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Review Article

Nutritional status of children in districts of Haryana an analysis from National Family Health Survey (NFHS-4 and 5)

Parul Singhal, Sunny Ohlan*, Sandeep Singh

Department of Community Medicine, SHKM Government Medical College, Nalhar Haryana, India

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***Correspondence:**

Dr. Sunny Ohlan,

E-mail: Sunnyohlan30@gmail.com

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ABSTRACT

Malnutrition in early life either undernutrition or particularly obesity, can be the underlying cause of many non-communicable diseases. Nowadays child growth failure phenomena are an enduring public health concern in lower and middle-income countries like India. DBM (Double burden of malnutrition) that is underweight and overweight is also a global concern. Recently, National Family Health Survey (NFHS-5) 2019-21 of India, data reported that 35.5 % of children age less than 5 years are stunted or they are too short for their age; 20% of children are too thin for their height (wasted) and 32% under 5 children are underweight. The district-level data of nutritional status of children indices were extracted from the district fact sheets of Haryana state, published by NFHS, India. This study is based upon two-time frames of the NFHS (NFHS-4 and NFHS-5) series. District wise change detection of nutritional status of children. Results found that the prevalence of stunted children is still present and increased in 4 districts of Haryana whereas wasted and underweight decreased from previous Survey in all districts of Haryana. As per data reported in the NFHS-5 fact sheet, there are 11 districts in Haryana which shows increased in overweight in children. This study may be beneficial for health policy and program makers to understand the dynamic trends of changes in nutritional status of children of under 5 years of age group across the various districts of Haryana.

Keywords: NFHS, Nutritional, Children, Underweight and Overweight

INTRODUCTION

The burden of Malnutrition and poor health among children is heavily concentrated in low and middle-income countries in sub-Saharan Africa and South Asia, including India. According to World Health Organization (2020), Malnutrition term consists of (wasting, stunting and underweight), in-adequate vitamins or minerals, overweight and obesity and World-wide, there are 144 million children under the age of 5 years who are stunted and 47 million who are wasted, while 38.5 million are overweight or obese.¹ There is a rapid surge in the prevalence of overweight and obesity in LMIC (Low middle income countries), at the same time as these countries are also experiencing a slower decline in the prevalence of undernutrition.

The immediate causes of malnutrition are inadequate dietary intake and disease; however, the underlying determinants are complex, spanning from food insecurity, poor care practices, unsanitary living environments and/or poor access to healthcare.² As a result of these causes malnourished children are more vulnerable to illnesses. Malnutrition in children under five can result either from a deficit or excess in energy intake, both within the same population, or at different times in a child's lifespan.

The nationally representative National Family Health Survey (NFHS), implemented by the Ministry of Health and Family Welfare, Government of India, monitors the state of child nutrition across Indian States and Union territories. Survey data suggest that the burden of stunting among children in India decreased by only 14 percentage

points over the 24-year period between 1992 and 2016 (stunting in children declined from 52% in 1992 to 38% in 2016), with widespread spatial, socioeconomic and demographic heterogeneities. The prevalence of underweight among children dropped by 17 percentage points over the same period (from 53% in 1992 to 36% in 2016), with notable spatial, socioeconomic and demographic disparities, and the prevalence of wasting increased by 3 percentage points (from 18% in 1992 to 21% in 2016).³

Child health is considered an important predictor of socioeconomic growth; the key objective of Millennium Development Goal 4 (MDG) and is to reduce mortality among children by two-thirds in 2015.⁴ A new global development agenda, seeking to achieve by 2030, new targets set out in the Sustainable Development Goals (SDGs) for child mortality aims to end, by 2030, preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 deaths per 1,000 live births and under-5 mortality to at least as low as 25 deaths per 1,000 live births.⁵

Nutrition Rehabilitation Centres (NRCs) are operational at public health facilities to exclusively cater the under-five sick Severe Acute Malnourished (SAM) children who are admitted for clinical management of their medical complications along with nutritional management. The guidance notes on "Enabling Delivery of Essential Health Services during the COVID 19 Outbreak" was issued on 14th April 2020 and on 24th May 2020, guidance note on "Provision of Reproductive, Maternal, Newborn, Child, Adolescent Health Plus Nutrition (RMNCAH+N) services during and post COVID-19 Pandemic". It was advised that NRC services in non-containment zone to be continued as per existing national guidelines, and in containment zones, medical management of sick SAM children to be ensured in the nearest NRC/health facility whereas post-discharge follow up to be conducted through tele-consultation. During FY 2019-20, 2.25 lakh sick SAM children received treatment in 1072 NRCs and in FY 2020-21, 1.04 lakh sick SAM children received treatment in 1073 NRCs.⁶

