Addressing the Social Determinants of Childhood Malnutrition: A Review

Authors:
Sharyu Mhamane, Scientific Assistant, Centre for Cancer Epidemiology, ACTREC-Tata Memorial Centre (TMC), Navi Mumbai, 410210, India,
Vanisree Ramanathan, Associate Professor, MIT-WPU, Faculty of Sustainability Studies, School of Public Health, Pune, 411038, India.

Address for Correspondence
Sharyu Mhamane,
Scientific Assistant Centre for Cancer Epidemiology, ACTREC, Sector 22,
Utsav Chowk, CISF Road, Kharghar, Navi Mumbai,
Maharashtra - 410210, India
E-mail: sharyumh2997@gmail.com.

Citation

Submitted: Apr 28, 2022; Accepted: Jul 2, 2022; Published: Jul 30, 2022

Abstract: Social determinants of malnutrition play a significant role in dictating the course of malnutrition outcomes in any population. Sustained efforts to optimize these determinants are indispensable to sustainable changes in the status of nutrition of the affected population. Despite the efforts undertaken, such a high prevalence of child malnutrition in India defies logic. Multiple causes of child mortality exist. Malnutrition accounts for 69% of these under-five deaths in India losing up to US$3.5 trillion loss per year, globally. Understanding the social determinants of malnutrition and its impact on child health is crucial to formulate sound and equity-based policies and interventions yielding fruitful outcomes. The situation has further worsened due to the COVID 19 pandemic. The paper emphasizes gaining cognizance of the grim and longstanding issues of malnutrition, its social determinants, and existing interventions to curb the issue.

Key Words: Social determinants, Malnutrition, Child Health, Child Nutrition

Introduction:
The issue of malnutrition has its course untamed and is deeply rooted within the system of society since time immemorial. Though generally perceived as a crisis in the developing country; malnutrition has its deleterious effects both on developed and developing nations though the extent of impact might vary it still exists despite several interventions and reforms. Malnutrition is inadequate or excess intake of protein, carbohydrates, fats, vitamins, and minerals, to meet the daily nutritional requirements of an individual. (1) Covering two broad groups malnutrition comprises of undernutrition, that is defined as lack or inadequate intake/absorption of nutrients. Consisting indicators such as stunting also known as (low height for age), wasting which is (low weight for height), underweight (low weight for age), and micronutrient inadequacies (also referred to as Hidden Hunger). (1) Overnutrition is defined as excess intake of energy/ nutrients. It includes the population that is overweight.(1) An estimated burden of obesity for children under the age of five is 41 million while 159 million children are stunted and some 50 million children are wasted, globally.(2) Malnutrition is among the leading risk factors for attributable DALYs (Disability-adjusted life years) for children aged 0-9yrs.(2) In the Indian context, according to the data provided by UNICEF (United Nations Children’s Fund), the state of Worlds Children Report; every second child is affected by some kind of malnutrition, (3) Indicators of malnutrition include stunting (height for age or HAZ), wasting (weight for height WHZ), underweight (weight for age WAZ), and overweight (weight for height). Depending on the Z score ±2 on either side is considered normal while exceeding anthropometric measures is indicative of the indicators. (4) India comprises over 45% of the undernourished population while the magnitude of its indicator is as follows; stunting accounts for 35.5% while wasting and underweight account for 19.3% and 32.1% respectively.(4,5) There is a constellation of causes contributing to child mortality; ranging from preterm birth complications, and ARDS (acute respiratory distress syndrome) to congenital anomalies and diarrhea. However, among these malnutrition accounts for a substantial 69% of these under-five deaths in India.(2) Considering its effects on child mortality, addressing the crisis is the need of the hour! Accounting for 69% of child mortality attributed to child malnutrition, its causes are a result of a social structure and are determined as Social Determinants of Health (SDOH). CDC defines SDOH as a condition in which a person lives, learns, grows, works, plays, and ages. These are the non-medical factors responsible for various health conditions. These are however shaped by various forces and systems which are inclusive of economic policies and systems, social norms, social policies, and political systems.(6) These social determinants for malnutrition include poverty, gender, political systems, living conditions, socio-cultural factors, etc. These determinants can be modified and optimized with sustained efforts to prevent the child from falling prey to the wrath of malnutrition. There have been sustained efforts undertaken through interventions to diminish the ill effects of malnutrition but the
journey has been arduous. Working towards optimizing the social determinants of malnutrition can aid in alleviating the grimness of the catastrophe. For this, it is crucial to understand the social factors that impact child health by affecting child nutrition. The review is an attempt to address the social determinants of malnutrition and its impact on child health and review the existing interventions with recommendations to have equity-based policymaking to tackle the longstanding issue of malnutrition in India.

