of child malnutrition. [32, 40, 43]. The NFHS-5 data has been used for analysis. This method allowed us to distinguish between two different sources of the gap in the outcomes between the group of districts, which are (i) due to differences in the distribution of the determinants between the groups, and (ii) due to differences in the effects of these determinants between the groups. More formally, assuming that the outcome is explained by only one determinant x, for each group (districts with high and low prevalence of child malnutrition) the outcome (z-scores of the indicators) 'y' could be expressed in a regression model in the following relationship (the effect of x is allowed to vary between the group). The results are presented as endowment effect (E) expresses the contribution attributable due to the difference in distribution of the determinant x between the groups; C is the coefficient effect, and refers to the gap attributable to the difference of effect x between the group of districts. The exposure variables were tested for possible multi-collinearity before putting them into the analysis. Decomposition analysis was performed using STATA 17.0 with a *mvdcmp* program.

III. Results

Prevalence of childhood stunting, underweight and wasting among Aspiration Districts (ADs) and Non-Aspirational Districts (Non- ADs)

Figure 1 depicts the child nutritional status in aspirational and non-aspirational districts of India. Results suggest that nutritional indicators such as stunting, wasting and underweight are on higher side among children from ADs compared with Non-ADs. The difference is noticeably higher particularly for underweight (37.7% vs 31%), severe stunting (18% vs 14.4%) and for stunting (34.4% vs 41%) respectively for ADs and Non-ADs.

Figure 1: Child nutritional status (%) in aspirational and non-aspirational districts of India, NFHS-5 (2019-21)



The appendix tables (A to D) provide detailed descriptive and bivariate evidence on child undernutrition across ADs and NADs in India. Appendix: Table A outlines the sample characteristics showing that children in ADs are disproportionately drawn from socioeconomically disadvantaged households, with higher concentrations of poverty, rural residence, lower maternal education, limited mass media exposure, and poorer maternal nutritional and anaemia status compared with NADs.

Appendix: Tables B, C and D present the prevalence of stunting, wasting and underweight (including severe forms) by child, maternal and household characteristics, along with chi-square statistics. Across almost all the subgroups, children in ADs exhibit significantly higher levels of stunting, wasting and underweight than their counterparts in NADs. Nutritional disadvantages are particularly pronounced among older children, higher birth orders, children of less educated or anaemic mothers, poorer households and rural areas. The consistently significant chi-square values indicate strong socioeconomic and demographic gradients in child undernutrition and highlight persistent inequalities between aspirational and non-aspirational districts.

Table 1 presents the result of logistic regression model suggesting risk of child undernutrition by type of district. The initial model was a simple regression with no covariates (Model 1). Similarly, multivariate analysis has been conducted in the subsequent models to adjust the covariates at each

Table 1: Results of adjusted logistic regression model suggesting risk of child undernutrition (stunted, severe stunted, wasted, severe wasted, underweight, severe underweight) by type of district (N=196,040)

Characteristics	Model 1	Model 2	Model 3	Model 4	Model 5
	OR	AOR	AOR	AOR	AOR
Stunted					
Non-aspirational districts®					
Aspirational districts	1.318***	1.288***	1.163***	1.063***	1.065***
	[1.279,1.358]	*[1.249,1.327]*	*[1.128,1.199]*	*[1.030,1.096]*	*[1.033,1.099]*
Wald chi-2	*330.21*	*1757.73*	*3619.58*	*4335.93*	*4387.52*
Pseudo R2	*0.0021*	*0.0139*	*0.0301*	*0.0381*	*0.0382*
Severe stunted					
Non-aspirational districts®					
Aspirational districts	1.343***	1.301***	1.168***	1.068**	1.072***
	[1.293,1.395]	*[1.252,1.351]*	*[1.124,1.215]*	*[1.026,1.111]*	*[1.030,1.115]*
Wald chi-2	*229.14*	*957.76*	*2208.78*	*2563.02*	*2618.8*
Pseudo R2	*0.0021*	*0.0103*	*0.0247*	*0.0305*	*0.0308*
Wasted					
Non-aspirational districts®					
Aspirational districts	1.138***	1.129***	1.080***	1.03	1.034
	[1.098,1.181]	*[1.088,1.171]*	*[1.040,1.121]*	*[0.992,1.070]*	*[0.996,1.074]*
Wald chi-2	*48.08*	*644.7*	*1136.62*	*1353.36*	*1402.64*
Pseudo R2	*0.0004*	*0.0073*	*0.0118*	*0.0138*	*0.0142*
Severe Wasted					
Non-aspirational districts®					
Aspirational districts	1.121***	1.111***	1.081**	1.045	1.048
	[1.063,1.183]	*[1.053,1.172]*	*[1.025,1.141]*	*[0.990,1.103]*	*[0.993,1.107]*
Wald chi-2	*17.74*	*439.82*	*538.08*	*665.17*	*679.1*
Pseudo R2	*0.0003*	*0.0095*	*0.0106*	*0.0119*	*0.0121*
Underweight					
Non-aspirational districts®					
Aspirational districts	1.340***	1.310***	1.180***	1.067***	1.071***
	[1.300,1.380]	*[1.271,1.350]*	*[1.144,1.216]*	*[1.034,1.101]*	*[1.038,1.105]*
Wald chi-2	*365.62*	*1681.79*	*3941.03*	*4816.03*	*4900.1*
Pseudo R2	*0.0023*	*0.0123*	*0.0314*	*0.0399*	*0.0403*
Severe Underweight					
Non-aspirational districts®					
Aspirational districts	1.326***	1.289***	1.163***	1.065**	1.071**
	[1.270,1.385]	*[1.234,1.346]*	*[1.113,1.215]*	*[1.019,1.113]*	*[1.025,1.120]*
Wald chi-2	*164.63*	*792.95*	*1730.19*	*2125.72*	*2217.18*
Pseudo R2	*0.0018*	*0.0102*	*0.0229*	*0.0285*	*0.0291*

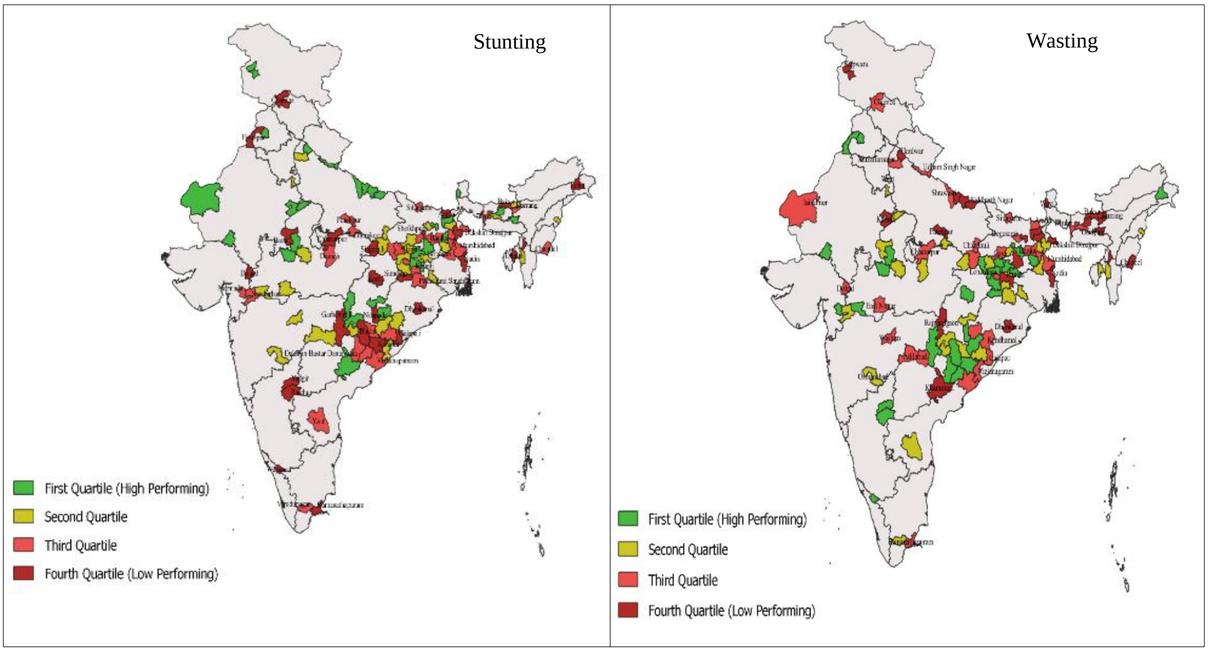
*Note: Model 2 is adjusted for child level characteristics such as sex of child, age, size of child at birth, and birth order. Model 3 is additionally adjusted for mother's characteristics i.e. her educational level, anemia, BMI and mass media exposure. Model 4 is additionally adjusted for household characteristics such as caste/tribe, religion, household size and wealth index. Model 5 is additionally adjusted for place of residence (urban/rural). ®: Reference category; * p<0.05, ** p<0.01, *** p<0.001; OR=Odds ratio, AOR=Adjusted odds ratio. Confidence intervals are in parenthesis.*

of our levels of interest. Model 2 included child level characteristics (sex, age, birth order and birth weight). Model 3 included individual and mother level characteristics (her education level, anaemic status, nutritional status based on BMI and her media exposure. Model 4 included individual, mother and household level characteristics (Caste, religion, wealth index and household size). Model 5 included individual, mother, household and place of residence characteristics (rural/urban). Results suggest that a higher risk of child stunting persists even after the model was adjusted for child, mother and household level characteristics and by place of residence [AOR=1.065; p<0.001]. Similar is the case for severe stunting. With respect of child underweight, a higher risk of child underweight persists when adjusted for child, mother, household level characteristics and by place of residence [AOR=1.071; p<0.001]. We did not find a significant difference in childhood wasting by type of district, i.e., ADs and non-ADs.

