



Chapter 3

HEALTH TRANSCENDS POVERTY: THE BANGLADESH EXPERIENCE

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A community health worker gives child nutrition and family planning advice. She also deals with minor medical problem and shows mothers how to mix and administer oral rehydration fluids to treat childhood diarrhoea. Mobarakdi village, Matlab district, Bangladesh

■ Key messages

- Bangladesh became a nation in 1971 under the most difficult circumstances and since then has made huge strides in improving its population's health. A political commitment to health was enshrined in the 1972 Constitution, and policies have transcended political change while constantly adapting to emerging issues.
- Bangladesh was one of the first developing countries to strongly endorse a national family planning programme, resulting in a dramatic reduction in fertility. Bangladesh's basic population and health indicators are on a par with or better than its neighbours, despite having a lower per capita income.
- Bangladesh has continued to be an innovator in health policies and in testing and adapting low cost technologies in the health sector, while maintaining long-term continuity of policies. This is demonstrated by its long history of community and voluntary health workers who bring appropriate technologies to its people.
- Innovation has been facilitated by an environment that has created policy space for the non-state sector. Bangladesh's world renowned non-governmental organisations (NGOs) and initiatives in health have grown and matured alongside public sector activities, often working together to deliver services.
- Bangladesh's health achievements have occurred in the context of improved literacy, economic development and some positive changes in the social fabric of the nation.

■ Introduction

The People's Republic of Bangladesh came into existence in 1971 under the most difficult circumstances. Once part of British India, the region had become East Pakistan at Partition in 1947 but was subjected to oppressive policies by the authorities in the politically dominant West Pakistan. The nine-month War of Liberation in 1971 was among the 20th century's most brutal. An estimated three million Bengalis died and ten million refugees fled into India. Much of the country's infrastructure was destroyed. Mortality rates were high, life expectancy and literacy were low, and poverty was rampant. Other challenges facing the new nation were frequent natural disasters, including seasonal flooding, cyclones and devastating famines such as that of 1974^{1,2}. The fledgling government also suffered from widespread inefficiencies^{3,4}.

During the past 40 years, the country has made enormous advances in life expectancy, child health, literacy and disaster preparedness. The fertility rate has been dramatically reduced and high levels of immunization coverage have been achieved; this, in turn, has led to unprecedented reductions in maternal and child mortality⁵. Bangladesh's basic population and health indicators are on a par with or better than its neighbours, which have higher per capita income. To recognize the great strides the country has made towards good health, in September 2010, Prime Minister Sheikh Hasina accepted a United Nations award on behalf of the people of Bangladesh for outstanding achievements in the reduction of child mortality, one of the eight Millennium Development Goals (MDGs). These achievements have been made with low total health expenditure (3.4% of GDP or US\$ 12 per capita in 2007) and even lower health expenditure financed by the public sector (1.1% of GDP or US\$ 4 per capita in 2007). The level of total health expenditure is low by regional standards; in contrast, India spends 4.8% and Nepal 5.3% of GDP on health⁶.

Although the Bangladeshi economy has grown 5–6% per annum since 1996, it is still one of the poorest nations in the world, with a per capita GDP of US\$ 554. In 2007, an estimated 40% of its 160 million people were living on less than US\$ 1 a day. Over the past three decades, Bangladesh has experienced one of the highest urban population growth rates in the world⁷. At present, about one quarter of the population lives in urban areas⁸, a number that is expected to continue to rise rapidly. The population of Dhaka, the capital city, is expected to reach 22 million by 2025, making it the fourth largest city in the world⁹. An estimated 37% of Dhaka's residents (more than nine million in 2007) live in overcrowded slums, often without access to safe drinking water, adequate nutrition or primary health care services^{10,11}. The picture is similar in other major cities and rural areas across the country (Box 3.1).

