The Gender Aspect of Malnutrition and Digital Interventions in India: Observations from State's Data

Surajit Deb
debsurajit@gmail.com
Professor in Economics
University of Delhi (Aryabhatta College)

Paper Proposal for NBER Conference: Women in the Digital World
February 28, 2025

1. Background and Research Issues:

Although India remains amongst the emerging economies and has at times shown positive achievements in various social safety nets, its progress in child nutrition parameter has often remained in the news due to its high rates of domestic inequalities in malnutrition. About one-third of world's stunted children and also an alarming proportion of underweight, wasted and obese children were found in the country during 2015-16 (Global Nutrition Report 2018). The need for better nutrition is recognized under goal 2 of the Sustainable Development Goals (SDG), which aims to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture by 2025. The key target under SDG- 2 is ending all forms of malnutrition, including achieving the internationally agreed targets on stunting and wasting in children below 5 years of age. The burden of child malnutrition in India has remained a national concern since about one-third or more children remains undernourished, i.e., underweight (32.1 per cent), stunted (35.5 per cent), wasted (19.3 per cent), and overweight (3.4 per cent), according to the National Family Health Survey (NFHS-5), 2019-21 data. As the adult level malnutrition is concerned, anemia prevalence remained at about 19 percent in women and 16 percent in men with below normal body-mass-index. On the other hand, about 58 per cent of non-pregnant women and 25 per cent of men in the age group of 15-49 years are found to be anemic.

While the literature has identified several viable causes of malnutrition including inadequate access to health care or safe drinking water, sanitation, hygiene and food insecurities, the extent and nature of the child malnutrition problem in the country remains somewhat incomprehensible. It is very commonly found that the women in different parts of India are at greater risk of malnutrition than men in households that are vulnerable to food insecurity. It therefore remains crucial to consider the gender aspect in the examination of malnutrition challenges in India. It may be mentioned that the government’s budgetary expenditures on nutrition-related activities different expenditures on nutrition improvement can be classified into two categories, viz., a) nutrition specific interventions, viz., promotion of infant and young child feeding, vitamin and mineral supplementation and management of acute malnutrition for children, pregnant women and lactating mothers, and, b) nutrition sensitive developments that contribute to the reduction of malnutrition. Thus, the Integrated Child Development Services (ICDS), Special Nutrition Programme (SNP), Anganwadi Services, Scheme for Adolescent Girls

and Pradhan Mantri Matru Vandana Yojna (PMMVY) remain as the main direct targeted interventions to address the problem of malnutrition in the country. On the other hand, the Janani Suraksha Yojana (JSY), Mid-Day Meal (MDM) scheme, the food subsidy programs under the National Food Security Act, the Mahatma Gandhi National Rural Employment Generation Program under the Ministry of Rural Development and the National Rural Health Mission under the Ministry of Health & Family Welfare happens to be the nutrition sensitive developments or activities related to the improving the enabling environment for nutrition in India.

It may be mentioned that the National Nutrition Mission (NNM) under the Ministry of Women and Child Development recently received major boost in the Union Budget. The NNM as such is designed to combine various existing programs along with information technology enabled monitoring, community awareness advocacy, online course on child nutrition and other awareness programs on WASH. Once the scheme is functional, the government will conduct Nutrition Social Audits to track the health progress through the Information Computer Technology Enabled Real Time Monitoring of Schemes (ICT-RTM). It is stated that the nutrition surveillance system will also use the geographic information system (GIS) to track severely undernourished children, and link these families with social protection measures, viz., food security or access to MGNREGP and other livelihood programs. In the NNM scheme, the ICT-RTM driven by the Common Application Software (ICDS-CAS) would function through a mobile application at the level of local anganwadi workers with a sector supervisor and a comprehensive web-based dashboard at the block, district, state and national level.

2. Objectives and Study Design:

Various government initiatives have been launched over the years which seek to improve the nutrition status in the country, including the Integrated Child Development Services, the National Health Mission, the Janani Suraksha Yojana, the Matritva Sahyog Yojana, the Mid-Day Meal Scheme, the National Food Security Mission and the National Nutrition Mission. However, the different regions or states have been found to have progressed at varying degrees in specific malnutrition indicators. On the contrary, the aspects of gender inequality in malnutrition, both at the level of children and adult have remained a relatively under-researched area. Finally, the success of the ICT enabled interventions of the NNM would require decent penetration level of mobile technologies in the remote areas of different states for acquiring the beneficiary details.

The working and success of the scheme would depend much on operational parts of the device, SIM Cards and data connectivity plan at the levels of different states or union territories.

In this background, this paper explores in detail the divergences in gender disparity of child and adult malnutrition across Indian states and subsequently examine whether the differences are explained by the use of digital technology in the states. This examination is undertaken in two steps, first we examine the gender disparity at the level of 31 states and second, statistically examine whether the gender disparity can be linked with the use of internet and mobile phone use by men and women across states, by using cross-sectional regression and correlational empirics

Our succeeding analysis could tentatively proceed in the following sequences. Section 2 would provide an account of the important issues relevant for the malnutrition burden in the country. The malnutrition trends for individual region/states are discussed in section 3. For this part, we consider the standard anthropometric indicators of malnourishment, viz., under-weight, stunting, wasting, body-mass-index, anemia and obesity for the states of India. Section 4 would deal with the gender differences in malnutrition. The examination of the link between malnutrition and differences in penetration of mobile and internet technology in men and women are carried out utilizing the cross-sectional correlation analysis in section 6. Finally, section 6 would summarize the analysis.

3. Methodology and Data:

The objective of our empirical analysis is to examine how the use of mobile phones by women or the differences in internet use by men and women could impact on the malnutrition prevalence. We attempt correlation and regression analysis along with other control variables and estimate the following model using cross-sectional observations from 31 states and union territories of India.

$$\textit{Malnutrition Indicator} = \alpha + \beta_1 \text{Percent of women using mobile phones} + \beta_2 \text{Ratio of men to women using internet} \quad (1)$$

The control variables are picked up from mothers with no schooling, women illiteracy, all age-appropriate vaccinations, and per capita net state domestic product as a measure of per capita

income in the state. We would use the state volumes of the National Family Health Survey, 2019-21 and the Comprehensive National Nutrition Survey, 2019 data.

4. Significance:

The problem of child malnutrition in India remains so critical at present that it is being doubted whether the country will achieve the SDG targets set out for 2030. In fact, it is being anticipated that some of the regions or sections of population in India may not be on course to meet all the nutrition targets. However, better nutrition for a country with high poverty and inequality like in India goes beyond the SDG-2 target and can play a direct role in the other SDG goals and development agendas like reducing gender and social inequalities. The regression exercises would help us better understand the roles of other factors, such as, women illiteracy, vaccinations, breastfeeding, dietary diversity or per capita income for the infant mortality prevalence rates across states in India. Overall, the results of the study could provide important insights for setting specific development policies.