Performance of aspirational districts between NFHS-4 to NFHS-5 for childhood stunting, wasting and underweight

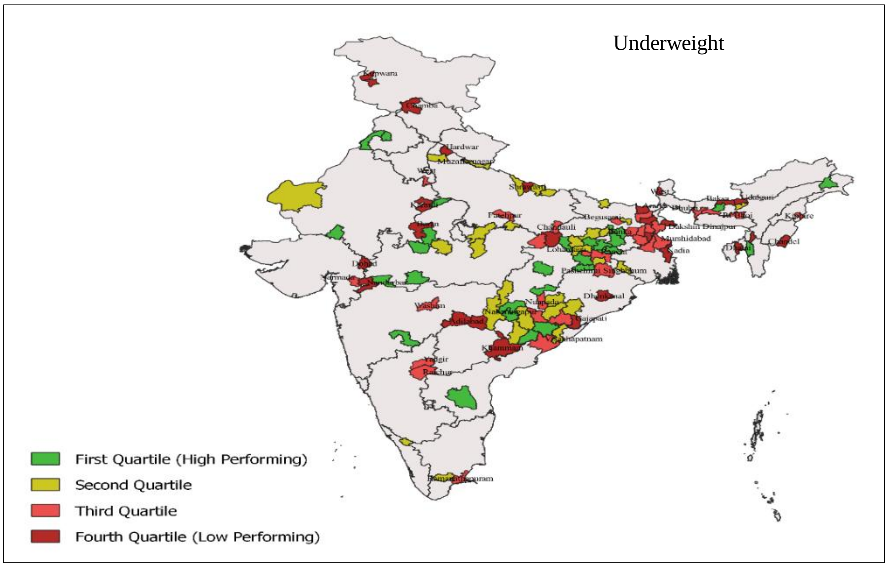
Figure 2 assists in locating the low and moderately performing districts for stunted, wasted and underweight during the period of NFHS-4 to NFHS-5. The dark red and mild red has been used to indicate low and moderately performing districts whereas, yellow and green colour depicts better and high performing districts. Findings suggest that the low and moderately performing districts are concentrated in Andhra Pradesh, Odisha, Jharkhand and Bihar.

Figure 2: Locating aspirational districts according to their performance during NFHS-4 to NFHS-5 for childhood stunting, wasting and underweight



An additional attempt has been made to understand the pattern of change occurring in prevalence of child nutritional outcome (stunting, wasting and underweight) from NFHS-4 to NFHS-5. The prevalence of child nutritional outcome is arranged in a descending order for NFHS-4 and divided into quartiles and the average change in child nutritional outcome for NFHS-5 has been presented.

Table 2 suggests that the first quartile districts (high prevalence during NFHS-4) have made most of the improvement. However, the fourth quartiles districts (low prevalence during NFHS-4) depict negative change, i.e., increase in prevalence of child malnutrition during the period. This pattern has been observed for all the three indicators, i.e., stunting, wasting and underweight.



The community based ICDS services also are found higher in high prevalence districts, suggesting considerable efforts to improve the child nutritional outcome whereas low prevalence districts are lagging behind.

Table 2: Percentage change in childhood stunting, wasting and underweight from NFHS-4 (2015-16) to NFHS-5 (2019-21)

Average performance by type of district	Prevalence		% Change
	NFHS-4	NFHS-5	
Stunting			
First quartile (high prevalence districts)	53.2	46.2	13.2
Second quartile	44.6	40.9	8.3
Third quartile	39.6	36.6	7.6
Fourth quartile (Low prevalence districts)	30.0	31.4	-4.6
Wasting			
First quartile (high prevalence districts)	33.6	23.1	31.4
Second quartile	25.0	22.6	9.7
Third quartile	19.4	20.3	-4.4
Fourth quartile (Low prevalence districts)	13.7	18.2	-32.8
Underweight			
First quartile (high prevalence districts)	52.0	43.6	16.1
Second quartile	44.8	39.8	11.0
Third quartile	37.6	34.2	8.9
Fourth quartile (Low prevalence districts)	24.1	25.0	-3.6
ICDS, Anganwadi services			
First quartile (high prevalence districts)	27.7	47.5	71.2
Second quartile	23.8	37.2	56.1
Third quartile	27.3	45.5	66.8
Fourth quartile (Low prevalence districts)	21.0	37.3	77.2

Factors contributing to the group of districts having low and high prevalence of child stunting, wasting and underweight

Table 3 presents the results of the Blinder Oaxaca decomposition analysis examining the differences in childhood stunting, wasting, and underweight between districts with low and high prevalence of undernutrition using NFHS-5 (2019–21) data. The decomposition disentangles the observed gaps into components attributable to differences in characteristics (endowments) and differences in the effects of these characteristics (coefficients).

For stunting, 58.6 per cent of the gap is explained by differences in observed characteristics, while 41.4 per cent is attributable to differences in coefficients, indicating that compositional disadvantages largely drive stunting inequalities. In contrast, wasting is predominantly explained by coefficient effects (81.7%), with only 18.4 per cent due to endowments, suggesting strong contextual and structural differences in how risk factors translate into acute undernutrition. For underweight, coefficient effects (61.1%) outweigh endowment effects (39.0%), reflecting a mixed but coefficient-dominated pattern.

Table 3: Results of blinder Oaxaca decomposition analysis suggesting contributing factors between the group of districts having low and high prevalence of child stunting, wasting and underweight, NFHS-5 (2019-21)