Box 3.1 Bangladesh at a glance

<i>Population</i>	162 million ¹² . Among the highest urban population growth rates in the world ⁷ , with 28% urban population (2009) ¹ living mainly in poorly serviced slums.	
<i>Geography</i>	Most of the country is low lying and subject to frequent floods and cyclones. 20 million people exposed to excessive levels of arsenic in drinking water ¹³ .	
<i>Ethnic composition</i>	Culturally homogeneous; 98% of the population Bengalis. Minority tribal groups living mainly in hilly regions of country ¹⁴ .	
<i>Government</i>	Gained independence in 1971. Parliamentary democracy since 1990s, except for brief period of military-backed government from 2006 to 2008. Frequent changes in political leadership, but investing in health services is popular politically.	
<i>Health system</i>	Health expenditure per capita (constant 2005 Int\$) ¹⁵ : 48.49 Density of physicians, nurses and midwives per 10 000 ¹⁶ : 6 Pluralistic, relatively decentralized health system, with the state, NGOs, private for-profit sectors all playing a major role. Large numbers of informal and traditional healers. Focus on primary health care and family planning. Coverage of key health interventions varies dependent on intervention (18% of births with skilled attendance at delivery ¹⁷ , 75% of children under age of 1 year fully immunized nationwide) ¹⁸ .	
<i>Economic, demographic and social development</i>	GDP per capita (constant 2005 Int\$) ¹²	1286
	Economic growth between 2000 and 2005 ¹⁴	5.4%
	Population living on less than Int\$ 1.25 a day (2005) ¹²	49.6%
	Population below the national poverty line ¹²	40%
	Gini index (2005) ¹²	31
	Infant mortality rate (2008) ¹⁶	43 ^a
	Maternal mortality ratio (2010) ¹⁹	194 ^b
	Adult HIV prevalence ²⁰	0.1%
	Life expectancy (years) (2009) ¹²	67
	Adult literacy (2009) ²¹	55.9%
	Ratio girls to boys in education ^c (2008) ¹²	108%
	Access to improved water source (2008) ¹²	80% population

Note: ^aPer 1000 live births; ^bPer 100000 live births; ^cPrimary and secondary education.

This chapter explores the reasons for the country's achievements in health. It shows how these health gains can be attributed to a series of effective health sector strategies and policy processes, and to a strong emphasis on delivery of health and family planning services at the community and household level. It then describes the promotion of low cost and targeted technologies and proven interventions and policies that have played a significant role in improving health

Box 3.2 The Government of Bangladesh

The head of state of the People's Republic of Bangladesh is the president, a largely ceremonial post, who is elected every five years by parliament. The legislature is a single-house parliament, consisting of 300 members of parliament, also elected every five years. The executive function resides with the prime minister as the head of government, acting through a Council of Ministers²². Implementation of government policies and programmes is vested in Bangladesh's civil service, a corps of trained administrators who form the most influential group of civil servants. The district level is key in policy implementation. The districts are divided into subdistricts, or *upazilas*, and those are further divided into unions, the lowest administrative level.

Democratically elected political parties have led the country since the 1990s, with the exception of a two-year, military-backed caretaker government from 2006 to 2008. Civil society organizations, development partners, the media and human rights groups have continued to lobby for the strengthening of democratic processes. The frequent change in political leadership has implications for turnover among political and administrative staff.

The right to health care is established in the Constitution of Bangladesh, which was adopted on 4 November 1972. The policy-making environment in Bangladesh is a closed one, with a bureaucratic chain of government and top-level officials making all the final decisions. In health, the key policy-makers include the minister of health, the director generals of health services and family planning, and the health secretary. They all have extensive authority and are accountable to the prime minister. However, there is an intensive and institutionalized consultative process involving multiple actors within and outside the government system. Commentators have noted that evidence does inform the decision-making process.

outcomes. The chapter concludes by setting Bangladesh's health achievements within a context of economic development and some positive changes in the social fabric of the nation.

Certain common threads weave throughout the chapter. These are the principles of political commitment, leadership, innovation and engagement with the non-state sector, which, taken together, go a long way in explaining why Bangladesh has done so well in comparison to many other low-income countries (Box 3.2).

■ Better health?

Compared with other countries in the region, Bangladesh has among the longest life expectancy for men and women, the lowest total fertility rate and the lowest infant, under-5, and maternal mortality rates (Table 3.1). This section examines the trends in these rates since the mid-1970s (with the exception of maternal mortality, which has only been measured since 2001) (Box 3.3). We will show that population and health gains have not been equitable.

Average life expectancy at birth rose from 58 years in 1994 to 66 in 2008, with women living slightly longer than men (65 years and 64 years, respectively) (Table 3.1).

