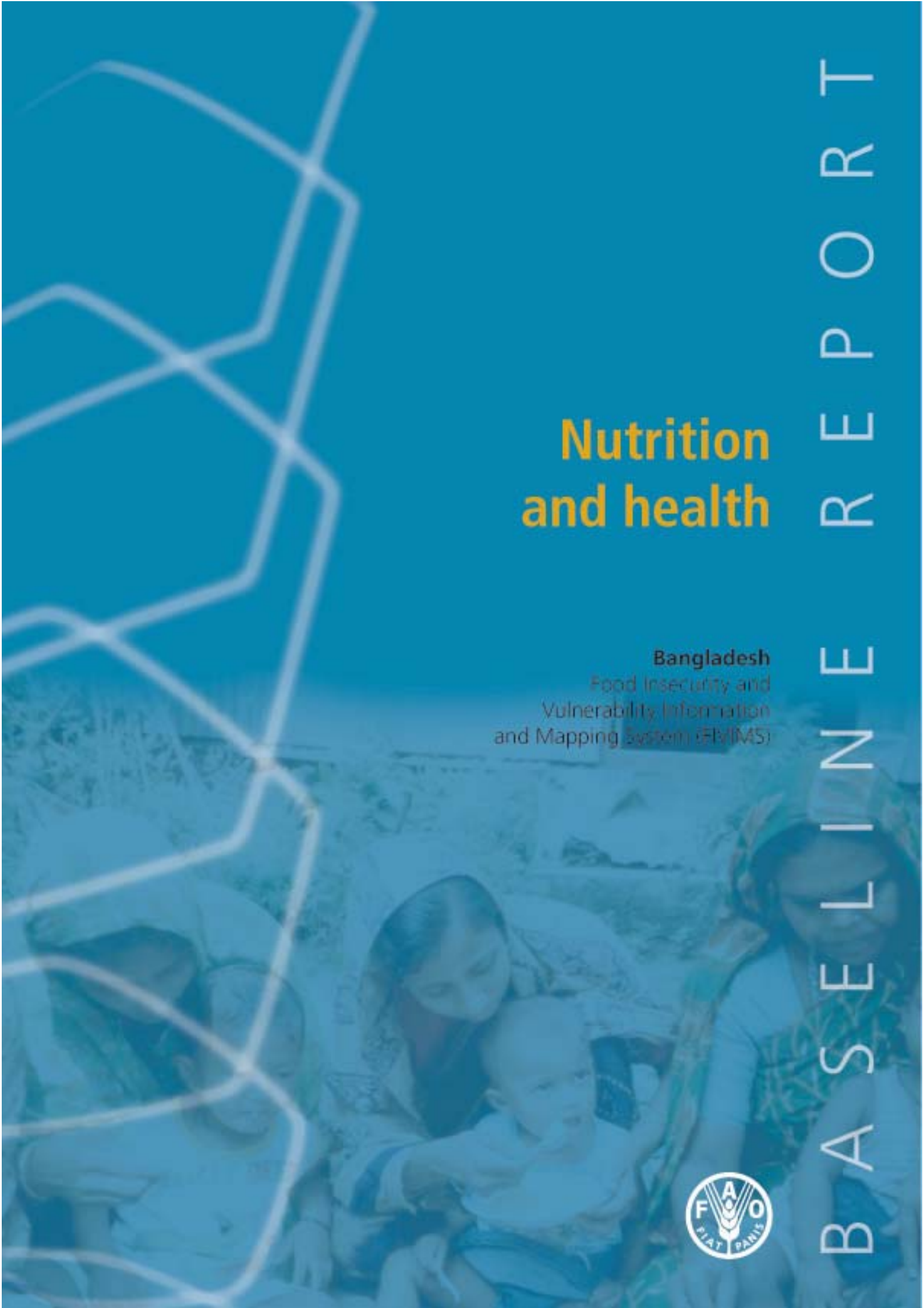
BASELINE REPORT

Nutrition and health

Bangladesh

Food Insecurity and Vulnerability Information and Mapping System (FIVIMS)



BASELINE REPORT ON **NUTRITION AND HEALTH**

Bangladesh
Food Insecurity and
Vulnerability Information
and Mapping Systems (FIVIMS)

Dr Harun K.M. Yusuf
FAO National Consultant, Nutritionist
Bangladesh FIVIMS
National FIVIMS Secretariat
Programming Division
Planning Commission

Government of the People's Republic of Bangladesh
Dhaka
(FNPP/GLO/001/NET)

Food and Agriculture Organization of the United Nations

April 2004

Table of contents

Acknowledgements

I am grateful to all of the government, non-government and academic organizations that contributed hard and soft data and, most importantly, their friendly cooperation. I would especially like to thank the Bangladesh Bureau of Statistics (BBS), including Director General Mr A.K.M. Musa, Deputy Director General Mr A.R. Sikder and Project Director Mr A.K.M. Abdus Salam; Helen Keller International (HKI), including Country Director Mrs Dora Panagides and Nutrition Programme Officer Mrs Gudrun Stallkamp; the National Institute for Population Research and Training (NIPORT), including Research Director Dr Ahmed Al-Sabir; and the Bangladesh Agricultural Research Council (BARC), including Director General Dr M. Nurul Alam and Nutrition Unit Chief Mr Anwar Iqbal.

I wish to convey special thanks to Programmer Mr Md. Abdur Rashid Sikder, Programme and Evaluation Wing of the Department of Agricultural Extension (DAE), Ministry of Agriculture (MoA), for creating a number of maps with disaggregated data.

My sincere thanks go to Bangladesh FIVIMS National Focal Point Mr Gopal Chandra Sen, also Chief, National FIVIMS Secretariat, Programming Division, and former focal points Mr Habibur Rahman, Mr Ziauddin Ahmed and Mr A.K.M. Nizam Uddin Choudhury for their help and cooperation. I am also thankful to the members of the Programming Division, Planning Commission, for their help, including Deputy Chief Mr A.S.M. Nasim Uddin, Assistant Chief Ms Shaila Zaman, Data Entry/Control Supervisor Mr Akbar Hussain and Data Entry/Control Operator Ms Shahina Akter.

The financial and technical support of the Food and Agriculture Organization of the United Nations (FAO) in preparing this report is gratefully acknowledged. I am also gratefully indebted to the FAO consultant team, Team Leader Dr Sohail Jehangir Malik, Agro-economist Dr Shantana R. Halder and Institutional Specialist Mr Md. Aftar Uddin for their encouragement, friendly cooperation and support.

Acronyms

BBS	Bangladesh Bureau of Statistics
BDHS	Bangladesh Demographic and Health Survey
BFS	Bangladesh Fertility Survey
BMI	Body Mass Index
BRAC	Bangladesh Rural Advancement Committee
CED	Chronic Energy Deficiency
CHT	Chittagong Hill Tracts
CNS	Child Nutrition Survey of Bangladesh
DCH	Dhaka Community Hospital
FAO	Food and Agriculture Organization – United Nations
FIVIMS	Food Insecurity and Vulnerability Information and Mapping Systems
HDS	Health and Demographic Survey
HKI	Helen Keller International
IDD	Iodine Deficiency Disorder
IMR	Infant Mortality Rate
INFS	Institute of Nutrition and Food Science
IPHN	Institute of Public Health Nutrition
LBW	Low Birth Weight
MICS	Multiple Indicator Cluster Survey
MMR	Maternal Mortality Ratio
MoFP	Ministry of Finance and Planning
MoHFW	Ministry of Health and Family Welfare
MUAC	Mid-Upper Arm Circumference
NGO	Non-Governmental Organization
NIPORT	National Institute of Population Research and Training
NSP	Nutritional Surveillance Programme
SES	School of Environmental Sciences – Jadavpur University, India
SVRS	Sample Vital Registration System
TFR	Total Fertility Rate
UIE	Urinary Iodine Excretion
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
WFP	World Food Programme
WFP-VAM	World Food Programme-Vulnerability Assessment Mapping Unit
WHO	World Health Organization
WSC	World Summit for Children

Executive summary

This report has been prepared to provide baseline data and information for the FAO-assisted United Nations initiative for the establishment and implementation of Food Insecurity and Vulnerability Information and Mapping Systems (FIVIMS) in Bangladesh. The report reviews the nutrition and health situation of the population, particularly for infants, children and women, based on a thorough inventory of data-generating agencies and organizations currently contributing to the information system network that exists in Bangladesh.

The inventory reveals that Bangladesh has a very rich data information system, collected and used by various organizations – government, non-government and academic institutions – for purposes determined by their own mandates. Notable among the organizations interested in child nutrition are the Bangladesh Bureau of Statistics (BBS) of the Ministry of Finance and Planning (MoFP), which conducts the Child Nutrition Survey of Bangladesh (CNS); the National Institute of Population Research and Training (NIPORT) of the Ministry of Health and Family Welfare (MoHFW), which conducts the Bangladesh Demographic and Health Survey (BDHS); and Helen Keller International (HKI), an international non-government organization (NGO), which conducts the bimonthly Nutritional Surveillance Programme (NSP).

Intersectoral analysis of child nutrition data collected by these three organizations shows a persistent decreasing trend in child stunting and underweight during the 1990s (from 60–70 percent in 1990 to 48–50 percent in 2000). The NSP, however, consistently shows a slightly higher prevalence (5–10 percent) of malnutrition.

Data sets on maternal nutrition from both BDHS and NSP show a high prevalence of chronic energy deficiency (CED) among women of childbearing age (40–55 percent), indicated by a body mass index (BMI) of less than 18.5 kg/m^2. Data from these sources and others also show a decrease in maternal malnutrition during the period 1992–2000.

While information on child malnutrition in terms of stunting (low height for age), wasting (low weight for height) and underweight (low weight for age), as well as maternal malnutrition in terms of low BMI, is rather rich, information on child and maternal malnutrition in terms of low birth weight (LBW: birth weight < 2500 gm), anemia (blood hemoglobin level <110 g/litre) or iodine deficiency (urinary iodine <100 µg/litre) is rather scarce, presumably because data collection is more technical and resource intensive.

Like the nutritional situation, the health status in Bangladesh has registered marked improvements during the last decade. For example, the total fertility rate (TFR), infant mortality rate (IMR) and maternal mortality ratio (MMR) all decreased during the decade, with a concomitant increase in life expectancy at birth.

While data collected on the nutrition and health situation almost always had rural-urban and male-female differentials, in most cases data were disaggregated only to the division level (Bangladesh contains six administrative divisions). Only in few cases – mid-upper arm circumference (MUAC), morbidity and arsenic contamination – were the data disaggregated to the district level. Nonetheless, interesting differences in the county's nutrition and health situation are evident. For example, the Sylhet division consistently shows the poorest profile of child and mother nutrition, while the Khulna division demonstrates the best. The mothers of the Sylhet division have the lowest BMI (they are the shortest, too) and they breast-feed their babies for the shortest period of time (25 months compared with 37 months by Khulna mothers), indicating a mother's nutritional status and caring practice patterns have a bearing upon the nutritional status of her children. Indeed, the children of the Sylhet division are consistently shown to have the highest prevalence of stunting or underweight (65–70 percent compared with 40–50 percent in Khulna). TFR in Sylhet is also the highest (3.52), while it is the lowest, again, in Khulna (2.41).

