Dietary diversity in early life: Evidence from 67,241 infants aged 6-24 months in 39 developing countries

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Background

• Malnutrition in childhood has lifelong consequences for health and productivity, and is most widespread in early life (6-24 months)
• Diet quality is closely linked to the number of food groups consumed, as in the WHO-UNICEF measure of Child Diet Diversity (CDD)
• Surveys of adults have revealed large income elasticities of demand for diversity away from starchy staples into other foods (Bennett’s Law)
• Infants’ dietary diversity has only recently been measured with sufficient accuracy and sample size to document demand for child nutrition
• We merge data on child diets with household wealth, community characteristics and agroecological conditions to identify the location and timing of early-life malnutrition in 39 low- and middle-income countries

Research Questions

• What determines dietary diversity among young children?
• What are the roles of household wealth, education & health services?
• What are the roles of community infrastructure, climate and agriculture?

Data and Methods

• Since 2005, DHS questionnaires use WHO-UNICEF guidelines to ask whether child was fed each item on a standardized food list in previous 24 hrs, and also document child’s anemia status and various household characteristics
• We compile results from 47 surveys in 39 countries, totaling 67,241 children surveyed between 2006 and 2013, merged with administrative data, satellite imagery and climatological information for each household location
• We use non-parametric regression to describe the time path of growth faltering and anemia, and the non-linear relationships between dietary diversity, household wealth and other variables of interest (results below)
• We use OLS to estimate a multilevel model of child dietary diversity by age at 6-23 months, 6-11 months and 12-23 months (pooled results at right)

Nonparametric Results

Stunting accelerates in 6-23 month window and anemia peaks

Diet diversity is low in this sample, but varies widely among surveyed children

Wealthier households reveal a clear preference for greater child diet diversity at all levels of wealth

Diet diversity differences across wealth quintiles begin to emerge at around 6 months

Multilevel Model Results

Household and community factors in child diet diversity

Effect Modifiers

• Child diets follow Bennett’s law, with an additional 0.29-0.59 food groups consumed with each increase in household wealth tercile.
• Household access to markets (travel time to town, night lights, population density) is associated with higher CDD only at older ages (12-23 months). In contrast, maternal access to health services (antenatal care, facility birth and vaccinations) is associated with improved child feeding practices in early infancy (6-11 months) as well.

Conclusions

• Malnutrition occurs very early in life, requiring large household surveys to obtain data on a sufficient number of infants at each age
• Recent DHS surveys, merged with other information, provide novel evidence on economic behavior regarding infant and young child feeding
• Household wealth alone can account for some but not all of the observed variation in child diet diversity and early-life malnutrition
• Also important are parental education and maternal & child health services, while market conditions primarily affect diets at older ages
• Climate change could influence malnutrition: shifts towards hotter and drier conditions expected to reduce dietary diversity for infants

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