Bangladesh has experienced dramatic decreases in total fertility among women aged 15–49 years. In the mid-1970s, total fertility was 6.6 births per woman aged 15–49 years; in 1994, it was 3.4; and by 2007, it was 2.7^{31,32} (Figure 3.1). The differential in rural–urban fertility has narrowed over the past decade, from 1.3 births in 1997 to 0.4 births in 2007; however, this decline has not been seen across wealth quintiles. The poorest women still have approximately one child more (3.2) than their wealthier counterparts (2.1).

Infant mortality has declined dramatically from 85 deaths per 1000 live births in the late 1980s to 52 deaths per 1000 live births between 2002 and 2006 (Figure 3.2). In recent years, there have been improvements in all wealth

Table 3.1 Comparative health indicators across countries of the region

Countries	GDP PPP per capita (US\$) ²⁹	Total fertility rate ³⁰	Life expectancy at birth (years) ¹⁶ 2008		Mortality rate per 1000 live births ¹⁵ 2008		
	2009	2008	Male	Female	Infant	Under-5	Maternal
Bangladesh	1398	2.3	64	65	43	54	380
Bhutan	5312	2.6	61	65	54	81	440
India	2930	2.7	63	66	52	69	450
Myanmar	1156	2.3	59	63	74	103	380
Nepal	1144	2.9	63	64	41	51	830
Pakistan	2624	4.0	63	64	72	89	320

Note: PPP: Purchasing power parity.

Box 3.3 The health system in Bangladesh at a glance

Bangladesh, like most other south Asian countries, has a public system run by the government and a large non-state sector that plays a major role in the delivery of health care services. The latter includes NGOs, private providers of modern and indigenous medicine, and informal providers, such as traditional birth attendants, drug vendors and village doctors.

During the 1970s, the government developed a public health system along the *Health for All* model, with a nationwide network of hospitals, health complexes, family welfare centres, subcentres, and Expanded Programme for Immunization outreach clinics. At the same time, a parallel network of family planning and maternal and child welfare centres was established, in some cases contracting NGOs to provide services²³.

Some 2000 NGOs work in Bangladesh, including some of the largest in the world Bangladesh Rural Advancement Committee (BRAC), Grameen, ASA and Proshika. NGO activities are mainly concentrated in rural areas, with recent expansion into semi-urban and urban slums.

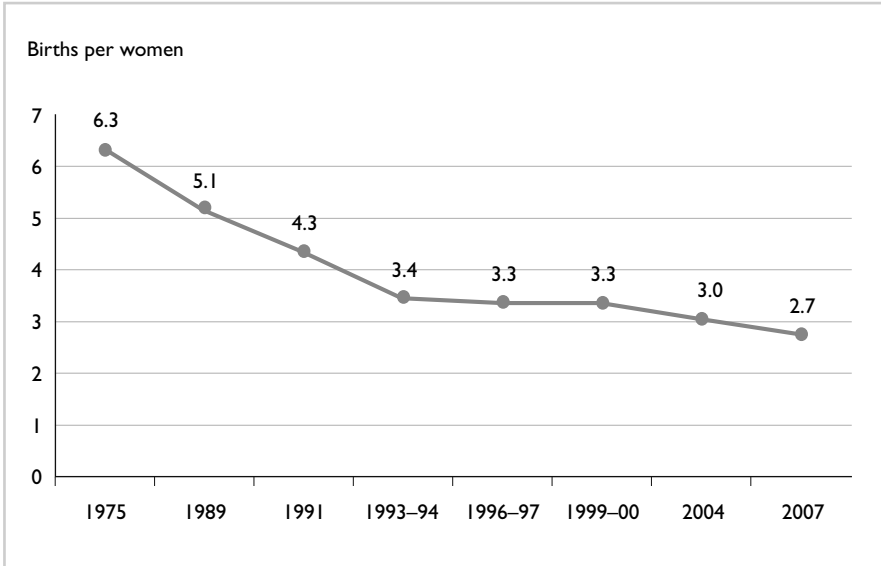
The traditional medicine practised in Bangladesh includes Unani and Ayurvedic medicine. Formal providers are regulated by a joint governing board, and each has its own network of teaching colleges.

