

POLICY BRIEF: SEVERE ACUTE MALNOURISHMENT IN CHILDREN



What is Severe Acute Malnutrition (SAM)?

Undernutrition in children is a looming public health crisis in many developing countries, contributing to the global disease burden. Globally, almost half of the deaths among **'children under 5'** are attributed to undernutrition, mostly occurring in low- and middle-income countries [1]. There are various forms of undernutrition in children: wasting, stunting, underweight and micronutrient deficiencies. Severe Acute Malnutrition is defined by a very **low weight for height**, **severe wasting** or by the presence of **nutritional oedema**. A **Mid Upper Circumference (MUAC)**, of less than 110 mm in children between 6-59 months also indicates Severe Acute Malnutrition (SAM) [2].

What are the various risk factors for malnutrition?

RISK FACTORS ASSOCIATED WITH MALNUTRITION IN CHILDREN [3]		
Socio-economic	Biological	Environmental
Poverty and Ignorance	Maternal malnutrition	Unhygienic environment
Illiteracy	Age of mother: 18-23 years	Being exposed to conditions such as droughts, floods, wars, migration
	Underweight mother, infectious diseases in the mother	
	Birth order > 3 Inappropriate Infant and young child feeding practices such as lack of exclusive breastfeeding, starting complementary feeding before 6 months [4],[5]	

What is the criteria to diagnose a child as SAM or severely wasted?

According to the WHO and UNICEF, a child is labeled as SAM under the following conditions [3]:

PARAMETERS	6 MONTHS to 5 YEARS	< 6 MONTHS
Weight for height	< 3 SD	< 3 SD
Mid-upper arm circumference (MUAC)	< 11.5 cm	Not included
Edema of both feet	Present	Present
Visible severe wasting	Not applicable	Present

Children with following medical complications should be admitted in a Nutrition Rehabilitation centre or a health facility [6]

- Presence of any of emergency signs
- Oedema
- Persistent vomiting
- Very weak, apathetic
- Fever (Axillary temperature > 38.5 degree Celsius)
- Children with fast breathing / chest in drawing/ cyanosis
- Extensive skin lesions, eye lesions, post-measles states
- Diarrhoea with dehydration based on history and clinical signs
- Severe anaemia
- Hypothermia (Axillary temperature <35 degree centigrade)
- Any other general sign which the clinician thinks warrants transfer to in-patient facility for assessment or care

Why is it important to address SAM in children? -

Children with SAM not only suffer **physically** and **physiologically**, but also get affected **cognitively** which has an adverse impact on their potential and productivity during childhood, adolescence, and adulthood. If untreated, it can lead to complications such as severe **diarrhea**, **hypoglycemia**, **hypothermia**, **pneumonia**, **urinary tract infection**, and **sepsis requiring hospitalization** [7],[8].

EFFECTS OF SEVERE ACUTE MALNUTRITION		
Physical Effects of SAM	Physiological Effects of SAM	Cognitive Effects of SAM
Restricted growth	Decreased metabolic rate	Decreased brain size due to reduction in number of neurons
Loss of muscle mass	Decreased body temperature (hypothermia)	Delayed brain development
Emaciated and weak appearance	Decreased heart rate (bradycardia)	Impaired moto function
Wrinkled and loose skin	Reduced levels of thyroid hormones, insulin, and glucose	Low Intelligence
Lethargy	Low blood pressure (hypotension)	Poor academic performance
Irritability	Increased susceptibility to infections	

