Policy Brief No. 12

National Academy of Agricultural Sciences

Limitations of Global Hunger Index and Way Forward

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Preface

Every year, the 'Global Hunger Index' is released to rank countries based on four indicators for measuring and tracking hunger at global, regional and national levels. The ranking sparks debate among academicians, policy makers and politicians as it ranks India at a very low level. The 2022 report ranks India at 107 out of 121 countries, and previous year it was 101 out of 116 countries. It is unbelievable to rank India below several low-income countries despite government's concerted efforts in ensuring food and nutritional security, extending subsidized and free ration, improving hygiene and sanitation, and increasing purchasing power of households. It compels to doubt on the data, indicators and methodology adopted to compute the index.

In order to discuss the authenticity of the data used, indicators chosen and methodology adopted for computing the 'Global Hunger Index', the National Academy of Agricultural Sciences (NAAS) organized a Roundtable Discussion on "Limitations of Global Hunger Index and Way Forward" on 4th November 2021. This meeting was attended by experts and academicians in nutrition, medical science, statistics and economics. The experts concluded that the 'Global Hunger Index' reports are erroneous and misleading since these provide a highly biased estimates of hunger.

On behalf of the Academy, I appreciate the efforts of Dr Mahtab S Bamji, Dr P K Joshi and Dr Rajender Parsad for convening the Roundtable Meeting and bringing out its recommendations in the form of this policy brief. I would like to express my gratitude to all the discussants for their valuable inputs. I hope that the feedback provided to the policymakers, professionals, and other stakeholders will clarify the defects in methodology and indicators adopted in computing 'Global Hunger Index'. My thanks are also due to Dr Pratap S. Birthal and Dr Malavika Dadlani for editorial support in preparing this document.

(Trilochan Mohapatra)
President

New Delhi

Round Table Discussion on Limitations of Global Hunger Index and Way Forward

Chairman : Dr Trilochan Mohapatra, President, NAAS

Conveners : Dr Mahtab S Bamji, NAAS Fellow
Dr P.K. Joshi, Secretary, NAAS

Co-Convener : Dr Rajender Parsad, NAAS Fellow

Discussants

1. Dr A K Singh, NAAS Fellow, and Vice President
2. Dr P Geervani, FNAAS, Former Vice Chancellor, Sri Padmavathi Mahila University, Tirupati
3. Dr R Hemalata, Director, National Institute of Nutrition, Hyderabad
4. Dr Kamala Krishnaswamy, NAAS Fellow, and Former Director, National Institute of Nutrition, Hyderabad
5. Dr Anura Kurpad, Professor and Founding Dean, St, John's Research Institute, Bengaluru
6. Dr A K Nigam, Consultant Advisor, Institute of Applied Statistics and Development Studies
7. Dr Prema Ramachandaran, Director, Nutrition Foundation of India, New Delhi
8. Prof H P S Sachdev, Professor, Sitaram Bharatia Institute of Science and Research, New Delhi
9. Dr Padam Singh, Former Additional Director General, Indian Council of Medical research, New Delhi
10. Dr Sheila Vir, Founder Director, Public Health Nutrition and Development Centre, New Delhi

Discussion on Limitations of Global Hunger Index and Way Forward

1. Background

Global Hunger Index: An Overview

The much-debated Global Hunger Index (GHI) 2021 was published by the Welt Hunger Helfe and Concern Worldwide, Bonn/Doblin. The publishers claim that it is a tool for comprehensively measuring and tracking hunger at global, regional and national levels. The index ranks selected countries based on four indicators, namely an indicator on undernourishment in population, two indicators of child undernutrition (child wasting and child stunting) and an indicator pertaining to child mortality under 5 years of age. The GHI of 2022, placed India in the category of "serious" with a score of 29.1. India is ranked at 107 out of 121 countries. Last year, India was ranked at 100 out of 116 countries. Astonishingly, it has ranked India below its neighboring countries, such as Bangladesh, Nepal, and Pakistan. Some of the Southeast Asian countries, such as Cambodia and PDR Lao, and many African countries, namely Malawi, Kenya, Mali and Rwanda are much better-off than India in hunger perspective. It is well known that majority of these countries are much below than India in food security and several economic indicators. Therefore, it is hard to accept the place of India in the Global Hunger Index.

Immediately after the launch of the Global Hunger Index there was debate by several professionals, academicians, nutritionists, statisticians, and media. Unequivocally all professionals have pointed out several flaws in Global Hunger Index. They pointed-out that the index exaggerates the measure of hunger, lacks statistical vigor, uses indicators that are not affected by mere lack of food as well as has a problem of multiple counts, and gives higher representation to under-5 years of children. The Government of India also took the issue seriously and concerned ministries also discussed and raised the concern over the index. ICMR Expert committee on GHI 2019 report was also presented to the government.

