



# Coexistence of Undernutrition, Micronutrient Deficiencies and Overweight: A Hindrance to Intra-household Wellbeing in India



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## Background

- ❖ Double burden (DB) of malnutrition refers to the coexistence of undernutrition and overnutrition.
- ❖ India has been grappling simultaneously with a high prevalence of undernutrition, widespread micronutrient deficiencies, and rising obesity.
- ❖ Poverty-stricken individuals, children, adolescents, elderly, those ill and having a weakened immune system, as well as breastfeeding and pregnant women, are the most susceptible.
- ❖ Double burden (DB) can occur at multiple levels, including
  1. **Population level** (e.g., a high prevalence of overweight and undernutrition in the same population),
  2. **Household level** (e.g., an overweight mother with a stunted child), and
  3. **Individual level** (e.g., overweight with micro-nutrient deficiency within an individual)
- ❖ Half of total Body Mass Index (BMI) inequality in India is due to within household inequality
- ❖ Majority of the studies with regards to paradoxical dual burden have researched intergenerational transmission.
- ❖ Very few studies have considered the nutritional status of males and intra-household burden of malnutrition.

## Objective

- ❖ To document the prevalence of double burden of nutrition through a comprehensive list of dual burdens within individuals and households across India.

## Data source & Methodology

- ❖ Data from the fourth round of the National Family and Health Survey (NFHS-4), India, 2015-16 was employed.
- ❖ 'Household' was considered as the primary unit of analysis irrespective of the relation among members
- ❖ Nine forms of double burden were examined both at the individual and household-level.
- ❖ Multiple logistic regression model was used to estimate the effect of certain household-level characteristics on double burden households.

## Sample description and definition of type of double burden

### Definitions used to define double burden of malnutrition (DB) at individual and household levels

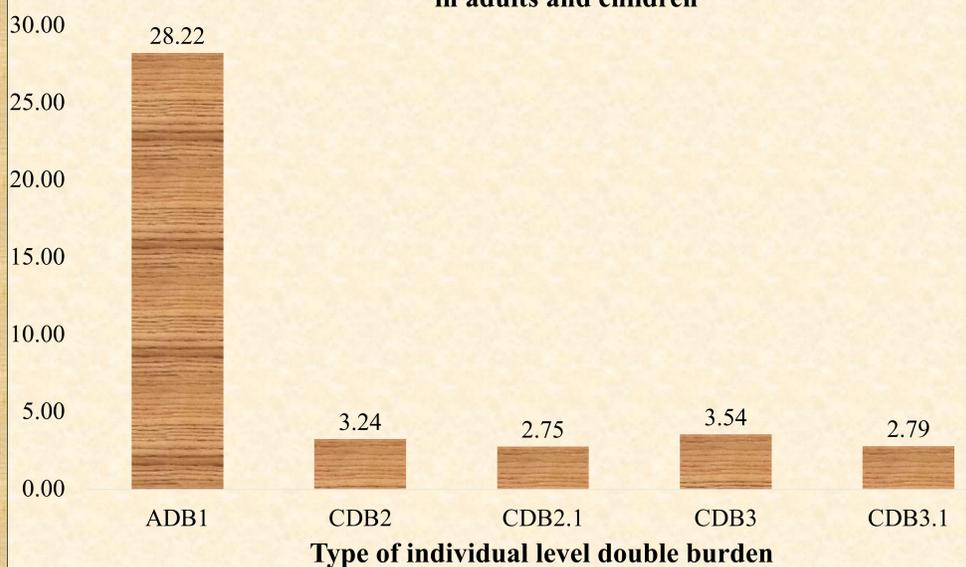
Type of double burden	Definition
<b>Individual level</b>	
ADB1	=1, if adult overweight/obese (BMI $\geq 25.0$ kg/m <sup>2</sup> ) and anemic
CDB2	=1, if child overweight (BAZ $> +2$ SD) and anemic
CDB2.1	=1, if child overweight (WHZ $> +2$ SD) and anemic
CDB3	=1, if child overweight (BAZ $> +2$ SD) and stunted (HAZ $< -2$ SD)
CDB3.1	=1, if child overweight (WHZ $> +2$ SD) and stunted (HAZ $< -2$ SD)
<b>Household level</b>	
DB4	=1, if adult overweight/obese (BMI $\geq 25.0$ kg/m <sup>2</sup> ) and child underweight (BAZ $< -2$ SD)
DB4.1	=1, if adult overweight/obese (BMI $\geq 25.0$ kg/m <sup>2</sup> ) and child underweight (WAZ $< -2$ SD)
DB5	=1, if adult overweight/obese (BMI $\geq 25.0$ kg/m <sup>2</sup> ) and child stunted (HAZ $< -2$ SD)
DB6	=1, if adult overweight/obese (BMI $\geq 25.0$ kg/m <sup>2</sup> ) and child wasted (WHZ $< -2$ SD)
DB7	=1, if adult overweight/obese (BMI $\geq 25.0$ kg/m <sup>2</sup> ) and child anemic
DB8	=1, if adult underweight (BMI $< 18.5$ kg/m <sup>2</sup> ) and child overweight (BAZ $> +2$ SD)
DB8.1	=1, if adult underweight (BMI $< 18.5$ kg/m <sup>2</sup> ) and child overweight (WHZ $> +2$ SD)
DB9	=1, if adult anemic and child overweight (BAZ $> +2$ SD)
DB9.1	=1, if adult anemic and child overweight (WHZ $> +2$ SD)

