Double burden of Malnutrition(DBM) in Indian children

Insights from National Family Health Survey(NFHS)-4

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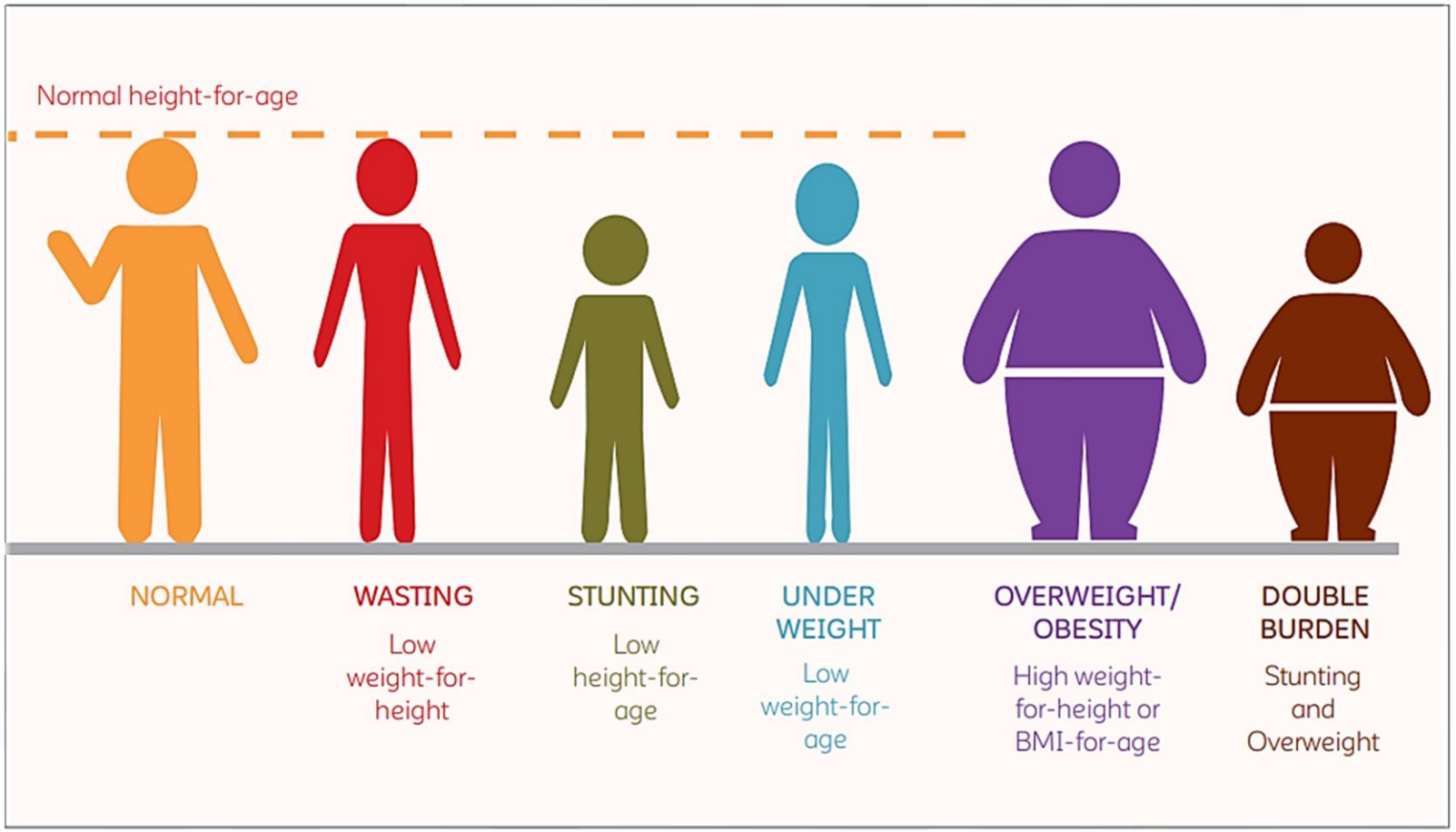
Types of Malnutrition