The National Academy of Agricultural Sciences, an independent think-tank on agri-food system, organized a discussion on the issue with leaders and academicians in nutrition, medical science, statistics and economics on 4th November 2021. The objective of the discussion was to 1) critically examine the GHI report and present views on whether it is an appropriate measure of hunger and 2) propose the way forward on 'Hunger Index'. The discussion points, presented below, revolved around the indicators representing hunger, weights assigned and sources of data. Each expert also presented key arguments on GHI and presented views on what could be the way forward.

2. Limitations: Global Hunger Index

The key issues of limitations of Global Hunger Index are listed below:

1. The indicators used in computing the Global Hunger Index do not represent 'hunger'. As per the Food and Agricultural Organization, "hunger is an uncomfortable or painful physical sensation caused by insufficient consumption of dietary energy. It becomes chronic when the person does not consume a sufficient amount of calories (dietary energy) on a regular basis to lead a normal, active and healthy life. The FAO uses 'prevalence of undernourishment' as an estimate to represent the extent of hunger. It states that "hunger" may also be referred to as undernourishment[1]". Of the four indicators of the Global Hunger Index, only one of the indicators, 'undernourished population' is included to represent hunger. The experts strongly discarded the nomenclature as Hunger Index to represent 'hunger'.

2. The Global Hunger Index has used four indicators to construct the index and rank countries. The indicators used are (i) percent of undernourished population, reflecting insufficient nutrition; (ii) the share of children five years, who have low weight for their height, reflecting acute undernourishment (wasting); (iii) the share of children below five years who have low height for their age (stunting), reflecting chronic undernourishment; and (iv) the mortality rate of children under five, partly reflecting the fatal mix of inadequate nutrition and unhealthy environments. The experts emphasized that while hunger leads to undernutrition, it alone is not the only reason for under five years undernutrition or mortality[2]. The available evidence clearly shows that stunting as well as child mortality are not only due to hunger but are due to several other factors. Other studies show that the use of under-five wasting and stunting prevalence as indicators of hunger are not supported by the biomarkers associated with the nutrition profile of individuals. Similarly, studies suggests that 70% of the deaths of children worldwide and in India are due to diarrhoeal illness, acute respiratory infections, malaria and immunizable diseases, and not only due to undernourishment.

3. The experts rejected the indicators used for calculating Hunger Index Scores which neither represent hunger nor represents the situation of the entire population of a country. Moreover, the three indicators, namely wasting, stunting and mortality of children below five years, are interrelated and may have high correlation. It is argued that these three indicators refer only to children below five years, who constitute only one-sixth of India's population. The experts claimed that the index is inadequately representing the entire population of the country and the hunger. The experts suggest that the four indicators used to compute Global Hunger Index do not reflect hunger and lead to misleading interpretation.

4. The dispute is also on the weights assigned to the indicators. The index assigns 1/3 weight to the undernourished population, 1/3 weightage to wasting and stunting in children, and 1/3 to the child mortality. The argument is that very high weight of 0.66 is assigned to children who constitute of

[1]https://www.fao.org/hunger/en/

[2]Nigam, A. K. 2019. Improving Global Hunger Index. Agricultural Research 8(1): 1132-139. (https://pubag.nal.usda.gov/catalog/63379000

minor population, and only 0.33 to the population above five years of age, which constitute about 82% of the total population[3]. It means that the index computation gives higher representation to children under five years of age. It is also argued that arithmetic mean (with equal weightage) of indicators would have extreme values.

5. The experts also argue that the undernourished population also includes undernourished children. Therefore, the index has an upward bias due to multiple counting of undernourished population. Statistically, there is multicollinearity among the selected indicators, hence the index provides biased results.

6. The experts also presented evidence and questioned the use of stunting as an indicator of undernutrition. It was empasized that it is not always necessary that the measure of child stunting represents undernourishment and only hunger is the cause of death of children, which the report has conveniently assumed. A study in American Journal of Human Biology[4] concludes that stunting is frequently observed not only in poor, but also in affluent and well-nourished social strata. The study clearly reveals, "the evidence for the global agreement on the association between the prevalence of stunting and chronic undernourishment in modern and historic populations is weak". The study further observes that there are overwhelming evidence to support the vision that stunting is the natural condition of human height also in the affluent and well-nourished social strata. Similarly, a study published in the European Journal of Clinic Nutrition[5] questions the concept of stunting as prima facie evidence of malnutrition and chronic infection. The study concludes that there is no relevant correlation between nutritional status and height. Another study published in International Journal of Epidemiology[6] shows, "weight-for-height is associated with an overestimation of thinness burden in comparison to body-mass index (BMI)-for-age in under-5 years of population with high stunting prevalence". Therefore, the assumed indicators representing undernutrition are irrelevant, misleading and distorting hunger index. The Wealth Index in India show that the children in high index households are chronically undernourished.