The formal private for-profit sector is large and complex, and since 2000, it has been growing by about 15% per year²⁴. For example, in 2000, approximately 682 clinics and hospitals and 838 laboratories and other diagnostic centres were registered with the Ministry of Health and Family Welfare. As of March 2009, those numbers had risen to 2271 and 4735, respectively²³. In many cities, essential health services are much more widely available in private hospitals than in public hospitals. In the city of Chandpur in 2008, for example, two public hospitals were offering emergency obstetric care, while 24 private hospitals offered the same service.

The non-state sector provides the overwhelming majority of outpatient curative care, while the public sector is used for a larger proportion of hospital deliveries and preventive care. For example, about 90% of care for children with acute respiratory infection or diarrhoea is obtained from the private sector^{25,26}. This is partly because of the lack of qualified providers in rural areas^{27,28}. It is also because the Essential Services Package does not cover noncommunicable diseases and health workers are not trained to manage these conditions; consequently, for these health issues, people routinely turn to unlicensed providers for treatment.

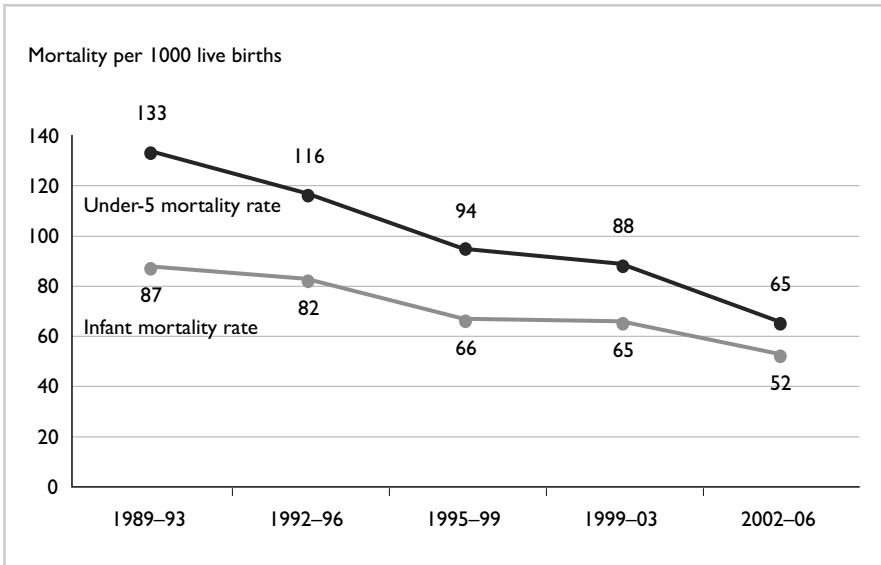
The total number of private practitioners is estimated to be around 450 000, or 3.6 per 1000 population. Of these, unqualified providers outnumber formally qualified ones by 12 to 1²⁴.

Figure 3.1 Trends in fertility rate, 1975–2007



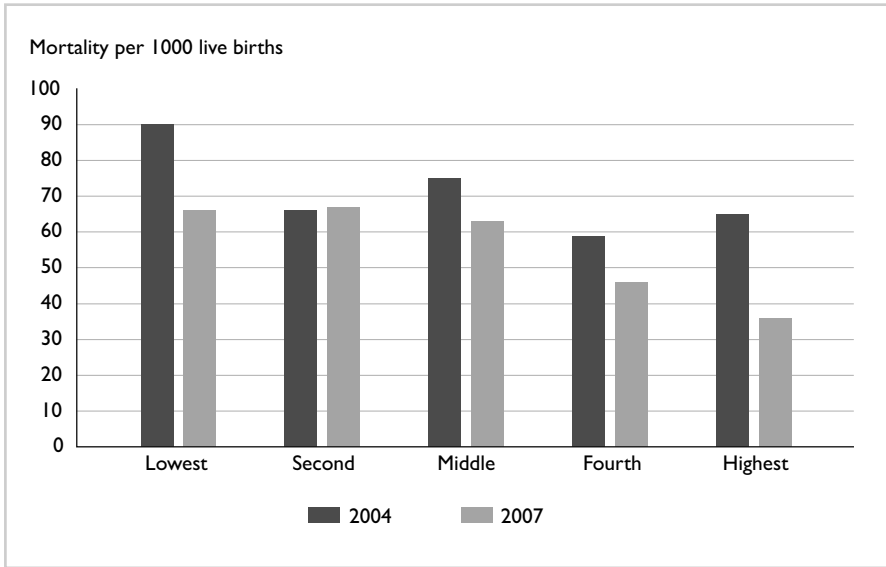
Source: Reference 32.