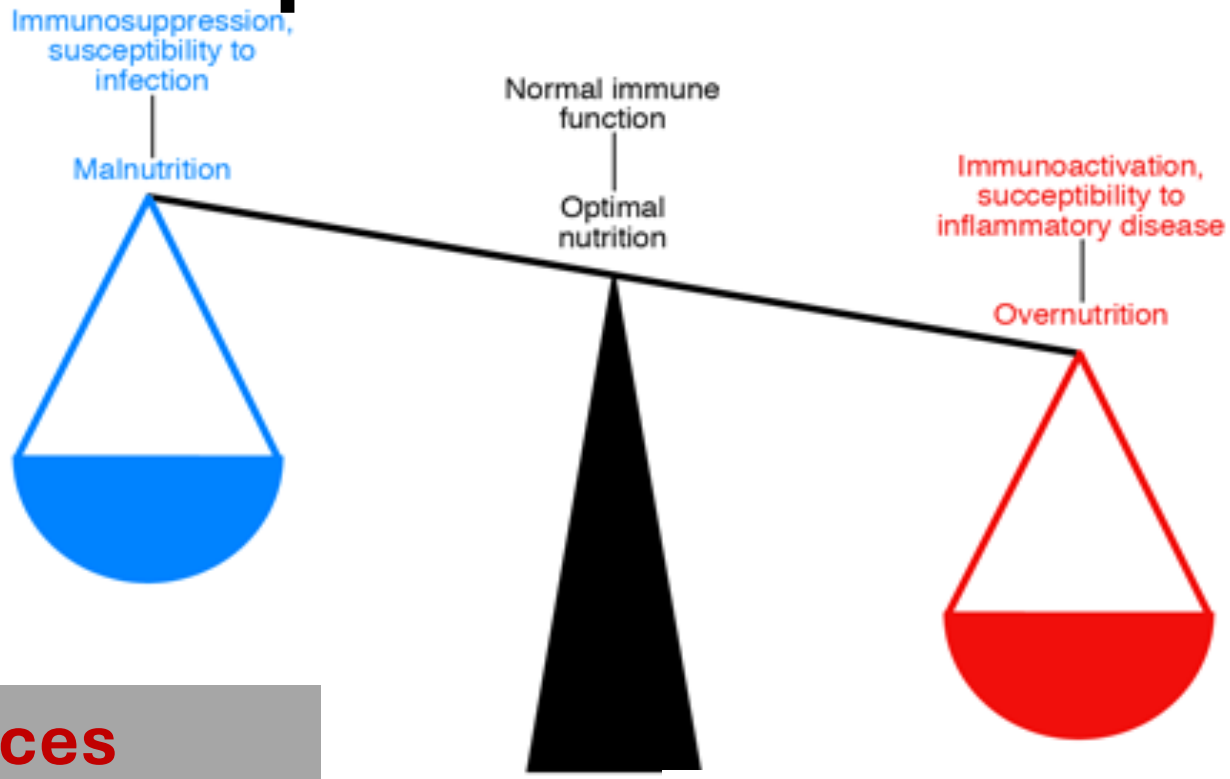


Stunting + **Overweight Obesity** = **DBM**

- This happens in the situation when most available and affordable food is rich in calories but not in protein and other nutrients (refined carbs , deep fried food items , cheaper food with sugary syrups

- People who often remain hungry, they have the tendency to over-eat with calorie dense food items when it gets available