	Stunting (weight for age)			Wasting (height for age)			Underweight (weight for height)		
	Coef.	[95% CI]	%	Coef.	[95% CI]	%	Coef.	[95% CI]	%
Endowment (E)	0.086***	[0.073,0.098]	58.63	0.0086**	[0.002,0.015]	18.35	0.072***	[0.062,0.083]	38.95
Coefficient (C)	0.060***	[0.038,0.083]	41.37	0.038***	[0.023,0.054]	81.65	0.114***	[0.092,0.135]	61.05
Residual (R)	0.146***	[0.127,0.165]		0.047***	[0.032,0.061]		0.186***	[0.168,0.204]	
Due to difference in characteristics (E)									
Sex (female)	1.000	[1.000,1.000]	0.01	1.000*	[1.000,1.000]	0.36	1.000***	[1.000,1.000]	0.1
Child age (24-59 months)	0.997***	[0.997,0.998]	-1.94	1.000**	[1.000,1.000]	0.11	0.999***	[0.999,0.999]	-0.57
Size of child at birth (average)	1.001***	[1.001,1.002]	0.85	1.000	[1.000,1.000]	0.09	1.000**	[0.999,1.000]	-0.18
Birth order (1-2)	1.006*	[1.001,1.012]	4.34	0.999	[0.998,1.000]	-1.98	1.002	[0.998,1.007]	1.31
Diarrhea in last 2 weeks (Yes)	1.001	[1.000,1.003]	0.74	0.999*	[0.999,1.000]	-1.56	1.000	[1.000,1.001]	0.06
Mother’s education (no formal schooling)	1.040***	[1.024,1.057]	27.18	1.000	[1.000,1.000]	0.09	1.025***	[1.011,1.040]	13.4
Mother’s education (primary)	1.003**	[1.001,1.004]	1.83	1.000	[0.999,1.001]	0.22	0.999*	[0.999,1.000]	-0.3
Mother education (secondary)	0.986*	[0.975,0.997]	-9.57	1.000	[0.997,1.002]	-0.97	0.992	[0.984,1.000]	-4.16
Anaemia status (severe or moderate)	1.000*	[1.000,1.001]	0.25	1.000	[0.999,1.000]	-0.34	1.001**	[1.000,1.002]	0.47
Nutritional status of mother (Low BMI)	1.006***	[1.003,1.008]	3.86	1.004***	[1.002,1.006]	7.91	1.015***	[1.011,1.019]	7.99
Wealth index (poorest)	1.047***	[1.034,1.060]	31.52	1.004	[0.999,1.008]	7.45	1.045***	[1.029,1.060]	23.48
Wealth index (poorer)	1.004***	[1.003,1.006]	2.92	1.000	[0.997,1.002]	-0.42	1.000***	[0.999,1.000]	-0.22
Wealth index (middle)	0.993***	[0.989,0.997]	-4.97	1.000	[0.999,1.001]	-0.03	0.994**	[0.990,0.998]	-3.27
Caste/tribe (SC)	1.000	[1.000,1.000]	-0.01	1.001	[1.000,1.002]	1.73	1.002	[0.999,1.004]	0.9
Caste/tribe (OBC)	1.001	[0.997,1.005]	0.47	1.002*	[1.000,1.005]	5.07	0.996***	[0.995,0.998]	-1.9
Caste/tribe (others)	1.001	[0.999,1.002]	0.49	1.0000	[0.996,1.003]	-0.25	1.005	[0.999,1.010]	2.44
ICDS Services (low ICDS services)	0.993**	[0.989,0.998]	-4.58	1.0000	[0.999,1.002]	0.68	0.999**	[0.999,1.000]	-0.39
Place of residence (rural)	1.008*	[1.001,1.014]	5.25	1.0000	[1.000,1.001]	0.17	1.000	[0.995,1.004]	-0.21
Due to difference in coefficients (C)									
Sex (female)	1.000	[0.980,1.021]	0.31	1.005	[0.993,1.018]	10.95	0.989	[0.971,1.007]	-6.1
Child age (24-59 months)	1.099***	[1.067,1.131]	64.38	1.026***	[1.011,1.041]	54.82	1.002	[0.978,1.026]	0.81
Size of child at birth (average)	1.006	[0.940,1.078]	4.4	1.027	[0.987,1.068]	56.22	1.072*	[1.017,1.130]	37.41
Birth order (1-2)	1.031	[0.986,1.078]	21.05	0.996	[0.978,1.014]	-8.43	1.019	[0.984,1.056]	10.24
Dirrhoea in last 2 weeks (Yes)	1.001	[0.996,1.007]	0.9	1.000	[0.996,1.005]	0.89	1.000	[0.996,1.005]	0.13
Mother’s education (no formal schooling)	1.007	[0.996,1.019]	4.84	0.993	[0.975,1.012]	-14.64	1.000	[0.990,1.010]	0.05
Mother’s education (primary)	1.004	[0.993,1.016]	2.96	1.000	[0.991,1.010]	0.69	1.001	[0.990,1.013]	0.75
Mother’s education (secondary)	1.031	[0.984,1.081]	21.06	0.986	[0.965,1.007]	-31.07	1.014	[0.974,1.055]	7.33
Anaemia status (severe or moderate)	1.001	[0.991,1.010]	0.44	0.996	[0.990,1.001]	-9.33	1.001	[0.992,1.009]	0.44
Nutritional status of mother (low BMI)	1.002	[0.993,1.010]	1.06	1.010**	[1.004,1.016]	21.49	0.999	[0.993,1.005]	-0.52
Wealth index (poorest)	1.018*	[1.001,1.035]	12.15	0.980*	[0.963,0.997]	-43.32	0.990	[0.976,1.003]	-5.61
Wealth index (poorer)	1.015	[0.998,1.031]	10	0.982**	[0.970,0.995]	-38.1	0.986*	[0.972,0.999]	-7.68
Wealth index (middle)	1.008	[0.992,1.024]	5.5	0.994	[0.986,1.002]	-12.6	0.994	[0.981,1.007]	-3.05
Caste/tribe (SC)	1.002	[0.987,1.018]	1.58	1.002	[0.993,1.012]	4.48	0.988	[0.973,1.002]	-6.73
Caste/tribe (OBC)	1.007	[0.986,1.028]	4.7	0.986	[0.971,1.000]	-30.71	0.982*	[0.967,0.997]	-9.81
Caste/tribe (others)	1.010	[0.996,1.023]	6.59	1.002	[0.993,1.011]	4.58	0.994	[0.982,1.007]	-3.12
ICDS Services (low ICDS services)	1.011	[0.985,1.037]	-5.13	0.991	[0.979,1.003]	-19.86	0.996	[0.977,1.015]	-2.33
Place of residence (rural)	1.025	[0.969,1.085]	16.94	1.092***	[1.056,1.129]	187.7	1.009	[0.967,1.054]	5.07
Constant	-0.211	[-0.357,-0.064]	-132	-0.024	[1.056,1.129]	-52.12	0.081	[-0.032,0.195]	43.76

*Note: level of significance: * p<0.05, ** p<0.01, *** p<0.001.*

Maternal education (no schooling: 27.2%), poorest wealth quintile (31.5%), and low maternal BMI (3.9%) are major contributors to the explained the gap in the childhood stunting between low and high prevalence of the district. Mother’s Low BMI (7.91%), poorest wealth index (7.45%) and OBC (5.07%) are major contributors to the explained gap in the childhood wasting between low and high prevalence of the district. Similarly, poorest wealth status (23.5%), maternal no schooling (13.4%) and low maternal BMI (8.0%) significantly explain the gap in childhood underweight between low and high prevalence of the district.

Discussion

Despite four decades of intervention programmes launched by the Government of India to combat child malnutrition, undernutrition among children remains a persistent and stubborn national challenge (Black et al., 2013). Successive policy efforts have chipped away at the problem, yet the scale of the country's population and the depth of underlying deprivation mean that progress has never been uniform or complete. The risk factors driving child undernutrition are well established across household, child and maternal dimensions including children aged 6–23 months (Akombi et al., 2017; Pradhan et al., 2021), male sex (Asfaw et al., 2015; Kavosi et al., 2014; Pradhan et al., 2021), belonging to Scheduled Castes/Tribes (Meshram et al., 2019), low birth weight (Aguayo et al., 2016; Banerjee et al., 2015; Biro et al., 2016; Pradhan et al., 2021; Rana et al., 2019), mothers with little or no formal schooling (Demilew et al., 2017), maternal low BMI (Aguayo et al., 2016; Rayhan & Khan, 2006) and households in the poorest wealth quintiles (Rajesh & Bhavana, 2016). These factors rarely act in isolation; rather, they tend to cluster together within the same disadvantaged households, compounding one another's effects. The findings of this study confirm these established risk factors and show they hold true for aspirational districts as well.

While locating the districts with low and moderate performance in child nutritional outcome during NFHS-4 and NFHS-5, most of these districts are located in Andhra Pradesh, Odisha, Jharkhand and Bihar. Again, these low and moderately performing districts belong to empowered action groups states (EAG). The latter were established in 2001 for monitoring and achieving MDG. It comprises of five major states of India. These states are socioeconomically backward in terms of demographic and epidemiological transition, characterized by high population growth rate, high infant and child morality, high fertility, low literacy rate, poor quality and long waiting time in accessing public healthcare facilities (Arokiasamy et al., 2013; Kumar & Paswan, 2021; Kumar & Singh, 2016; Mishra, 2015; Sarkar, 2018).The overlap between EAG status and poor nutritional performance is not coincidental, it reflects decades of structural disadvantage in these states that has proven difficult to dislodge through standard policy instruments alone.

Examining how child nutrition indicators (stunting, wasting and underweight) shifted between NFHS-4 and NFHS-5 shows an interesting and somewhat counterintuitive pattern: districts that started with high malnutrition burdens in NFHS-4 achieved the largest gains, while districts that began with lower burdens actually regressed, showing rising prevalence over the same period. This trend holds consistently across all the three indicators which shows again that the pattern is not an artifact of measurement noise in any single outcome. Cross-referencing clinical and community-level services supports this picture — high-burden districts show greater NRC admissions and ICDS service uptake, pointing to concentrated efforts and plausibly more focused administrative attention directed toward the districts that were behind. Low-burden districts by contrast appear to be stalling in further progress, perhaps because they were assumed to have already "solved" the problem and consequently received less programmatic focus. This makes it problematic to simply transplant the intervention models from high-burden districts (where most improvement occurred) onto low-burden districts which are trending in the opposite direction — the underlying causes of stagnation in an already low-prevalence setting are likely to be different from the causes of high prevalence in the first place, and therefore, call for a distinct policy response.

Analysis also suggests that wasting in children is almost half to that of stunting, irrespective of aspirational and non-aspirational districts (Fig. 1). Moreover, the nature of stunting (chronic malnutrition) is totally different from wasting (acute malnutrition). Considering the common risk factors, smaller than average size of child at birth, low BMI status of mothers and children from the poorest wealth quintile were more likely to develop childhood stunting as well as wasting. Similarly, factors such as older children, higher birth order and lower educational status of mothers is found to be more likely to develop childhood stunting. Whereas, younger children, male children, children from ST community and from urban areas were more likely to develop childhood wasting. This is also evident from our decomposition analysis, suggesting higher birth order, low education and BMI of mothers and children from the poorest wealth quintile were the contributing factors in childhood stunting. Whereas, low ICDS services and mother characteristics were prominently contributing in childhood wasting. Hence, while improving child nutritional outcome, the strategies need to be devised separately for stunting and wasting.

