

Malnourished Millions – Are We Doing Enough?

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Introduction:

Nutrition word is derived from the Latin verb 'Nutrire" which means to nourish.^[1] Indian equivalent to nutrition is POSHAN. The development of a fertilized Ova cell into a full-grown human body consisting of trillions of cells is one of the finest miracles of nature on display and it is primarily dependent on adequate and appropriate nutrition.

Malnutrition in literal terms means adjusted/ bad nutrition. Any deviation from adequate and appropriate nutrition can be termed malnutrition. It is important to understand that nutrition must be adequate as well as appropriate for achieving optimal growth. Classically malnutrition word has been used for under nutrition, signifying a lack of adequate nutrition. Over nutrition (overweight & Obesity) has also been defined as malnutrition. However, in the present paper, the authors will be using malnutrition terminology in reference to under nutrition.

The entire article is commenced by briefly describing the health impact of malnutrition followed by the current situation of nutrition in India and the potential impact of the COVID-19 pandemic on nutritional status. In the next section, the authors have highlighted current programmatic interventions for malnutrition management. In the final section, a detailed discussion of various programmatic innovations and modifications is proposed for effective malnutrition management.

Health impact of malnutrition on children:

Malnutrition in the early years of childhood is highly detrimental to the overall growth potential of a child. Following is a brief description of the various health impacts of malnutrition.

- Children with Severe Acute Malnutrition (SAM) have very high rates of morbidity and mortality in the early years of life compared to normal weight child
- Low immunity leads to recurrent infections such as common cold, fever, diarrhoea
- Poor height and weight gain appropriate for the age.
- A poor mucosal barrier in the nose and mouth makes a child prone to infections.^[2]
- Suboptimal vaccination generated immunity compared to a normal child.^[2]
- Delayed or poor cognitive development: various studies have highlighted that malnourished children performed consistently poor in various cognitive tasks (Motor, language and cognitive components) compared to their peers having normal nutrition status.^[3]

Malnourished children are trapped vicious cycle of malnutrition and infection, leading to long-term health, social, educational, and economic


Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Ratnu A, Hadial H. Malnourished Millions – Are We Doing Enough? Healthline 2022;13(3): 195-200
	DOI : 10.51957/Healthline_431_2022	

Table 1 : Malnutrition rates in India from the year 2005 to 2020

Indicator	NFHS- 3 (2005-06)	NFHS-4 (2015-16)	NFHS-5 (2019-20)	% Change from NFHS 3 to 5
Under weight	42.5	35.8	32.1	24.5%
Stunting	48.0	38.4	35.5	26.0%
Wasting	19.8	21.0	19.3	2.5%
Severe Wasting	6.4	7.5	7.7	- 20%

Further more, these rates do not represent the entire picture. There is a huge inter-state variation in malnutrition rates (Table 2). While many states have improved in nutrition indicators, few states continue to demonstrate very high rates of malnutrition.

Table 2 : Inter-state variations in nutrition across India (NFHS - 5)

Indicator	Best performing states	Indicator
Under weight	Mizoram (12.7%) Sikkim (13.1%)	Bihar (41%) Gujarat (39.7%)
Severe Underweight	Manipur (3.3%) Mizoram (3.3%)	Gujarat (14.5%) Jharkhand (14.3%)
Stunting	Sikkim (22.3%) Kerala (23.4%)	Meghalaya (46.5%) Bihar (42.9%)
Wasting	Mizoram (9.8%) Manipur (9.9%)	Maharashtra (25.6%) Gujarat (25.1%)
Severe Wasting	Manipur (3.4%) Punjab (3.6%)	Maharashtra (10.9%) Gujarat (10.6%)

Impact of COVID-19 on malnutrition:

A recent survey on the impact of the COVID Pandemic on nutrition is not available in India. However, the latest report by UNICEF has predicted a 20% rise in severe wasting cases by the year 2022. The COVID pandemic has affected nutrition care in multiple ways ranging from the lesser availability of food, economic slowdown affecting the financial situations of families, the financial situation of various countries for nutrition sector investment, reduced screening for SAM, increased costs of RUTF etc.^[7]

Food security is another area where the COVID pandemic had a distressing impact on India. Although there is a paucity of evidence on food security, there are few proxy indicators which can help decipher

food security in India. PMGKAY (Pradhan Mantri Garib Kalyan Ann Yojana) Launched in April 2020, the scheme is recently extended in phase VII for the period of October – December 2022. This scheme ensures the provision of five kg of grains to the crores of beneficiaries for the last 25 months.^[8] The continuation of this scheme can be attributed to the effect of COVID-19 on food security.

Current interventions for malnutrition management in India:

Various programs for malnutrition management are in place for decades. These interventions are primarily implemented by either the health department or Integrated Child Development Services (ICDS) program. These programs have their challenges and implementation hurdles in ensuring adequate care for children.