Figure 3.2 Trends in under-5 and infant mortality rates, 1989–2006



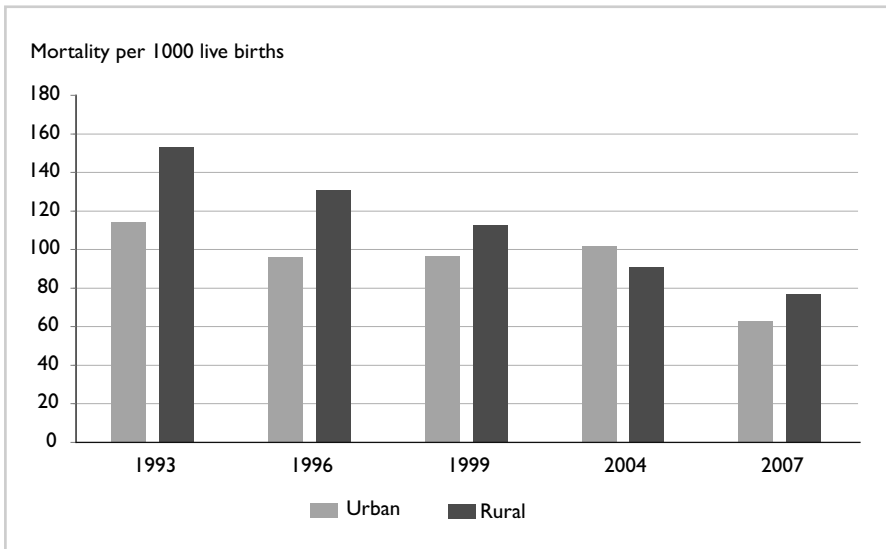
Source: Reference 32.

Figure 3.3 Infant mortality rate by wealth quintile, 2004 and 2007



Source: Reference 32.

Figure 3.4 Trends in under-5 mortality rate, urban vs. rural



Source: Reference 32.

quintiles (Figure 3.3), but there has been no reduction in inequality and, if anything, disparities between wealth groups have widened. While in 2004 mortality in the richest quintile was 27% lower than in the poorest quintile, this disparity increased to 42% in 2007³². However, there have been more equitable advances in infant mortality across the urban–rural divide (Figure 3.4): in 1993, the rate was 81 in urban areas versus 102 in rural areas; by 2007, the difference had fallen to 50 in urban areas versus 59 in rural areas.

Huge improvements in under-5 mortality have taken place: from 202 per 1000 live births in 1979 to 133 in 1989 to 94 in 1995 and to 65 in 2006. As a consequence, Bangladesh is on track to achieve MDG4 to reduce under-5 mortality. Although disparities remain between rural and urban areas (Figure 3.4), child mortality has fallen by at least half in all areas.

There is strong evidence from national and subnational studies that maternal mortality has declined substantially in Bangladesh. Studies conducted in the 1960s suggest that maternal mortality was between 600 and 800 deaths per 100 000 live births at that time^{33,34}. A national survey conducted in 2001 reported a decline from 514 deaths per 100 000 live births in the mid-1980s to 322 per 100 000 in the late-1990s³⁵. These trends are confirmed by high-quality studies in the Matlab demographic surveillance area^a in rural Bangladesh: maternal mortality in the Matlab rural area declined from 579 to 247 deaths per 100 000 live births between 1982 and 2005³⁶. In order to achieve MDG5 (improve maternal health), maternal mortality must fall to 143 deaths or lower per 100 000 live births by 2015. In fact, a 2010 national survey showed that the maternal mortality ratio had dropped to 194 per 100 000 live births, indicating that Bangladesh is also on track to achieve this goal. However, poor rural women remain disadvantaged²².

Other health indicators where more progress is needed include low birth weight, malnutrition, and drowning and injuries among children. In addition, an increase in noncommunicable diseases and an ageing population are bringing new challenges to the health system. These are discussed in more detail below.

