

CHAPTER - 2

NUTRITION





2.1. Literature Review

Hunger, under-nutrition and malnutrition continue to plague the developing countries and this is especially true in the Indian context. Despite India's rapid growth development, it faces a triple challenge with the burden of under-nutrition and communicable diseases on one end of the spectrum, while on the other hand is the challenge of over nutrition, non-communicable diseases and micronutrient deficiencies. These extremities are the manifestation of a growing inequality. In fact, India has been identified as the country with the highest rates of domestic inequalities in malnutrition. Therefore, it becomes critical to address this problem at its intersection that can further perpetuate poverty and undermine economic growth. Case in point being, according to the Global Nutrition Report, India is among 88 countries that are likely to miss global nutrition targets by 2025 (Report n.d.)²⁶. In fact, India is set to miss targets for all four nutritional indicators for which there is data available, i.e., stunting among under-5 children, anaemia among women of reproductive age, childhood overweight and exclusive breastfeeding (Correspondent 2020)²⁷. Over half (51%) of Indian women of reproductive age (15 to 49 years) are anaemic, mostly caused by nutritional deficiencies, with six in 10 women in India facing the risk of anaemia, according to the Global Nutrition Report (Correspondent 2020)²⁷. India is distinguished as among the three worst countries, along with Nigeria and Indonesia, for steep within-country disparities on stunting, where the levels varied four-fold across communities.

While the overall investment on nutrition research is still limited, IFPRI notes that, "Far too many people around the world are afflicted by the triple burden of malnutrition—the coexistence of undernutrition, micronutrient deficiency, and overweight and obesity (IFPRI n.d.)²⁸. Failing to ensure good nutrition in the critical first 1,000 days of life (from conception to a child's second birthday) harms children's physical and cognitive development and can have other lasting consequences, including undereducation and lowered economic productivity." However, the sector is fundamentally driven by challenges in multiple sectors and there arises a need to develop contextually relevant, high-impact strategies to tackle the triple burden of malnutrition. In a sector that is already burgeoning with its own set of challenges, the widespread prevalence of misinformation is not only under-debated but a huge matter of concern affecting the balance of lifestyles. Constant misbeliefs are directly influencing a conscious under-consumption of protein in the daily diet. According to survey findings by Right to Protein in collaboration with research agency Nielsen, over 70% of the mothers surveyed held incorrect beliefs that protein is hard to digest, leads to weight gain, is unaffordable and is only required by physically active people (Itapu 2020)²⁹. On the supply side, over 85% of the mothers agreed that they would value carbohydrates and multivitamins over protein consumption while the demand side is bridled with food brands' labelling misinformation (e.g. MSG, salts in Maggi noodles), wrong claims on zero trans fats, sugar content in honey, etc. (Sivani 2015)³⁰ (Barman 2020)³¹.



2.2. Common Myths and Misconceptions

MYTH:
01 | **Protein is hard to digest, leads to weight gain and is not as vital as vitamins or carbohydrates.**

FACT: Haemoglobin, a primary carrier of oxygen in the blood, is, in fact, a protein and thus, protein in the diet becomes utmost crucial. Proteins are also crucial for body growth, muscle strength and its recovery, can act as neurotransmitters, and are vital for muscles, skin, bones, and hair.

MYTH:
02 | **Protein only comes from a non-vegetarian diet/Proteins are unaffordable/expensive and only required by physically active people.**

FACT: A plant-based diet comprising vegetables, beans (soybeans, black soybean), grains, nuts, and seeds can adequately meet the suggested protein intake, meaning that there are several affordable options available to vegetarians.

MYTH:
03 | **Lemon-water is a quick fix for fat loss.**

FACT: While lemon juice contains Vitamin C and small amount of micro-nutrients, the lemon water merely restricts the calorie intake but there is no evidence that lemon water can result in fat-loss (Ashok 2019)³².

MYTH:
04 | **Food fads and fad diets promote weight loss.**

FACT: Often, these trendy diets may be popular for short periods of time. Most fad diets promote quick/short-term weight loss by promoting ideas of consuming (or not consuming) certain food items & supplements without taking into consideration the required macro & micronutrients for the body (L. Bellows n.d.)³³.

