

**Nutritional Vulnerability within the Household: Panel Data Evidence from Rural Bangladesh**  
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Knowing how economic growth and resources are shared across groups of people, as well as within households, is essential to policy makers interested in supporting vulnerable groups. For both conceptual reasons (treating households like single units, with assumptions about decision-making and resource allocation) and practical reasons (data availability), analysis of poverty and food insecurity is often conducted at the household level, despite the fact that poverty and food insecurity are inherently individual constructs. The use of adult equivalence is common, relying on the strong assumption that calories are distributed equitably within a household – an assumption that may not hold for all households or throughout the year. As a result, governments and aid agencies targeting poor and food insecure households are unlikely to be capturing all poor and food insecure individuals. For example, a recent working paper demonstrates that nearly half of the undernourished children and under-weight women in Sub-Saharan Africa are not found in the poorest 40% of households (Brown, Ravallion, & van de Walle, 2017).

In this paper, we examine the intra-household dynamics that cause some household members to fall short of obtaining their minimum daily caloric requirements, while others in the same household meet theirs. We are interested in understanding the roles of economic resources and culture in shaping the reported nutritional inequities. We explore how income and calorie availability, along with behaviors (such as expenditure patterns and human capital investments), are associated with larger or smaller nutritional inequities. We explore the likelihood of a household or an individual member becoming undernourished over time. (Here, we use “undernourished” to describe a household not meeting its total daily caloric requirement or an individual not meeting her daily caloric requirement.) And we explore how nutritional inequities change over time as household circumstances change; for example, if a household crosses the calorie availability threshold (i.e., there are sufficient calories available for all members to obtain their minimum daily requirements), do all members reach their caloric requirements? If not, which members receive less generous shares of calories? And are such differences associated with, for example, women’s empowerment or the cultural views on women’s status?

We exploit rare intra-household food consumption data from a large panel survey, representative of rural Bangladesh – IFPRI Bangladesh Integrated Household Survey (BIHS). Over the past several decades, Bangladesh has experienced substantial economic growth, poverty reduction, and nutritional improvements; despite these gains, malnutrition remains at

alarming rates, with over 40% of children suffering from stunting (Headey, Hoddinott, Ali, Tesfaye, & Dereje, 2015). Our analysis tries to address the idea of shared prosperity; as Bangladesh continues to experience economic growth, to what extent will the lives of vulnerable individuals improve? In Bangladesh and other South Asian countries, disparities in the treatment and outcomes of females and males have been well-documented (Jayachandran & Pande, 2017; Pitt, 1983; Pitt, Rosenzweig, & Hassan, 1990). We seek to contribute to this literature by constructing various household profiles based on characteristics and behaviors associated with changes in nutritional inequities over time.

The BHHS data were collected in 2011-12 and 2015 from over 5,000 households. They include standard household survey modules (e.g., demographics, expenditure, education, health, etc.). And, salient to this paper, they include 24-hour individual-level dietary intake data, household-level shock data (e.g., death of main earner, food price increase, loss of assets, etc.), and modules on women's status and women's empowerment.

In earlier work that uses the first wave of the panel, we find that, on average, male household heads receive a disproportionate share of household calories compared to all other members and that nutritional inequities between members are exacerbated in households with lower economic well-being and lower female empowerment (D'Souza & Tandon, forthcoming). In this paper, we build on that earlier work, using the panel aspect to better understand how the behaviors and beliefs of these Bangladeshi families may contribute to inequalities within their households. The panel data help us address some of the measurement error typically found in cross-sectional data.

We use simple descriptive tables and figures to illustrate some of the core findings and we use regression models to identify the relationships between changing nutritional inequities and changing household characteristics, behaviors, and circumstances. In some models, we use household fixed effects to account for unobserved household heterogeneity; in other models, we attempt to identify time-invariant characteristics, opting not to use household fixed effects.

Preliminary results show that the nutritional inequities persist in the second wave, with male heads continuing to receive disproportionate calorie shares. We find that 37 and 34 percent of households and individuals, respectively, transition in or out of undernourishment over the survey period. Of those who were well-nourished (meeting their caloric requirements) in round one, male heads are the least likely to become undernourished in round two. And, of those who were undernourished in round one, male heads are the most likely to become well-nourished in round two. We find cases in which nutritional inequities are positively associated with various changes in household circumstances (incurring medical expenses) and cases in

which the association is negative (damage due to a flood). We are currently exploring household characteristics and behaviors that may explain these patterns.

The results have implications for the design of food and nutrition programs (e.g., nutritional safety nets that more explicitly account for household and gender dynamics). Given the growing recognition of the importance of measuring food and nutrition security at the individual level and the strong emphasis on gender equality in the Sustainable Development Goals (SDGs), we believe that knowing who is most affected when the circumstances of impoverished households change is critical to tackling the first two SDGs of poverty and hunger and for governments concerned with how prosperity is shared across individuals.

## References

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