Existing literature shows that stunting takes root within the first 1000 days after conception, shaped by a mix of socioeconomic conditions, dietary intake, infections, maternal nutritional status, micronutrient deficiencies and environmental factors (Black et al., 2008; Ikeda et al., 2013). This time is widely regarded as a critical and largely irreversible period after which the damage done becomes far harder to correct. Children who are stunted and simultaneously deficient in iodine and iron risk permanent cognitive damage that limits their developmental potential (Black et al., 2008), along with reduced adult height, greater vulnerability to chronic disease, lower educational attainment and diminished lifetime earnings (Victora et al., 2008). Mortality risk is also elevated among stunted and wasted children, and rises further when both conditions occur together (Khara & Dolan, 2014). Given the sluggish or stalled progress on stunting reduction in many countries (Stevens et al., 2012) and its far-reaching, multi-generational consequences, stunting has been written into the monitoring framework for Sustainable Development Goal 2. The Global Nutrition Targets for 2025, endorsed by the Sixty-fifth World Health Assembly in 2012 (WHA65.6, 2012) call for a 40 per cent cut in the number of stunted children under five. While stunting is difficult to reverse once established, it is preventable through a combination of direct and indirect health measures applied well before the damage sets in. Evidence shows that combining nutritional support (for both mother and child), sanitation improvements (clean water, sanitary latrines), poverty-reduction measures, food security initiatives (agricultural training, kitchen gardens, livestock support, income generation), women's empowerment (rights and nutrition education), and coordinated advocacy delivers a far greater reduction in stunting than any single intervention alone (Smith et al., 2013). Bhutta et al. similarly found that scaling multi-sectoral and nutrition-specific evidence-based interventions to 90 per cent coverage could cut stunting by 20 per cent (Bhutta et al., 2013).

A marked improvement has been recorded by the efforts of the existing operational key institutions/programmes, raising child health and nutritional status, viz., Nutritional Rehabilitation Centers (at district or sub-district level), Rashtriya Bal Swasthya Karykram (a centrally sponsored programme implemented in most of the districts of India for child health care), Village Health, Sanitation and Nutrition Committee (an important community based awareness and demand generation activity at grass-root level) and ASHAs (a community based front line worker) are involved, sponsored and supported by the Ministry of Health and Family Welfare, India. Similarly, Integrated Child Development Services (ICDS), a community-based programme provides nutrition supplements through Anganwadi Centers along with growth monitoring, immunization and counselling to mothers of 0-6 years aged children under Poshan Abhiyan by the Ministry of Women and Child Development.

Previous studies suggest that there is still room to strengthen these programmes. For instance, studies on assessment of NRCs suggest that they are struggling with essential human resources and drugs, infrastructure and training (Bisai et al., 2024; Katole et al., 2022). This severely affects quality of services as well as follow-up. Most of the cases to these NRC are referred from pediatric department, suggesting lack of demand generation activities at community level (Panda et al., 2019; Rastogi et al., 2018). Similarly, with respect to Rashtriya Bal Swasthya Karyakram (RBSK) launched in 2013 to subsume the existing school health programmes and envisions child health screening and early intervention services to provide care, support, and treatment to children.? Several studies reveal implementation challenges such as under staffing of mobile health team and training (Pirzada et al., 2024; Prabhu et al., 2023; Priya et al., 2022). Similarly, Village Health, Sanitation and Nutrition Committee (VHSNC) were formed to take collective actions on issues related to health and its social determinants at the village level. Studies highlighted the ambiguity regarding roles and responsibility among committee members and weak linkages with the broader health system. (Dhiman et al., 2020; Singh et al., 2022; Srivastava et al., 2016). Prior evidence suggests that these programmes have made a mark in raising child nutritional status but socio-economic and regional variations are still a matter of concern.

India had set the target for stunting and wasting by 2025 to reduce it by 25 per cent and 5 per cent respectively. Comparing this, the prevalence of stunting (41 vs 34%) and wasting (21 vs 19%) is much higher for ADs and non-ADs respectively. Analysis from the present paper suggests that higher prevalence districts have made much of the improvement by reducing child malnutrition, but low prevalence districts depict a negative trend, i.e., increase in child malnutrition. Such disturbing results point to the need to re-evaluate the existing intervention strategies or to proceed towards adoption of new strategy. This will also be helpful for the policy- makers to catch-up the target laid by WHO of 40 per cent reduction in stunting and wasting. Hence, the existing programmes/institutions need to be revived to streamline and well-coordinate them. Literature suggests that shared vision, resource sharing and personal relationships facilitate the inter-sectoral interventions (Aivalli et al., 2024; Kim et al., 2017; Najafi et al., 2023).

The ADP aims to expeditiously improve the socio-economic status of 114 districts from across 28 states. The three core principles of ADP are - convergence (central & state schemes), collaboration (citizens and Central & State Governments, development partners) and competition (among districts). Working on these three principles along with the encouraging aspirational districts to develop and replicate evidence base practices that drive improvement across the socio-economic themes by engaging development partners can fast-track the progress in the low and moderately performing districts.

Conclusion

The present study exhibits that despite overall improvements in child nutrition in India, ADs continue to bear a disproportionate burden of child undernutrition. Even after adjusting for child, maternal, household and place-of-residence characteristics, children in ADs show significantly higher odds of chronic undernutrition compared to non-aspirational districts. The results from the Blinder–Oaxaca decomposition further reveal that maternal education, maternal nutritional status and household poverty are the leading drivers of nutritional disparities. Notably, districts with historically high malnutrition levels have achieved greater reductions over time, whereas districts with initially lower prevalence show stagnation or reversal. This suggests gaps in sustained programme intensity and targeting. The findings underscore that undernutrition is not solely a service-delivery issue but is deeply rooted in structural and intergenerational disadvantages, which require differentiated and context-specific strategies within the ADP.

For expediting the process of improving child health and nutrition while achieving the 2025 target regarding stunting and wasting, it is important to design two-prong interventions, i.e., clinical as well as community-based interventions. Further, direct and indirect factors related to child health need to be considered, i.e., along with nutritional support and monitoring, factors such as sanitation, poverty alleviation measures, food security, women empowerment and planning actions and advocacy can be considered. Additionally, it is wise to adopt different strategies for stunting and wasting. For stunting, implement long-term, multi-sectoral approaches (education, poverty reduction and sanitation), and for wasting, use rapid-response and health-system-based approaches. Collaborative work on direct and indirect factors can be the master key for answering India’s child malnutrition.

References

Aguayo, V. M., Nair, R., Badgaiyan, N., & Krishna, V. (2016). Determinants of stunting and poor linear growth in children under 2 years of age in India: an in-depth analysis of Maharashtra’s comprehensive nutrition survey. *Maternal & Child Nutrition, 12 Suppl 1(*Suppl 1), 121–140. https://doi.org/10.1111/mcn.12259

Aivalli, P., Gilmore, B., Srinivas, P. N., & De Brún, A. (2024). Navigating intersectoral collaboration in nutrition programming: implementors' perspectives from Assam, India. *Archives of Public Health, 82*(1), 82. https://doi.org/10.1186/s13690-024-01312-6

Akombi, B. J., Agho, K. E., Hall, J. J., Wali, N., Renzaho, A. M. N., & Merom, D. (2017). Stunting, Wasting and Underweight in Sub-Saharan Africa: A Systematic Review. *International Journal of Environmental Research and Public Health*, *14*(8). https://doi.org/10.3390/ijerph14080863

Arokiasamy, P., Jain, K., Goli, S., & Pradhan, J. (2013). Health inequalities among urban children in India: a comparative assessment of Empowered Action Group (EAG) and South Indian states. *Journal of Biosocial Science*, *45*(2), 167–185. https://doi.org/10.1017/S0021932012000211

Asfaw, M., Wondaferash, M., Taha, M., & Dube, L. (2015). Prevalence of undernutrition and associated factors among children aged between six to fifty-nine months in Bule Hora district, South Ethiopia. *BMC Public Health*, *15*(1), 41. https://doi.org/10.1186/s12889-015-1370-9

Banerjee, A., Patel, U. V, Verma, P. B., Viramgami, A., & Vala, M. C. (2015). Health status of children under three years of age residing in the slums of Rajkot city, Gujarat, India. *The Journal of Medical Research*.

Bhutta, Z. A., Das, J. K., Rizvi, A., Gaffey, M. F., Walker, N., Horton, S., Webb, P., Lartey, A., & Black, R. E. (2013). Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *The Lancet*, *382*(9890), 452–477.