MYTH: | Carbohydrates are bad for health.
05

FACT: Carbohydrates which are naturally occurring sugars, starches and fibre have been blamed for weight-gain problems. However, it must be noted that carbs are an essential energy source for the body and must be consumed in limited yet adequate amounts for sustained energy.

MYTH: | Eating fats always leads to weight gain.
06

FACT: Balance is the key to good nutrition. Although consumption of lesser fat is better, one must not eliminate fat from their diet, given that healthy monosaturated fats are required to absorb vital nutrients in the body.

MYTH: | Eggs increase your cholesterol.
07

FACT: Eggs surely contain cholesterol. However, people with high blood cholesterol and cardiovascular diseases can consume eggs in limited quantity. In fact, eggs help in providing other nutrients to the body and help reduce weight. People with high cholesterol must instead limit the amount of saturated fat consumption.

MYTH: | Non-nutritive sweeteners are healthy.
08

FACT: On the contrary, non-nutritive sweeteners may lead to adverse health outcomes, such as an increased risk of type-2 diabetes, negative changes to gut bacteria, and promoting blood sugar dysregulation.



2.3. Case Study- Superstition of Daagna in Umaria, Madhya Pradesh

The perils of hunger can be witnessed in the small district of Umaria, home to the Bandhavgarh National Park. The following case study is a gruesome evidence of malpractice which has its roots in superstition. Despite increasing administrative pressure and targets to address malnutrition, NFHS-5 fact sheets hold distressing truths and further highlight the diminutive progress made in tackling the issue of malnutrition (Welfare 2020)¹¹⁹. With persistent cases of respiratory issues including pneumonia, cold and malnutrition, the village has resorted to superstition instead of science. Daagna is a ritual where the village elders or local healers, in case of malnutrition, singe the sick child's belly with hot iron, a piece of bangle, sharp end of a sickle or neem wood in the hope that it will bring relief to the child's problem. However, things started to change when the district collector Swaroachish Somavanshi decided to take things into his hand. "The practice has a direct connection to nutrition—poor nutrition leads to kwashiorkor, which results in a protruding belly, and marasmus, which causes stomach shrinkage, thereby increasing the chances of their being subjected to daagna. There have been cases where hot iron was put on genitals", said Swaroachish Somavanshi in his statement to Outlook (Ahmad 2020)³⁴. By then, over 500 children were found to have been singed through daagna in Umaria. The cruelty continues, since the child not only suffers from malnutrition, but is further deprived of any medical attention in the belief that the burning

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With no scientific evidence, children were subjected to this brutal 'cure' called Daagna to cure their problems of malnourishment.
(Ahmad 2020)³⁴

”

will eventually heal them. This is, in fact, quite dangerous since the serious wound inflicted on the child can prove to be fatal.

In this regard, the District Collector launched Project Sanjeevani which entailed regular examining of children. Mangal Diwas was celebrated in the region every Tuesday to check on the nutrition status and that the children were not being branded by the practice. The initiative was an opportunity to cater to and provide necessary healthcare for malnourished and underweight children in the region.

2.4. Experts Speak



DR SHWETA KHANDELWAL

She is a trained and experienced public health nutrition researcher and serves as the Head Nutrition Research at the Public Health Foundation of India (PHFI). She serves on several expert government panels constituted by FSSAI and MoHFW including oils and fats, sustainable healthy diets, and combating high fat, sugar and salt in Indian population. She is currently the Program manager for India Taskforce and Lancet COVID-19 commission.

DR SUBBARAO M GAVARAVARAPU

He is Scientist E and heads the Nutrition Information, Communication & Health Education (NICHE) Division at ICMR-National Institute of Nutrition. He has widely researched and published in the areas of health, nutrition, and food safety communitarian. He is on the editorial board of the Journal of Nutrition Education and Behaviour; review editor for Frontiers in Communication; and has served as Asian Editor for



American Journal of Health Behaviour. He chairs the Health Communication Working Group of International Association of Media and Communication Research (IAMCR), serves on expert committees of FSSAI, Codex, UNICEF, and some universities. He is a fellow of the National Academy of Agriculture Sciences (FNAAS) and Royal Society for Public Health (FRSPH), UK.

01

In your research, has there been evidence on misinformation or myths that have affected the outcomes of nutrition? If so, can you please describe in detail the nature of such misinformation/myths?

