

Trends in child malnutrition, 1990 to 2005

Declining rates at national level mask inter-regional and socioeconomic differences

The burden of malnutrition is much higher in South Asia compared to that of Africa and other parts of the world and Bangladesh is one of the worst-off countries in this regard. Established in the year 1990, with a goal to monitor trends and patterns in national nutrition situation, Nutritional Surveillance Project (NSP) of Helen Keller International (HKI) and Institute of Public Health Nutrition (IPHN), Govt. of Bangladesh has been collecting high-quality household-based data on nutrition, food security, health-care services and agro-economic conditions. Analyses of trends over the past 15 years (1990-2005) show a steady and remarkable decline in the undernutrition prevalence. However, these national trends conceal both interregional differences as well as differences among various income groups. Importantly, even if Bangladesh achieves the Millennium Development Goal (MDG) of reducing underweight by 50% compared to 1990 levels in 2015, rates will still remain above the threshold for 'very high prevalence' according to the World Health Organization (WHO). Improved strategic and programmatic planning and systematic monitoring and evaluation is critical to tackle persistent undernutrition.

Over the last few decades major international commitments have emphasized the reduction of undernutrition considering its magnitude¹ and its impact on health and economic development.² Even though there is a perception that the malnutrition situation is worst in Africa, the burden of malnutrition is actually much higher in South Asia in terms of both numbers and proportions.^{2,3} For instance, the prevalence of underweight among preschool children is almost double

in Bangladesh compared to Somalia or Mozambique and equal to that of Ethiopia.

Malnutrition, which is preventable and treatable, is a major underlying cause of child morbidity and mortality; and in Bangladesh two-thirds of childhood deaths are attributable to malnutrition.⁴ Despite the intricate challenges posed by population pressure on a scarce resource base, coupled with frequent natural disasters, there has been

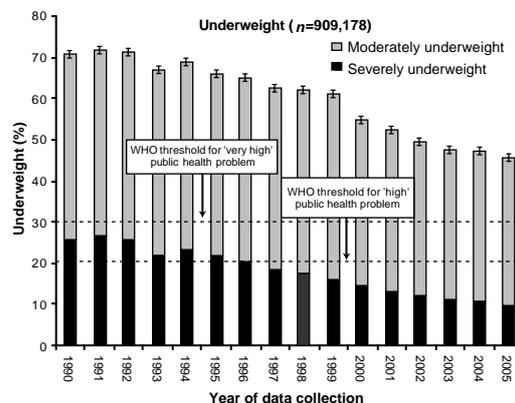


Figure 1a. Prevalence of underweight (weight-for-age <-2 Z-scores) among children under five years of age in rural Bangladesh, 1990 to 2005

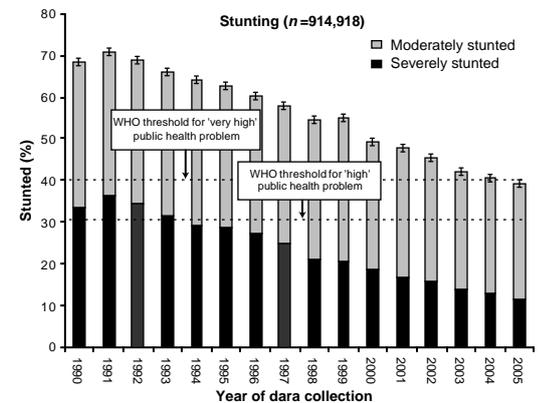


Figure 1b. Prevalence of stunting (height-for-age <-2 Z-scores) among children under five years of age in rural Bangladesh, 1990 to 2005

a significant improvement in the health and nutrition sector in Bangladesh over the last two decades. Using the unique bi-monthly data provided by Nutritional Surveillance Project (NSP), the longest running surveillance system at the national level in the region, this bulletin aims to explore the trends in the nutritional status of underfive children at the divisional level and across socioeconomic groups for the period of 1990 to 2005.

For more than fifteen years, the NSP has been conducted in Bangladesh to monitor the nutrition and health situation of women and children in the country. Since its inception, the surveillance system has collected information not only on health and nutrition, but also food security, agricultural practices, disaster and crisis coping strategies, utilization of government and NGO services, and various indicators of socioeconomic status from households in urban poor and rural areas. The NSP has employed a multistage cluster sampling design in rural areas since 1998, which is nationally and divisionally representative; before 1998 data were also collected throughout the country, but preferentially from disaster-prone areas.⁵ Every two months, cross-sectional data were collected from a new sample of 9,000 households from 24 rural sub-districts across the country. Thus, over the period of 1990 to 2005, NSP collected information on almost 910,000 rural underfive children and their households nationwide, which are reported here.