Material and Methods:
This study is based on a review of relevant published articles in online databases such as PubMed, Web of Science, and Google Scholar. The articles selected to study were from peer-reviewed journals and the period for the published article was from 2013 to 2022. The articles were chosen for review based on the Boolean search of relevant topics on child malnutrition, social determinants of malnutrition, magnitude, intervention strategies, and trends for the same.

Exclusion Criteria:
1. The review excludes information from narrative reviews, letters, editorials, and articles as preliminary reports with results published in later versions, articles existing in abstract-only form, and literature from the unpublished article are excluded.
2. Studies from non-English publications were excluded.

Results
Studies identify a plethora of social factors involved in dictating the course of malnutrition among children. However, these factors are interlinked and contribute on varying levels, after reviewing the literature these contributing social determinants can be divided into three levels.

Level 1- These are basic causes and can be considered as the root of the emergence of risk factors for malnutrition. These constitute, maternal characteristics, political factors giving rise to inflation and unrest, gender disparity, and socio-cultural practices.

Level 2- These are intermediate social determinants that are a result of poor outcomes of basic causes/determinants. The intermediate determinants are interlinked and indirectly pave the pathway toward malnutrition. Most of the interventions are introduced to optimize these determinants to achieve favourable outcomes to tackle malnutrition. The intermediate social determinants include poor-living conditions, lack of Water Sanitation and Hygiene (WaSH) conditions, and food insecurity.

Level 3- These are the immediate social determinants contributing directly to the malnutrition status of the child. These include diseases, food safety, inadequate dietary intake, and poor child feeding practices. Targeted interventions at mitigating these determinants can have a substantial impact on curbing child malnutrition. These social determinants and their pathways of disposition into malnutrition is shown in Figure 1 below.

Discussion
Political Empowerment: Political power plays a major role in emanating sound policies about nutrition, it also exercises its power by influencing the food systems and food products available in the market, by influencing the market prices thus affecting the consumption pattern and the affordability and accessibility to nutrition-rich food. (16) Political unrest can give rise to economic distress affecting the citizen’s economic accessibility to nutrition affecting the child born this will, in turn, have long-term effects on morbidity and mortality. (18,19)

Maternal Nutrition
The literature says that there are documented detrimental effects of poor maternal nutrition during the period of pregnancy on child health and child nutrition. Causin impaired child neurodevelopment and general cognitive abilities. Maternal obesity was another factor that played a major role in reduced breastfeeding practices, leading to inadequate dietary intake. (20,21) Behavioural and psychological factors stemming from mothers’ perceptions regarding their body image played a major role in the discontinuation of breastfeeding. (21) Evidence depicts that when women possess the power of decision-making power
and household income, they are more likely to adopt healthier foods and feeding practices for their children. (22)

Gender disparity and socio-cultural practices
Gender disparity has its roots in socio-cultural practices, especially in a patriarchal country like India. Davey et al. and Patel et al. emphasize gender preferences and their impact on child nutrition. When compared to boys of the same birth order, a considerable proportion of girls (80.3%) of the third and later birth orders were malnourished. It may be argued that the first kid, whether a son or a daughter, is always looked after, and prejudice begins when the family already has a son or when the anticipation of having a son is not fulfilled. Female children of less educated and illiterate mothers were more likely to be malnourished. (9,11) Socio-cultural practices influenced the post-natal care and dietary constituents of mother and child having an impact on imparting an adequate diet to children.