Dr Khandelwal: I have personally not undertaken any research on health misinformation, but I do have general knowledge and can summarise the research evidence on this. Like Dr Sowmya Swaminathan has written on the ‘infodemic’, when people do not know what and where to access correct information, they consume everything given to them. This is a definite concern for Public Health Nutrition - they access videos and posts on WhatsApp and believe that Vitamin C is the cure for everything, or a yoga posture will heal ailments. Please know that such random advice can actually do more harm than good. It is important to take advice from certified professionals or confirm what you have found out with the help of experts in the field. However, I can’t speak from first-hand knowledge as I have not done direct research in the area of misinformation.

Dr SubbaRao: We do come across a lot of misinformation related to nutrition. It is not necessarily misinformation, but it is often unverified information being given out in some media. We encounter misinformation on a day-to-day basis. It could be as simple as highlighting or projecting a single nutrient or a food item as a panacea for different problems, which is against the basic tenet of describing nutrition as a holistic approach. For example, with COVID-19, you would have seen people talk about pepper being good or ginger as something that builds immunity; but eating only ginger or adding ginger to your regular meal does not, in any way, directly protect one from infection. Of course, it could regulate immunity a bit, but when taken in, its association with other foods matters. Such partial information is unauthentic. Therefore, it doesn’t tantamount to deliberate misinformation, but as it is not scientifically validated information, it can be categorised as misinformation. The infodemic also witnessed misinformation, imposter content, sometimes disinformation, or sometimes even all these together.

02

What are some of the major challenges in the nutrition sector faced by the following risk groups:

Dr Khandelwal:

2.1. Nutrition challenges for pregnant women

This is an important question from the nutrition, health and economic standpoints given that they give birth to the future citizens. So, it is imperative to acknowledge their importance but the buck must not stop at the pregnancy, but give equal weightage to early childhood development.

The nutritional challenges arise mainly because of loss of livelihoods or fear of infections since that will impact what and how much they will eat. For instance, some people assume that packaged food is safer than fresh fruits and vegetables sold by hawkers, so such decisions alter their nutrition preferences, which is usually for the worse. Access to timely and routine antenatal care has also been highlighted quite a bit. The help/rest at home is also usually compromised given their financial status and the fact that their access to domestic help is almost negligible. In addition, a nutritious meal takes a lot of ingredients, time and effort, and it becomes even more daunting if the expecting mother has other children to take care of. Even with breastfeeding, despite constant advertising and WHO guidelines, there is hesitancy, especially in the COVID-19 times. Mothers do not want to take that risk so they ultimately opt for formula milk which is not completely healthy/nutritious. To summarise this, the barriers to nutrition are lack of livelihoods (thereby leading to lack of incomes), lack of rest/help, routine antenatal care, stress-free environment, nutritious meals, and proper breastfeeding.

2.2. Early Childhood

There are 6Es that I'd like to focus on here:

1 Early Childhood Development- As we know, India ranks high in several childhood health indicators including wasting, stunting, low birth weight, etc. The first 1,000 days are crucial for children and they have to be provided with ample opportunities to grow. This has been a huge challenge for India and it is important to address this through innovative and culturally acceptable methods to grow, stimulation strategies, optimal nutrition, and healthy growth opportunities. But unfortunately, children are often not in the radar and we have focused only on certain issues like weight gain for AWS and government functionaries. Thus, approach towards early childhood must be more inclusive. The first few years are extremely crucial for healthy, optimal cognitive growth, and feeding only biscuits and milk is detrimental to it. Thus, the focus must be on healthy food including healthy proteins, healthy fats, and micronutrients. As per the current reports, the diet diversity for children is one of the worst.

2 Education & Expression- Education influences choices and decision making. Thus, it becomes a crucial indicator in the nutrition sector. As per Pratham reports, the education indicators reflect the true and disturbing state of the current education system. And COVID-19 has only made it worse by leaps. Children should be well exposed to skill-building exercises, technology, toys to play with, creative art forms to push their boundaries of imagination in different ways, and especially physical activity. This is important considering the fact that child marriages and child labour are still prevalent in India.

3 Equity- UNICEF defines equity as a fair chance for each child. Whether it is a gender, caste or religion issue, COVID-19 has only pushed the boundaries of these further.

