

*How does the choice of method influence differences in intrahousehold nutritional status? A close examination of nutrition measures and methods from Bangladesh.*

### **Relevance of the topic**

Women and girls are commonly assumed to be at greater risk of food insecurity (e.g., UN Women 2012). Earlier research examined whether women consume a lower percentage of their required daily caloric intake (e.g., Haddad and Kanbur (1990); Berhman and Deolaliker (1990); Pitt et al. (1990); Haddad et al. (1995)), but, as Marcoux (2002) summarized, “evidence of pro-male biases in food consumption is scarce” (p. 275).

In recent years, this claim has been reconsidered, and more recent findings suggest that there is meaningful nutritional inequality within households. Much of the earlier research used caloric intake measures. Recent research has focused on richer nutritional intake and outcome measures, such as dietary diversity (Mangyo (2008); Villa et al. (2011); Rahman (2013)), nutrient adequacy (Coates 2017 and Coates 2018), and body mass index (Sahn 2009; D’Souza and Tandon 2018). This resurgent interest in understanding intra-household nutrition reflects the recognition that calories are just one measure of nutritional status.

The new studies that measure differences in nutritional status within households, which we refer to as nutritional discordance, use both a wide variety of methods and a wide variety of nutritional measures. Researchers have to make a series of choices about how to measure discordance, and there is little-to-no consensus on current best practice. For example, some approaches ignore activity intensity of each individual. Individuals working in higher-intensity occupations may have greater caloric requirements compared to those who do not. If men are expending a greater proportion of energy in high-intensity activities than women, failing to account for energy expenditure can make results appear more inequitable than they truly are. The nutrient-reference tables used in low-income country studies also differ. In some cases, USDA reference tables are used, even though the foods’ nutrients may vary (e.g., banana in the US is different than banana in Uganda). As a result of this variation, we know little from current studies about whether findings of nutritional discordance are sensitive to the choice of method or measure. We intend to disentangle how the choice of method and choice of nutritional measure impact findings for a single country: Bangladesh.

### **Research methodology**

To compare across methodologies, we use the Bangladesh Integrated Household Survey (BIHS). BIHS is a rich, nationally representative survey collected in 2011-12 of over 21,000 individuals across more than 5000 households. Researchers face multiple decisions points when computing nutritional discordance.

Our comparisons across key methodological decisions include:

- (1) Nutritional measures: we will estimate discordance for both calorie and nutrient intake, using 24 hour individual dietary recall data, household food expenditure data, Household Dietary Diversity Scores, and body mass index using anthropometric measurements.
- (2) Approaches to computing nutrient intake: we will compare several assumptions used to compute individual measures and to convert household level measures to individual measures:
  - a. Per capita (PC), Adult Equivalent (AE), and Adult Male Equivalent (AME): We look at the method of distributing calories or nutrients from household level to individuals.

- b. Food composition tables: We examine how calorie and nutrient intake vary by the choice of reference table to calculate calories and nutrients from food diaries, using both the USDA and Indian reference tables (Bangladesh does not have its own reference tables).
- (3) Calorie and Nutrient Benchmarks:
  - a. Methodology: We look at the source and methodology for benchmarks such as Estimated Average Requirement (EAR), Recommended Daily Allowance (RDA), and BMI tables.
  - b. Geography: We consider the importance of regional compared to international nutrient benchmarks using USDA, FAO, and Indian reference tables.
  - c. Parameters: We evaluate the effects of using age compared to age group, and including activity level, gender, height, weight, and pregnancy or lactation status affect frequency and level of nutritional discordance.
- (4) Multiple approaches to compute discordance: We consider various methods of computing discordance, such as Kuznets curves, log deviation of inequality, and differences in deviations from minimal required intakes.

We are now computing multiple nutritional measures. We will then compute correlations across the multiple nutritional measures. We will test the sensitivity of the nutrient intake results to the various approaches and parameter choices. By identifying relationships between measures, approaches, and parameters, we can make recommendations for best practices for measuring nutritional inequality, given data and temporal limitations.

### **Preliminary results (if available)**

*Forthcoming.*

### **Potential for generating discussion**

This research has two aims. First, we make a methodological intervention to learn the extent to which measurement choice influences findings of nutritional discordance. This can help us to determine when and where relying on unitary models of households is appropriate. Brown et al. (2017) argue there is “substantial intrahousehold inequality” in sub-Saharan Africa, where being an undernourished woman is poorly correlated with poverty status. Lentz et al. (2019) show that women eat last and least and consume fewer high-quality quality foods than other household members in rural South Asia. These and other studies raise questions about the continued reliance on unitary household models for food, agriculture and nutrition research. An important step is to identify how sensitive results that are discordant are to the choice of method.

Second, based on our findings, we aim to provide guidance on best practices for measurement. A better understanding of nutritional discordance is critical for food, agriculture, nutrition, gender, and social protection policy. For example, while efforts to link agriculture-to-nutrition remain widespread, achieving improved nutrition remains challenging (see Kadiyala et al. 2014). Similarly, an expanding interest on women’s empowerment (e.g., Pratley 2016) raises questions of when and how gender inequality manifests itself within households. A clearer understanding of how to measure such effects, and when it is useful to do so can help researchers and practitioners recognize when household bargaining matters and how to design program interventions better achieve desired impacts.