- **Facility-based and community-based management of Acute Malnutrition:** Facility Based Management of SAM (FBSAM) program is the flagship program run by the health department to provide treatment to SAM children with medical complications. The guidelines on SAM management recommend SAM children without medical complications be managed through the community-based program. However, details for the same are very minimal in the guidelines.^[9]
- **ICDS Supplementary Nutrition Program:** Women and Child Development (WCD) ministry run one of the largest nutrition supplement program through ICDS (Integrated Child Development Services). It provides take-home ration for children aged 6-36 months and hot cooked meals and snacks to children 3-6 years. It also provides additional take-home ration for SAM children as well.^[10]
- **Preventing malnutrition and regular nutrition status assessment:** various interventions aimed at building the capacity of pregnant women to ensure prevention of malnutrition in her child. This includes the provision of take-home ration to pregnant women, teaching benefits of early and exclusive breast feeding, appropriate IYCF (Infant and Young Child Feeding) practices, immunization, care for Respiratory infections and diarrhoea etc. Regular nutrition status assessment is done by Anganwadi workers. Rashtriya Bal Swasthya Karyakram (RBSK) also periodically checks anthropometric measurements for children.
- **Anemia Mukht Bharat and Deworming program:**

Anemia Mukht Bharat focuses on multiple aspects such as Iron Folic Acid supplementation, dietary diversity, biannual deworming using Albendazole and awareness generation using a life cycle approach. However, its implementation needs larger improvement.^[11]
- **Capacity building of frontline workers:** various programs are designed for the capacity

building of frontline workers to early identify malnutrition and provide community-based care and make early referrals for severe cases.

- **Innovative public-private partnerships:** various academic institutions, industries and NGOs are also working for various community and facility-based interventions for malnutrition. Bal Poshan Yojana is one such intervention to engage private sector paediatricians and NGOs for the malnutrition management program.^[12]

At this point, it is noteworthy that the scale of malnutrition is such humongous that the above-mentioned interventions are not able to bring the desired result. Hence, it becomes important to relook at the approach of all stakeholders with a fresh perspective and devise newer policies and strategies which may help malnourished millions across the country. The following section highlights ten recommendations for policy-level changes and implementation strategies aimed at reducing current levels of malnutrition.

Recommendations:

1. Updating facility-based malnutrition treatment guidelines:

Current malnutrition treatment guidelines by Ministry of Health and Family Welfare (MOHFW), Government of India are at least a decade old. Operational guidelines on Facility based management of children with Severe Acute Malnutrition were released in 2011.^[13] These guidelines need comprehensive review and revision to include newer interventions for malnutrition treatment. A systemic review and relook into screening protocols, diagnostic criteria, treatment protocol and linking with community-based follow-up is essential and can help improve outcomes in children with malnutrition.

2. Community-level management of acute malnutrition:

Out of all malnourished children, very few will be suffering from Severe Acute Malnutrition with medical complications. Most of the malnourished children will be either SAM children without medical complications or having Moderate Acute Malnutrition (MAM). These children do not

require facility-based care and can be managed at the community level.

However, there is no clear direction for the implementation of the CMAM (Community Management of Acute Malnutrition) program. Few states have taken initiative in this direction and can help in developing updated national CMAM program guidelines. This will be the single most important intervention for malnutrition management in the present context.

3. Involving private sector paediatricians/NGOs in malnutrition programs:

Private sector practitioners and Civil Society Organizations play a crucial role in scaling up malnutrition interventions. Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) has identified this opportunity and has included the management of **acute severe malnutrition** in the National Health Benefits Package.^[14] However, just the inclusion of SAM in the pediatric medical management package will not be useful. Inviting the private sector for discussion and encouraging them to participate will be essential for the success of the program.

Furthermore, the Standard Treatment Workflow (STW) prepared under PMJAY requires immediate updating. STW for SAM mentions a treatment duration of 3-5 days which is highly insufficient for the treatment of SAM children.^[15] STW updates by the appropriate authority will tremendously help in improving the quality and coverage of SAM Management by the private sector/NGOs.

4. Leveraging Corporate Social Responsibility (CSR) funds for malnutrition:

CSR funds in India are increasing with the industrial growth in the country and can be mobilized for nutrition programs. Currently, all CSR agencies are trying out various interventions as per their technical partner capacity with varying degrees of success. Many of these interventions are not evidence-based and do not provide desired results. There is a strong need for developing evidence-based **interventions for malnutrition management** in collaboration

with the industry. Such a document can identify scientifically accurate & effective interventions with measurable outcomes. It will also provide easy reference for CSR agencies to implement successful treatment models and reach out to the most remote areas of the country for providing care.