4 Environment- Discussions on any sector is incomplete if the sustainability aspect is left out. Whether it is water distress, air pollution, or water and sanitation hygiene, it is important to provide optimal environment to nurture their growth. Thus, we have to use resources sustainably for the future generation. Therefore, it is a two-way street and we have to be cognitive of this fact.

5 Emergency Preparedness Services- When COVID-19 struck, we were struck hard. In fact, we still do not have answers as to what to do and how to improve the access. This kind of unpreparedness proves detrimental to the work that has been done so far for all these years. How many policies are pandemic/disaster resistant? And you'd be surprised to learn that 95% of these policies do not even mention the word 'disaster' in their briefs. It is here that the government must be applauded that in a quick span of time, they pulled out and provided guidelines like the Ministry of Women and Child Development did. We must enhance and strengthen emergency preparedness services.

6 Economic Commitment- Economics and financial burden must be in tandem to achieve any kind of goals. Nutrition has garnered this kind of attention only in the last decade through national and international aid, but the economic commitment is still vague, unclear, and masked under other schemes. Other domains like HIV have definitely had better economic commitment but issues like nutrition, whose effect is seen in the long term and probably 20 years later, does not get enough economic commitment. Thus, it becomes pertinent to provide economic commitment at the early stages and provide nutritional opportunities for the mainstream children to grow equally.

Dr SubbaRao: In the Indian context, undernutrition persists. Stunting and wasting persist despite concerted government programmes and a lot of efforts from a range of other stakeholders, including NGOs or research organisations and academics. If you see the upcoming data of NFHS-V, you can see that there is some reduction in stunting among children, but it is not commensurate with the kind of efforts we are putting in. Similarly, among micronutrient deficiency disorders, there is anaemia. It persists as a big problem among women, especially of reproductive age, who in turn pass on undernutrition to the next generation not just in terms of iron deficiency (anaemia), but also in terms of low birth weight of the children. The impacts of this follow through in the subsequent phases of life. If the child happens to be a girl, then she grows up to be an undernourished adolescent and an undernourished mother who passes on these issues to the next generation and thus the cycle continues. If you see the upcoming NFHS data, you can see that there is a definite increase in overweight and obesity in many states. There are states where obesity increased by about 2-3% in the last

five to six years, and there are states where it has gone up by as much as 11%. On an all-India basis, we are witnessing an increase in overweight and obesity. The coexistence of the dual challenges of undernutrition and overnutrition is cutting across all economic categories now, and also, micronutrient malnutrition, especially of iron, zinc, and folate, are coexisting in the Indian population and that's a bigger challenge for us to handle. Again, consider the existing challenge of low birth weight among children, i.e., children born below 2.5 kg at birth. Three decades ago, it was about 30% and today, it stands at 26-27%, which is almost the same, despite all our efforts. And of course, there are several other problems like not initiating exclusive breastfeeding soon after the birth of the child. While the progress on some of these issues is optimistic, they are not commensurate with the efforts that we are putting in.

03

What kind of large-scale behavioural change communication intervention is to be designed to combat misinformation in maternal and child nutrition?

Dr Khandelwal: We usually tend to focus a lot on delivery but not on implementation, and implementation is of paramount significance. Change will come only through a combination of people-centric policies, programmes using a participatory approach, working with the communities, involving women through SHGs, and working together to make them understand the objectives, and accordingly, the goals will be met. My two cents here are:

- 1 Models are available, but they need to be customised and use local evidence and capacity to address the community's needs. The community has to be in the driver's seat to be able to make things more relevant for them.
- 2 Use mass media for communication, i.e., a community participatory approach.
- 3 Local solutions, local leaders and local evidence for catering to local problems- This will enhance uptake and optimal utilisation of services or interventions designed to improve MCH and nutrition.

04

Misinformation around food is an under-debated topic. So, how should we start an effective conversation around it and inform people to consume the right diet?