Pre-lacteal feeding was introduced to new-borns. The most preferred pre-lacteal feed was honey. Sugar or jaggery diluted in water was being used as pre-lacteal feed. When compared to male children, female children (62.3%) were more likely to start breastfeeding on time while discontinuation of breastfeeding was seen more among male children than the female child. (9,11,21)

Inadequate Dietary Intake
Inappropriate breastfeeding- The post-natal factor contributing to childhood nutrition, which comprises Breastfeeding for babies up to 6 months. Breastfed babies are less likely to be obese and have fewer cholesterol levels and lesser risk factors that subject them to NCD (Non-Communicable Disease) in their middle age; this period is considered a good bonding time between mother and child thus evoking a sense of security, care, and affection that helps baby for future development. (23)

Complementary Feeding- From six months and onwards up to 18 months contributes to the child’s development and growth while they are more likely to be exposed to the wrath of malnutrition. The micronutrient deficiency leading to anemia is a major cause of concern in both women and children. (24) Breastfeeding is linked with a reduced risk of morbidity. However, the POSHAN Report analyzing the EBF (Exclusive Breastfeeding) in India depicted that there was a rise in EBF rates from 46.4% to 54.9% in 2020. This is the result of the strategies to support and promote EBF. (25) The lack of knowledge and support within the household, formula marketing, and code of marketing alternatives to breastmilk substitutes, and limited and scattered data to implement strategic plans served as major hindrances in achieving the minimal progress that is witnessed. Inappropriate complementary feeding practices showed delayed complementary feeding severely affects physical, cognitive, and economic development. Among the children receiving feeding beyond 9 months developed malnutrition. (26) According to NFHS-5, only 12.6% of total children between the age of 6-and 23 months received an adequate diet which increased significantly as compared to NFHS-4. (5,27)

Inadequate Child Care
Various criteria contribute to whether the care that is given to the child is sought including the information acquired by the caregiver about the illness, perception about the concept of health and healthcare, its access and availability; affects the nutritional condition of the child receiving care. Especially, the knowledge of the family regarding maternal care has direct implications on childcare. Throughout pregnancy, the WHO recommends that all women consume 30-60 mg iron and 400mg folic acid daily. If compared to iron intake, iron supplementation during pregnancy correlated with a 47 percent decline in maternal anemia risk, a 46% decrease in the risk of iron inadequacy, and a 12% decline in the chance of having a low-birth-weight infant. (10,28) The sex of the child also plays an important role when it comes to undernutrition in a predominantly patriarchal country. (29)

Poor environment and WASH practices
One of the major environmental variables that affect the soaring prevalence rates of childhood stunting and dismal child health outcomes in several parts of densely populated India is a dearth of appropriate sanitation facilities and a preference for open defecation. (30) India is home to one-third of the world’s 2.4 billion people who lack decent sanitation and two-thirds of the world’s 946 million individuals who practice open defecation. (30,31)

The relationship between water and food is interdependent and is linked to the availability, access, stability, and utilization of food by the population. Food ‘availability’ – through the water as a resource for agricultural produce. Food ‘access’ - is disrupted when the household income is diverted in obtaining clean water and ensuring sanitation, the access to food is compromised to some extent in such cases. Food ‘stability’ - through the economic loss that the family is subjected to on periodic spending on treatment of sanitation-related illnesses, thus the economic shock meddling with the food stability. Food ‘utilization’ - through the effect of WASH-related enteric illnesses the body’s ability to utilize essential nutrients is altered, thus hindering food utilization.