FIVIMS aims to analyze disaggregated data to the lowest level possible in order to identify which areas (upazilas) of each division have the poorest profiles, and, thus, need the most help overcoming food insecurity (malnutrition) and vulnerability (health behaviour). Recently, the World Food Programme (WFP), under the umbrella of the Bangladesh FIVIMS and in association with BBS and the Bangladesh Planning Commission, MoFP, produced upazila-level maps of food insecurity, calorie intake and child malnutrition using the technique of small-area estimation.

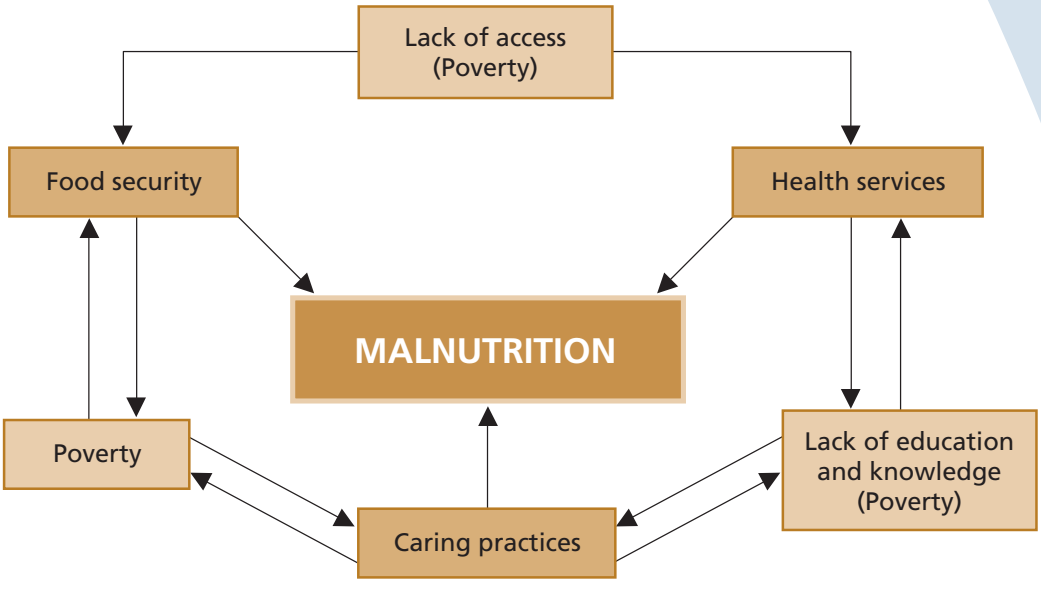
FIVIMS has the potential for establishing a data-sharing network and suggesting procedures for avoiding data redundancy. FIVIMS can also provide for more effective and efficient utilization of data collection, analysis and dissemination, which will provide policy makers and programme planners with timely and accurate information on food insecurity and vulnerability. Thus, FIVIMS will address the problems of hunger, malnutrition and related health issues.

The Bangladesh FIVIMS, now just in its infancy, should be supported and nurtured from all quarters to ensure healthy sustained growth.

Introduction

Malnutrition is widespread in Bangladesh and has long been a public health problem that affects all sectors of the community, particularly infants and young children who have higher nutritional requirements. Typically, nutritional requirements are not met owing to one or more of the following factors: inadequate dietary intake (caused or exacerbated by the lack of food security); infection (caused or exacerbated by the lack of adequate health services); insufficient or improper caring practices. Malnutrition primarily affects households suffering from poverty, a circumstance from which escape is difficult. Poverty contributes both directly and indirectly to malnutrition. Poor households have less economic access to food and less access to education. Lack of education and the illiteracy that results from it contribute to problems understanding and carrying out proper nutrition and caring practices, which, in turn, contribute to malnutrition (Figure 1).

FIGURE 1 The cycle of malnutrition



When malnutrition occurs early in life, long-lasting and negative effects are often seen in overall growth, morbidity, cognitive development, educational attainment and adult productivity (United Nations Children's Fund [UNICEF], 1998). Thus, the nutrition status of young children, particularly those below five years of age, is viewed as one of the most sensitive indicators of a country's food security vulnerability and overall socio-economic development.

In addition to children, women of childbearing age are highly vulnerable to nutritional insufficiencies because of the increased need for food and nutrients during pregnancy and lactation. In Bangladesh, as in many other developing countries, poverty, ignorance and social taboos negatively affect the food intake of girls and their mothers. While these women most often acquire and prepare food for the household, they usually eat last and least. Tasked with household chores and burdened with repeated pregnancies from early adolescence, young wives and mothers suffer most from the serious consequences of nutritional insufficiency. Maternal malnutrition during pregnancy also affects foetal growth, resulting in LBW, which puts the survival of a child at risk.

Nutrition

A variety of indicators are used to assess the nutrition and health status of different age and gender groups, as well as the caring practices of a given population (Table 1).

TABLE 1 Bangladesh FIVIMS baseline indicators for nutrition, health and caring practices

NUTRITION
Intra-uterine undernutrition (LBW): weight < 2500 g
Stunting: low height for age
Wasting: low weight for height
Underweight: low weight for age
Severe wasting: mid-upper arm circumference (MUAC) <125 mm
Chronic energy deficiency (CED): height < 145 cm or BMI < 18.5 kg/m^2
Iron deficiency anaemia
Vitamin A deficiency: night blindness
Iodine deficiency disorders (IDD): goitre and urinary iodine < 100 µg/l
HEALTH
Life expectancy at birth
Total fertility rate (TFR)
Infant mortality rate (IMR)
Maternal mortality ratio (MMR)
Morbidity: diarrhoea, malaria
Access to safe latrine
Use of unsafe surface water for drinking
Arsenic contamination in drinking water
CARING PRACTICES
Duration of breast-feeding

The remainder of this report provides an analytic overview of data from current information systems. This overview uses the aforementioned indicators to describe the state of the nutrition and health situation in Bangladesh and to forecast trends among vulnerable population groups, i.e. infants, young children and women.

Intra-uterine undernutrition (low birth weight)

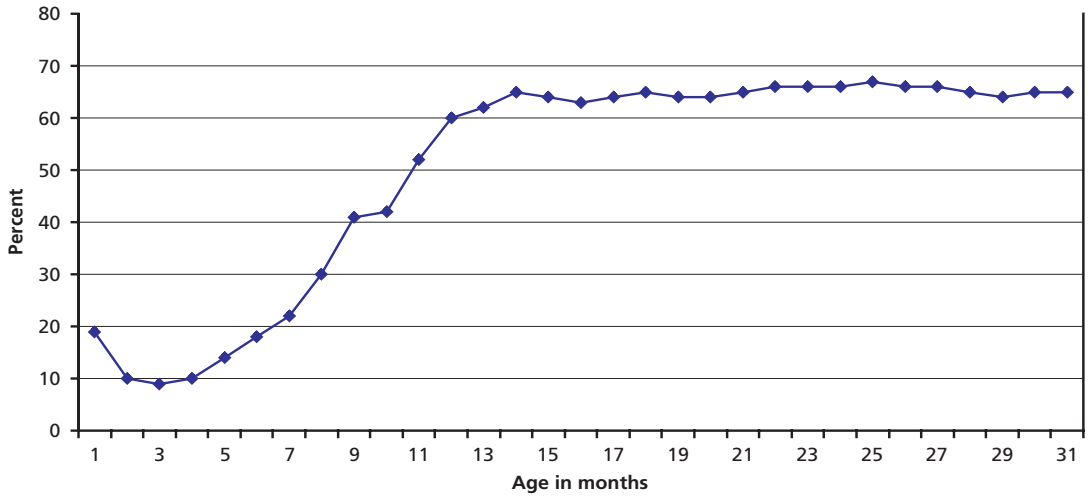
No nationally representative data is currently available on the prevalence of low birth weight (LBW) in Bangladesh. Small-scale home delivery and clinic-based studies, however, report a prevalence figure of 30–50 percent (Khan, Curlin, and Chakraborty, 1979; Canosa, 1989; Goodburn, Chowdhury and Gazi, 1994; Arifeen *et al.*, 2000). Results from a national LBW prevalence study launched in February 2003 by BBS/Bangladesh Rural Advancement Committee (BRAC)/UNICEF are expected soon.

Infant malnutrition

Data source(s): BBS; NIPORT; HKI with the Institute of Public Health Nutrition (IPHN); Save the Children USA with UNICEF (details available in data inventory report)

Most infants in Bangladesh, particularly those in rural areas, are breast-fed. The World Health Organization (WHO) and UNICEF suggest that breast-feeding continue well into the second year and that breast milk be supplemented with frequent small meals that are rich in energy, protein and micronutrients from six months of age. Surveys show, however, that breast-feeding infants in Bangladesh are given complementary meals that rarely contain foods sufficient in these nutrients, even if these foods are available in the household. As a result, the percentage of underweight infants increases sharply between six and 12 months of age. For example, a rural survey conducted in 2000 (Figure 2), reported a nearly threefold increase in the percentage of underweight children from six months (22 percent) to 12 months of age (60 percent). Along with infectious diseases, faulty weaning is one of the prime causes of underweight throughout the preschool years.

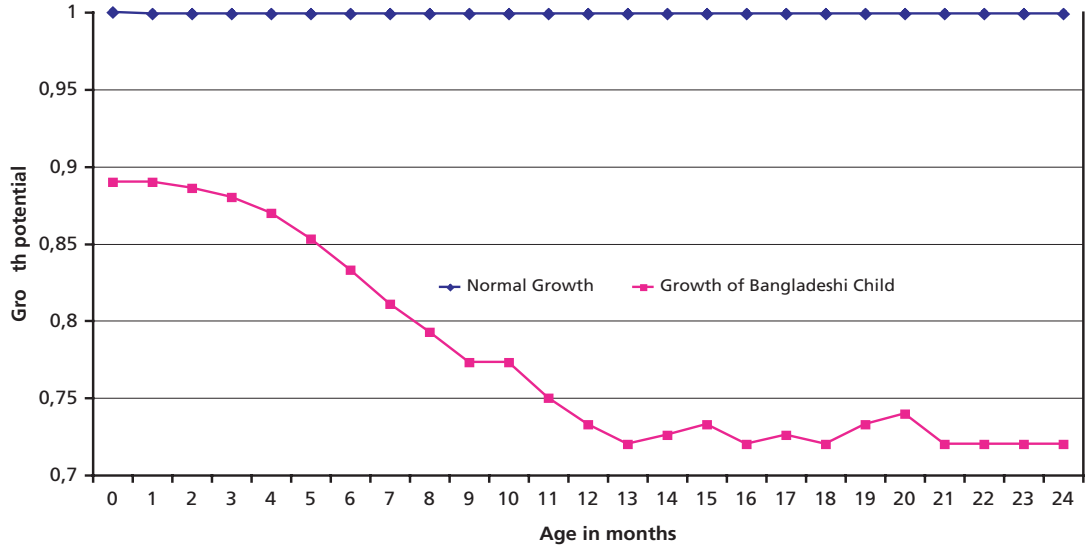
FIGURE 2 Percentage of underweight children ages 1–31 months in rural Bangladesh in 2000



Source: HKI, 2001

An earlier survey on the growth patterns of Bangladesh children ages 0–24 months reported that children typically do not reach normal growth potential at birth (Figure 3) and that growth potential sharply decreases from ages 4–13 months, after which growth potential stabilizes and continues at a low level to the age of 24 months. These results point to serious flaws in the provision of complementary food to infants under the age of one year.