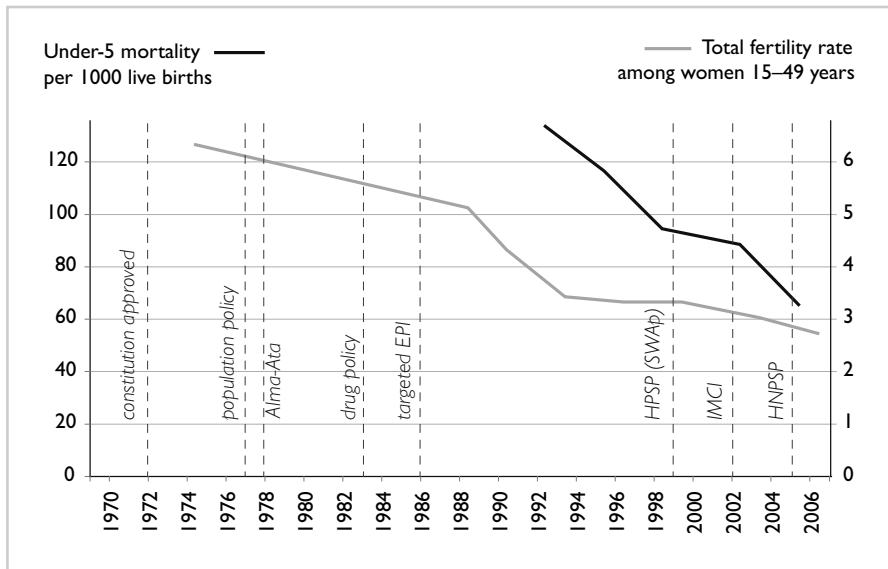
^a The Matlab Health Research Centre, in rural Bangladesh, is the world's oldest and largest demographic surveillance site in a developing country. Since 1966, researchers at the ICDDR,B have been monitoring population and health indicators for approximately 225 000 residents. Situated 57 km south of Dhaka, it was originally selected for the high incidence of cholera. Now, routine collection is done on births, deaths, nutrition and migration. In recent years, information has been collected regarding risk factors, and morbidity and mortality for non-communicable diseases. The Health and Demographic Surveillance Site at Matlab is part of the INDEPTH Network.

■ Role of large-scale strategies and policy processes in explaining health gains

The country’s leaders have considered the health of the population to be a national priority ever since the drafting of Bangladesh’s Constitution in November 1972. This political commitment has transcended political party politics. Under the military rule that lasted from 1975 to 1990, Bangladesh made considerable progress in the health and social development sectors. It is believed that military leaders adopted a set of pro-people programmes to strengthen their popularity, and build the basis for a political platform from which they could subsequently achieve an electoral mandate. In any event, it should be noted that the transition to democracy since the 1990s has served to generate further momentum for the country’s overall development.

Figure 3.5 shows the timeframe of major health reforms mapped against outcomes in total fertility and child mortality. In general, political and institutional leadership in the public sector is subject to frequent changes, and depends more on political bent than on specific expertise. Politicians are key actors in the health system. For example, the current political party rose to power on a platform that included the re-establishment of community clinics throughout

Figure 3.5 Health reforms and health gains



Notes: HPSP: Health and Population Sector Programme; HNPSP: Health, Nutrition and Population Sector Programme.

rural Bangladesh. Despite rapid changes in the political landscape and in key actors, many policies have been sustained for a significant period of time. Individual health professionals, activists, technocrats and civil servants played a critical role in the country's health sector development. There are many examples of individuals who achieved national support for key policies despite the complex political environment. One example from the time of military rule was the promotion and development of Bangladesh's National Drug Policy of 1982 (see below). This innovative policy has survived the transition from military rule to civilian leadership and subsequent changes in governing party.

However, it was the presence of effective civil servants that was essential for implementing complex policies nationwide. The following sections will highlight three policies that had a major impact on the health of the people of Bangladesh: the population policy, the drug policy and the early adoption of the Sector Wide Approach (SWAp). Yet coverage by these policies would not have been as widespread, in terms of geography and their outreach to disadvantaged groups, without the diverse institutions of the voluntary sector. These organizations came into being after the country's independence and grew as the nation was being rebuilt. In many cases, their mandate has been to deliver types of service and reach groups that could not have been reached with existing government capacity. This explains why the voluntary health sector is viewed as an "extender of government". Voluntary organizations have developed strong capacity and often lead the implementation of innovative delivery models and technologies. In reality, they have a considerable scope of freedom of action on the ground. Some of Bangladesh's NGOs have gained worldwide reputations.