7. The experts also claim that in India children and adults have smaller body frame, which is why overweight and obesity classification is different (lower cut-off for Asians). The same argument would also apply for children.

8. The Minimum Dietary Energy Requirement (MDER) value of 1800 KCals used for assessing nutrition of population is too high in Indian context. Indians tend to have a lower Basal Metabolic Rate (BMR) and Physical Activity Level (PAL). The corrected MDER value for Indians is suggested to be 1505 and application of this will bring down the estimate of undernourished population.

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[3]https://www.thehindu.com/opinion/op-ed/a-misleading-hunger-index/article21255142.ece

[4]Scheffler, Christiane and Hermanussen, Michael. 2021. Stunting is the natural condition of human height. American Journal of Human Biology (Wiley) 2021;e 23693 (htttps://doi.org/10.1002/ahhb.23693)

[5]Scheffler, C, et al. 2021.Stunting is not synonym of malnutrition. European Journal of Clinical Nutrition March: 74 (3): 535. (https://pubmed.ncbi.nlm.nih.gov/31142828

[6]Naga Rajeev L, Saini M, Kumar A, Sinha S, Osmond C, Sachdev HS. 2021. Weight-for-height is associated with an overestimation of thinness burden in comparison to BMI-for-age in under-five populations with high stunting prevalence. Int J Epidemiol. 2021, 1-10. Epub ahead of print 22 September 2021 (https://doi.org/10.1093/ije/dyab238)

9. The source of data used to construct Global Hunger Index is outdated and far from convincing. For example, the National Family Health Surveys (NFHS) data on stunting/wasting in under 5 years children is not available annually but every 8-10 years. The CNNS (Comprehensive National Nutrition Survey) 2019 data cannot replace the NFHS findings since the undernutrition data of CNNS is for 1-4 years and not under 5 years children. There is no authentic data base regarding the undernourished population since the last NNMB (National Nutrition Monitoring Bureau) diet survey of 2012. The limitations of Food and Agriculture Organisation (FAO), Gallup survey data used in Global Hunger Index 2021 for undernourished population, has apparent methodological limitations that need to be recognised.

3. Way Forward:

1. Recognising 'Zero' hunger is one of the very important goal of Sustainable Development Goals (SDGs), there is a need for good quality survey-based data on hunger, which may capture access as well as the element of 'anxiety' that is an integral part of hunger[7]. In this context, a new Index could be developed following consensus on definition of hunger and objectives. The proposed Index should aim at assessing state-wise situation so that it can be used as an information base for planning. A set of few questions that could be used to measure state-wise hunger situation could be built into the future NSSO or NFHS 6 surveys. The proposed questions as well as the composition of index and methodology be based on a critical review of the available tools tested in India (FAST, MFAST, FANTA etc). A Technical consultation committee could develop these questions.

2. The group suggests that following four indicators may be tried to begin with for constructing Hunger Index: (i) percent food insecure population; (ii) percent undernourishment population; (iii) dietary intake of major food commodities; and (iii) assessment of element of anxiety.

3. Various statistical techniques are available to finalize weights[8]. Empirical studies should be conducted to assign appropriate weights to different indicators.

4. In addition to hunger survey and Index, state-wise information on food and nutrition insecurity is important for addressing the problem of malnutrition and could also be included in the survey and institutionalised in the country. This assessment should focus on dietary intake of food stuff from diversified food groups and can be added in the hunger survey.

4. Conclusions:

There was a consensus that the GHI Reports are misleading since it provides a highly biased estimates of hunger. The Government of India should not accept its ranking due to erroneous methodology. A new index should be developed following consensus on definition of hunger and its indicators.

[7]There is a need for survey based behavioural responses to represent as an indicator on access. Presently, available options are: (i) USAID's Food and Nutrition Technical Assistance (FANTA) based Food Access Survey Tools (FAST) and its modified version (MFAST) by IASDS; (ii) FAO's Food Insecurity Experience Scale (FIES) from Voices of the Hungry (VOH) project, 2012-18.

[8]There are several statistical techniques to compute weights. These include (1) Raking; (2) Matching; (3) Propensity Weighting; (4) Matching + Propensity Weighting; (5) Matching + Raking; (6) Propensity Weighting + Raking; and (7) Matching + Propensity Weighting + Raking.

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