Trends in undernutrition by severity

Prevalence estimates in **Figure 1a** and **1b** shows that during 1990 to 2005, there were steady reducing trends in the prevalence of both underweight and stunting among underfive children in rural Bangladesh. During this period prevalence of underweight was reduced by 25.2 percentage points

Box. Trends in macro-economic and health indices, 1990-2005		
Indicators	1990-92	2002-05
Macroeconomics ^{a, b}		
Real GDP per capita (PPP US\$)	883	1,770
Development expenditure (US\$ in million)	1,483	4,915
Human development index (HDI)	0.318	0.520
Health and Sanitation ^{c, d}		
Under-five mortality rate (per thousand live births/year)	151	76
Infant mortality rate (per thousand live births/year)	94	53
Measles vaccination among children aged 12-23 months (%)	54	83
Access to sanitary latrine (%)	21	53

Source: ^a Human Development Report, ^b The World Bank, ^c Bangladesh Demographic and Health Survey (BDHS) ^d UNICEF/Bangladesh Bureau of Statistics (BBS).

(from 70.9% to 45.7%) and stunting by 29.1 percentage points (from 68.3% to 39.2%). The average rates of reduction were 1.7 and 1.9 percentage points per year for underweight and stunting, respectively. In the early 1990s, severe undernutrition (<-3 Z-score) accounted for about half of total underweight and stunting; today it accounts for about a quarter. The overall reduction in stunting and underweight rates is attributable mostly to the reduction of severe undernutrition. On the other hand, the prevalence of moderate undernutrition (<-2 to ≥-3 Z-score) remained virtually stagnant over the entire period. To meet the MDG target of reducing underweight by 50%, reduction rates of both severe and moderate undernutrition need to be accelerated.

In addition, even though Bangladesh showed a significant reduction in undernutrition, the magnitude of the problem still is of great concern. The current prevalence of underweight is well above the threshold of ‘very high prevalence’ for a country as indicated by the WHO.⁶ Importantly, with the current reduction rates, even if Bangladesh achieves the target of reducing underweight prevalence to 32.9% in 2015,

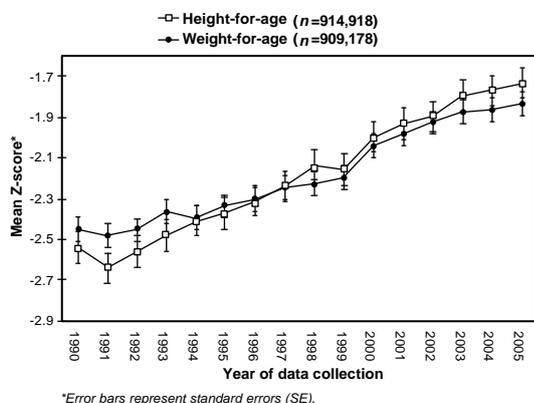


Figure 2. Annual mean weight-for-age and height-for-age Z-score of underfive children in rural Bangladesh, 1990 to 2005

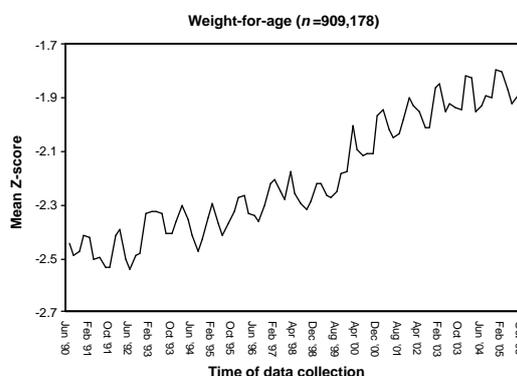


Figure 3. Bi-monthly mean weight-for-age Z-score of underfive children in rural Bangladesh, 1990 to 2005

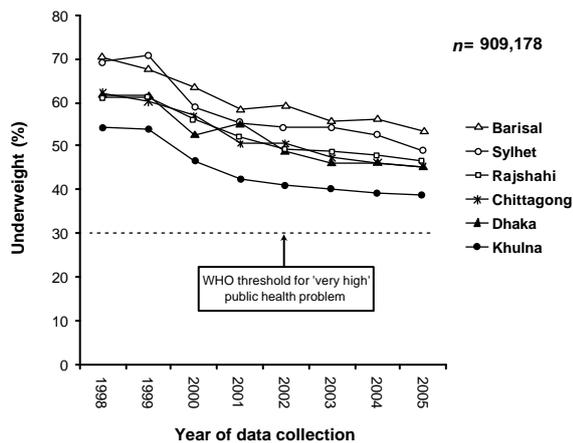


Figure 4. Reduction in underweight prevalence among rural under-five children by six divisions in Bangladesh, 1990 to 2005

i.e. halving the rates compared to 1990; the underweight rate would still remain above the threshold for 'very high prevalence'.