Recently released, National Family Health Survey (NFHS-5) 2019-21 data of India, reported that 35.5 % of children age less than 5 years are stunted or they are too short for their age; 20% of children are too thin for their height (wasted) and 32% under 5 children are underweight. One interesting fact is that the prevalence of wasted and underweight children remained constant between NFHS-4 (2015–2016) and NFHS-5 (2019–2020) rounds.

So, the purpose of this study is to estimate for overall mean time trend or variations for malnutrition across all districts of Haryana State, India. This study will be beneficial for policy makers and health workers to understand the nutritional status of children and changes of child growth failure indices across the districts in Haryana.

METHODS

This study used data of Nutritional status of Children from district level fact sheets of Haryana State published by the National Family Health Survey (NFHS), India. This study was carried out based upon two-time frames of the NFHS (NFHS-4, 2015–2016 and NFHS-5, 2019–2021) series. The fact sheets are publicly available on the respective website and one can access the data set without any prior request. MoHFW (Ministry of Health and Family Welfare) designated the International Institute for Population Science (IIPS), Mumbai as the nodal agency for the survey. Information was collected on height, weight and other anthropometric measurements children born to those women in the 5 years preceding the survey. Because of almost similar content in both the NFHS 4th and NFHS 5th round, it is possible to compare the indices over time across the districts of Haryana, India. Key indicators related to the nutritional status of Under-5 children in the last 5 years (2015–2016 to 2019–2020) by making a comparative analysis from district level NFHS-4 factsheets and NFHS-5 factsheets of Haryana.

RESULTS

According to NFHS-5 fact sheets of Haryana State, children under 5 years who are stunted or acutely undernourished, wasted and underweight was observed to be 27.5%, 11.5% and 21.5% respectively. The stunted, wasted and underweight children under 5 years of age are taken below -2 standard deviations, based on the WHO (World Health Organization) standard.⁷ The children under 5 years who are severely wasted are taken below -3 standard deviations, as per based on the WHO standard and also overweight children under 5 years are above +2 standard deviations accordance with WHO standard.⁷ However, 3.3% children under 5 years who are overweight and 4.4% are severely wasted in recently released NFHS-5 fact sheet of the State of Haryana.

Stunted children in districts of Haryana

In Table 1, according to NFHS-5 fact sheets of districts of Haryana, increasing trend of stunted or acutely undernourished children was observed in four districts which are Ambala, Hisar, Panchkula and Mahendragarh.⁷ Rest all of the districts, shows decline in the stunting (Height for age) in NFHS-5 as compare to NFHS-4. Except these two districts where comparator or comparison not done because of data was not present in NFHS-4 these are Charkhi-Dadri and Bhiwani both the districts in NFHS-5 district fact sheet have coverage of 23.9 and 29% respectively.

Wasted children in districts of Haryana

Out of 22 districts in Haryana all the districts show the decreasing trend of wasted (weight-for-height) except two where we don't make comparison because of data constraints.

Table 1: Districts fact sheet of nutritional status of children in context with stunting, wasting and severe wasting.