5. Debunking the 15% weight gain myth:

Time and again, World Health Organization and other agencies have highlighted that a 15% gain from the baseline weight should not be used as a measure of program success. Nonetheless, this indicator is being widely used because it is mentioned in National Guidelines. It is high time that national guidelines are revised as per new updates. WHO update on the management of SAM in infants and children provides a scientific recommendation in this regard. Recommendation 1.5d mentions 'percentage weight gain should not be used as discharge criterion'. There are sets of other more sensitive indicators available for measuring the growth of children and the performance of the program. Recommendation 1.4 mentions 'The decision to transfer children from inpatient to outpatient care should be determined by their clinical condition and not on the basis of specific anthropometric outcomes such as a specific mid-upper arm circumference or weight-for-height/length'. These indicators can be derived through a consultative process at the national or state level and should replace 15% weight gain as an indicator at the earliest.^[16]

6. Ayurvedic interventions for malnutrition management:

Ayurved is one of the oldest streams of medicine and provides a very important treatment regime for many illnesses. Various Ayurvedic interventions have been tried out to treat malnutrition across India. Ashwagandha is one such potent medicine tested in different preparations (kshirpak, ghrit, modak etc.) with good efficacy in malnutrition management. Similarly, Abhyanga (full body oil massage) is also found to be helpful in weight gain.^[17-21] There is a need to do systemic research on promising

ayurvedic interventions for malnutrition management. Ayurvedic interventions for malnutrition management will have two advantages over current management. First, there is a huge number of ayurvedic practitioners who can be involved in the management of malnutrition. The second benefit will be the acceptability of the treatment. Ayurvedic interventions are well accepted in many communities across the country and can help improve treatment compliance rates.

7. Demystifying F-75/F-100 & EDNS (Energy Dense Nutritional Supplement):

'When diet is wrong, medicine is of no use; when the diet is correct, medicine is of no need' – an ancient ayurvedic proverb aptly fits while discussing F-75/F-100 and EDNS, a mainstay of malnutrition management. There is a lot of mysticism around F75 & F-100 as if they are a magic bullet to cure malnutrition. However, they are simple diet preparation made of milk, sugar, oil, puffed rice and water. They are called therapeutic nutrition.

There is a huge potential for scaling up these interventions for the management of moderate malnutrition and facility discharge of SAM children. There are cooperative milk federations producing millions of liters of milk products for consumption in India and abroad. Innovations in F-75/F-100 preparations with the support of milk federations such as ready-to-drink tetra packs or similar ready-to-consume products can help tremendously in scale-up.

Similar issues are with the use of EDNS (Energy Dense Nutrition Supplement). EDNS are proven malnutrition treatment interventions, used across the world with enough scientific evidence. Cooperative milk federations do have the capacity to produce EDNS domestically at a scale. However, these supplements are not used in India on large scale. National guidelines can consider including these products based on their scientific merit in the treatment protocols.

8. Community awareness about appropriate nutrition and food sources:

While it is important to treat malnourished children, it is equally important to ensure that

normal children continue to gain height and weight at desired rates. There can be no program for managing nutrition but to increase awareness about appropriate nutrition at the community level. This can be achieved through various modes of community engagement and by providing solutions feasible solutions for implementation.

9. Adolescent and Maternal Nutrition:

Adolescent and maternal nutrition are often neglected areas having a very strong impact on child malnutrition. As per WHO Growth Standards for children any male child with a birth weight ≤ 2500 grams and a girl child with a birth weight ≤ 2400 grams is classified as moderate underweight at birth.^[22, 23] Appropriate strategies for maternal nutrition during pregnancy can drastically cut down malnutrition rates. A detailed study of various maternal and adolescent malnutrition interventions is required to devise a strategy appropriate for the Indian context.

10. Increasing awareness about scientific interventions for malnutrition:

'Something has to be done, this is something, that's why it must be done'. This quote applies perfectly to various interventions for malnutrition. A single pack of nutritious biscuits, protein powder packets or one time fruit baskets may be a good gesture but very unlikely to bring a child out of severe malnutrition. Furthermore, it consumes the limited resources available for nutrition. Awareness must be created at every level regarding most scientific interventions and their duration for bringing a child out of malnutrition.

Malnutrition is a very complex issue requiring efforts from every stakeholder. Regular systemic screening and management protocols are required for timely interventions. At the same time, capacity building of frontline workers is also important to ensure quality screening and treatment. There need to be nutrition-specific plans for every department and convergent health & nutrition planning. Finally, nutrition needs to be addressed through a life cycle

approach for better results instead of focusing on the first five years of life.

Conclusion:

Malnutrition in India continues to be one of the major public health problems. The first five years of life is a small window of opportunity available for the development of the brain of a child. A malnourished child is likely to live with a lifelong cognitive disadvantage. Hence, malnutrition at a young age must be treated appropriately. Interventions for malnutrition management are far beyond the scope and reach of the Health or WCD Department and must involve other stakeholders. A comprehensive policy involving government, NGOs, private providers, CSR agencies and academic institutions is a must in the present-day environment for effectively tackling malnutrition. With comprehensive and sincere efforts, it can be ensured that every child serving the Nation is healthy. "Healthy Child Healthy nation"

Declaration:

Funding: Nil

Conflict of Interest: Nil

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