Biro, S., Barber, D., Williamson, T., Morkem, R., Khan, S., & Janssen, I. (2016). Prevalence of toddler, child and adolescent overweight and obesity derived from primary care electronic medical records: an observational study. *CMAJ Open*, *4*(3), E538–E544. https://doi.org/10.9778/cmajo.20150108

Bisai, S., Dutta, S., Sengupta, D., & Ghosh, P. (2024). Performance Analysis of Nutritional Rehabilitation Centers in Purulia District of West Bengal, India. *Acta Medica International*, *11*(2). https://journals.lww.com/amit/fulltext/2024/11020/performance_analysis_of_nutritional_rehabilitation.7.aspx

Black, R. E., Allen, L. H., Bhutta, Z. A., Caulfield, L. E., de Onis, M., Ezzati, M., Mathers, C., & Rivera, J. (2008). Maternal and child undernutrition: global and regional exposures and health consequences. *The Lancet*, *371*(9608), 243–260. https://doi.org/10.1016/S0140-6736(07)61690-0

Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., de Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., Martorell, R., & Uauy, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *Lancet (London, England)*, *382*(9890), 427–451. https://doi.org/10.1016/S0140-6736(13)60937-X

Claeson, M., Bos, E. R., Mawji, T., & Pathmanathan, I. (2000). Reducing child mortality in India in the new millennium. *Bulletin of the World Health Organization*, *78*(10), 1192–1199.

Demilew, Y. M., Tafere, T. E., & Abitew, D. B. (2017). Infant and young child feeding practice among mothers with 0-24 months old children in Slum areas of Bahir Dar City, Ethiopia. *International Breastfeeding Journal*, *12*, 26. https://doi.org/10.1186/s13006-017-0117-x

Dhiman, A., Khanna, P., & Singh, T. (2020). Evaluation of village health sanitation and nutrition committee in Himachal Pradesh, India. *Journal of Family Medicine and Primary Care*, *9*(9), 4712–4716. https://doi.org/10.4103/jfmpc.jfmpc_736_20

Gragnolati, M., Shekar, M., Gupta, M. Das, Bredenkamp, C., & Lee, Y. (2005). *Executive summary: India' s Undernourished Children: A Call for Reform and Action* (Issue August).

Grebmer, K., Bernstein, J., Alders, R., Dar, O., Kock, R., Rampa, F., Wiemers, M., Acheampong, K., Hanano, A., Higgins, B., Chéilleachair, R. N., & C. Foley, S. Gitter, K. Ekstrom, and H. F. (2020). *2020 Global Hunger Index: One Decade to Zero Hunger: Linking Health and Sustainable Food Systems. Bonn: Welthungerhilfe; and Dublin: Concern Worldwide*.

Development Initiatives. (2021). *2021 Global Nutrition Report: The state of global nutrition*. Development Initiatives. https://globalnutritionreport.org/reports/2021-global-nutrition-report/

Ikeda, N., Irie, Y., & Shibuya, K. (2013). Determinants of reduced child stunting in Cambodia: analysis of pooled data from three demographic and health surveys. *Bulletin of the World Health Organization*, *91*(5), 341–349. https://doi.org/10.2471/BLT.12.113381

International Institute for Population Sciences. (2021). *National Family Health Survey - 5 2019-21. In Ministry of Health and Family Welfare National*. http://rchiips.org/nfhs/NFHS-5_FCTS/India.pdf

International Institute for Population Sciences - IIPS/India and ICF (2017). *National Family Health Survey NFHS-4, 2015-16: India*. Mumbai: IIPS.

Katole, A., Naik, G., Kujur, A., & Kumar, M. (2022). Performance Appraisal of Nutritional Rehabilitation Centers in Central India: A Retrospective Facility-Based Descriptive Study. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine*, *47*(2), 272–276. https://doi.org/10.4103/ijcm.ijcm_776_21

Kavosi, E., Hassanzadeh Rostami, Z., Kavosi, Z., Nasihatkon, A., Moghadami, M., & Heidari, M. (2014). Prevalence and determinants of under-nutrition among children under six: a cross-sectional survey in Fars province, Iran. *International Journal of Health Policy and Management, 3*(2), 71–76. https://doi.org/10.15171/ijhpm.2014.63

Khara, T., & Dolan, C. (2014). Technical briefing paper: The relationship between wasting and stunting, policy, programming and research implications. *Emergency Nutrition Network* [homepage on the Internet]. 2014. c2015.

Kim, Y. D., Jung, Y. H., Caso, V., Bushnell, C. D., & Saposnik, G. (2017). Countries with women inequalities have higher stroke mortality. *International Journal of Stroke*. https://doi.org/10.1177/1747493017694389

Kumar, R., & Paswan, B. (2021). Changes in socio-economic inequality in nutritional status among children in EAG states, India. *Public Health Nutrition, 24*(6), 1304–1317. https://doi.org/10.1017/S1368980021000343

Kumar, V., & Singh, P. (2016). Access to healthcare among the Empowered Action Group (EAG) states of India: Current status and impeding factors. *National Medical Journal of India, 29*, 267–273.

Meshram, I. I., Mallikharjun Rao, K., Balakrishna, N., Harikumar, R., Arlappa, N., Sreeramakrishna, K., & Laxmaiah, A. (2019). Infant and young child feeding practices, sociodemographic factors and their association with nutritional status of children aged 3 years in India: findings of the National Nutrition Monitoring Bureau Survey, 2011-2012. *Public Health Nutrition, 22*(1), 104–114. https://doi.org/10.1017/S136898001800294X

Mishra, S. V. (2015). Understanding needs and Ascribed Quality of life – through maternal factors – infant mortality dialectic. *Asian Geographer, 32*(1), 19–36. https://doi.org/10.1080/10225706.2014.962551

Najafi, M., Mosadeghrad, A. M., & Arab, M. (2023). Mechanisms of Intersectoral Collaboration in the Health System: A Scoping Review. *Iranian Journal of Public Health, 52*(11 SE-Review Article(s)). https://doi.org/10.18502/ijph.v52i11.14030

Panda, M., Nanda, S., Murmu, M. C., Giri, R. C., & Debi, L. L. (2019). Evaluation of the performance of a nutrition rehabilitation centre in a tertiary care hospital in Eastern India. *International Journal of Community Medicine and Public Health, 6*(4 SE-Original Research Articles), 1728–1733. https://doi.org/10.18203/2394-6040.ijcmph20191428

Pathak, P. K., & Singh, A. (2009). Geographical variation in poverty and child malnutrition in India. *Population, Poverty and Health: Analytical Approaches*.

Pirzada, A., Sharma, R., Bhatt, G., Bakshi, H., Oza, D., Dave, R., Jani, D., & Bapat, N. (2024). A qualitative study regarding perception and challenges faced by providers and beneficiaries of Rashtriya Bal Swasthya Karyakram in general and also amid the COVID-19 pandemic at an urban health center from Ahmedabad City. *MRIMS Journal of Health Sciences, 12*(2). https://journals.lww.com/mjhs/fulltext/2024/12020/a_qualitative_study_regarding_perception_and.5.aspx

Prabhu, S., Shukla, N., & Mandala, S. R. (2023). External Evaluation of Rashtriya Baal Swasthya Karyakram (RBSK) in Chhattisgarh & Practical Recommendations: External Evaluation of RBSK in Chhattisgarh. *GAIMS Journal of Medical Sciences, 3*(1 (Jan-Jun)), 33–39. https://gjms.gaims.ac.in/index.php/gjms/article/view/66

Pradhan, I., Kandapan, B., & Pradhan, J. (2021). Age-appropriate feeding practices and their association with undernutrition among children aged 6-23 months in aspirational districts of India: a multinomial analysis. *Journal of Biosocial Science, 55*(1), 1–21. https://doi.org/10.1017/S0021932021000596

Priya, H., Krishna, A., & Sundar, J. (2022). Insights of Rashtriya Bal Swasthya Karyakram: a strength, weaknesses, opportunities, and threats analysis. *International Journal of Community Medicine and Public Health, 9*(11 SE-Review Artic), 4279–4282. https://doi.org/10.18203/2394-6040.ijcmph20222926

Rajaram, S., Zottarelli, L. K., & Sunil, T. S. (2007). Individual, household, programme and community effects on childhood malnutrition in rural India. *Maternal & Child Nutrition, 3*(2), 129–140. https://doi.org/10.1111/j.1740-8709.2007.00086.x

Rajesh, D., & Bhavana, D. (2016). A study on infant feeding practices in the urban slums: a cross sectional study. *In International Journal of Contemporary Pediatrics* (pp. 350–354). https://doi.org/10.18203/2349-3291.ijcp20161005

Ramalingaswami, Jonsson, U., & Rohde, J. E. (1996). The Asian enigma.?

Rana, R., Vaze, G., Christian, P., & Gupta, P. (2019). Determinants of acute malnutrition among under five children in Aravalli District of Gujarat, India: a community-based case-control study. Int J Heal Sci Res, 9, 1–8.

Rastogi, S., Maheshwari, C., Raghav, S. K., & Muzammil, K. (2018). A prospective observational study to evaluate the efficacy of facility-based management in malnourished children at NRC, district Meerut.