The policy environment involves a great deal of flexibility and fluidity between state and non-state sectors. The government has fostered collaboration, working with a series of reputable NGOs on health initiatives that have complemented public sector activities. This has been a two-way exchange, with government providing support but also learning from these organizations³⁷:

NGOs grew and prospered and became the cutting edge for programme improvement. The government, albeit reluctantly, came to accept this and to learn from NGOs.

Population policy and family planning

Population control by means of family planning was a high priority immediately after independence in 1971 and was seen as a main driver of socioeconomic progress and development in an environment with limited resources. It was the main policy goal in the country's first Five Year Plan, 1973–1977³⁷. In 1974, the decision was taken to divide the Ministry of Health and Family Welfare

(MoHFW) into separate health services and family planning wings, each with their own director general responsible for supervising and maintaining their respective staff. This separation has been a long standing topic of debate and is frequently challenged, but to date, efforts to unify the two directorates have failed³⁸. It is argued that the separation served its purpose at the time, producing benefits in terms of organizational structures that advanced specific policy goals. The MoHFW embodied the government commitment to family planning and helped to safeguard resources and build management capacity in this area.

A population policy was developed in 1976. As part of this, the government decided to implement an innovative, community-based delivery system for family planning services that had been carefully piloted. From the mid-1970s until the 1990s, the family planning programme was largely supply driven and incentive based. The interventions that resulted – namely an aggressive campaign at the community level through household visits with a supply of contraceptive methods – were made possible in large part as a result of the government's impetus.

Drug policy

The pioneering drug policy of 1982 is seen as a major innovation in improving access to drugs in Bangladesh, and it had several components. First, the national policy established a list of mainly generic essential drugs to be procured and used in the public health services. The development of the drug policy under a military government, with key support from the non-state sector, is well documented³⁹. Dr Zafrullah Chowdhury^b of Gonoshasthaya Kendra (GK) played a major role in designing this policy, together with some reputable health professionals and civil servants. WHO worked with government institutions to recommend products to the essential drugs list.

Moreover, the new policy set the stage for establishing in-country production of essential medicines and for a flourishing pharmaceutical sector, facilitating the availability of antibiotics and other medicines for both formal and informal providers throughout the country.

^b Public health activist, freedom fighter, and founder of the NGO Gonoshasthaya Kendra. A UK trained physician, his public health leadership began with the establishment of the first field hospital dedicated to serving other freedom fighters during Bangladesh's War of Liberation. He further served the young nation by championing the Essential Drugs Act, which encouraged national development and discouraged duplication and unsafe practices in the pharmaceutical sector.

Following adoption of this policy, the MoHFW established a drug-production unit (Essential Drugs Company Limited) to ensure an adequate supply of essential drugs in public facilities. Thus, production and distribution facilities exist primarily within the public sector.

The drug policy, the Essential Drugs Company Limited and incentives for the country to produce its own good quality drugs were critical in making essential drugs available to public facilities, filling a previous gap in supply and demand of drugs. By the mid-1990s, the drug policy's positive impact became clear. Not only did drug prices stabilize and medicines become more affordable, but the percentage of essential drugs in all local production increased from 30% (1981) to 80% (mid-1990s). In addition, while only 35% of the country's essential drugs were produced by Bangladeshi companies in the 1980s, this share grew to 60% by the mid-1990s⁴⁰. The reduced dependence on imports and the prioritization of essential drugs are estimated to have saved the country approximately US\$ 600 000 million.

In recent years, additional production and distribution facilities have been established within both the public and the private sectors. The pharmaceutical sector in Bangladesh is now thriving, with approximately 224 licensed pharmaceutical factories in the country, six of which are owned by multinational companies⁴¹. Eighty-five per cent of the raw materials used in the local production of pharmaceuticals are imported, but only 1.1% of locally produced drugs are exported, which has ensured access to drugs that are appropriate to local needs. The pharmaceutical industry lobby is not strong and, in contrast to elsewhere, there has been limited opposition to the essential drug list. This situation may change; in a speech to the parliament of Bangladesh on 11 June 2009, the Minister of Finance, the Honourable Mr Abul Maal Abdul Muhith, recommended the development of export capacity in the pharmaceutical sector as a priority for the economic development of Bangladesh, and this may reduce local availability in the long run.