Consequences of malnutrition/DBM



Consequences

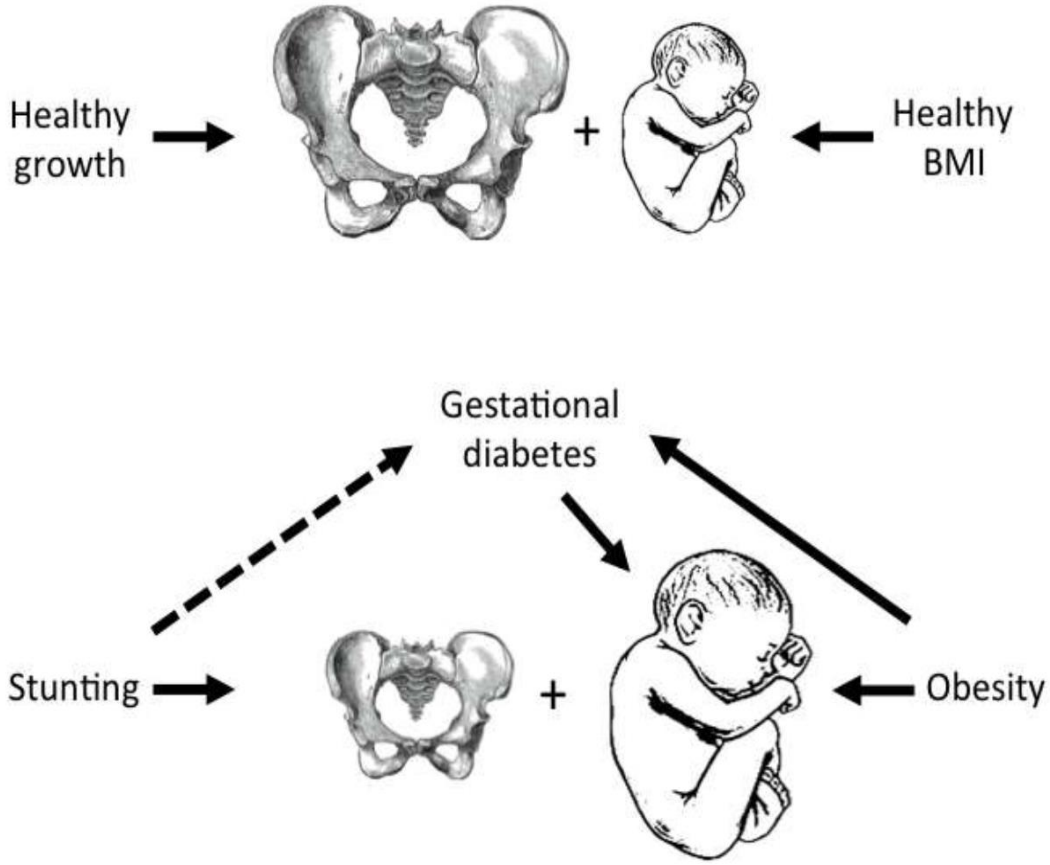
- Learning difficulties
- Bullying
- Psychological effects

Long term consequences

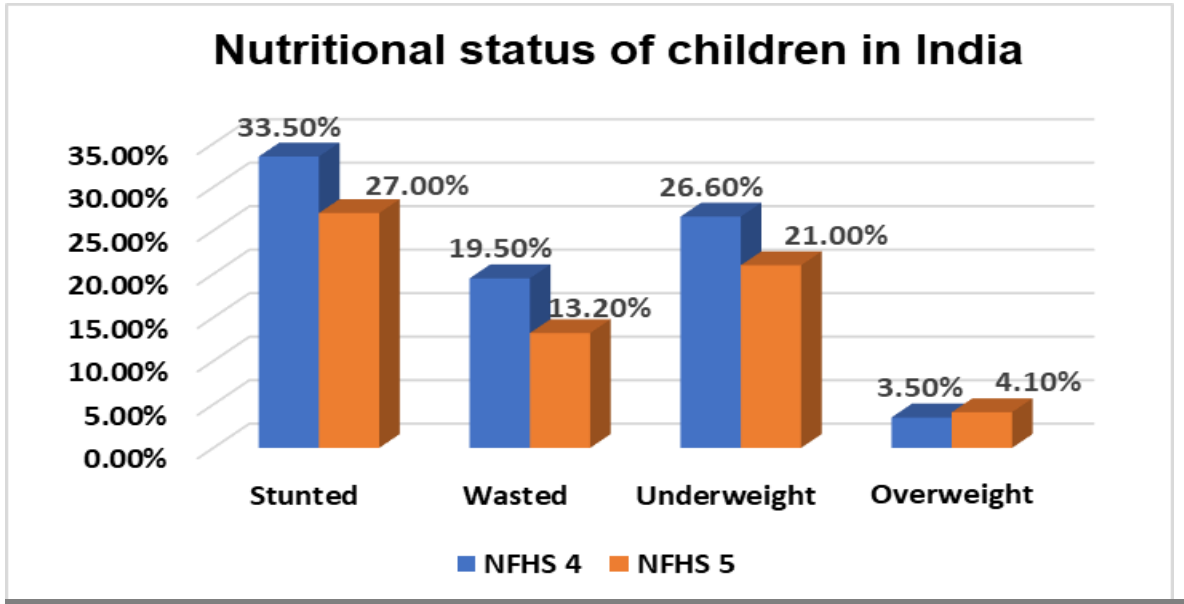
- Adult obesity
- Diabetes, Hypertension
- Osteoarthritis,
- Cancers -endometrial, breast, ovarian, prostate, liver, Gallbladder, colon).
- premature death