Districts of Haryana	Stunted %			Wasted%			Severely Wasted%		
	NFHS-5	NFHS-4	Change noted	NFHS-5	NFHS-4	Change noted	NFHS-5	NFHS-4	Change noted
Ambala	24.1	19.8	+	10.9	37.9	-	4	18.4	-
Bhiwani	29	NA	Comparator not available	6	NA	Comparator not available	1.9	NA	Comparator not available
Charkhi Dadri	23.9	NA	Comparator not available	10.6	NA	Comparator not available	2.6	NA	Comparator not available
Faridabad	28.9	29.7	-	8	19.7	-	3.6	8.9	-
Fatehabad	24.6	28.5	-	16	20.7	-	5.3	8	-
Gurgaon	22.1	41.2	-	15.7	17.9	-	4.2	9.5	-
Hisar	27.8	25.6	+	16.4	23.5	-	5.1	9.3	-
Jhajjar	15.6	22.3	-	8	15.5	-	3.5	5.5	-
Jind	25.5	26	-	8.8	26.7	-	1.6	14	-
Kaithal	29.9	33.6	-	20.7	23.8	-	9.5	10.2	-
Karnal	29.2	41	-	9.8	19.8	-	4.8	7.1	-
Kurukshetra	24.9	31.9	-	12.8	24.1	-	5	11.9	-
Mahendragarh	25.2	23.5	+	8.4	19.2	-	2.1	6.8	-
Mewat	44.4	52.2	-	14.2	17.2	-	7.1	7.5	-
Palwal	31	34	-	9.9	21.4	-	4.2	10.2	-
Panchkula	21.8	21.5	+	12	31.8	-	5	13.6	-
Panipat	25.1	44.6	-	9.9	25.1	-	2.8	11.8	-
Rewari	25.9	27.8	-	9.3	18.3	-	4.2	7	-
Rohtak	28.9	36.6	-	12.5	13.6	-	2.9	4.5	-
Sirsa	25	34.2	-	12.6	22.5	-	5.1	7.2	-
Sonapat	23.6	40.2	-	9.2	21.6	-	5.1	9.7	-
Yamunanagar	27.7	30	-	12.1	26.8	-	4.3	11.6	-

“+” indicates (Increased), “-” indicates (Decreased) in Percentage, NA: Not Available

District Ambala shows maximum decline of 27% from 37.9% in NFHS-4 to 10.9% in NFHS-5 followed by

districts which shows decrease in wasted children percentage in NFHS-5 that are Panchkula, Jind, Panipat i.e.; 19.8, 17.9 and 15.2% respectively.

Table 2: Districts fact sheet of nutritional status of children in context with underweight and overweight.

Districts of Haryana	Underweight (weight-for-age) %			Overweight (weight-for-height) (%)		
	NFHS-5	NFHS-4	Change noted	NFHS-5	NFHS-4	Change noted
Ambala	13.7	32.9	-	6.2	1	+
Bhiwani	20.6	NA	Comparator not available	1	NA	Comparator not available

Continued

	Underweight (weight-for-age) %			Overweight (weight-for-height) (%)		
Charkhi Dadri	16.9	NA	Comparator not available	1.8	NA	Comparator not available
Faridabad	19.5	20.5	-	2.4	1.1	+
Fatehabad	26.6	30	-	1.1	1.9	-
Gurgaon	22.2	30.6	-	2.6	6.5	-
Hisar	21.4	23.5	-	1.8	5.4	-
Jhajjar	9.7	21	-	6.3	2	+
Jind	22.9	29.3	-	2.5	1.6	+
Kaithal	29.9	37.5	-	2.3	2.6	-
Karnal	20.5	32.5	-	2.9	3	-
Kurukshetra	22.5	27.1	-	7	8.6	-
Mahendragarh	15.4	26.1	-	5	1.2	+
Mewat	37.3	40.2	-	3.5	1.5	+
Palwal	21	27.5	-	3.7	4.2	-
Panchkula	19.3	26.2	-	3.9	3	+
Panipat	18.9	40.8	-	2.4	2.3	+
Rewari	20.5	23	-	5.4	2.7	+
Rohtak	22.1	25.2	-	4.1	2.7	+
Sirsa	23.4	30.1	-	0.7	2	-
Sonipat	12.7	30.4	-	3.6	6.2	-
Yamunanagar	23.1	31.8	-	6.4	3.8	+

“+” indicates (Increased), “-” indicates (Decreased) in Percentage, NA: Not Available

Yamunanagar and Sonipat districts data shows that 14.7 and 12.4 percentage decreased of weight-for-height in these two districts and around 11% downshift in NFHS-5 as compared with NFHS-4 in districts like Kurukshetra, Palwal and Faridabad. District Rohtak shows the least decline of 1.1% difference in NFHS-4 (13.6%) to NFHS-5 (12.5%). (Table 1)

Severely wasted children in districts of Haryana

Of all districts of Haryana shown in Table 1, the decreasing trend of severely wasted (weight-for-height) except two districts where we don't make comparison because of data constraints. Here also the Ambala district shows maximum decline of 14.4% from 18.4% in NFHS-4 to 4.0% in NFHS-5 followed by districts which shows decrease in severely wasted children percentage in NFHS-5 were Jind, Panipat and Panchkula i.e., 12.4, 9.0 and 8.6% respectively. In NFHS-5, Mewat and Kaithal districts were shown minimum difference of 0.4% and 0.7% respectively decreased of weight-for-height in severely wasted children as compared with NFHS-4.