FIGURE 3 Growth pattern of Bangladesh children ages 0–24 months



Source: Save the Children USA – Dhaka, UNICEF-NUTS, 1992

Child malnutrition

Data source(s) (details available in Data Inventory): BBS; NIPORT; HKI/IPHN; Institute of Nutrition and Food Science (INFS)

Bangladesh has a very rich data bank on malnutrition of under-5 children, particularly with respect to the anthropometric indicators of stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and severe wasting (MUAC < 125 mm).

Indicators of child malnutrition

Stunting, wasting and underweight are the typical indicators used to assess the nutritional status of children under the age of 10 years.

Stunting: Height-for-age up to -2SD* = Normal
Height-for-age < -2SD to -3SD = Moderate
Height-for-age < -3SD = Severe

Wasting: Weight-for-height up to -2SD= Normal
Weight-for-height < -2SD to –3SD= Moderate
Weight-for-height < -3SD = Severe

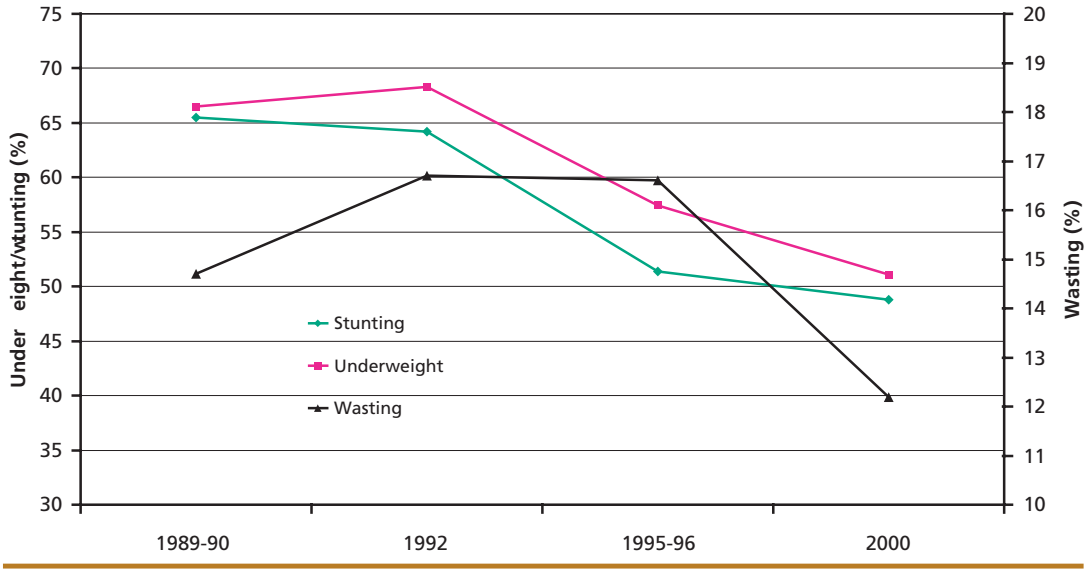
Underweight: Weight-for-age up to -2SD = Normal
Weight-for-age < -2SD to –3SD = Moderate
Weight-for-age < -3SD = Severe

*Standard Deviation (SD), National Center for Health Statistics (NCHS), Atlanta, USA

According to the 2000 BBS CNS, one-half of Bangladesh children below the age of six years are underweight (51 percent) or stunted (49 percent), with 13 percent of these severely underweight and 19 percent severely stunted; 12 percent were identified as wasted (Figure 4). Similar results were obtained by the 1999–2000 BDHS conducted by NIPORT on children ages 0–59 months and by the 2000 NSP conducted by HKI/IPHN. The child malnutrition rates in Bangladesh are among the highest in the world, higher than the rates in most developing countries, including those in sub-Saharan Africa.

There is reason for encouragement, however. All of the aforementioned reporting organizations have shown a declining trend of malnutrition in children below the age of six years during the decade 1990–2000. For instance, CNS showed that the rates of underweight and stunting started to decrease rapidly from levels of 65–70 percent in 1992 to levels of approximately 50 percent in 2000. Spectacular improvements in the rate of wasting also occurred during the latter half of the 1990s, dropping from 17 percent in 1995 to 12 percent in 2000. These steep declines were not reported by all of the reporting organizations, however. NSP, in particular, showed consistently higher prevalence rates in stunting, wasting and underweight (Figures 5–7).

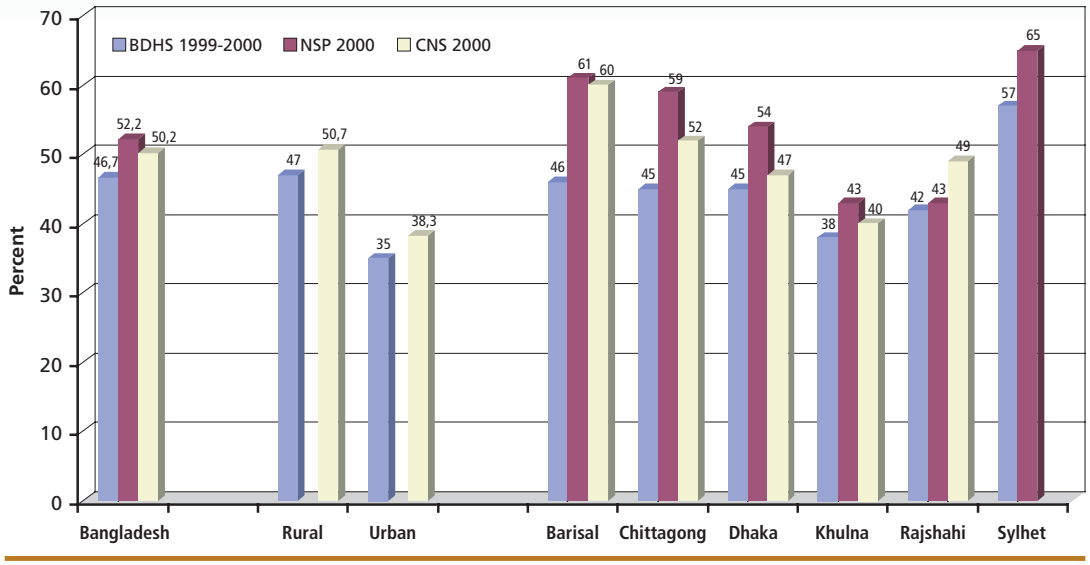
FIGURE 4 Malnutrition rates among children ages 6–71 months



Source: CNS/BBS, 1989–2000

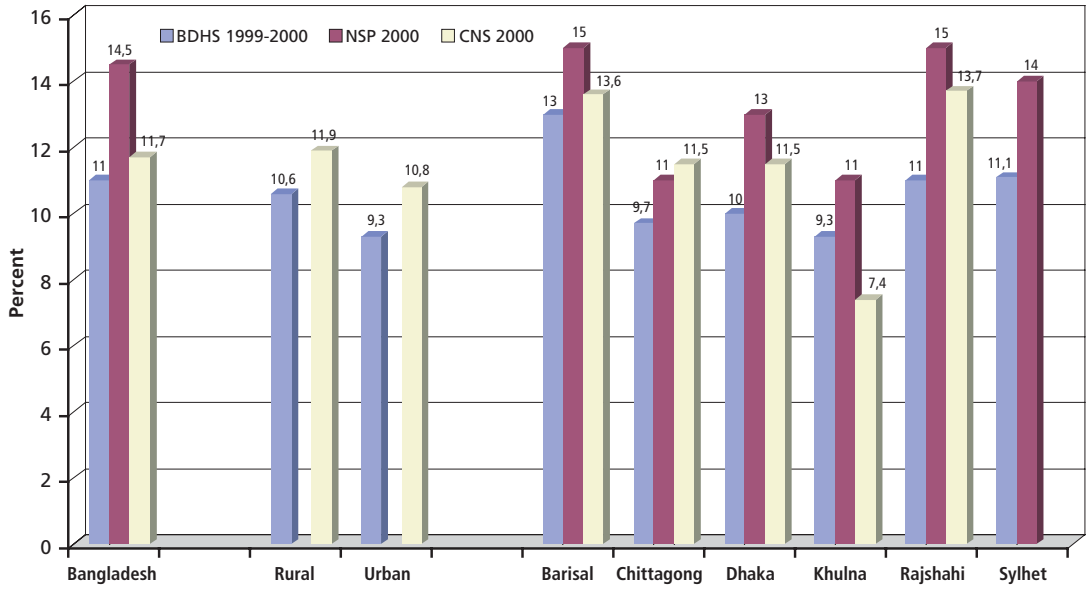
Despite the impressive and consistent decline in prevalence of underweight and stunting during the 1990s, the goal to reduce malnutrition to 50 percent of 1990 levels by the year 2000 was not achieved. Between 1990 and 2000, stunting declined 24 percentage points, from 73 percent to 49 percent, and underweight declined 18 percentage points from 73 percent to 55 percent. Based on the yearly trends in z-scores of stunting and wasting reported during the 1990s, and assuming that these trends will continue unaltered over the next two decades, it has been estimated that the World Summit for Children (WSC) goal for stunting (36.5 percent prevalence) will be achieved by the year 2008 and the goal for underweight (36.7 percent prevalence) by 2018 (HKI, 2001).