Journal of Family Medicine and Primary Care, 7(6), 1341–1345. https://doi.org/10.4103/jfmpc.jfmpc_157_18

Rayhan, M. I., & Khan, M. S. H. (2006). Factors causing malnutrition among under five children in Bangladesh. *Pak J Nutr, 5*(6), 558–562.

Sarkar, R. (2018). *Demographic Change and Urbanization in India with reference to Empowered Action Group (EAG) States: Some comments on socio-demographic development and policy implications*. https://api.semanticscholar.org/CorpusID:252006753

Shetty, P. (2006). Malnutrition and undernutrition. *Medicine, 34*, 524–529. https://doi.org/10.1053/j.mpmed.2006.09.014

Singh, D., Singh, L., Kaur, J., & Kaur, H. (2022). Village Health Sanitation and Nutrition Committees (VHNSCs) under National Rural Health Mission (NRHM): How Much do the People Know About Them? *International Journal of Food and Nutritional Sciences, 11*(2), 240–256.

Smith, L. C., Khan, F., Frankenberger, T. R., & Wadud, A. K. M. A. (2013). Admissible evidence in the court of development evaluation? The impact of CARE's SHOUHARDO project on child stunting in Bangladesh. *World Development, 4*, 196–216.

Srivastava, A., Gope, R., Nair, N., Rath, S., Rath, S., Sinha, R., Sahoo, P., Biswal, P. M., Singh, V., Nath, V., Sachdev, H. P. S., Skordis-Worrall, J., Haghparast-Bidgoli, H., Costello, A., Prost, A., & Bhattacharyya, S. (2016). Are village health sanitation and nutrition committees fulfilling their roles for decentralised health planning and action? A mixed methods study from rural eastern India. *BMC Public Health, 16*(1), 59. https://doi.org/10.1186/s12889-016-2699-4

Stevens, G. A., Finucane, M. M., Paciorek, C. J., Flaxman, S. R., White, R. A., Donner, A. J., & Ezzati, M. (2012). Trends in mild, moderate, and severe stunting and underweight, and progress towards MDG 1 in 141 developing countries: a systematic analysis of population representative data. *The Lancet, 380*(9844), 824–834.

Svedberg, P. (2006). Declining child malnutrition: a reassessment. *International Journal of Epidemiology, 35*(5), 1336–1346. https://doi.org/10.1093/ije/dyl157

Svedberg, P. (2007). Child Malnutrition in India and China. *World Health, 20*(October), 1–4.

UNICEF, WHO, & Bank, W. (2020). *LEVELS AND TRENDS IN CHILD MALNUTRITION.* UNICEF.

UNICEF. (1990). *Strategy for Improved Nutrition of Children and Women in Developing Countries.* New York.

UNICEF. (2014). *Committing to Child Survival: A Promise Renewed- UNICEF Progress Report 2014*.

UNICEF. (2019). *The State of the World's Children 2019: Children, food and nutrition: Growing well in a changing world*. UNICEF.

Victora, C. G., Adair, L., Fall, C., Hallal, P. C., Martorell, R., Richter, L., & Sachdev, H. S. (2008). Maternal and child undernutrition: consequences for adult health and human capital. *The Lancet, 371*(9609), 340–357. https://doi.org/10.1016/S0140-6736(07)61692-4

WHA65.6. (2012). *Comprehensive implementation plan on maternal, infant and young child nutrition. In: Sixty-fifth World Health Assembly, Resolutions and decisions. Nutrition and Food Safety (NFS), WHO.* https://apps.who.int/gb/ebwha/pdf_files/WHA65-REC1/A65_REC1-en.pdf#page=34

WHO. (2021). *Fact sheets - Malnutrition.*

Appendix Table A: Sample characteristics by aspirational and non-aspirational district

Characteristic	Aspirational Districts		Non-aspirational Districts	
	%	Total	%	Total
Child level characteristics				
Sex of child				
Male	52.0	21,090	52.0	99,935
Female	48.0	19,476	48.1	92,419
Age in months				
0-6	11.9	4,570	11.9	21,789
7-12	10.4	3,979	9.8	17,994
13-24	19.6	7,494	19.5	35,693
25-59	58.1	22,244	58.8	107,501
Size of child at birth				
Average	89.3	35,533	89.2	169,181
Smaller than average	10.7	4,243	10.8	20,418
Birth order				
1	35.5	14,399	39.9	76,729
2	31.0	12,577	34.2	65,701
3	17.3	6,999	14.9	28,635
4 and above	16.3	6,591	11.1	21,287
Mother level characteristics				
Mother education				
No formal schooling	32.2	13,042	19.1	36,701
Primary	14.3	5,787	11.9	22,900
Secondary	44.9	18,212	51.9	99,858
Higher	8.7	3,525	17.1	32,894
Mother's anaemia status				
Severe	1.0	393	0.9	1,742
Moderate	16.7	6,782	13.7	26,409
Mild	47.4	19,238	42.5	81,710
Not anaemic	34.9	14,154	42.9	82,492
Mother nutritional status				
Thin	24.4	9,706	18.4	34,371
Normal	63.4	25,242	61.1	114,157
Overweight	9.9	3,954	15.6	29,201
Obese	2.4	936	4.9	9,168
Mothers with mass media exposure				
Low	43.0	17,430	25.8	49,573
Moderate	50.4	20,431	61.3	117,949
High	6.7	2,705	12.9	24,832
Household level characteristics				
Caste/tribe				
SCs	22.0	8,935	23.6	45,299
STs	15.3	6,203	8.9	17,143
OBCs	40.5	16,431	44.1	84,869
Others	15.3	6,210	18.3	35,251
Don't Know	0.9	357	1.0	1,821
No caste/tribe	6.0	2,430	4.1	7,970
Religion				
Hindu	74.3	30,141	80.5	154,825
Muslim	21.8	8,861	15.1	28,967
Others	3.9	1,564	4.5	8,561
Household size				
Less than 4 members	8.8	3,585	7.8	15,082
4-7 members	66.9	27,156	66.9	128,695
<7 members	24.2	9,826	25.3	48,576
Wealth index				
Poorest	43.6	17,702	20.6	39,573
Poorer	25.5	10,350	20.9	40,265
Middle	15.0	6,065	20.5	39,437
Richer	10.4	4,227	20.1	38,656
Richest	5.5	2,223	17.9	34,423
Place of residence				
Urban	14.8	6,018	29.1	56,056
Rural	85.2	34,549	70.9	136,297
Total	*17.4*	*40,567*	*82.6*	*192,353*

Appendix Table B: Percentage of children stunted and severely stunted in aspirational (AD) and non-aspirational districts (NAD) by background characteristics

