



Trends in malnutrition among children in India: Growing inequalities across different economic groups

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ABSTRACT

This paper examines the trends and patterns of economic inequalities with respect to child malnutrition by wealth status of population across major regions and states of India. Data from three rounds of National Family and Health Survey (NFHS) conducted during 1992–2006 were analyzed. The proportion of underweight children (measure of both acute and chronic malnutrition) has been used as a dependent variable. The wealth index is used as proxy for economic status of the population, and was estimated through principal component analysis by employing a set of variables representing durable asset ownership, access to utilities and infrastructure, and housing characteristics of respondents for all the three survey rounds. Bivariate analyses, poor–rich ratio and concentration indices were used to understand the trends in economic inequalities with respect to child malnutrition. Pooled logistic regression models were fitted to estimate the adjusted effect of economic status on the likelihood of child malnutrition over time. Results indicate sluggish change coupled with concomitant rise in economic inequalities with respect to child malnutrition in India during 1992–2006. The burden of malnutrition was disproportionately concentrated among poor children. In addition, average decline in malnutrition concealed large economic disparities across space and time.

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Introduction

Reduction of child malnutrition is one of the prime challenges that India faces. The burden of malnourished children in India is amongst the highest in the world and virtually twice that of Sub-Saharan African countries. Nearly 60 million Indian children are estimated to be underweight; more than 50 percent suffer from anemia and a similar proportion lacks full immunization (Deaton & Dreze, 2009; FOCUS, 2006; Gragnolati, Shekar, Dasgupta, Bredenkamp, & Lee, 2005). India ranked 96 out of 119 countries in the Global Hunger Index (GHI) developed by the International Food Policy Research Institute (IFPRI) in 2006, and where child malnutrition is concerned, it ranked 117 among 119 countries (Braun, Ruel, & Gulati, 2008).

That malnutrition undermines economic growth and perpetuates the vicious circle of poverty has been well established. This occurs due to multiphasic loss, that is, direct loss to productivity because of weak physical status, indirect loss from fragile cognitive development, and loss incurred due to increased health care costs

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(World Bank, 2006). Generally, there is an inverse relationship between hunger and increasing economic growth. Studies have shown that during the past decade, after the New Economic Policy was introduced in the 1990s, India achieved unprecedented economic growth and has made noteworthy advances in the fields of science, agriculture, medicine, information technology (CSNSI, 2008). Despite these improvements, progress toward reducing the proportion of undernourished children in India has been sluggish (Pathak & Singh, 2009; Svedberg, 2006). The economy grew steadily at an average of 6 percent (Basu & Maertens, 2007) and the per capita income doubled during the post reform period. However, although the Global Hunger Index (GHI) declined between 1981 and 1997, it remained stagnant between 1997 and 2003. This phenomenal stagnation in GHI might be attributed to rising income inequalities and spatial disparities in the country during the same period (Braun et al., 2008).

The proportion living in poverty has declined only marginally from 36% in 1992–1993 to 27.5% in 2004–2005 (Economic Survey, 2001–2002; Planning Commission, 2007), and even this decline has been uneven. Recent studies (Ahluwalia, 2002; Ghosh & Chandrasekhar, 2003; Pal & Ghosh, 2007; Sen & Himanshu, 2005) have shown that economic inequalities and regional disparities have grown during the post reform period. During the same period,

(1992–2006) while the proportion in poverty declined by 24%, the relative prevalence of underweight children, on average, declined more gradually by 12% (Economic Survey, 2001–2002; Planning Commission, 2007).

The issue of socioeconomic inequalities in health outcomes in developing countries like India has evoked considerable interest among researchers and social scientists (Carr, 2004; Gwatkin, Bhuiya, & Victora, 2004; Houweling, Kunst, & Mackenbach, 2003; Lawnet, Tinker, Mridha, & Anwar, 2006; Mohanty & Pathak, 2009; Pathak, Singh, & Subramanian, 2010; Poel, Hosseinpoor, Speybroeck, Ourti, & Vega, 2008; Subramanian, Kawachi, & Smith, 2007; Subramanian, Perkins, & Khan, 2009; Subramanian & Smith, 2006; Subramanian, Smith, & Subramanyam, 2006; Zere & McIntyre, 2003; Wagstaff & Watanabe, 2000, Wagstaff, 2002a, 2002b). Studies have shown that the pervasiveness of socioeconomic inequalities in health both between and within countries at any stage of development significantly retards progress toward the achievement of the Millennium Development Goals (MDGs) such as maternal and child health, universal education, gender equity and combating HIV/AIDS, and especially efforts to meet the first MDG of halving poverty and hunger.