FIGURE 5 Prevalence of stunting in children below six years of age



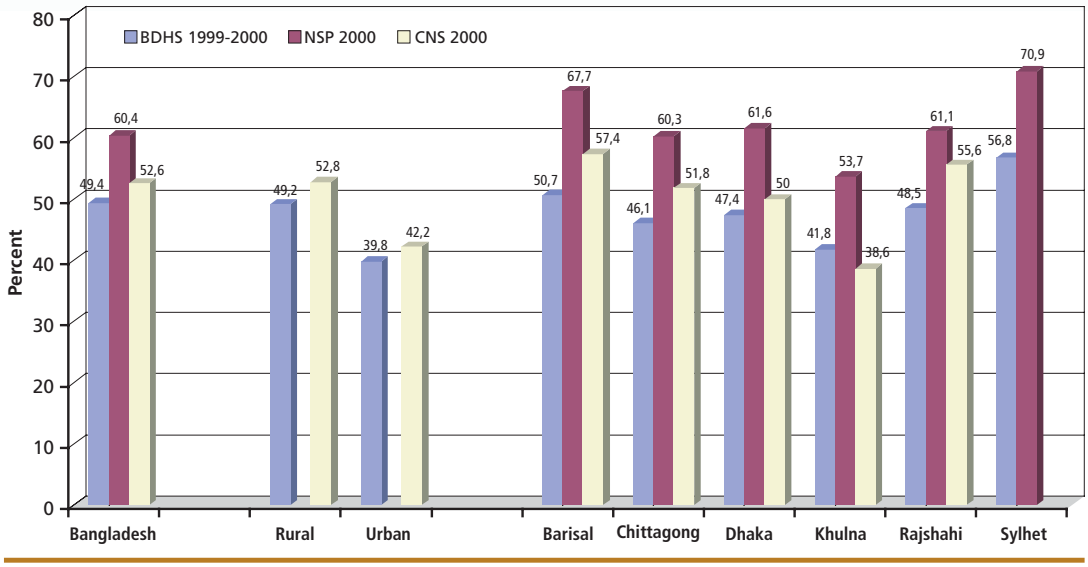
Source: BDHS, 2002; NSP, 2001; CNS, 2002

FIGURE 6 Prevalence of wasting in children below six years of age



Source: BDHS, 2002; NSP, 2001; CNS, 2002

FIGURE 7 Prevalence of underweight in children below six years of age

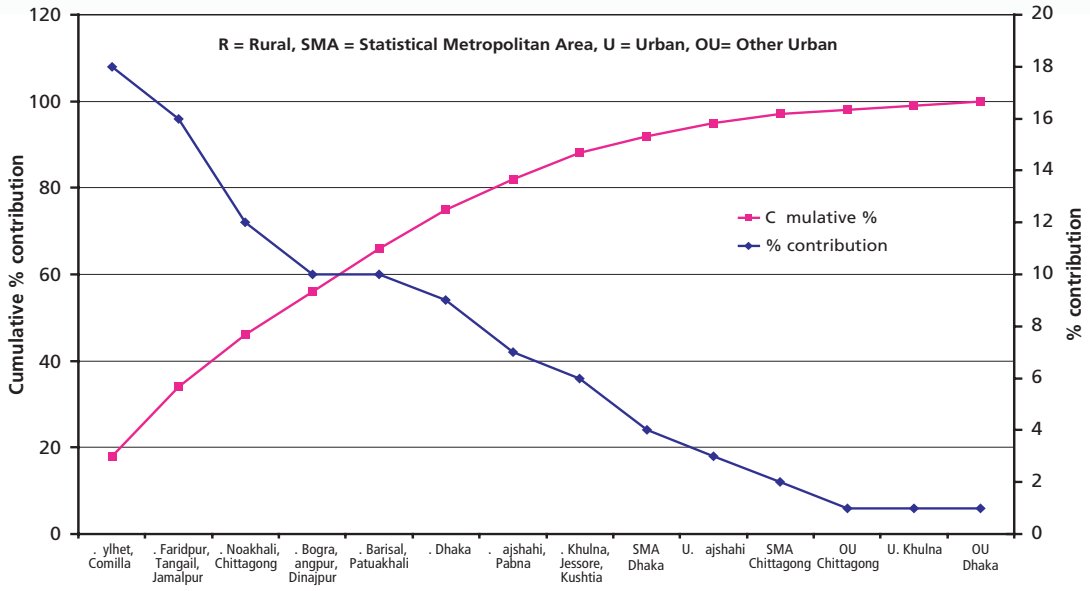


Source: BDHS, 2002; NSP, 2001; CNS, 2002

Rural-urban differential in child malnutrition

All of the aforementioned surveys unequivocally show higher malnutrition rates for children of rural areas compared with those of urban areas. These findings likely reflect higher consumption of cereal foods in proportion to non-cereal foods in rural households. Within rural areas, malnutrition appears to be more concentrated in certain locations. For instance, the rural districts of Sylhet, Comilla, Faridpur, Tangail, Jamalpur, Noakhali and Chittagong contain nearly one-half of all severely stunted children in the country (Figure 8). While the country's lowest child malnutrition rates are found in the Dhaka and Khulna divisions (CNS, 2000), malnutrition rates in urban slums within these divisions are even higher than overall rural rates.

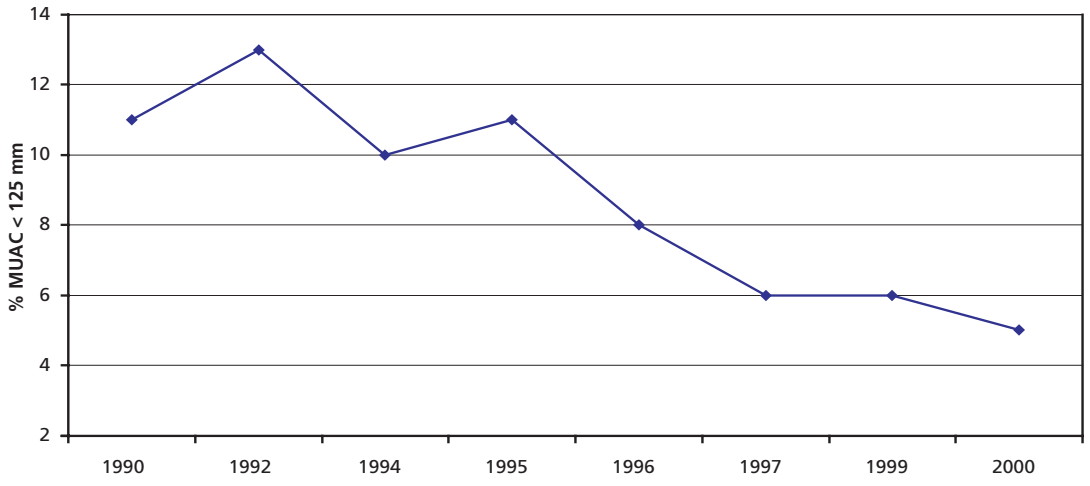
FIGURE 8 Prevalence of severely stunted children in rural areas of Bangladesh in 2000



Source: CNS, 2000

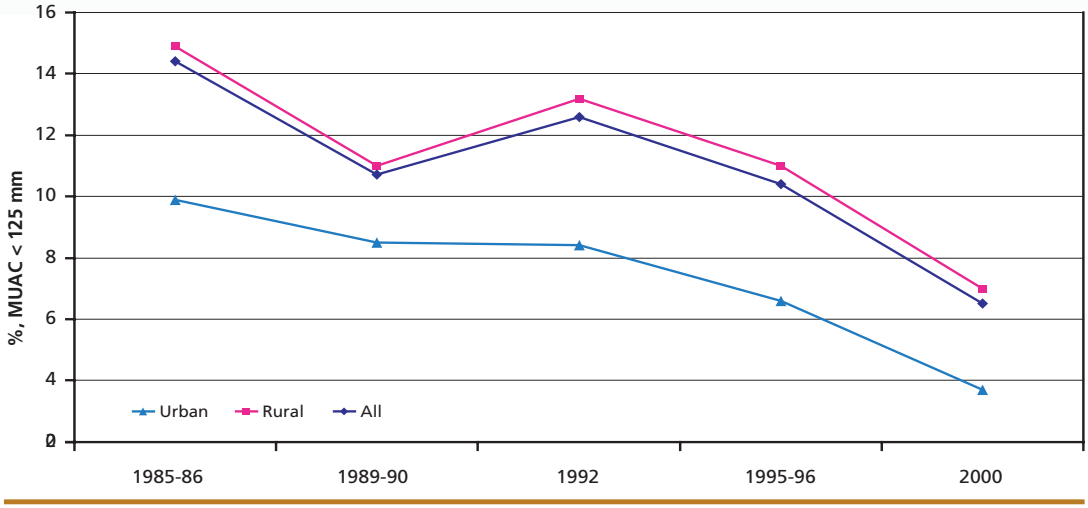
Both CNS and the Multiple Indicator Cluster Survey (MICS) consistently show that the prevalence of severe wasting (MUAC < 125 mm) among children ages 12–59 months is decreasing (Figure 9 and Figure 10). CNS also shows a high rural-urban differential, with rural areas reporting a significantly higher prevalence of severe wasting.

FIGURE 9 Prevalence of severe wasting (MUAC < 125 mm) among children ages 12–59 months



Source: MICS, various years; BBS/UNICEF

FIGURE 10 Prevalence of severe wasting among children ages 12–59 months by area



Source: MICS, various years; BBS/UNICEF

Child malnutrition by division

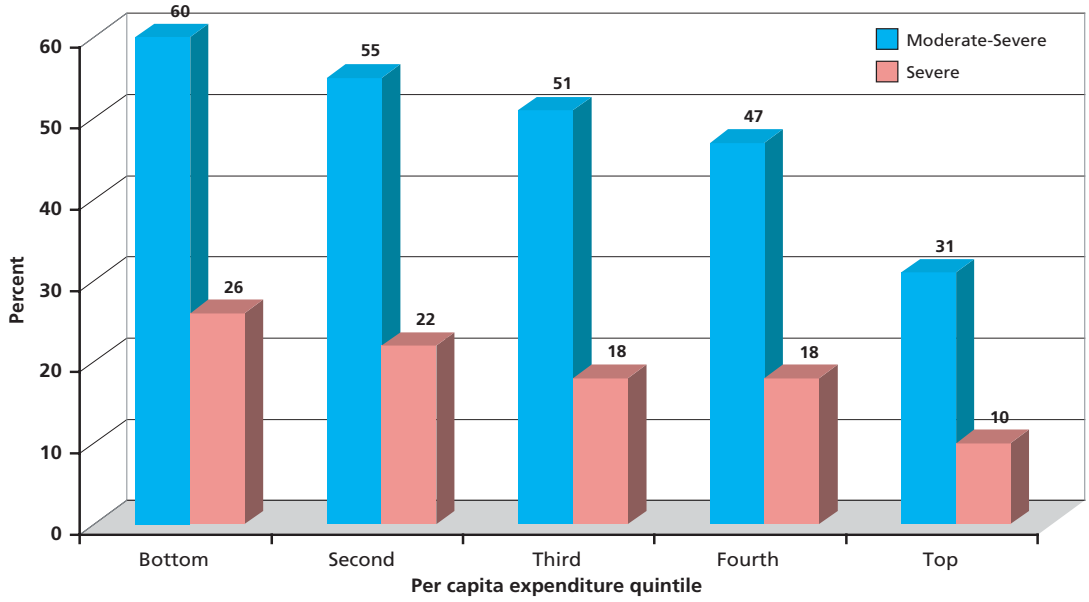
When data are segregated at the division level, rates of stunting, wasting and underweight are found to be lowest in the Khulna division and highest in the Sylhet division (see Figure 8 and Annex 1). These findings are not surprising, even though Sylhet Sadar benefits economically from foreign remittance, since Sylhet division is next to Rajshahi, which has the country's highest level of poverty. In order to identify pockets of high food insecurity, vulnerability and malnutrition, however, disaggregation of data to the upazila level is required.

Recently, the World Food Programme-Vulnerability Assessment and Analysis Unit (WFP-VAM), in association with BBS and the Bangladesh Planning Commission, MoFP, has produced upazila-level maps for food insecurity, calorie intake and child malnutrition using the small-area estimation technique (WFP/BBS/Bangladesh Planning Commission, 2004). Maps on stunting and underweight, which were created under the umbrella of the Bangladesh National FIVIMS, are available in Annex 2 and Annex 3.

Child malnutrition by poverty status

As expected, the rate of malnutrition varies with economic status. Approximately 60 percent of children ages 6–71 months who reside in households in the lowest per capita expenditure quintile are malnourished (underweight or stunted) compared with 47 percent and 31 percent of children ages 6–71 months who reside in households in the fourth and fifth quintiles, respectively (Figure 11). The observation, made persistently over the years, that nearly one-third of children from the richest households (top 20 percent) are malnourished, suggests that malnutrition is a multifaceted problem not determined by economic status alone.