Food Insecurity and Food Safety
Household food insecurity has been on the rise due to the pandemic as economies at the global and household level has been grimly affected, causing nearly 300,000 fatalities per year as a result of limited food consumption patterns and poor dietary practices. It is also estimated to catapult to 17 million by the year 2021. (13) Access to adequate and safe food is a basic human need that is critical for building a hunger-free world. The impoverished are the ones who are most exposed to and susceptible to these dangers. Diarrhoeal illnesses caused by food or water kill an estimated 2.2 million people each year, the majority of whom are children. Diarrhoea is the most common pathogen-caused foodborne sickness. (32)

Diseases
8% of all the under-five deaths worldwide until recently with about 1,300 young children dying every year, 30% of under-five deaths were deemed to be attributed to pneumonia, diarrhoea, malaria; wherein pneumonia killed a child every 39 seconds. (32) According to a Lancet study, though the age-standardized DALY has been dropped by 36% between the period of 1990 to 2016, the inegalitarian distribution of the risk factors amongst various states of India persists. (33) Diarrhoea however persists as a longstanding problem in India, though the infamous Swachh Bharat Abhiyan (Clean India Mission) which has decreased the proportion of open defecation and improved the WASH conditions in the country, diarrhoea is still a cause of concern as it strongly affects the weight indicators which potentially reflect the short-term deficit as opposed to height indicators showing long-term deficits. (34) The risk of infectious disease mortality is greater in cases of wasting than stunting, it is also associated with growth faltering in children and the enteric dysfunction potentially leads to depressed cognitive functioning having a substantial effect on social and economic productivity. (23)

Trends in malnutrition and a snapshot of current malnutrition status of India
An average decline of 6% points from 53% to 47% during 1992-2006. The current NFHS-5 projects reversal that happened in child stunting, which reflects chronic undernutrition. Over 60% of child mortality is explained by malnutrition. (5) From the first released state fact sheet, from the 5th round of NFHS following, are the rapid analysis that captures the snapshot of India’s current nutritional status. The total fertility rates have seen a decline as compared to NFHS-4 in almost all phase-1 states and Union Territories. Children’s nutrition indicators have mixed patterns across states. Though
the mortality due to malnutrition has been reduced malnutrition persists to be existent in the country. More than half of the women and children in 13 states/UT are anaemic and have increased as compared to the previous survey, this is despite increased consumption of IFA (Iron and Folic Acid) tablets by pregnant women for 180 days or more. (27) The malnutrition outcomes for children were as follows,

- The child anthropometric outcomes such as stunting, wasting, and underweight stood either worsened or stagnated, however it showed improvements for some states such as Bihar.
- Many states improved the under-five mortality rates, including IMR (Infant Mortality Rate) and NMR (Neonatal Mortality Rate).
- Anaemia culprited in children, women, pregnant women, and adolescents.
- On immediate determinants, EBF and adequacy of complementary feeding have increased. However, the initiation of complementary feeding and initial breastfeeding issues are still prevalent in some states.
- Maternal anemia persists to be a grim challenge.
- WASH serving as underlying causes showed large consistent improvements.
- Sluggish but consistent improvements were observed in areas of women's education and early marriage.
- Inadequate traceable data on poverty and food insecurity have nothing much to offer, however analyzing the previous trends and the brunt of the pandemic is likely to project further employment and inflation, thus skyrocketing prices with no money. (35)

**Interventions**

Smart and targeted interventions are requisite to holistically improve the status quo of nutrition in the country. Interventions to improve the dietary intake, reduce morbidity, and interventions improving social conditions must be primarily focused to bring a holistic improvement in the nutritional status of the country. Interventions to improve dietary intake involves, boosting dietary supplementation during pregnancy, promotion of exclusive breastfeeding and complementary feeding, guided and correct information regarding supplementary feeding, running school feeding, and health program. Many such programs are run in the country but are run half-heartedly. Thus, sustained and rigorous efforts must be undertaken to give justice to the purpose of the schemes that have been rolled out. The recent NFHS-5 survey also took an account of the progress of the key interventions implemented for curbing malnutrition and the issues related to it. The findings projected that a positive trend was observed in the reach of the National Nutrition Mission or infamously known as the POSHAN Abhiyan with the coverage of the program having increased in most of the states. The intervention that requires attention is the ICDS (Integrated Child Development Scheme) in regards to its food supplementation, in terms of its quality and access. (35) Though millions have benefitted from the longstanding ICDS scheme, its equitable distribution and quality of food provision are questionable.