Dr SubbaRao: In my experience as a communication researcher in the field of nutrition, what I often come across is that people always look for easy remedies to their problems. If somebody says that having a particular food items helps one reduce weight, or that having green tea helps one burn calories, what it means is that they don't want to do what actually needs to be done to

burn calories. The best way to go about it is to endeavour to develop certain necessary nutrition life skills among people: First, choose wisely from what is available in your area in the given season. Dispelling the myth that good nutrition is always costly is necessary. Second, nutrition should be taught as a life skill, and it can start in schools. Second, like you learn swimming and cycling, you should also learn nutrition and that it is no rocket science. I think the new National Education Policy can give ample scope to enable this learning and prepare our kids towards building the nation. Third, the media also has a great role to play. While the media has its own interests in terms of ad revenues from the food companies, they can promote healthy living including foods like fruit, vegetable, fish, meat and eggs on a regular basis through social service advertising. I think these three steps can be taken up immediately as a national movement. The Agriculture Ministry and/or the WCD are currently, I believe, in the process of documenting different foods that are available in different parts of the country along with their nutritional values. If we have that database, we can draw a roadmap of a nutritious diet based on what is available in a certain region. Take exotic fruits like dragon fruit or kiwis, for example. These are not needed in our regular diet. You can find easy and simple alternatives from what is cheap and locally available. In fact, one of the studies conducted by the NIN has shown that adding 25 grams of guava in the mid-day meal improved iron absorption and haemoglobin levels among children. The media must cover stories like these and such initiatives can help go a long way in improving children's diets. Therefore, it is significant to not only provide people with the right kind of information but also make these things available, accessible, affordable, and approachable to people.

05

Considering the problem runs deep, what kind of strategies should the state governments adopt to accelerate the reduction in nutrition deficiency?

Dr Khandelwal: We propose a F-O-O-D F-I-X to accelerate India's attainment of Swastha Suposhit Bharat vision (Bureau 2019)³⁵.

Fix food systems and accountability issues for making healthy diets accessible to all – oppose conflict of interest and uphold public health and nutrition. Access to healthy food and human basic needs- opportunity to maximally tap the human potential, uncompromised growth and development coming from food and nutrition security, clean drinking water, education, safe pollution free environment, etc. Financial levers by politicians- encourage favourable price packaging promotion placement.

Oppportunity for win-win engagement education, empowerment of consumers at all levels – This will not only motivate masses to make informed choices but to help understand the implications. Parents are usually running out of time. Quick fixes from markets and food systems thriving on cheap calories from ultra-processed foods are predisposing us towards malnutrition, especially childhood obesity. To have an effective Jan Andolan, start early and start nutrition education everywhere possible – public places, schools, workplaces, hospitals, even prisons. Use of multimedia should be to spread positive nutrition messages around how to choose healthy and not merely to advertise high fat, sugary and salty ultra-processed foods. Education modules or media stories should be impactful and pegged to provide guidance for all actors.

Orchestrate multi-sectoral policies on food and nutrition security and promotion of health food is increasingly understood as an interconnected system involving multiple sectors, but policies targeting different parts of the food system are typically made in isolation. Poshan Abhiyaan has tried to bring together 17 or more ministries and departments to develop strong, cohesive policies. However, inter-ministerial coordination and smooth functioning remain challenging. Efforts to improve processes around priority-setting, meeting timelines, fund allocation, disbursement, documentation, and robust monitoring must be continued.

Develop, design, document local solutions for local nutrition problems while imbibing wisdom or direction from published work or interventions. Align life-course perspective for healthy living by use of robust technology, sound feedback loop for queries, suggestions, strong independent, monitoring. One problem's solution should not fuel some other issue, and this can be checked by taking everyone together and making each voice heard. Push for transparency, open access of nationally collected data to researchers and academia.

Focus and forward work on benefits of healthy diets on all forms of malnutrition- Several economic benefits have been discussed (e.g., \$1 investment yields \$16-18 returns). The vulnerable need more attention and urgent action.

Invest in and incentivise capacity to do research and pilot interventions around healthy diets – In addition to philanthropies and private donors, it is important for the government to accord priority to train and/or upgrade the skill set of their programme personnel. In addition, partnerships with academia and research bodies should be established and used symbiotically. Financial help must be earmarked for testing innovative ideas and/or scaling up as necessary. Without trained staff and upgraded technology, we will not have far-reaching, sustainable and replicable impact on public health and nutrition.