Characteristic	Stunted			Severely Stunted		
	AD	NAD	Chi-square	AD	NAD	Chi-square
Sex of child						
Male	41.5	35.2	($\chi2$=159.87; p=0.000)	19.6	15.0	($\chi2$=148.75; p=0.000)
Female	40.4	33.6	($\chi2$=173.86; p=0.000)	17.4	13.8	($\chi2$=86.03; p=0.000)
Age in months						
0-6	25.7	23.6	($\chi2$=4.82; p=0.028)	14.7	12.7	($\chi2$=6.56; p=0.010)
7-12	30.0	25.4	($\chi2$=19.23; p=0.000)	15.1	12.7	($\chi2$=8.74; p=0.003)
13-24	46.5	39.2	($\chi2$=79.90; p=0.000)	23.5	18.4	($\chi2$=58.95; p=0.000)
25-59	43.9	36.3	($\chi2$=256.19; p=0.000)	18.2	13.7	($\chi2$=169.41; p=0.000)
Size of child at birth						
Average	40.1	33.7	($\chi2$=292.95; p=0.000)	18.0	14.1	($\chi2$=198.88; p=0.000)
Smaller than average	47.3	40.2	($\chi2$=35.11; p=0.000)	22.3	17.1	($\chi2$=30.90; p=0.000)
Birth order						
1	37.1	30.4	($\chi2$=126.76; p=0.000)	16.0	12.3	($\chi2$=75.43; p=0.000)
2	39.3	33.8	($\chi2$=74.31; p=0.000)	17.0	13.7	($\chi2$=50.27; p=0.000)
3	44.5	38.5	($\chi2$=47.01; p=0.000)	21.0	16.6	($\chi2$=42.09; p=0.000)
4 and above	48.5	44.7	($\chi2$=16.76; p=0.000)	24.0	21.1	($\chi2$=13.79; p=0.000)
Mother characteristics						
Education						
No formal schooling	49.0	45.4	($\chi2$=29.05; p=0.000)	24.8	21.8	($\chi2$=28.21; p=0.000)
Primary	44.2	41.1	($\chi2$=9.54; p=0.002)	20.0	17.1	($\chi2$=14.65; p=0.000)
Secondary	37.2	32.7	($\chi2$=72.39; p=0.000)	15.4	12.9	($\chi2$=44.23; p=0.000)
Higher	25.8	22.6	($\chi2$=9.57; p=0.002)	9.2	9.0	($\chi2$=0.08; p=0.773)
Anemia status						
Severe	48.8	44.4	($\chi2$=1.59; p=0.207)	23.5	21.5	($\chi2$=0.47; p=0.491)
Moderate	44.2	39.0	($\chi2$=32.30; p=0.000)	20.6	17.0	($\chi2$=26.83; p=0.000)
Mild	40.9	35.0	($\chi2$=123.25; p=0.000)	18.4	14.7	($\chi2$=82.80; p=108.26)
Not-anemic	39.2	32.0	($\chi2$=153.66; p=0.000)	17.5	13.1	($\chi2$=31.67; p=0.000)
Nutritional status						
Thin	48.0	42.2	($\chi2$=54.84; p=0.000)	22.0	18.5	($\chi2$=6.70; p=0.000)
Normal	40.1	34.6	($\chi2$=153.35; p=0.000)	18.4	14.7	($\chi2$=120.88; p=0.000)
Overweight	31.8	27.7	($\chi2$=13.86; p=0.000)	12.3	10.4	($\chi2$=6.70; p=0.009)
Obese	27.4	24.1	($\chi2$=2.40; p=0.121)	10.0	8.9	($\chi2$=0.58; p=0.447)
Mass media exposure						
Low	46.4	43.3	($\chi2$=28.22; p=0.000)	22.2	19.6	($\chi2$=31.17; p=0.000)
Moderate	37.9	32.5	($\chi2$=118.05; p=0.000)	16.0	13.2	($\chi2$=62.82; p=0.000)
High	29.7	26.1	($\chi2$=8.11; p=0.004)	13.3	10.1	($\chi2$=12.42; p=0.000)
Caste/tribe						
SCs	44.1	38.5	($\chi2$=50.13; p=0.000)	20.6	16.4	($\chi2$=47.36; p=0.000)
STs	44.1	38.9	($\chi2$=42.47; p=0.000)	21.5	17.0	($\chi2$=52.45; p=0.000)
OBCs	40.4	34.2	($\chi2$=133.82; p=0.000)	17.6	14.0	($\chi2$=77.07; p=0.000)
Others	36.9	27.7	($\chi2$=83.47; p=0.000)	16.2	11.4	($\chi2$=40.45; p=0.000)
Don't Know	43.1	38.6	($\chi2$=1.00; p=0.318)	22.8	14.2	($\chi2$=6.15; p=0.013)
No caste/tribe	35.7	32.9	($\chi2$=2.90; p=0.088)	14.9	14.5	($\chi2$=0.16; p=0.690)
Religion						
Hindu	40.9	34.5	($\chi2$=260.02; p=0.000)	18.4	14.4	($\chi2$=181.28; p=0.000)
Muslim	41.5	35.5	($\chi2$=42.52; p=0.000)	18.7	15.4	($\chi2$=23.61; p=0.000)
Others	38.6	29.5	($\chi2$=46.93; p=0.000)	19.5	12.2	($\chi2$=52.35; p=0.000)
Household size						
Less than 4 members	38.3	31.5	($\chi2$=28.40; p=0.000)	17.8	13.0	($\chi2$=25.94; p=0.000)
4-7 members	41.2	34.4	($\chi2$=243.70; p=0.000)	18.4	14.5	($\chi2$=141.10; p=0.000)
<7 members	41.3	35.5	($\chi2$=65.95; p=0.000)	19.0	14.5	($\chi2$=68.96; p=0.000)
Wealth index						
Poorest	48.1	45.5	($\chi2$=18.04; p=0.000)	23.5	21.2	($\chi2$=21.20; p=0.000)
Poorer	41.1	39.5	($\chi2$=4.58; p=0.032)	17.8	16.6	($\chi2$=3.87; p=0.049)
Middle	35.7	34.3	($\chi2$=2.63; p=0.105)	14.8	13.7	($\chi2$=2.76; p=0.096)
Richer	28.5	28.2	($\chi2$=0.08; p=0.777)	10.4	10.7	($\chi2$=0.20; p=0.653)
Richest	22.3	23.0	($\chi2$=0.32; p=0.573)	8.3	9.1	($\chi2$=1.07; p=0.300)
Place of residence						
Urban	33.1	29.9	($\chi2$=9.71; p=0.001)	14.6	12.4	($\chi2$=8.87; p=0.003)
Rural	42.3	36.3	($\chi2$=254.43; p=0.000)	19.2	15.3	($\chi2$=186.67; p=0.000)
Total	41.0	34.4	*($\chi2$=333.13; p=0.000)*	18.5	14.4	*($\chi2$=232.33; p=0.000)*

Appendix Table C: Percent of children wasting and severe wasting in aspirational (AD) and non-aspirational districts (NAD) by background characteristics (N=196,343)

	Wasted			Severely Wasted		
Characteristic	AD	NAD	Chi-square	AD	NAD	Chi-square
Sex of child						
Male	22.2	19.5	(χ2=41.98; p=0.000)	9.2	7.8	(χ2=22.59; p=0.000)
Female	19.8	18.2	(χ2=14.32; p=0.000)	7.4	7.1	(χ2=0.96; p=0.327)
Age in months						
0-6	27.2	26.6	(χ2=0.35; p=0.552)	11.6	12.8	(χ2=2.25; p=0.133)
7-12	26.8	22.0	(χ2=22.32; p=0.000)	10.5	8.8	(χ2=5.99; p=0.014)
13-24	21.5	18.9	(χ2=15.38; p=0.000)	9.3	7.6	(χ2=13.97; p=0.000)
25-59	18.8	17.0	(χ2=24.09; p=0.000)	7.0	6.3	(χ2=9.74; p=0.002)
Size of child at birth						
Average	20.6	18.4	(χ2=49.03; p=0.000)	8.3	7.3	(χ2=20.76; p=0.000)
Smaller than average	24.7	22.6	(χ2=4.05; p=0.0441)	8.7	8.6	(χ2=0.00; p=0.972)
Birth order						
1	20.3	17.9	(χ2=23.18; p=0.000)	8.1	7.2	(χ2=7.99; p=0.005)
2	20.8	19.1	(χ2=10.79; p=0.001)	8.4	7.4	(χ2=6.57; p=0.010)
3	21.8	20.0	(χ2=6.31; p=0.012)	8.1	8.1	(χ2=0.00; p=0.989)
4 and above	22.1	19.9	(χ2=8.74; p=0.003)	9.0	8.0	(χ2=4.38; p=0.036)
Mother characteristics						
Education						
No formal schooling	22.8	21.1	(χ2=9.90; p=0.002)	9.3	8.5	(χ2=3.83; p=0.050)
Primary	20.5	19.8	(χ2=0.84; p=0.359)	7.8	7.5	(χ2=0.35; p=0.556)
Secondary	20.5	18.5	(χ2=20.90; p=0.000)	7.9	7.3	(χ2=4.78; p=0.029)
Higher	18.1	16.7	(χ2=2.08; p=0.149)	8.0	7.0	(χ2=2.52; p=0.113)
Anemia status						
Severe	27.7	18.0	(χ2=10.46; p=0.001)	9.6	6.8	(χ2=2.42; p=0.119)
Moderate	21.1	18.4	(χ2=12.37; p=0.000)	7.8	7.0	(χ2=2.76; p=0.096)
Mild	21.2	19.4	(χ2=17.16; p=0.000)	8.6	7.7	(χ2=8.33; p=0.004)
Not-anemic	20.6	18.5	(χ2=19.35; p=0.000)	8.2	7.4	(χ2=5.88; p=0.015)
Nutritional status						
Thin	24.8	24.3	(χ2=0.58; p=0.448)	8.7	8.5	(χ2=0.34; p=0.562)
Normal	20.9	19.2	(χ2=19.70; p=0.000)	8.6	8.0	(χ2=5.44; p=0.019)
Overweight	13.9	13.4	(χ2=0.32; p=0.569)	5.8	5.2	(χ2=1.35; p=0.245)
Obese	14.6	10.9	(χ2=5.39; p=0.020)	5.8	4.0	(χ2=3.29; p=0.069)
Mass media exposure						
Low	22.6	20.6	(χ2=16.28; p=0.000)	8.8	8.2	(χ2=4.03; p=0.045)
Moderate	20.1	18.4	(χ2=17.53; p=0.000)	7.9	7.2	(χ2=7.73; p=0.005)
High	18.5	17.7	(χ2=0.59; p=0.441)	8.1	7.5	(χ2=0.70; p=0.404)
Caste/tribe						
SCs	21.6	19.1	(χ2=15.21; p=0.000)	8.3	7.5	(χ2=3.90; p=0.048)
STs	24.2	22.9	(χ2=3.73; p=0.054)	10.1	8.9	(χ2=5.97; p=0.015)
OBCs	20.5	18.7	(χ2=14.91; p=0.000)	8.3	7.3	(χ2=11.78; p=0.001)
Others	17.9	16.7	(χ2=2.37; p=0.123)	6.8	7.0	(χ2=0.24; p=0.623)
Don't Know	30.5	22.1	(χ2=4.24; p=0.039)	13.2	7.9	(χ2=3.88; p=0.049)
No caste/tribe	21.3	19.0	(χ2=2.74; p=0.098)	7.3	8.5	(χ2=1.76; p=0.185)
Religion						
Hindu	21.3	18.8	(χ2=51.76; p=0.000)	8.5	7.4	(χ2=26.46; p=0.000)
Muslim	20.2	20.0	(χ2=0.14; p=0.705)	7.5	8.6	(χ2=4.72; p=0.029)
Others	21.2	15.4	(χ2=28.35; p=0.000)	8.8	5.8	(χ2=18.51; p=0.000)
Household size						
Less than 4 members	19.9	18.9	(χ2=0.94; p=0.332)	8.0	7.8	(χ2=0.07; p=0.795)
4-7 members	21.3	19.1	(χ2=33.70; p=0.000)	8.1	7.6	(χ2=3.96; p=0.047)
<7 members	20.8	18.1	(χ2=21.88; p=0.000)	9.2	7.1	(χ2=28.01; p=0.000)
Wealth index						
Poorest	23.3	22.2	(χ2=4.33; p=0.037)	8.8	8.5	(χ2=1.16; p=0.281)
Poorer	20.3	19.9	(χ2=0.37; p=0.544)	8.3	7.8	(χ2=1.70; p=0.192)
Middle	18.8	18.2	(χ2=0.69; p=0.406)	7.3	7.3	(χ2=0.03; p=0.866)
Richer	18.7	17.4	(χ2=2.28; p=0.131)	7.9	6.9	(χ2=3.39; p=0.065)
Richest	17.5	16.1	(χ2=1.67; p=0.196)	7.8	6.9	(χ2=1.11; p=0.292)
Place of residence						
Urban	21.2	18.2	(χ2=12.12; p=0.000)	8.5	7.5	(χ2=3.49; p=0.062)
Rural	21.0	19.1	(χ2=35.97; p=0.000)	8.3	7.5	(χ2=14.10; p=0.000)
Total	21.0	18.9	*(χ2=53.47; p=0.000)*	8.3	7.5	*(χ2=18.01; p=0.000)*

