Global Hunger Index
-How Good It Is

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Hunger -

- Whenever we say hunger, the first thing which comes to our mind is lack of food
- Hunger is characterized by reduced food intakes with the physical sensation caused by lack of food; it is universal, but with different manifestations

- strong desire or need for food, and the discomfort weakness, or pain caused by a prolonged lack of food

- caused by food insecurity

- not getting two square meals a day throughout the year

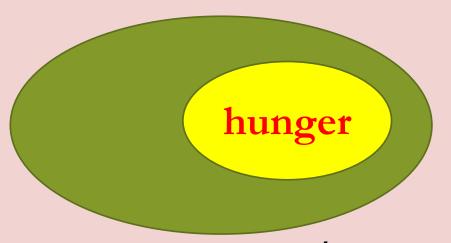- chronic undernourishment; not enough to eat to meet energy requirements

- people suffering from hunger are **constantly worried** where and when their next food will come from
- If we remain hungry for long time **it leads to** undernutrition/mortality

- **Global Hunger Index (GHI)** by **IFPRI** is the arithmetic mean of % undernourished population, % underweight children of under five years and % mortality rate of under five children. All the indicators are standardized and are assigned equal weights.

- **At a later stage, stunting and wasting replaced underweight. But it ignores neo-natal mortality and BMI-for-age suggested by WHO (2006).**

Limitations of GHI

- **GHI is a combination of only proxy indicators**
- **The FAST study (2003) by USAID highlighted that the pattern of nutritional outcomes is too complex for undernutrition to be used as a single proxy for food security.**

- **Estimates of GHI** are bound to have an upward bias: hunger implies undernutrition (<-2sd of median) though undernutrition does not imply hunger. Similarly, under 5 mortality may have reasons other than hunger.

Undernutrition/mortality

This is simply not desirable; what to do?

Which other indicators?

- Also use indicators having a direct bearing on hunger
- Use dietary intakes of important food stuffs like cereals, pulses and fats & oils as the major sources of energy and protein. Also use behavioral responses based indicators on access
- Use of these indicators having direct bearing on hunger can be helpful in suppressing the upward bias.

- A good index number should be derivable at both macro and micro levels. GHI fails on this count
- Under-5 mortality is not available at district and lower levels
- Small area estimates

Three data Based Studies

- FAST (FANTA) from Bangladesh, 2001; MFAST from Banda, 2011; and FAO's Voices of the Hungry (VOH) project, 2012-18
- A set of 9 questions: for distinguishing individuals/ households experiencing food insecurity
- FAST: develop a measure of household food access

- **FAST: 600 households** (i)Pattern of nutritional outcomes is too complex for undernutrition to be used as a single proxy for food security (ii) Access is measurable
- **MFAST: 8953 households**, 440 selected villages 44 Panchayat Groups;
- **Hunger and Access** are measurable
- Both FAST and MFAST had 9 questions seeking food insecurity related behavioral responses
- These are more elaborate than the 3 questions of **NSSO.**

1. The family ate few meals per day on a regular basis;
2. Obliged to eat non-preferred instead of preferred food;
3. Members of the household who had to skip the meal due to lack of food: (i) working adult, (ii) house-wife, (iii) both, (iv) elderly persons, and (v) children;
4. Sometimes food stored in the house ran out and no cash to buy;
5. Worried frequently about where the next meal would come from;
6. Needed to purchase food frequently (because own production or purchased stores ran out);
7. Took food on credit from a local store;
8. Needed to borrow food from relatives/neighbors to make a meal;
9. Needed to borrow food in order to meet social obligations (to serve a meal to guests or relatives).

- **questions 4-9** together provide food insecure households with hunger. **Question 3 gives hunger at individual level. 'Access'** is addressed by both FAST and MFAST

- **Panchayat Groups were mapped** using Arc View **GIS** software. Cut-offs determined by Arc View by percentage of households with hunger were:

Very low   6.80-7.40

Low   7.40-20.20

Moderate   20.20-23.50

High   (11)   23.50-26.30

Very high (6)   26.30-36.40

- **17 Groups with high/very high** against **8 by NSSO** method (Nigam et al, 2016). **NSSO** estimate, as expected, is a **gross under-estimate** of hunger.
- **Of these** - 6 had poor infrastructure, 6 had poor dietary intake and nutritional status and 8 had poor SLI

Hunger components	Bangladesh (2001) n = 600	IASDS (2010) n = 8953/5351-low SLI
Anxiety	36.3	20.7/26.1

Hunger Index in Indian States – IFPRI (2008)

17 states; U.P. has the hunger index 22.1,

- Very close to MFAST hunger percentage 22.7 and anxiety estimate 20.7 in Banda

- <50 percent of RDA percentages for cereals, pulses and fats & oils (2004 U.P. dietary survey done jointly by National Institute of Nutrition (NIN) and IASDS) are 4.3, 44.3 and 37.9 respectively. The simple average of these gives the hunger percentage as 28.5. This estimate is higher than 22.1, U.P. figure. This indicates that we should lower the cut-offs.

- **For a good hunger index**, it may be worthwhile to include both types of factors – proxy indicators and those directly related to hunger like survey based behavioral responses including anxiety and average percent consumption below a specified level of **RDA** of cereals, pulses and fats & oils.
- All these may work well for hunger index at Global level, whereas for lower levels (district or lower) we may have to use small area estimates.
- It may be important for districts which are poor in respect of food security, undernutrition and dietary intakes. Such districts will be few; and special dietary surveys can also be planned for them.

- **A close look into 9 questions** reveals that questions 4-5 and 6-9 can be remodeled as single questions by rewording

4-5: Worried frequently about where the next meal would come from as the food stored in the house ran out and no cash to buy more

6-9: Had to take food on credit from a local store/relatives or neighbors to make a meal for the family or to serve a meal to guests or relatives

- This would shorten the 9-question to a 5-question module. It may be possible to further reduce these to the following 3-question module:

1. The family ate meals per day on a regular basis
2. Worried frequently about where the next meal would come from as the food stored in the house ran out and no cash to buy more
3. Had to take food on credit from a local store/relatives or neighbors to make a meal for the family or to serve a meal to guests or relatives

- These along with dietary intake aspects of cereals,

pulses and fats & oils can easily be regularly canvassed, may by agencies like NSSO.

- A good hunger index should include proxy indicators as well as those directly related to hunger like survey based behavioral responses on access and average percent consumption below a specified level of RDA of cereals, pulses and fats & oils.

- For reducing the bias based upon undernutrition and mortality based indicators, the hunger index based upon dietary intakes should be lower than the undernutrition and mortality based hunger index

- This suggests lowering down of the cut-off on percentage below RDA or even fixing different cut-offs for different food stuffs may be a good idea.
- It is an open question on how to arrive at appropriate cut-offs. It is easily realized that hunger should lie between two extreme estimates, the one provided by anxiety and the other given by question 3 giving the numbers who had to skip meal. This provides a good lead for fixing the cut-offs for the intake of food stuffs. This has to be a case of further research efforts in this area.

- A further issue is to quantify the extent of upward bias induced by proxy indicators being used at present in the computation of GHI. This is theoretically not feasible and only large data based empirical assessment seems the way out.
- The outcome of these research efforts will go a long way in bringing about improvement in the present structure of GHI. Both these research efforts require techniques like big data analysis, data mining and simulation. The research of this type has to be a sponsored team effort.

Thanks