### Different types of household (HH) structure within sample

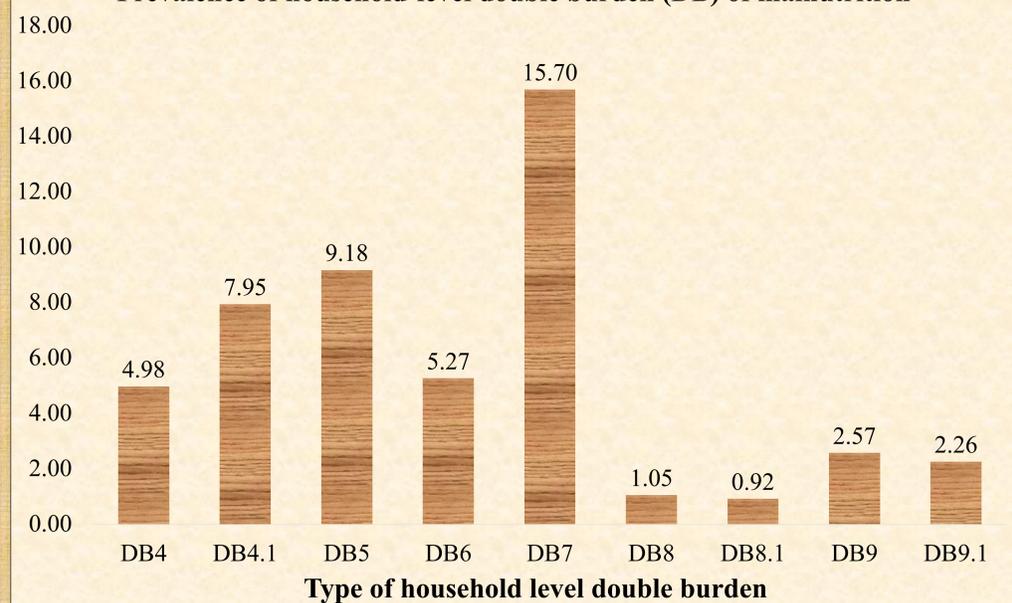
Household (HH) Structure	N	%
HH consist of 1 child and 1 adult	66,423	45.17
HH consist of 1 child and 2 adults	26,239	17.84
HH consist of 1 child and 3 adults	7,663	5.21
HH consist of 1 child and 4 adults	2,723	1.85
HH consist of 1 child and 5 adults	1,001	0.68
HH consist of 1 child and 6 adults	395	0.27
HH consist of 1 child and $\geq 7$ adults	225	0.15
HH consist of 2 child and 1 adult	22,193	15.09
HH consist of 2 child and 2 adults	9,496	6.46
HH consist of 2 child and 3 adults	3,135	2.13
HH consist of 2 child and 4 adults	1,274	0.87
HH consist of 2 child and $\geq 5$ adults	851	0.58
HH consist of 3 child and 1 adult	1,768	1.20
HH consist of 3 child and 2 adults	1,451	0.99
HH consist of 3 child and 3 adults	764	0.52
HH consist of 3 child and 4 adults	345	0.23
HH consist of 3 child and $\geq 5$ adults	252	0.17
HH consist of $\geq 4$ child and 1 adult	82	0.06
HH consist of $\geq 4$ child and 2 adults	289	0.20
HH consist of $\geq 4$ child and 3 adults	219	0.15
HH consist of $\geq 4$ child and 4 adults	143	0.10
HH consist of $\geq 4$ child and 5 adults	77	0.05
HH consist of $\geq 4$ child and $\geq 6$ adults	53	0.04
<b>Total</b>	<b>147,061</b>	<b>100</b>

## Results

Prevalence of individual-level double burden (DB) of malnutrition in adults and children



Prevalence of household-level double burden (DB) of malnutrition



## Conclusion

- ❖ Prevalence of individual level DB among adults is highest for co-existing overweight and anemia.
- ❖ Prevalence of co-existing overweight and stunted is highest among children if calculated using BMI-for-age.
- ❖ Double burden at household level ranged between 1 to 15 percent.
- ❖ Five to nine percent of the households had at least one adult overweight along with either a stunted, underweight or a wasted child.
- ❖ Households comprising of fewer members, were less likely to have double burden.
- ❖ Households with 1 child and 2 adults, 1 child and 3 adults and 2 children and 1 adult are less likely to suffer from any kind of DB.
- ❖ Addressing both ends of the malnutrition spectrum and appropriate intervention shall assist in curtailing underlying determinants of the intra-household burden of nutrition.
- ❖ An integrated nutrition action should be aimed at eradicating such contrasting forms of malnutrition.