FIGURE 11 Rate of stunting in children ages 6–71 months in 2000

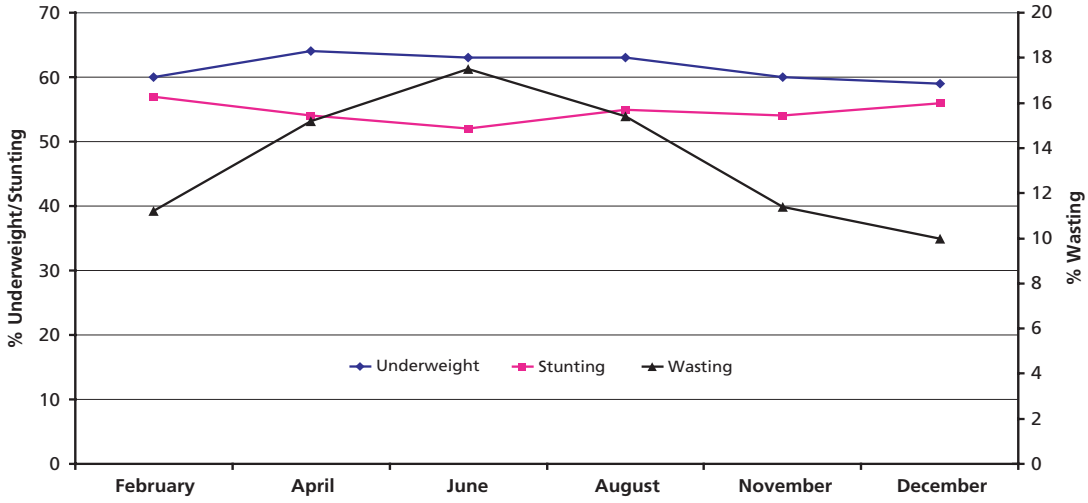


Source: CNS, 2002

Seasonality of child malnutrition

While prevalence of underweight or stunting does not vary much throughout the year, the prevalence of wasting is highly seasonal. In all divisions, the prevalence of wasting peaks during the rice pre-harvest period from June to August and reaches its lowest levels during the post-harvest period from December to February (Figure 12). These data conform to the definition of wasting as a measure of short-term acute malnutrition.

FIGURE 12 Prevalence of underweight, stunting and wasting in children ages 6–59 months by season in 1999



Source: HKI/IPHN, 2001

Malnutrition in women

Data source(s): NIPORT; HKI/IPHN; INFS (details available in data inventory report)

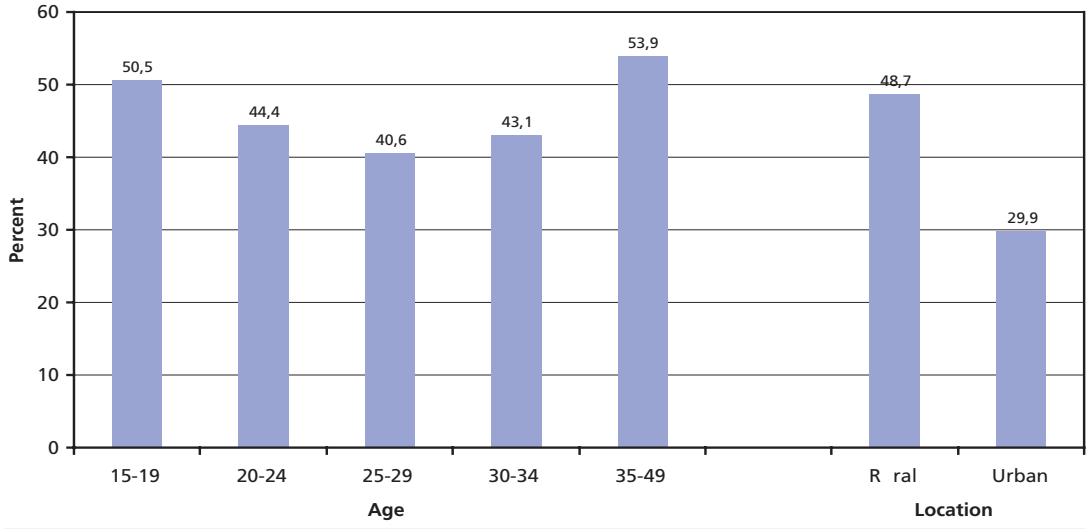
An enormous quantity of information on malnutrition among Bangladesh women has been collected by various organizations. The most common nutritional problem in women, especially the poor, is chronic energy deficiency (CED). CED is calculated by measuring height (height > 145 cm) as well as BMI, though the latter is more widely used (WHO, 1995). BMI is derived by dividing weight (kg) by height squared (m^2); ratios are listed below.

BMI > 25.0 kg/m^2	=	overweight
BMI = 18.5–25.0 kg/m^2	=	normal
BMI < 18.5 kg/m^2	=	malnourished
BMI < 16.5 kg/m^2	=	severely malnourished

Body mass index

Women below the age of 20 and above the age of 34 are most likely to suffer from CED (see Annex 4). In these women, there is a strong rural-urban differential, with CED much more prevalent among rural women (Figure 13).

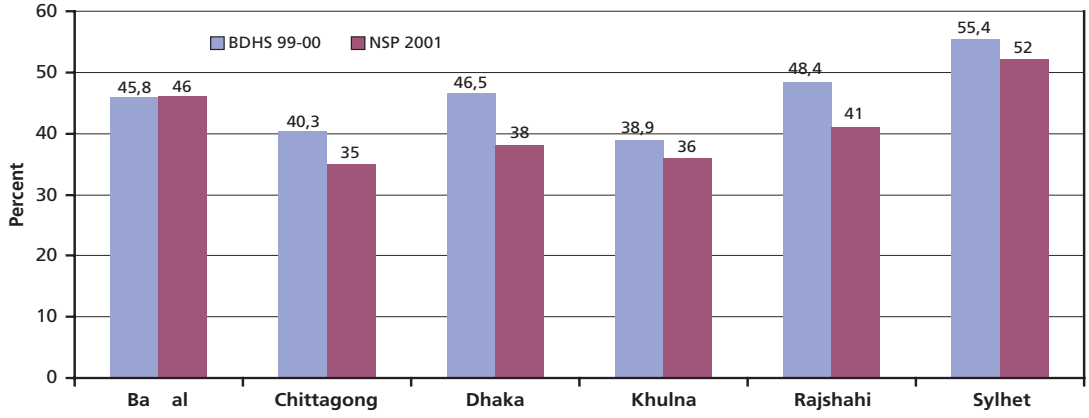
FIGURE 13 Percentage of women with CED (BMI < 18.5) by age and location



Source: BDHS, 1999–2000

Division data from surveys by both NIPORT and HKI/IPHN show that the women of Khulna and Chittagong have the lowest prevalence of CED and the women of Sylhet the highest.

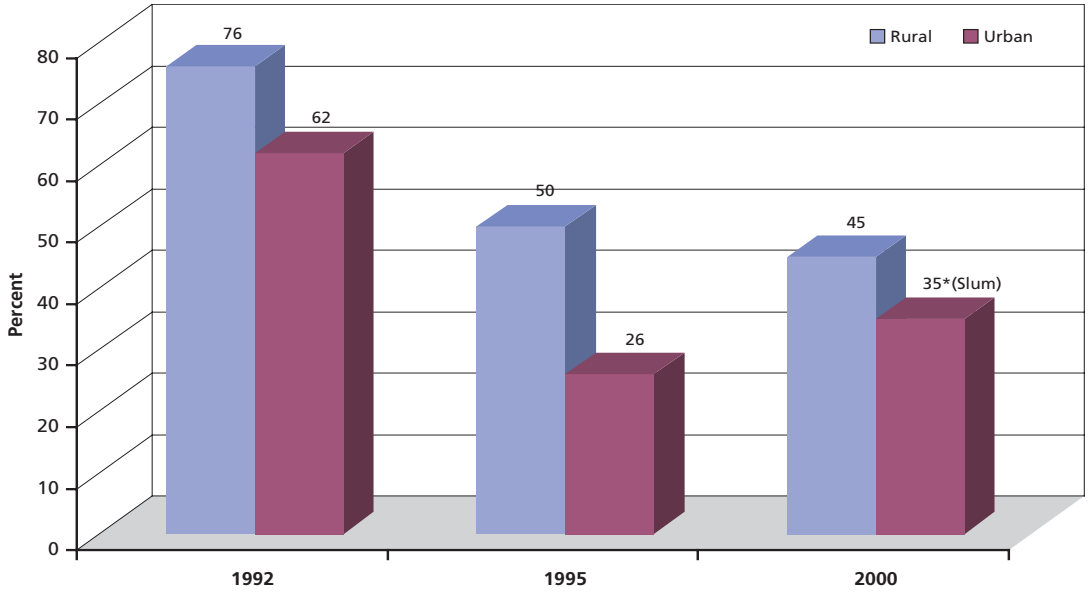
FIGURE 14 Percentage of women with CED (BMI < 18.5 kg/m2) by division



Source: BDHS, NSP

Figure 15 shows that the prevalence of CED among women in Bangladesh, as revealed by studies of different organizations, has decreased in rural areas from 76 percent in 1992 to 45 percent in 2000. The prevalence of CED decreased from 62 percent to 35 percent in urban areas over the same period of time.

FIGURE 15 Prevalence of CED in women as reported by various organizations



Source: BDHS, NSP

Micronutrient malnutrition

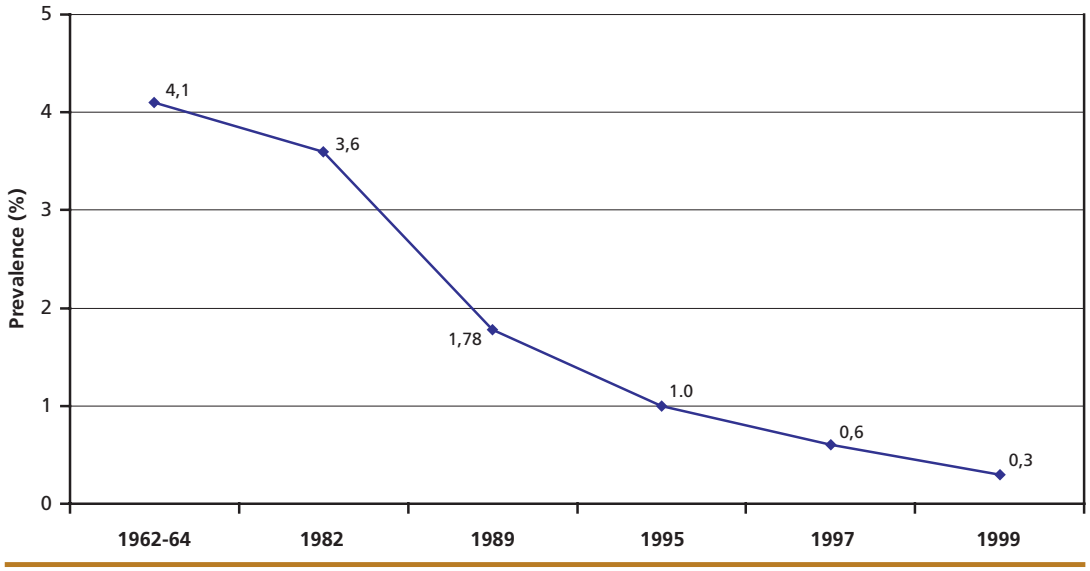
Data source(s): Department of Biochemistry, Dhaka University; INFS; HKI/IPHN; IPHN/MoHFW; BBS/ BRAC/UNICEF (details available in data inventory report)

The diet of those suffering from poverty is deficient in almost all micronutrients (vitamins and minerals) as well as macronutrients, which results in protein-energy malnutrition. The most overt and common micronutrient deficiencies seen in Bangladesh are vitamin A deficiency, which causes night blindness, and iron-deficiency anaemia.

