

# **UNDERNUTRITION IN**

# PRESCHOOLERS:

A Cause Of Worry



## Prevalence of Undernutrition in India

Malnutrition among children: a major public health problem in India (NFHS-5)1

- Underweight (low weight for age): 35.1%
- Stunting (low height for age): 38.4%
- Wasting (low weight for height): 21%
- 45% mortality among preschool children is linked to undernutrition, mainly in low- and middle-income countries.1

Age of child



Socioeconomic status

birth

weight



influences the nutritional status of preschool children<sup>1,3</sup>

What



nutritional status

Maternal



Gender of the child



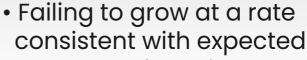
**Picky** eating

# **Consequences of undernutrition**

53% of all childhood deaths

Increased disease burden<sup>4</sup>

attribute to undernutrition and associated infections:



Failure to thrive8

standards for children <3 years of age.





Pneumonia: 52.3%



Diarrhea: 60.7%



**Malaria: 57.3%** 

## Altered absorption and

bioavailability can cause

Micronutrient deficiencies<sup>5-7</sup>

micronutrient deficiency, limiting the effects of specific vitamins and minerals, leading to malnutrition and faltered growth.

## Stunted adult size

Long-term consequences9

- Diminished intellectual ability
- Reduced economic
- performance Increased risk of metabolic

# Diversification of diet10-12

in preschoolers?



To improve the variety of foods consumed

Protein supplementation<sup>13,14</sup>



• Protein deficiency results in:



• Lysine releases growth hormone

- MortalityStunted physical growth Premature aging • Proteins play an important role in growth and development
- Arginine promotes lean body mass
- **Zinc** improves general mental development
- Vitamin D and K enhance • Iron-folic acid increases calcium absorption and

Micronutrient supplementation<sup>15-18</sup>

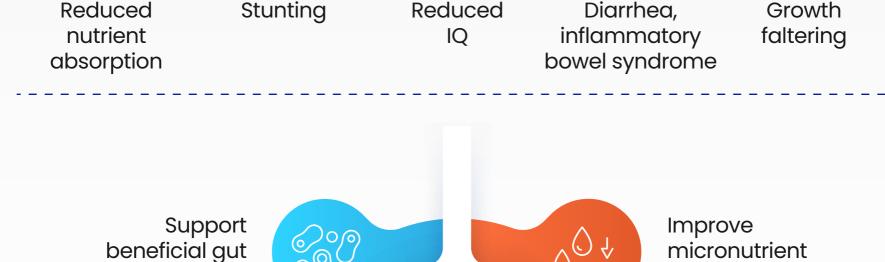
- hemoglobin and plasma ferritin
  - Role of prebiotics15-18

bone health

Vitamin A reduces infections

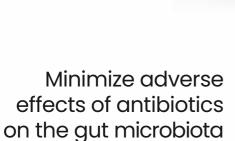


Effects of altered gut microbiota with mucosal damage



**Benefits** 

of prebiotics



bacteria



- Undernutrition is a common and serious health issue
- While public health measures such as food fortification aim to improve dietary intakes in children, dietary diversity, protein, micronutrient and prebiotic supplementation are essential to increase the intake of specific nutrients to avoid undernourishment, diminished growth, and development in preschoolers.20

For the use of Healthcare Professionals only

IQ: Intelligent quotient;

NFHS-5: Fifth Round of the National Family Health Survey

## Katoch OR. Nutrition. 2021 Dec 11:111565. Soliman A et al. Acta Bio Medica: Atenei Parmensis. 2021;92(1). Taylor CM and Emmett PM. Proc Nutr Soc. 2019 May;78(2):161-169. Caulfield LE et al., Am J Clin Nutr. 2004 Jul;80(1):193-8. Lutter CK and Rivera JA. J Nutr. 2003 Sep;133(9):2941S-9S Combet E and Gray SR. Proc Nutr Soc. 2019 Feb;78(1):1-3. Singh M. Indian J Pediatr 2004 Jan;71(1):59-62. Gahagan S. Pediatr Rev. 2006 Jan;27(1):e1-11. Black RE et al., Lancet. 2008 Jan 19;371(9608):243-60. 10. Zeinalabedini M et al. Available at SSRN 4135209.

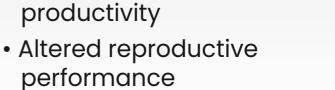
14. Uauy R et al., J Nutr Sci Vitaminol (Tokyo). 2015;61 Suppl:S192-4. Poskitt EME. Practical peadiatric nutrition. 2005; p370-379. Roberts M et al., 2022 Jan 26;14(3):532. Tam E et al., Nutrients. 2020 Jan 21;12(2):289.
Kotecha PV and Lahariya C. Indian J Pediatr 2010;77:419-24. Iddrisu I et al., Nutrients. 2021 Aug 8;13(8):2727.
Bhan MK et al., Br. J. Nutr.. 2001 May;85(S2):S199-203.

absorption

Reduce adverse

diseased state

effects of a



and cardiovascular disease How can undernutrition be reversed/prevented

> 11. Maleta K. Malawi Med J. 2006 Dec;18(4):189-205 Bhutta ZA et al. The lancet. 2013 Aug 3;382(9890):452-77.
> Semba RD. Ann Nutr Metab. 2016;69(2):79-88.