Appendix Table D: Percent of children underweight and severely underweight in aspirational (AD) and non-aspirational district (NAD) by background characteristics

	Underweight			Severely Underweight		
Characteristic	AD	NAD	Chi-square	AD	NAD	Chi-square
Sex of child						
Male	38.5	31.8	(χ2=188.94; p=0.000)	13.8	10.7	(χ2=94.92; p=0.000)
Female	36.9	30.1	(χ2=185.20; p=0.000)	12.4	9.6	(χ2=76.16; p=0.000)
Age in months						
0-6	30.7	27.5	(χ2=10.95; p=0.001)	12.2	11.8	(χ2=0.37; p=0.543)
7-12	33.2	25.9	(χ2=48.30; p=0.000)	11.8	9.0	(χ2=17.73; p=0.000)
13-24	37.7	30.0	(χ2=100.49; p=0.000)	14.2	10.6	(χ2=48.89; p=0.000)
25-59	39.9	32.8	(χ2=232.41; p=0.000)	13.1	9.9	(χ2=120.65; p=0.000)
Size of child at birth						
Average	36.7	29.9	(χ2=351.95; p=0.000)	12.5	9.6	(χ2=157.11; p=0.000)
Smaller than average	45.2	39.7	(χ2=21.95; p=0.000)	17.3	14.3	(χ2=12.46; p=0.000)
Birth order						
1	34.6	27.4	(χ2=162.31; p=0.000)	11.6	8.7	(χ2=63.58; p=0.000)
2	36.7	30.4	(χ2=105.42; p=0.000)	12.2	9.7	(χ2=42.35; p=0.000)
3	39.7	35.7	(χ2=22.62; p=0.000)	13.9	12.2	(χ2=9.09; p=0.003)
4 and above	43.8	39.3	(χ2=25.33; p=0.000)	17.1	14.1	(χ2=22.53; p=0.000)
Mother characteristics						
Education						
No formal schooling	46.2	40.7	(χ2=71.74; p=0.000)	17.3	14.8	(χ2=27.02; p=0.000)
Primary	38.8	36.7	(χ2=4.68; p=0.0304)	13.7	12.0	(χ2=6.63; p=0.010)
Secondary	33.9	29.5	(χ2=75.85; p=0.000)	11.0	9.2	(χ2=30.56; p=0.000)
Higher	23.9	20.6	(χ2=11.08; p=0.001)	7.6	6.4	(χ2=3.55; p=0.059)
Anaemia status						
Severe	49.9	38.7	(χ2=10.63; p=0.001)	21.3	12.7	(χ2=10.80; p=0.001)
Moderate	40.6	34.2	(χ2=51.54; p=0.000)	13.7	11.7	(χ2=10.91; p=0.001)
Mild	37.8	32.0	(χ2=126.91; p=0.000)	13.1	10.2	(χ2=73.84; p=0.000)
Not-anemic	35.8	28.7	(χ2=161.82; p=0.000)	12.5	9.4	(χ2=72.99; p=0.000)
Nutritional status						
Thin	47.4	42.3	(χ2=45.10; p=0.000)	17.3	14.1	(χ2=33.28; p=0.000)
Normal	36.7	31.0	(χ2=172.09; p=0.000)	12.6	10.3	(χ2=67.56; p=0.000)
Overweight	23.7	22.0	(χ2=3.19; p=0.074)	7.4	6.5	(χ2=2.46; p=0.117)
Obese	18.5	17.3	(χ2=0.44; p=0.507)	5.5	4.8	(χ2=0.44; p=0.508)
Mass media exposure						
Low	43.7	39.0	(χ2=66.12; p=0.000)	15.8	13.4	(χ2=34.65; p=0.000)
Moderate	33.9	29.1	(χ2=103.81; p=0.000)	11.4	9.3	(χ2=47.72; p=0.000)
High	27.7	24.0	(χ2=8.74; p=0.003)	8.6	7.6	(χ2=1.92; p=0.165)
Caste/tribe						
SCs	40.6	33.9	(χ2=78.69; p=0.000)	14.3	10.9	(χ2=47.39; p=0.000)
STs	45.0	37.6	(χ2=85.65; p=0.000)	17.3	13.6	(χ2=39.04; p=0.000)
OBCs	36.7	30.6	(χ2=132.42; p=0.000)	12.6	9.9	(χ2=62.25; p=0.000)
Others	31.2	24.6	(χ2=46.67; p=0.000)	9.5	7.9	(χ2=8.20; p=0.004)
Don't Know	51.8	35.1	(χ2=14.06; p=0.000)	13.2	8.8	(χ2=3.12; p=0.077)
No caste/tribe	30.4	31.1	(χ2=0.22; p=0.641)	10.0	11.0	(χ2=0.97; p=0.325)
Religion						
Hindu	38.0	31.2	(χ2=303.90; p=0.000)	13.2	10.2	(χ2=137.73; p=0.000)
Muslim	36.7	31.8	(χ2=32.79; p=0.000)	12.5	10.7	(χ2=10.75; p=0.001)
Others	37.8	24.7	(χ2=102.51; p=0.000)	14.1	6.9	(χ2=74.64; p=0.000)
Household size						
Less than 4 members	36.6	28.5	(χ2=41.39; p=0.0000)	12.9	9.4	(χ2=17.75; p=0.000)
4-7 members	38.3	31.2	(χ2=281.68; p=0.0000)	13.2	10.2	(χ2=121.40; p=0.000)
<7 members	36.4	31.2	(χ2=56.78; p=0.0000)	12.9	10.3	(χ2=32.89; p=0.000)
Wealth index						
Poorest	45.7	42.2	(χ2=36.29; p=0.000)	16.9	14.9	(χ2=23.46; p=0.000)
Poorer	36.8	35.6	(χ2=2.74; p=0.098)	12.2	11.7	(χ2=0.93; p=0.334)
Middle	31.2	30.2	(χ2=1.31; p=0.252)	9.4	9.6	(χ2=0.09; p=0.765)
Richer	25.6	25.4	(χ2=0.03; p=0.861)	7.6	7.4	(χ2=0.7651; p=0.703)
Richest	19.0	20.1	(χ2=0.88; p=0.347)	7.2	6.6	(χ2=0.62; p=0.433)
Place of residence						
Urban	29.6	27.1	(χ2=6.57; p=0.010)	10.5	9.0	(χ2=6.03; p=0.014)
Rural	39.1	32.6	(χ2=309.90; p=0.000)	13.5	10.6	(χ2=144.33; p=0.000)
Total	37.7	31.0	*(χ2=373.90; p=0.000)*	13.1	10.1	*(χ2=170.85; p=0.000)*