Consequence of DBM

Stunting, obesity and childbirth



Nutritional Status : India



Comprehensive National Nutritional Survey (2016-18) :
DBM(0-4years) - 2.8%

2023

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Original Article

Paediatrics Section

Prevalence of Double Burden of Malnutrition among Young Children in Rishikesh, Uttarakhand, India: A Cross-sectional Study

AAKRITI JASROTIA[1], VARTIKA SAXENA[2], YOGESH BAHRUPI[3]

310 children (0-6 years)- 3.5 %

Aim - **To estimate the prevalence of DBM and associated socio-demographic factors among children aged 0-5 years in India, using data from the National Family Health survey-4 (2015-16)**

National family Health survey(NFHS) -4 - 2015-16

- 5 yearly , nationally representative cross-sectional survey, 28 States and 8UTs
- MoHFW, GOI. IIPS, Mumbai
- stratified two-stage sampling. The 2011 census served as the sampling frame for the selection of PSUs. PSUs were villages in rural areas and Census Enumeration Blocks (CEBs) in urban areas.
- 28,586 Primary Sampling Units (PSUs) were selected across the country
- Seca 874 Digital scale was used to measure the weight
- Seca 213 Stadiometer - height of children age 24-59 months
- Seca 417 Infantometer - recumbent length of children under two years or less than 85 cm.