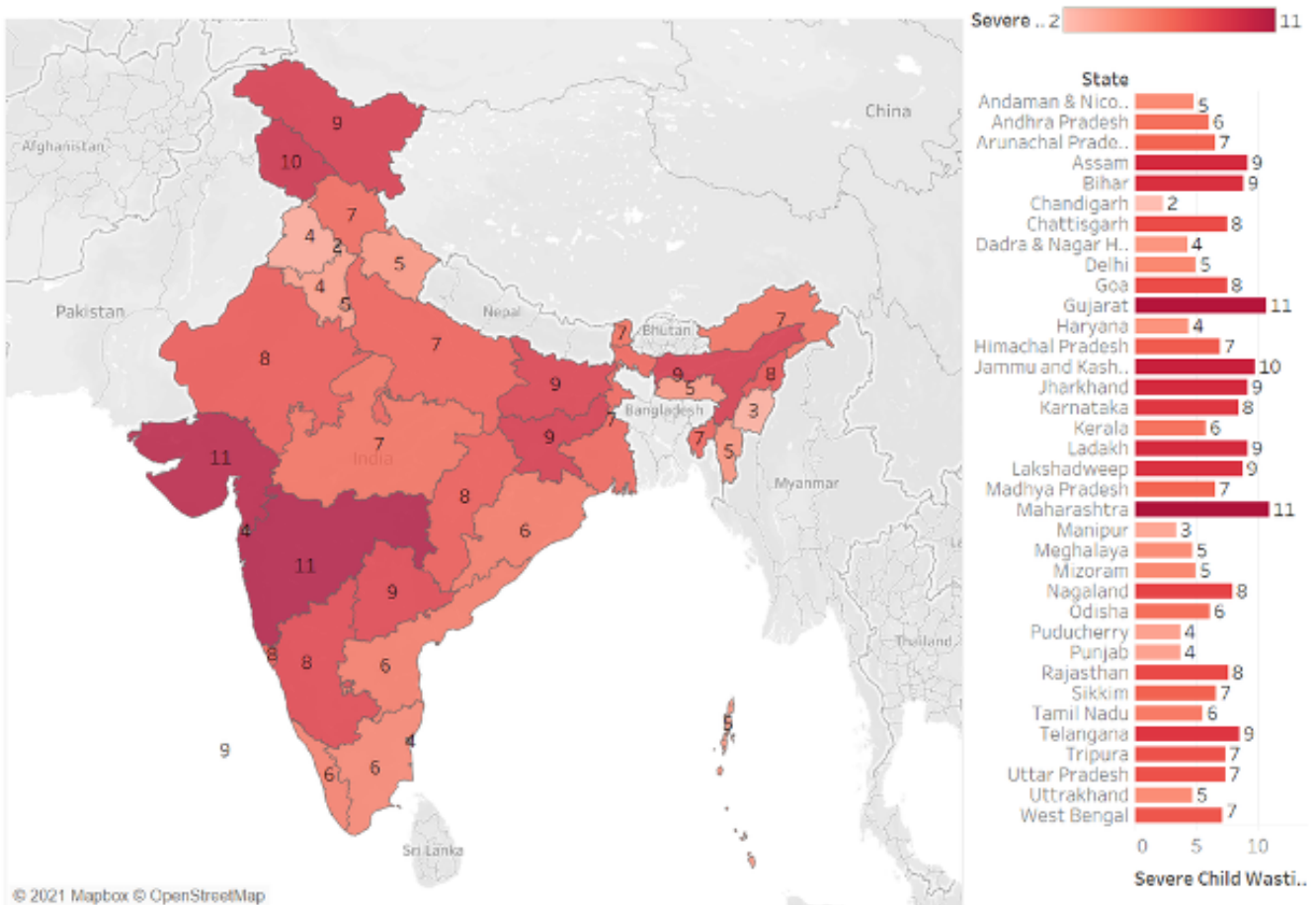
Dry, sparse, brittle, and depigmented hair that appears reddish yellow	Raised cortisol levels	
	Electrolyte imbalance	

What does the data say about SAM in India?

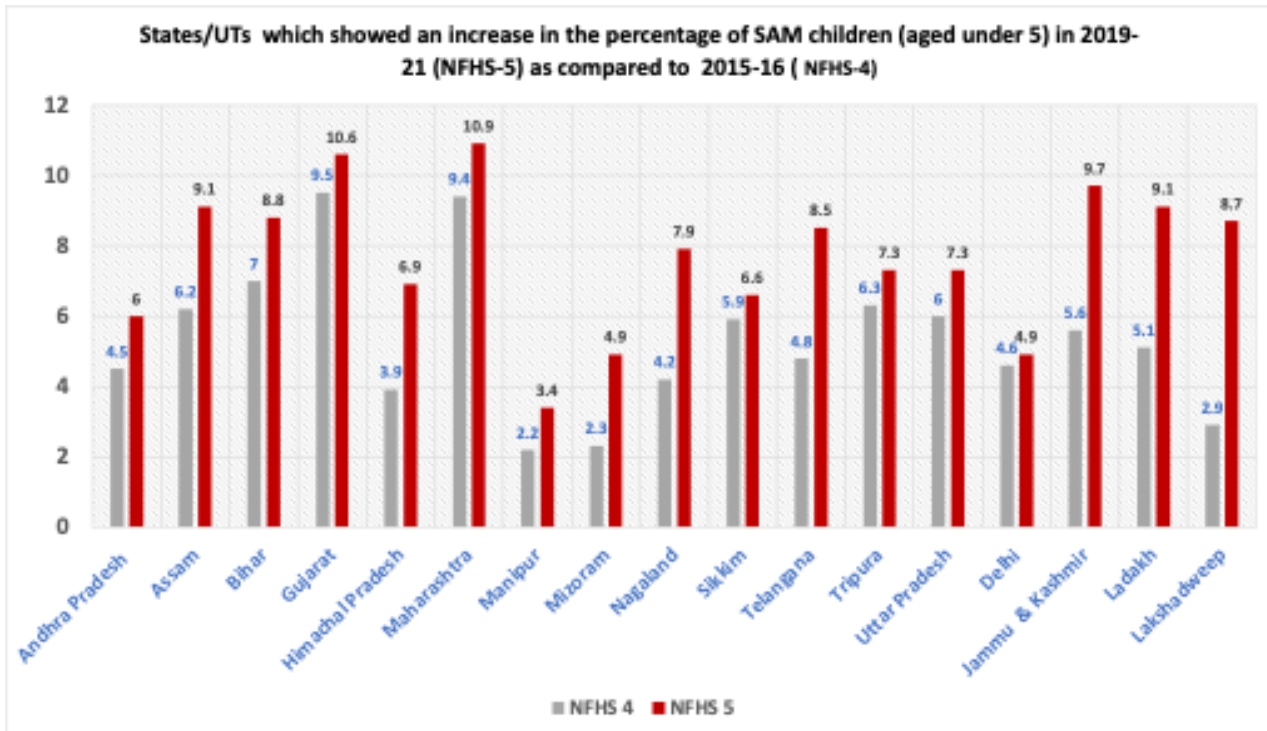
India has seen some worrying trends in severe acute malnutrition since many decades. As per the most recent NFHS-5 survey (2019-2021), the **percentage of children under 5** who are severely wasted is quite alarming at **7.7%** which has not seen a significant change, as compared to the NFHS-4 (2015-16) survey at **7.5%** [9].