Underweight children in different districts of Haryana

All of the districts, shows decline in Underweight (weight-for-age) in NFHS-5 as compare to NFHS-4 except two Bhiwani and Charkhi-Dadri districts we cannot comment on them because of data limitations. Three districts Panipat, Ambala and Sonipat data was declines maximum in underweight children by 21.9%, 19.2% and 17.7% respectively in NFHS-5 as we give a look with previous NFHS-4 data. Faridabad district shows the minimum changes with only 1% in underweight children from 20.5% in NFHS-5 to 19.5% in NFHS-4 and rest all districts change ranges between 2% to 12%. (Table 2)

Weight for height (overweight) in various districts of Haryana

Table 2 depicts that total 11 districts show increase in percentage of overweight children out of 6 were found with maximum difference that are Ambala, Jhajjar, Mahendragarh, Rewari, Yamunanagar and Mewat 5.2, 4.3, 3.8, 2.7, 2.6 and 2.0 percent respectively, except two

districts Bhiwani and Charkhi-Dadri we comment on other districts.

Districts Panipat, Jind and Panchkula depicts minimum increase in overweight children and Faridabad district and Rohtak district found change of 1.3% and 1.4% increase in overweight in children in NFHS-5 as compared with NFHS-4 and rest nine districts show decrease in overweight children.

DISCUSSION

This article provides information about the trends of (stunting, wasting, severe wasting, underweight and overweight) in different districts of Haryana State. As we are burdened with both stunting and overweight in our state. Increasing trend of stunted or acutely undernourished children observed in four districts which are Ambala, Hisar, Panchkula and Mahendragarh. Rest all of the districts, shows decline in the stunting (Height for age) in NFHS-5 as compare to NFHS-4.

Eleven districts of Haryana shows increase in overweight percentage in children, So Childhood obesity has reached epidemic levels in developed as well as in developing countries. Overweight and obesity in childhood are known to have significant impact on both physical and psychological health. Overweight and obese children are likely to stay obese into adulthood and more likely to develop non-communicable diseases like diabetes and cardiovascular diseases at a younger age. The mechanism of obesity development is not fully understood and it is believed to be a disorder with multiple causes.⁸

Malnutrition takes toll on an individual throughout the life cycle. It travels from childhood to adolescence and to the adult thereby hampering his/ her physical and cognitive capacities and eventually reducing his/ her productivity thereby, continuing the cycle of poverty and malnutrition. It is more rampant and visible in women as a malnourished girl child is most likely to develop as a malnourished adolescent and malnourished mother giving birth to a low birth weight (LBW) baby (less than 2.5 kg). Nutrient-rich take-home ration is provided from Anganwadi Centres for both mother and children up to 6 years. GOI and State Governments have launched many schemes for improving the nutrition status of children, but most of them lose focus because of the unawareness of people.⁹ India's ranking in Global Hunger Index 2021 is 101 (slipped from the 2020 index of 94) out of 116 countries. The index is jointly released by Concern Worldwide and Welthungerhilfe every October. The Hunger Index measures countries' performance on four component indicators – undernourishment, child wasting, child stunting and child mortality.¹⁰ Timely Mother and Child Anthropometry may help to reduce the increased indicators of various districts and diet diversity play a major role and identification of behavioral and structural barriers to delaying the introduction of other foods in the child diet.

Limitations

The two districts Bhiwani and Charkhi-Dadri NFHS-4 district fact sheet, nutritional status of children was not available, so we can't comment on them.

CONCLUSION

Children less than five years of age group are more vulnerable group. Although the wasting, severe wasting, underweight are in declining phase in districts of Haryana but parallelly overweight is also increased in 11 districts of State. Malnutrition is one of the world's most serious but least addressed development challenges. Child mortality and child survival in India have ameliorate over the time because of the more focused attention and investment by the government of India. The National Nutrition Strategy (2017) and Poshan Abhiyaan launched on March 8, 2018, has triggered Anganwadi Centers (AWC's) across India to make the Abhiyaan a Jan Andolan (people's movement). For bring the future changes in India and Haryana State we have to sensitize and mobilize people more towards nutrition of children and women.

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