Vitamin A deficiency and night blindness

For years, night blindness in children owing to vitamin A deficiency was a common nutritional problem in Bangladesh, even though green leafy vegetables and yellow/orange vegetables and fruits – foods rich in essential vitamins and minerals – can be grown in abundant quantities. The first nutrition survey conducted in1962–64 in Bangladesh (then known as East Pakistan) showed that over four percent of children under six years of age suffered from night blindness, which prompted the launch of widespread intervention and public awareness programmes by government and non-government agencies. Today, after 35 long years of struggle, the scourge is almost non-existent in Bangladesh (Figure 16). The figure shows the steady decrease in night blindness, providing a unique example of how discrete information from various sources was used to give a relatively full picture of one aspect of the country's nutrition situation.

FIGURE 16 Prevalence of night blindness among children below 6 years of age, 1962–1999



Source: 1962–64: DHESW, 1965; 1982: HKI/IPHN, 1985; 1989: IPHN/UNICEF, 1989; 1995: INFS, 1998; 1997: HKI/IPHN, 1999; 1999: HKI/IPHN, 2001

Iron deficiency anaemia

Iron deficiency is the most common but least understood nutritional problem in the world. According to a 1992 WHO estimate, approximately half of all preschool age children and pregnant women in developing countries have anaemia (i.e., blood haemoglobin less than 110 g/l). Anaemia increases the risk of death and is associated with LBW, impaired growth, retarded cognitive development and decreased work capacity and productivity (Administrative Committee for Coordination/Subcommittee for Nutrition, United Nations, 2000), thus negatively affecting the socio-economic development of a nation (Ross and Horton, 1998).

The high prevalence of anaemia among preschool children in Bangladesh has long been known. Recent surveys report a prevalence rate of 52.7 percent among rural preschool children (HKI/IPHN, 1999b) and 67 percent nationwide (Jahan and Hossain, 1998). Research concurs with these findings, suggesting that the prevalence of anaemia, like that of stunting, wasting and underweight, is in decline among preschool age children.

Anaemia in urban slums, however, is increasing rapidly. A study in 2000 by HKI/IPHN shows a prevalence rate of 76 percent among children ages 6–59 months living in urban slums, compared with only 40 percent in 1995–96. Children living today in urban slums face a strong challenge to survive such appalling malnutrition conditions.

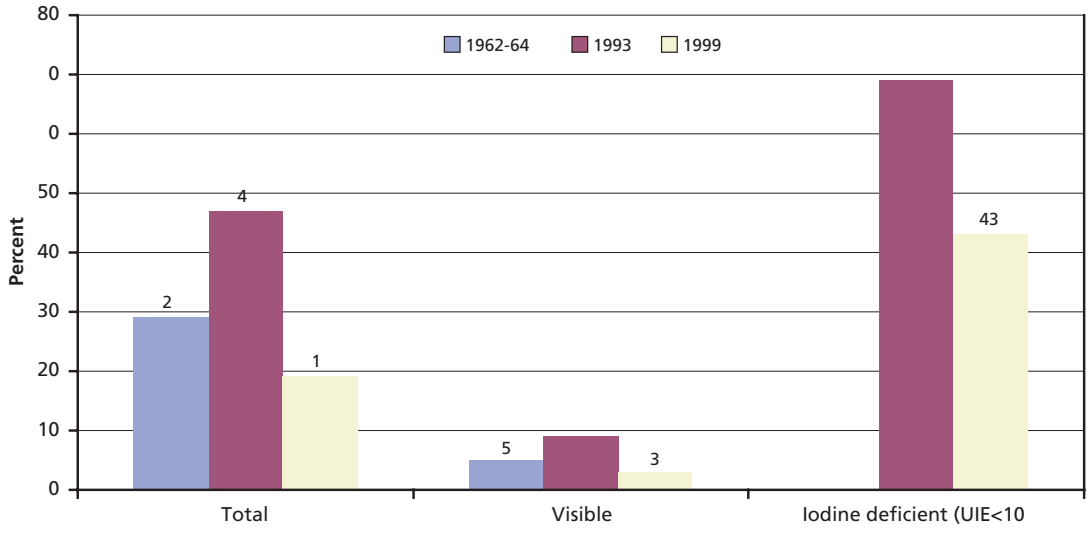
An anaemia survey of urban Bangladesh and the rural areas of the three districts included in the Chittagong Hill Tracts (CHT) was conducted in 2003 by BBS/UNICEF in collaboration with BRAC. The data, when published, will provide calculation of anaemia prevalence for all vulnerable population groups at the national level.

Iodine deficiency disorders

With the introduction and use of iodized salt at the end of 1994, iodine deficiency disorders (IDDs), which had been rising slowly but steadily since the 1960s, began to decline. A sharp drop in the occurrence of goitre, particularly visible goitre (grade 2), was seen by 1999.

Urinary iodine excretion (UIE) also decreased during this period, from 69 percent in 1993 to 43 percent in 1999. UIE, with biochemical iodine deficiency calculated at levels below 10 µg/dl, is considered to be a better indicator of iodine deficiency than goitre.

FIGURE 17 Prevalence of total and visible goitre and iodine deficient population in Bangladesh between 1962 and 1999



Source: 1962–64: Department of Health, Education and Social Welfare – USA, 1965; 1993: Yusuf *et al.*, 1994; 1999: Quazi *et al.*, 2002

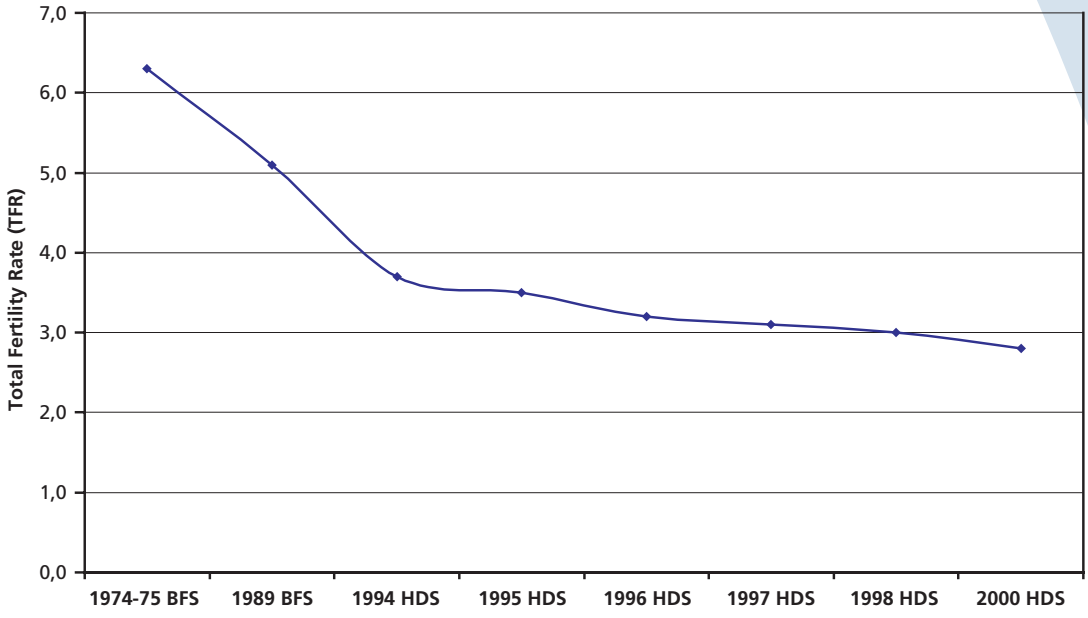
Health and sanitation

Data source(s): NIPORT; BBS (details available in data inventory report)

Total fertility rate and population growth

Bangladesh has achieved commendable progress in reducing the rate of population growth during the last few decades. The total fertility rate (TFR = total number of children born per once-married woman) showed a steady decrease during the period from 6.3 in 1975 to 2.9 in 2000 (Figure 18). This decrease in TFR is reflected in the overall population growth rate, which decreased from 2.15 percent in 1991 to 1.54 percent in 2001 (BBS, 2003).

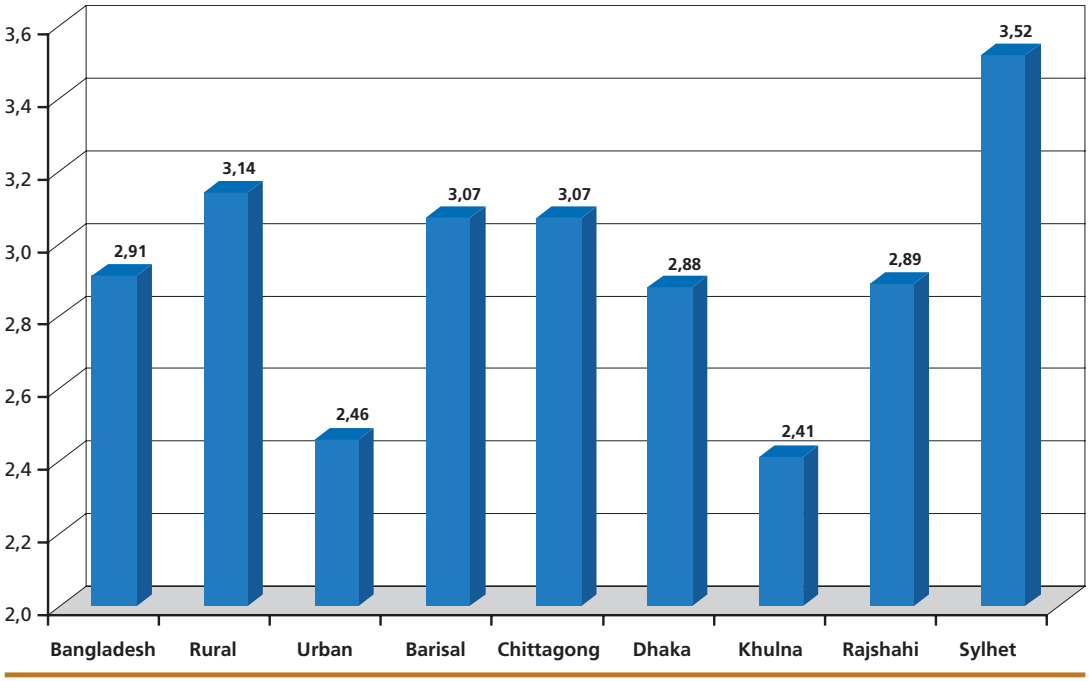
FIGURE 18 TFR in Bangladesh, 1975–2000



Source: Bangladesh Fertility Survey (BFS) 1974–75 and 1989; Health and Demographic Survey (HDS), 1994–2000

When the TFR data is disaggregated to the divisional level, the Sylhet division has the highest value at 3.52 and the Khulna division the lowest at 2.41 (Figure 19). A strong rural-urban differential is also evident; the rural TFR of 3.14 is 28 percent higher than the urban TFR of 2.46. A district-level disaggregation of TFR is shown in Annex 5.