Indicators of DBM in Under-5 children

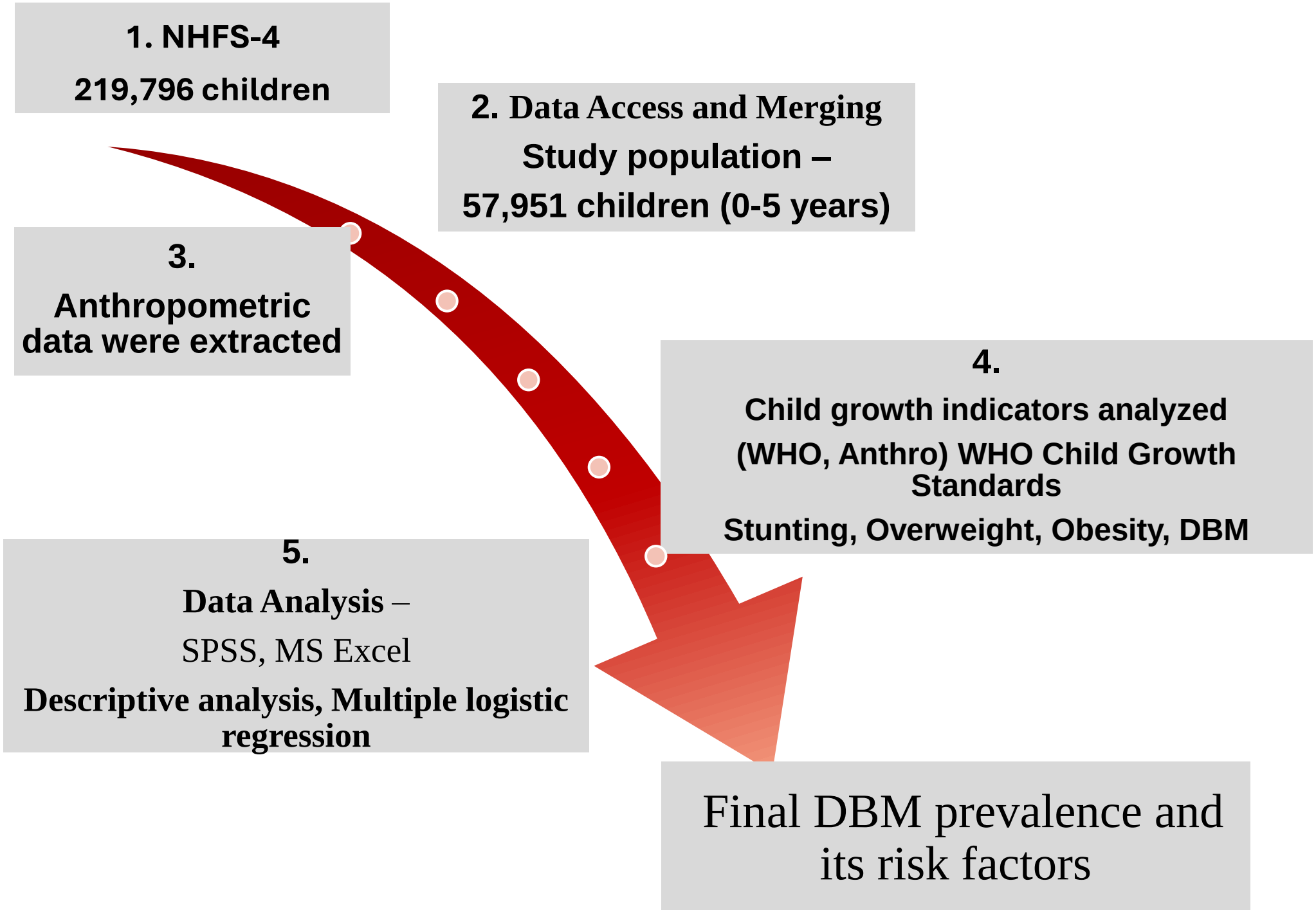
Stunting

<2sd Height for age

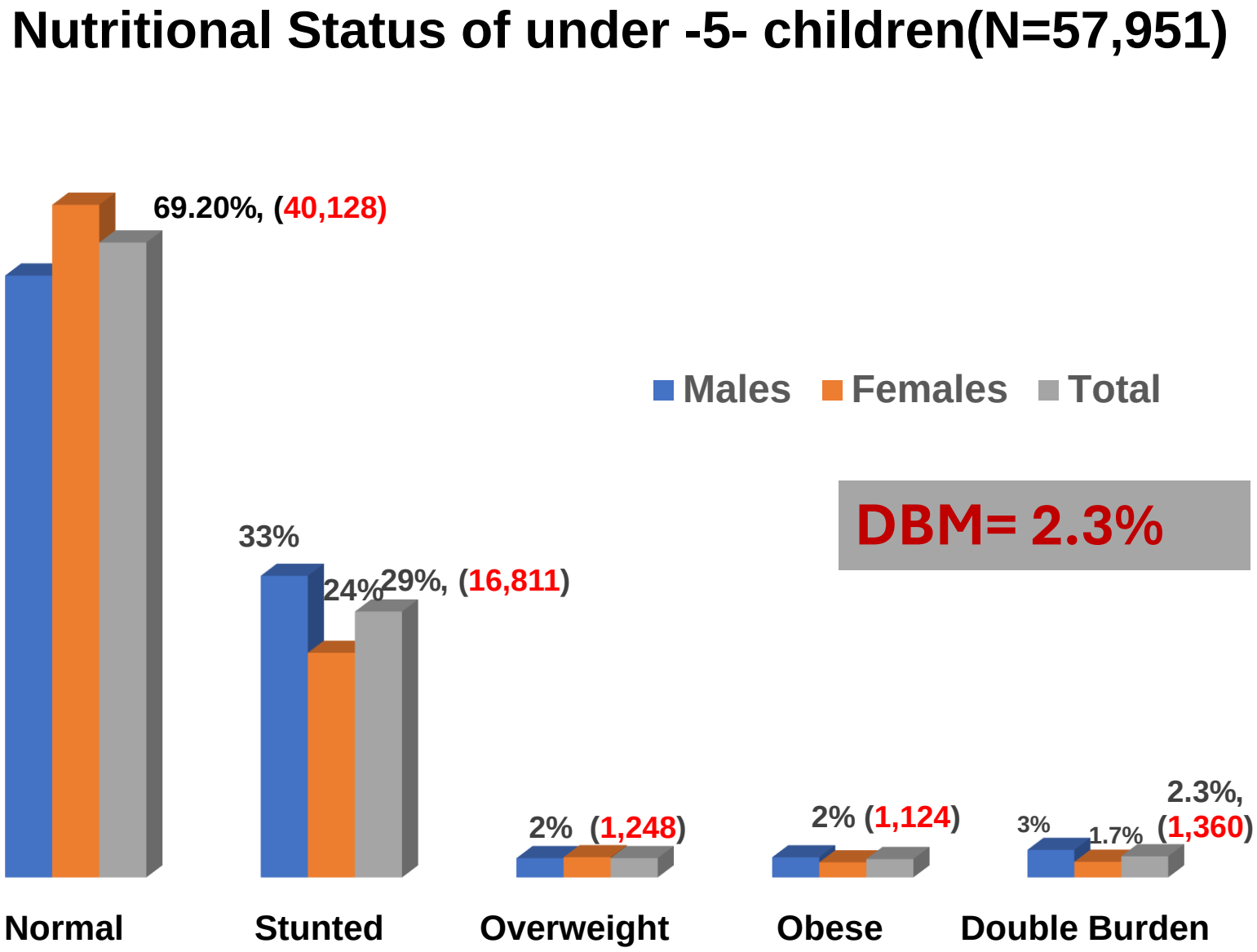
+

Overweight & Obesity

>2sd Weight for Height


1. NHFS-4
219,796 children
2. Data Access and Merging
Study population –
57,951 children (0-5 years)
3.
Anthropometric data were extracted
4.
Child growth indicators analyzed
(WHO, Anthro) WHO Child Growth Standards
Stunting, Overweight, Obesity, DBM
5.
Data Analysis –
SPSS, MS Excel
Descriptive analysis, Multiple logistic regression
Final DBM prevalence and its risk factors

Results


Nutritional Status of under -5- children(N=57,951)
69.20%, (40,128)
33%
24%
29%, (16,811)
2% (1,248)
2% (1,124)
3%
1.7%
2.3%, (1,360)
Males
Females
Total
DBM= 2.3%
Normal
Stunted
Overweight
Obese
Double Burden

Association of socio-demographic characteristics with Double Burden of Malnutrition

Socio-demographic factors	Total (57951)	Double Burden of Malnutrition		Adjusted OR (95% CI)
	No.	No.	Unadjusted OR (95% CI)	
Age (in months)				
0-2	1939	100	1	1
2-6	6177	365	0.9 (0.7-1.08)	0.8 (0.6-1.0)
6-12	9120	283	1.7 (1.3- 2.14)	1.6 (1.3-2.1)
12-24	16196	330	2.6 (2.08-3.3)	2.5 (2.0-3.2)
24-60	24519	282	4.7 (3.7- 6)	4.9 (3.7-6.2)