Children Under 5 who are severely wasted	INDIA (NFHS-4)	INDIA (NFHS-5)
	7.5%	7.7%

Children under 5 years who are severely wasted (weight-for-height) (%)



Out of 28 states and 8 union territories, **14 states and 4 union territories** have shown a decline in wasting. The states that have shown the **biggest decline between 2016 (NFHS-4) and 2021 (NFHS-5)** include **Dadra and Nagar Haveli and Daman and Diu (12% to 4%)** and **Haryana (9% to 4%)**, while **Lakshadweep (3% to 9%)** and **Ladakh (5% to 10%)** have shown an **increase in wasting**.



What are the policies in place to address SAM in children at the national level?

Over the years, the Government of India has taken several steps to target Severe Acute Malnutrition in children. These policies include the following-

MINISTRY OF WOMEN AND CHILD DEVELOPMENT [10]	
Poshan 2.0	Targets the identification, treatment and reduction of SAM including Supplementary Nutrition Program, Health checkups and referral services and nutritional and health education.
Supplementary Nutrition Program	As per the latest nutrition norms severely malnourished children aged 6 months to 6 years are provided with food supplements worth 800 kcal energy and 20-25 g protein under the SNP program.

MINISTRY OF HEALTH & FAMILY WELFARE [6]	
Health Checkups with a focus on growth monitoring under National Health Mission	Regular weight & height measurement, identification of MAM and SAM children followed by referral of SAM children to the nutrition rehabilitation centres.
Referral + Care at Nutrition Rehabilitation Centres	Medical and nutritional therapeutic care + counselling

What strategies can be adopted to prevent SAM in children?

The increasing prevalence of SAM in children, advocates for not only policies that are geared towards early identification and treatment of SAM children, but also community engagement in screening the children with SAM. SAM can be prevented in children by adopting a multi-pronged approach

Adopting Nutrition specific strategies such as [11]

- Adequate **dietary intake** during early childhood
- Appropriate **Infant and Young Child Feeding Practices** such as a) Exclusive breastfeeding upto first 6 months of life & Early initiation breastfeeding-colostrum provides essential nutrition and prevents Infection in the infants b) Continued breastfeeding upto 2 years and Complementary feeding c) Strategies to prevent the occurrence of infections to break the **infection-malnutrition** cycle

Nutrition Sensitive strategies & Community Engagement [11]

- Improved access to healthcare and maintenance of adequate **hygiene** and **sanitation**
- Addressing micronutrient deficiency strategies such as micronutrient **supplementation** and food **fortification**
- Health and nutritional education and **counselling** targeted towards parents, especially the mothers
- Ensuring **food security** in food insecure areas through supplementary feeding programs
- Strategies aimed towards preventing Moderate Acute Malnutrition (MAM) before it reaches SAM
- **Anganwadi** centers, need to be well equipped and Anganwadi workers are to be properly trained for timely **identification** and **referral** of SAM children
- Community based management of SAM children, adopted by several states such as **Odisha, Rajasthan, Gujarat** has been able to effectively address SAM (For eg: In Rajasthan, for example, the government adopted **POSHAN** (Proactive and Optimum care of children through Social Household Approach for Nutrition) strategy to treat SAM children without medical complication, which showed that this approach can detect malnourished children at an early age, and thus could be treated early) [12].

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