Recent evidence suggests that malnutrition leads to the likelihood of developing chronic diseases, and hence high child morbidity and mortality; it also reduces long term physical development, cognitive skills, and consequently has a negative effect on school enrolment and productivity in later life (Grantham-McGregor et al., 2007; Tarozzi & Mahajan, 2007; Walker et al., 2007; World Bank, 2006). Reduction of malnutrition is thus not only an economic issue but also welfare, social protection and human rights issue.

Data shows that undernutrition remains a leading problem in most parts of India, but it is most pronounced in the states of Bihar, Uttar Pradesh, Madhya Pradesh and Rajasthan. In these states, more than half the children are underweight and stunted. Nearly 50% of the children in Orissa, Maharashtra and West Bengal are underweight, while 50% of the children in Assam and Haryana are stunted. States with the lowest percentage of underweight or stunted children are Goa, Kerala, and all the small north-eastern states except Tripura and Meghalaya (Arnold, Nangia, & Kapila, 2004; Mishra, Roy, & Retherford, 2004; Nair, 2007).

A multicountry study using Demographic and Health Survey (DHS) data from more than fifty developing countries found that the poorest quintile fares worse than better-off groups on nutritional status. On average, stunting is three times more likely among children in the poorest quintile than among those in the wealthiest quintile (Gwatkin et al., 2007). Another study that examined socioeconomic inequality in child nutrition among twenty developing countries found that eighteen countries had statistically significant inequalities in both stunted and underweight children (Wagstaff & Watanabe, 2000).

Previous studies (Gragnolati et al., 2005; Pande & Yazbeck, 2003) have found significant differentials in child health and health care utilization by wealth status, gender and geographical regions in India. While efforts to reduce socioeconomic disparities in health outcomes are not lacking, they are rather ineffective. The Public Distribution System (PDS), (one of the world's largest food security programs for poor households) and Integrated Child Development Services (ICDS) scheme, (the world's largest early child development program) have been instituted for the last three decades in the country. However, these initiatives have performed far below expectations (Gragnolati et al., 2005). Recently, the government has launched several programs, such as the Mid-Day Meals Program, National Rural Health Mission (NRHM, 2005–2012), National Food Security Mission, National Rural Employment Guarantee Act and others, to attain inclusive growth

with social justice. These programs aim at improving the economic, health and nutritional status of the population, especially that of marginalized poor women and children from rural areas. However, there is hardly any study that documents the progress and achievements of these programs in relation to the agenda of inclusive growth in the country.

The studies mentioned earlier either did not include India in their analysis or did not analyze data on child malnutrition (Gwatkin et al. 2007; Wagstaff & Watanabe, 2000). Though Gragnolati et al. (2005) did attempt to analyze economic inequalities with respect to various indicators of maternal and child health in India, they did not analyze the nutritional aspect in detail. Further, they used data from NFHS I and NFHS II to understand the trends in child malnutrition. Therefore, we find that there is a dearth of studies that examine the recent trends and patterns of economic inequalities with respect to child malnutrition in India. Given the high prevalence of child malnutrition in India, it is important to understand the economic gradient in child malnutrition and the changes in the same during the period 1992–2006. Economic reforms were launched in India during the early nineties. The present analysis examines the changes in the economic gradient in child malnutrition during the period of economic reforms. Further, there is an immediate need for such studies as they not only throw light on the magnitude and complexity of the problem of child malnutrition across space and time, but also assist policy makers and program managers to focus targeted interventions on those who are in real need.

In this study, we use three rounds of NFHS data to examine the trends and patterns of economic inequalities with respect to child malnutrition in major geographic regions and states of India. Mackenbach and Kunst (1997) have suggested a framework for measuring the magnitude of socioeconomic inequalities in health, which was developed in the context of the efforts of the World Health Organization (WHO) European region to monitor changes over time. Within this framework, we describe the variations in child malnutrition and then summarize the observed variations into single measures to facilitate comparisons over time and between populations. As suggested by Mackenbach and Kunst (1997), we compute the measures of 'total impact' such as the ratio of child malnutrition among those in the 'poorest' quintile to those in the 'richest' quintile and the concentration index. One drawback with the measures of 'total impact' is that they only take into account inequalities between the two economic groups that are compared and ignore the full range of malnutrition differences. We examine the changes in economic inequalities with respect to child malnutrition during 1992–2006 after adjusting for important socioeconomic and demographic factors affecting child malnutrition. Further, given the strong interest in reduction of average rates of malnutrition in national and state development goals and targets, we test the association between average level of malnutrition rates and economic related inequality in malnutrition to decipher how various geographical regions and states of India compare among themselves in average malnutrition rates and economic related inequalities.

Data and methods

Data

The present study uses data from the three rounds of the National Family Health Survey (NFHS) conducted during 1992–1993 (NFHS-1), 1998–1999 (NFHS-2) and 2005–2006 (NFHS-3) respectively. NFHS is a nationally representative, large scale, repeated cross sectional survey in representative samples of households throughout India. The principal objective of NFHS is to

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