Gender of Child				
Female	27183	469(.017)	1	1.8 (1.5- 2)
Male	30768	891(.03)	1.6 (1.5-1.8)	

Association of breastfeeding, disease status and treatment with Double Burden of Malnutrition

Variables	Total (57951) N	Double Burden of Malnutrition No.	OR (95% CI)	Adjusted OR (95% CI)
Currently breast feeding				
Yes	37792	1061	1.9 (1.7-2.2)	1.1 (0.9- 1.2)
No	20159	299	1	
Had Diarrhea				
Yes, Last two Weeks	6474	147	0.96 (0.81-1.14)	-------
No	51477	1213	1	
Had Fever				
Yes	8900	160	0.73 (0.62-0.86)	1.2 (0.9 -1.6)
No	49051	1200	1	
Had cough				
Yes, Last two Weeks	8005	145	0.74 (0.62-0.88)	1.1 (0.9 – 1.4)
No	49946	1215	1	
Treatment of Fever				
Yes	8596	156	0.74 (0.63- 0.88)	1.05 (0.8- 1.4)
No	49355	1204	1	

- Multivariate logistic regression revealed:
  - **Higher odds of DBM in older age groups children.**
  - **Higher odds of DBM in Male children.**

Conclusion & recommendations

- **Prevalence of DBM** is - **2.3%, more male children with older age**
- **After Infancy , protein intake should be focused and high density , sugary food items should be limited**
- **Proteinaceous diets should be recommended for sick child**
- **Further research with a prospective design is needed to grasp the temporal dynamics of DBM**