FIGURE 19 Total TFR in different administrative divisions



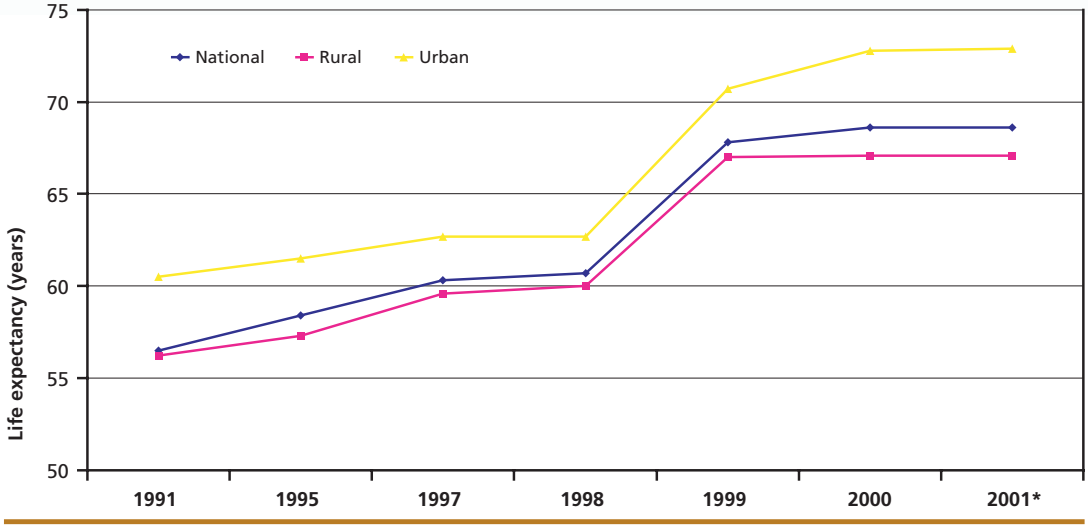
Source: HDS, 2000

Life expectancy at birth

Improvements in the Bangladesh health service system during the last few decades, particularly in terms of increased immunization rates, have had a positive impact on life expectancy at birth, as well as the country's Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR).

Expectation of life at birth has been increasing during the last decade. The Sample Vital Registration System (SVRS) showed that the 1991 life expectancy rates of 56.2 and 60.5 years in rural and urban areas, respectively, increased to 67.1 years and 72.9 years, respectively, in 2001 (Figure 20), with little difference noted between rates for males and females.

FIGURE 20 Increase in life expectancy at birth, 1991–2001

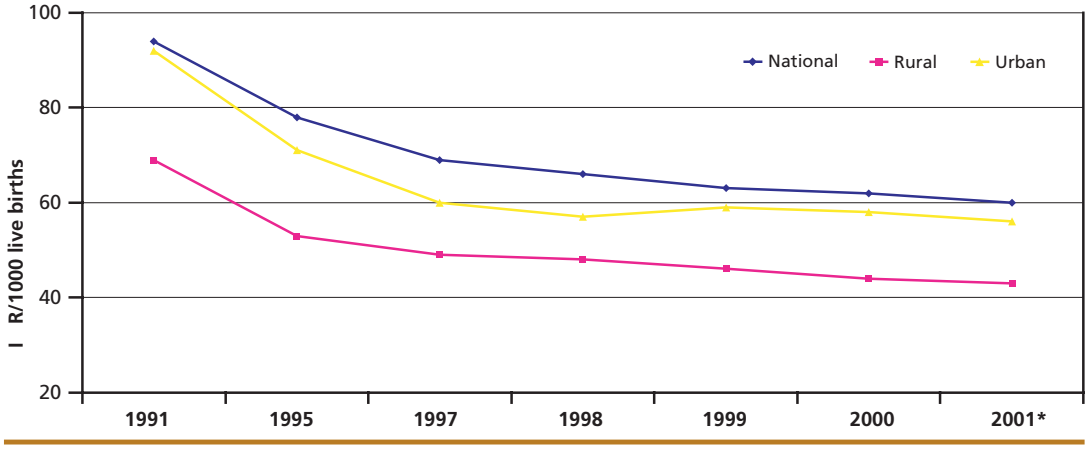


Source: SVRS, provisional data

Infant mortality rate

The increase in life expectancy is attributable to the steady decrease in the infant mortality rate (IMR) during the period 1991–2001 (Figure 21), with rates higher in rural areas than in urban areas. In 1991, IMR rates were 88 and 64 per 1 000 live births in rural and urban areas, respectively, decreasing to 63 and 44 per 1 000 in 2001.

FIGURE 21 IMR per 1 000 live births, 1991–2001

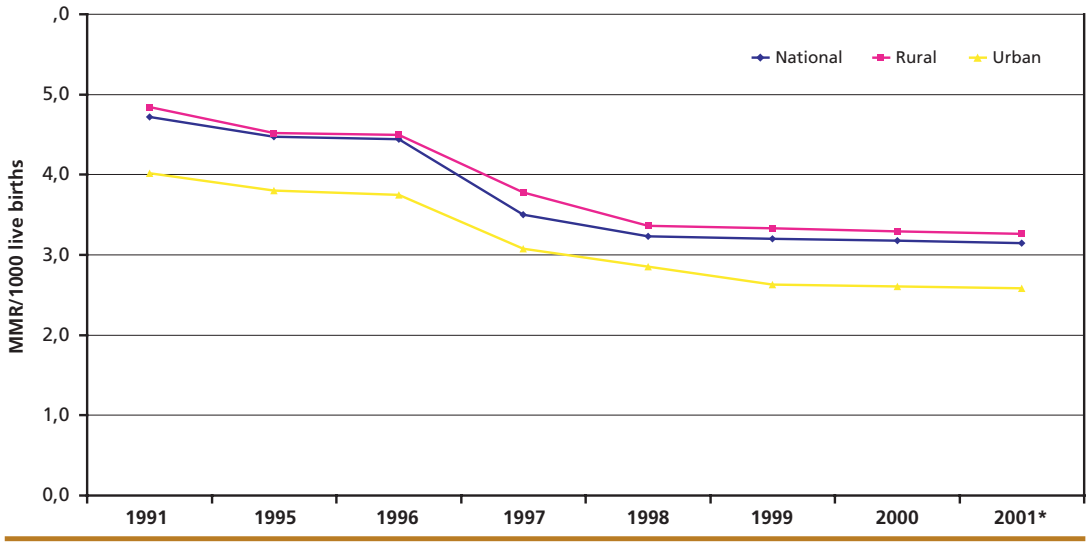


Source: SVRS, provisional data

Maternal mortality ratio

The maternal mortality ratio (MMR) remained fairly steady during the period 1991–1996, with values of 4.8 and 4.0 per 1 000 lives births in rural and urban areas, respectively (Figure 22). From 1996 to1997, the ratio decreased rapidly, then evened out over the next few years, reaching values of 3.5 and near 2.5 per 1 000 live births in 2001 in rural and urban areas, respectively.

FIGURE 22 MMR per 1 000 live births, 1991–2001



Source: SVRS, provisional data

Use rate of unsafe drinking water

Although nearly 98 percent of the population in Bangladesh obtains water from tube wells or taps, there are still some places, such as the districts of the Sylhet division, the Chittagong Hill Tracts (CHT), Bagerhat and Satkhira (see Annex 6), where more than 10 percent of people obtain water from open ponds or rivers, which are unsafe for drinking purposes. While people of Bagerhat and Satkhira use surface water for drinking owing to arsenic contamination of tube-well water (see Annex 8), people in the Sylhet division and the CHT, where the prevalence of diarrhoea is one of the highest, often use surface water for drinking owing to ignorance and lack of motivation to find alternative water sources.

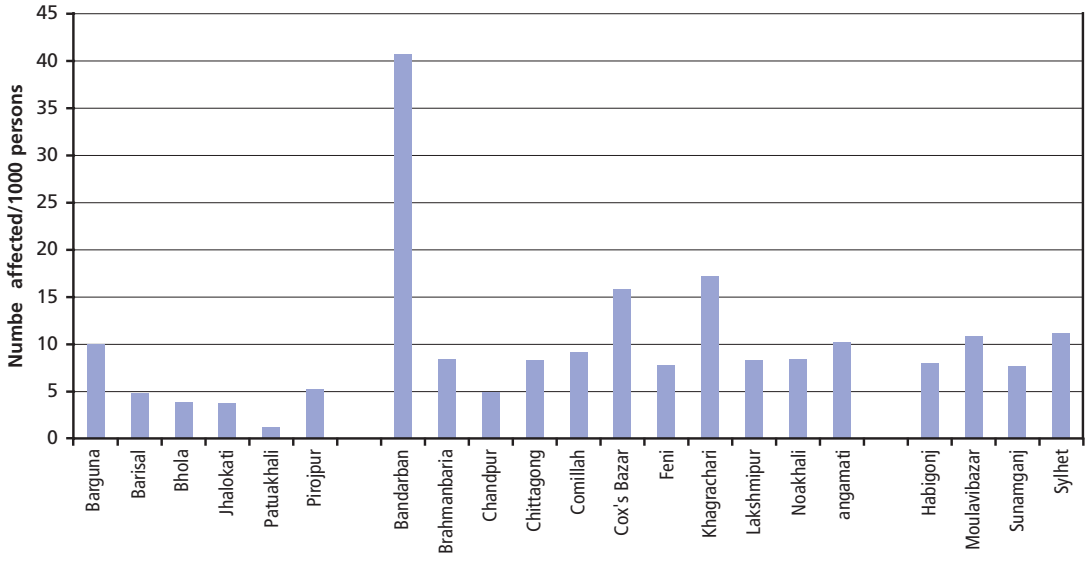
Access to safe latrine

The excreta disposal system in Bangladesh is still very underdeveloped. Nearly 60 percent of the population disposes their excreta in open places and access to safe latrine (waterseal + pit) is limited (see Annex 7).