Increase in weight-for-age and height-for-age

During the 15-year period, the mean weight-for-age Z-score (WAZ) and height-for-age Z-score (HAZ) increased from -2.4 to -1.8 and -2.5 to -1.7 respectively (Figure 2). Over this period, trends in mean WAZ showed steady increase despite some periodical slowdowns, possibly due to large-scale flooding in 1998 and 2004, other disasters or crisis. Similar patterns were seen in the trends of mean HAZ over the same period. With proper preparedness and rehabilitation, these slowdowns could be avoided and rates in reduction could be accelerated to achieve the MDGs. As shown in Figure 3, the bi-monthly estimates of mean WAZ of children over the same period indicate strong seasonal effects. The highest levels of underweight were observed between June and September, a lean period for agricultural production and seasonal unemployment mostly due to the monsoon; whereas during December to March, the post-harvest period with increased dietary diversity, underweight levels were found lowest. Higher malnutrition levels were also evident among children from the younger age group (6-23 mo) and girls lagged behind the boys in terms of rates of nutritional improvement (data not shown).

Trends of underweight by region

When the national undernutrition trends were disaggregated by division, strong differences were apparent (Figure 4). The divisions most in need of attention are Barisal, Sylhet and Rajshahi, which continue to carry a heavy burden of child underweight (53.3%, 49.0% and 46.5%, respectively). Compared to other parts of the country, currently Khulna has

the lowest prevalence of underweight (38.9%), followed by Dhaka (45.2%). However, the rates of reduction showed that while underweight was reduced by 20.3 percent-point in Sylhet (from 69.3% in 1998 to 49.0% in 2005), there was only 14.6 percent-point reduction in Rajshahi (from 61.1% to 46.5%). In some *thanas* (sub-districts) in Rajshahi, where food security was the worst,⁷ the average WAZ was still below -2.0 in 2005, with over 60% of children being underweight. Estimates of stunting by division had almost similar patterns (data not shown). It should be noted that Chittagong Hill Tracts (CHT) were excluded from trend estimates since data were available only from 2003 onwards. In 2005, 44.8% of the under-five children in CHT were underweight.

Decline in underweight across socioeconomic strata

The national decline in underweight prevalence masks the differences in reduction within quintiles of monthly per capita expenditure, a strong indicator of socioeconomic status (Figure 5). Data were adjusted to also include an estimate for the cost of rice consumed from household production or received as donations. Results highlight that though all the quintiles experienced a decline in underweight, the rate of decline was not similar for all. In the poorest quintile the prevalence of underweight reduced by 14.2% in the ten years but the wealthiest quintile showed 4% more reduction, i.e. 18.1%. This highlights the inequality in reduction since the gap between the poorest and the wealthiest is widening in terms of underweight rates. yet, the level of undernutrition is still very high even among the wealthiest quintile. A recent report revealed that rural households in Bangladesh spend 60 percent of their total expenditure on food and among the wealthiest households it is still 47 percent.⁸ Thus, improved access to food as well as nutrition security is vital

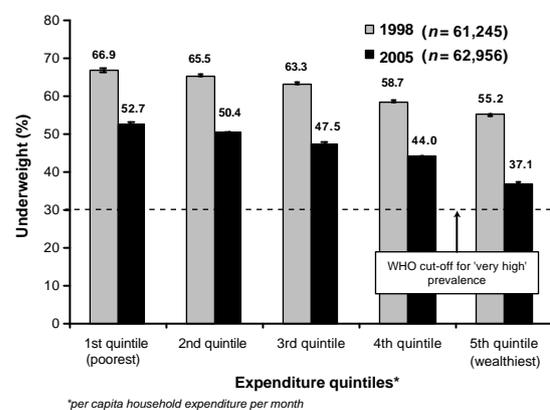


Figure 5. Prevalence of underweight among under-five children by expenditure quintiles, comparison of 1998 and 2005

for all socioeconomic groups in rural Bangladesh. During the past 15 years economic development has shown rapid progress in Bangladesh (as shown in the **Box**, on page 2) and we have seen a steady reduction

in undernutrition. Nevertheless, in order to reap further benefits from the economic gains and to meet MDGs, increased attention to food security and nutrition is necessary.

Conclusion

Even though trends in undernutrition show a steady decline, there are considerable differences in rates of decline across regions and across socioeconomic groups. However, in all segments underweight and stunting prevalence still remains very high.

Recommendations

- Targetted efforts are needed to reduce hunger and malnutrition in areas where underweight prevalence is highest (namely Barisal, Sylhet and Rajshahi) and specifically among lower socioeconomic groups.
- To achieve the MDG target of reducing underweight by 50% from the 1990 levels, additional inputs are needed to address moderate malnutrition while maintaining the reduction of severe malnutrition further.
- Within the Health, Population and Nutrition Sector Programme (HNPS), emphases on appropriate infant and young child feeding practices are needed, specifically among children less than two years, to prevent and reverse malnutrition when mortality rates are highest.
- Existing surveillance systems can be adapted for regular monitoring and evaluation of HNPS; tracking progress towards national and international targets and identifying nutritional crisis in order to design appropriate interventions.
- Improved coordination among sectors is required to benefit vulnerable groups and to accelerate the reduction of food insecurity and malnutrition.

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This publication was made possible through support provided by the Embassy of the Kingdom of the Netherlands (RNE)/Bangladesh Agreement BD 020805, PIR 72. The opinions expressed herein are those of the authors and do not necessarily reflect the views of the RNE.