In addition to iron deficiency, folate and vitamin B12, India must emphasize practices and policies that exhibit the links between the malnutrition determinants and anaemia, instead of focusing solely on malnutrition. (36) Interventions to reduce morbidity involve bolstering the living conditions and factors that meddle with the health of the population, that expose them to morbid conditions. It includes programs undertaken to reduce the spread of diarrheal diseases, an expanded program of immunizations and programs run for micronutrient supplementation. There are schemes run under such interventions to reduce the morbid conditions of the population, however, they do not operate to their full capacity. For instance, the village health and sanitation committee which is one of the significant elements of the NRHM (National Rural Health Mission) program is non-functional and lacks funds. (4) A life-course approach that intervenes with the preconception is fundamental to bring permanent changes and improve the nutritional status of the generation and the coming generations henceforth.

Intervention to improve the social conditions involves improving the WASH conditions, programs to bolster child growth, and monitoring primarily focusing on early education and integrating those programs with nutritional programs to improve nutritional outcomes. The Early Child Care Education (ECCE) is a foundation education model proposed by the government to boost early childhood education/development. ECCE can nurture caring, capable and responsible future adults. ECCE is the best investment a country can make to promote human resource development, improve societal cohesion and decrease the cost of future remedial programs.

**Required contribution from policymakers to accelerate the sustained gains**

Standardized metrics must be developed to support more effective communication of findings to policymakers. Standardized assessments must be built to help policymakers disseminate findings more efficiently. Viable capacity-building reforms across food systems must be identified and evaluated. Create a countrywide Common Results Framework to evaluate progress monitoring and analysis. Produce robust information to aid continuing appraisal of cost-effective measures throughout the food system and food environment. Address knowledge gaps and data inadequacies on cost and benefits as quickly as possible.(37)

If policies to combat childhood malnutrition are to be based on “evidence,” it is evident that a “grown-mediated” approach is unlikely to provide desired results, at least in the short run. Indeed, it is hardly unexpected that macroeconomic development over the last few decades has not resulted in increased advances in children's nutritional health. (38)

**Conclusion**

Despite sustained, longstanding efforts made to curb malnutrition, it persists to be a grim issue. Its deep rootedness is one of the major causes of concern and this is added on by the population of the country. In addition to this dual burden, several unaddressed issues play a significant role in the prevalence of malnutrition in the country and must be targeted to bring out positive health outcomes. Half-hearted implementation of the nutrition programs and policies are obsolete with various scams, and lack of political will towards tackling nutritional problems, jeopardizes the country in various ways. Timely revision, upgradation, monitoring and evaluation of policies, programs and schemes is indispensable to meet the population demand efficiently. These measures in conjunction with adequate governance, strategic leadership, and bolstering the status of women will majorly contribute to reducing prevalence of malnutrition in India. An equity-based intervention through inter-ministerial collaboration, intersectoral coordination and funding organizations can target the interlinking social factors of malnutrition and work extensively to change the status quo of malnutrition by its roots for healthier outcomes. Children are the future of the world, the way their various aspects of life are moulded in the early childhood; moulds the fate of the country in forthcoming years. Investing in them and for them is equivalent to investing in the future demographic dividend of the country that leads towards a healthy and sustainable future.
References


OJHAS 2022;21(2):2 Mhamane S, Ramanathan V. Addressing the Social Determinants of Childhood Malnutrition: A Review.