Incidence of diarrhoea

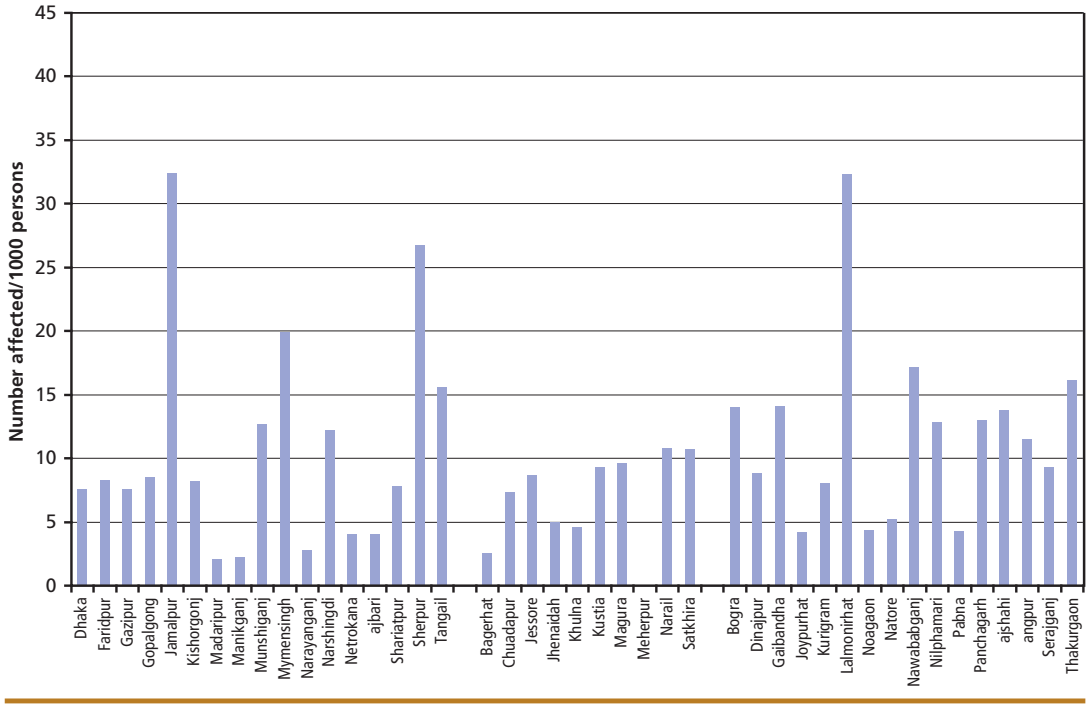
Diarrhoea, concomitant with unhygienic drinking water collection and poor sanitation, is widespread in Bangladesh. The situation is particularly dire in the poorest districts of Bandarban, Jamalpur, Sherpur, and Lalmonirhat (Figure 23a and 23b), where food scarcity is severe and water and environmental sanitation is precarious.

FIGURE23A Incidence of diarrhoea during June–August 2000 in different districts of Barisal, Chittagong and Sylhet divisions



Source: HDS, 2000

FIGURE 23B Incidence of diarrhoea during June–August 2000 in different districts of Dhaka, Khulna and Rajshahi divisions

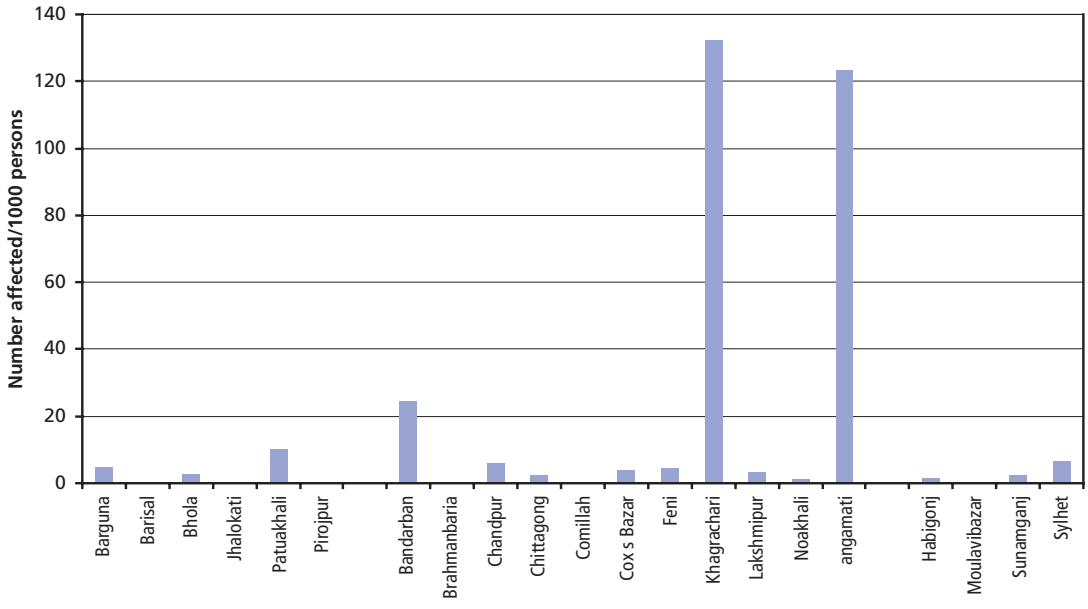


Source: HDS, 2000

Incidence of malaria

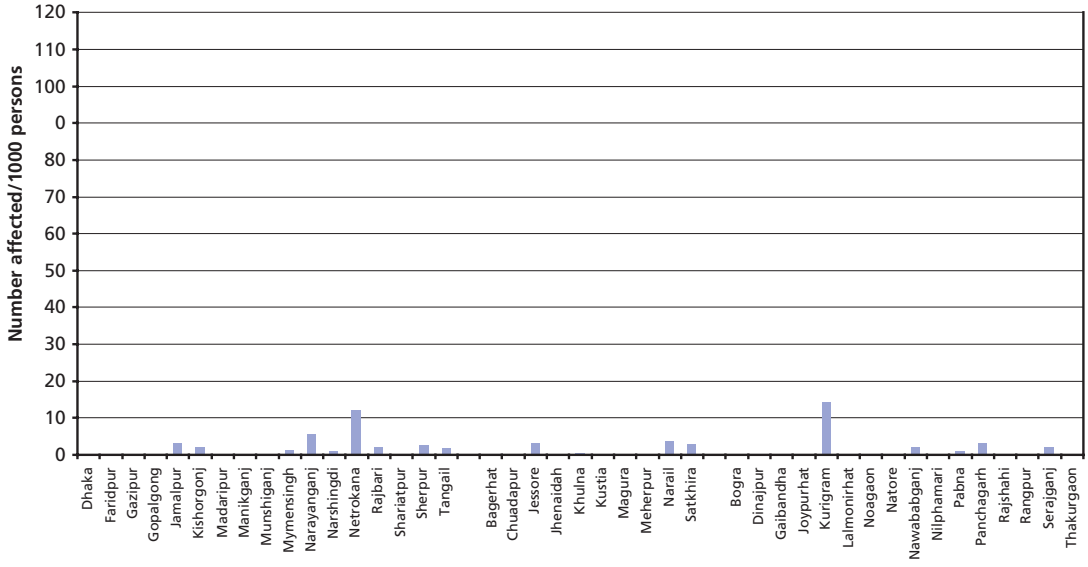
Malaria was almost completely eradicated from Bangladesh in the 1970s and is now generally confined to the three districts of the CHT, particularly Khagracchari and Rangamati (Figure 24a and 24b).

FIGURE 24A Incidence of malaria during June–August 2000 in different districts of the Barisal, Chittagong and Sylhet divisions



Source: HDS, 2000

FIGURE 24B Incidence of malaria during June–August 2000 in different districts of the Dhaka, Khulna and Rajshahi divisions



Source: HDS, 2000

Arsenic contamination of drinking water

According to the latest survey jointly conducted by the Dhaka Community Hospital (DCH) and the School of Environmental Sciences (SES), Jadavpur University, India, approximately 65 million people in Bangladesh are at risk of arsenic contamination. These experts contend that groundwater contamination and the sufferings of the Bangladesh people may constitute the world's biggest environmental calamity (DCH/SES, 1998; Khan and Ahmed, 1997).

DCH first brought this harmful situation to light in 1996, prompting the Bangladesh government to begin acting on it. The alluvial Ganges aquifers, used as a public water supply, are reportedly polluted with naturally occurring arsenic in 61 of 64 districts (Ross and Horton, 1998). The extensive arsenic contamination of tube-well water was also documented by Japanese arsenic specialists (see Annex 8).

Arsenic occurs naturally in two major forms – arsenate and arsenite – both of which are toxic to the body, the latter far more so than the former. Both forms of arsenic inhibit energy-producing metabolic reactions in the body, leaving intoxicated persons energy deficient. The Bangladesh people are exposed to high levels of arsenic poisoning owing to the great need for liquids that a hot climate and the demands of physical labour require and the lack of water alternatives. It has been observed in various studies that arsenicosis worsens nutritional status, thus worsening the situation of people already suffering from malnutrition (Yusuf *et al.*, 1994). Particularly under conditions of marginal protein adequacy, people are liable to be affected by protein-energy malnutrition (PEM).

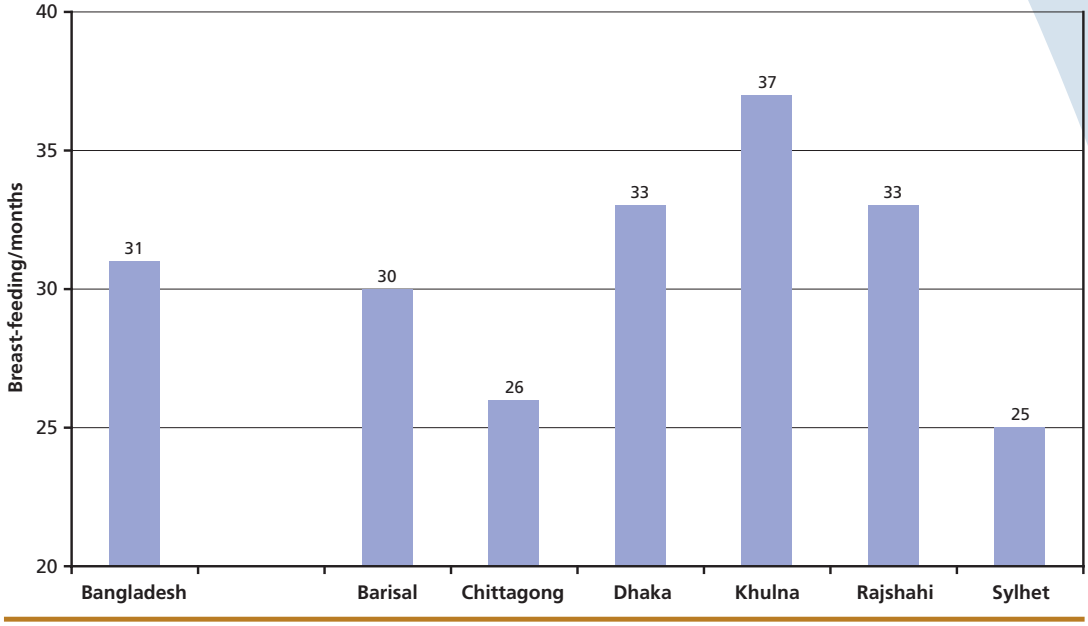
Caring practice

Data source(s): NIPORT; Bangladesh Breastfeeding Foundation (details available in data inventory report)

Breast-feeding

Breast-feeding is almost universal (over 99 percent) in rural Bangladesh. While the duration of breast-feeding averages 31 months, significant differences exist in different divisions. For example, the breast-feeding period is only 25–26 months in the Sylhet and Chittagong divisions, but as high as 37 months in the Khulna division (Figure 25), where the under-5 children are the least malnourished and mothers are the tallest, have the highest BMI and suffer the least from CED.

FIGURE 25 Median duration of breast-feeding in different administrative divisions of Bangladesh



Source: BDHS, 1999/2000