Exchange case studies, document success and failure lessons to build a robust evidence pool –Trained teams must collate good, quality evidence and feed into the government system. High-quality reviews should be commissioned or periodically conducted and used in planning new ideas or improving the course of ongoing action.

06

Has your research covered food and nutrition misinformation that can be a serious threat to public health?

Dr Khandelwal: My research has not particularly looked at this problem. However, I am aware of the issue through multiple panels and expert discussions. For example, anaemia has been one of the biggest battles for decades and we continue to struggle so at 60-70% improvement. The reason is that there is a lot of misinformation associated with it; this discourages mothers from consuming iron folic tablets, thus seriously affecting public health outcomes. There is also the fat vs sugar debate; people often mistake baked, low-fat foods to be healthy. However, they fail to read the food information and understand the misinformation that the industry is easily masking behind the foods through added sugars and salts. Misinformation has percolated everywhere, and it is important to correct it on every medium possible.



2.5. Conclusion

There is a growing body of knowledge and evidence-based research to support and demonstrate the correlation between diet and the overall health. While nutrition is a convoluted topic with multiple factors, there is no straight answer to the question on how to reduce the nutrition deficiencies among varied groups. However, Dr SubbaRao suggests a way forward:

Looking at nutrition, especially maternal nutrition or underweight or stunting or anaemia, these are multifactorial, which means they occur not just because of one principal reason like not having a diversified diet. When we say diversified diet, we mean that no one food can adequately give you all the nutrients required for a day. So, one has to have different categories or groups of foods, which will account for diversity, and that diversity will, in turn, we hope, build nutrition. Sometimes, there are also genetic factors at play; a child's nutritional status is programmed right in the stage of being in the mother's womb. So if the mother is undernourished, the child may naturally be born undernourished or with a low birth weight, and can have a catch up growth very easily. But that catch up growth does not necessarily ensure good health. And the child who is born underweight is also susceptible to be overweight or obese or contract non communicable diseases at a later point of time. So, it is multifactorial. Availability, accessibility and affordability of foods for

diversifying diets is to be ensured. Supplementation is definitely one of the ways but it is not the only way. *The long-term goal should be diversifying diets and ensuring a food-based approach* so that people know how to choose healthy and eat healthy. Our approach to combat these problems should also be multi-pronged. One is that the availability, accessibility and affordability of foods for diversifying diets is to be ensured. Food supplementation and fortification are certainly helpful measures but they are not the only way; the long-term goal should be to diversify diets and ensure that a food-based approach is popularised, so that people can choose healthy and eat healthy. Repeated infections among children can also compromise nutrition and these are directly related to WASH (water, sanitation and hygiene). Of course, with initiatives like the Swacch Bharat Mission, many more people have access to toilets and piped water facilities. These definitely will have a positive impact in the long run, probably in the years to come. But as of now, there are a lot of things to handle including continuously endeavouring to increase awareness and prompt action. The most educated and literate people in this country are often nutritionally illiterate. Nutrition literacy is the most important thing that needs to be worked on, and I am sure the media can play a tremendous role in this. One has to be extremely cautious that one doesn't end up highlighting the greatness of one nutrient or a food that results in people looking down upon the greatness of other nutrients or foods. One should take a holistic approach. And of course, there are other aspects to it like physical activity, stress and screentime which do matter for improving the nutrition status of an individual. It's a long story, but it has to begin somewhere.

It is a mammoth task to make a vast sector like nutrition misinformation-proof, especially with the shift of information online from traditional media. While health initiatives have taken the internet by storm, there is still a lack of clarity as to what kind of food can or cannot be consumed. Given the diversity of food availability in India based on season, crops and festivals, a sustainable nutrition guideline is the need of the hour. Proactive efforts must be undertaken to both correct the wrong information on the internet and also have a nutrition strategy in place by the relevant and concerned authorities to guide the people. Nutrition misinformation comes in many forms such as erroneous information, false food labels, misinterpreted labels, and fraud and fad diets. Therefore, in order to correct this misinformation, the media, nutritionists, universities, research organisations, national, state and local governments, and, finally, consumers must work in tandem to think critically and seek evidence-based nutrition information. While it is going to be a long way before all nutritional misinformation is weeded out, it is important to inculcate the habit of seeking the right information about food from the right sources and therefore combat misinformation, so that one can make positively influenced food choices for better public health outcomes