



GRADUATE SCHOOL OF BIOMEDICAL SCIENCES
M.D./Ph.D. PROGRAM IN BIOMEDICAL SCIENCES

M.D., Ph.D. THESIS DEFENSE

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Trends, Predictors, and Consequences of Child Undernutrition in India

Background: India has the highest number of undernourished children, worldwide. Understanding trends, predictors, and consequences of child undernutrition is important to inform a strategy for addressing this public health crisis.

Methods: We used data from four National Family Health Surveys (1992-93, 1998-99, 2005-6, 2015-16 NFHS) to examine trends of undernutrition before and after the 2005 implementation of National Rural Health Mission, India's flagship public health initiative (Aim 1). We used the 2016 NFHS to build a predictive model that identifies infants at-risk for child undernutrition (Aim 2). Lastly, we used data from the 2005 and 2012 India Human Development Surveys to investigate the consequences of early childhood undernutrition (Aim 3).

Results: NRHM was more effective at addressing acute than chronic undernutrition but its prioritization on high focus states resulted in an increase of acute undernutrition among children living in normal focus states. We demonstrate that it is feasible to predict 5-year risk of child undernutrition at the time of birth. Child undernutrition is associated with adverse physical and cognitive outcomes during pre-adolescent years, with female undernourished children experiencing the worst outcomes. Higher female education in the household helps overcome gender and nutrition-based disadvantage among Indian children.

Conclusion: There is an urgent need to reduce nutrition-related disparities among Indian children. Short-term strategy could include a predictive model that can be used to more effectively provide resources and intervention to the most disadvantaged population. Long term strategy should focus on elevating women's status through improved female education in India.

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