SWAp

SWAp was introduced in 1998 within the framework of the Health and Population Sector Programme. Although vertical programmes had been successful in reducing overall morbidity, mortality and the total fertility rate, by the late 1990s, it was apparent that duplications and overlap were wasting resources. The SWAp replaced more than 120 separate partner-funded development health projects with 25 integrated annual operational plans, each of them a cost centre whose resources are managed by a single-line director. It is claimed that the SWAp has reduced duplication and financial waste in the health sector and has

simplified the process of programme development and implementation. It was carried through the subsequent Health, Nutrition and Population Sector Programme, from 2003 to 2010. The Programme, in place at the time of writing, was extended until 2011 and a new plan called the Health Population Sector Development Programme was under development.

The SWAp is facilitated by the World Bank and the core donor group includes the Governments of Canada, Germany, Japan, the Netherlands, Sweden, the United Kingdom and the United States, as well as the European Union, the Global Fund, GAVI, United Nations Population Fund and UNICEF.

■ **Health workers and service delivery at the community level**

Strong political commitment has led to investments in human resources and in their innovative use in delivering services, particularly at community and household levels in rural areas, which have made significant contributions to the country's progress in improving population and health outcomes. First of all, household visits by health assistants and family welfare assistants, the public sector's frontline health personnel, have been instrumental in achieving success in health and family planning programmes. Second, alongside the government's drive to increase personnel, NGO participation has been remarkable, training thousands of community health workers and deploying them in rural areas to carry out home visits and raise awareness about good health practices. The large NGOs that deliver health care in Bangladesh began during and in the immediate aftermath of the War of Liberation in the early 1970s, and soon flourished. Third, the many informal providers^c found in almost every community in Bangladesh have also played an important role. These three distinct groups are described below.

Health assistants and family welfare assistants

Health assistants and family welfare assistants have been particularly instrumental in achieving health improvements in Bangladesh. In the 1960s and early 1970s, there were male smallpox vaccinators and malaria control workers in the

^c Informal providers (also referred to as unlicensed or unqualified practitioners) are predominantly allopathic practitioners such as village doctors and drug sellers, and less commonly, non-allopathic providers such as homeopaths, kabiraj and others. Some of these providers may have received training, but this is not a requirement for them to set up practice; they are not licensed or regulated by public sector authorities.

country. In the mid-1970s, when these two vertical programmes ended, the male field workers were reassigned to the position of health assistants, demonstrating the government's efforts to promote continuity and retain human resources.

In 1976, as part of the new policy to advocate family planning, 13 500 young married women were trained as family welfare assistants, and each was assigned to a population of approximately 5000 people in a rural area. Every two months, these female government employees visited the homes of married women of reproductive age in rural areas, achieving almost universal coverage. Services provided included a wide range of contraceptive methods and education. This was backed by new drug and supply distribution systems and family planning clinics in rural areas, which later started to provide integrated maternal and child health services. Family welfare assistants distributed birth control pills and condoms free of charge and provided information. The initial focus concentrated on birth spacing, but later the family planning programme developed into a comprehensive maternal and child health service aimed to reduce maternal and child mortality. It supplemented the major child and maternal health interventions of the health directorate at that time. Its use of the mass media for education and attitude change was replicated in other countries, such as Kenya and Brazil.

Many misconceptions about family planning, childbirth and maternal death have been eliminated from rural society. Nowadays, even "would-be brides" come to us and say they will get married soon, what contraceptive would suit them best? Previously, we did not find such interest in family planning. This change of mindset didn't occur overnight. Sustained campaigning at the doorstep by FWAs, coupled with satellite clinics and facility-based back-up, has resulted in such positive motivation.

Family Welfare Assistant (FWA)

In 1996, the government recruited 4500 women to fill vacancies as health assistants. During home visits, the health assistants carry out health promotion and disease prevention activities, including early detection and reporting of infectious diseases; birth/death registration; distribution of oral rehydration solution (ORS), vitamin A capsules and the supply of medicines for selected diseases; health education campaigns, including motivating men to use condoms and informing them about vasectomy; immunization via Extended Programme of Immunization outreach; and the organization of medical teams during natural disasters. They also make referrals when deemed necessary. The health assistants are assigned to a cluster of 6000 people in the community and they make home visits every two months.

We clearly inform them about dos and don'ts during pregnancy, delivery and the postnatal period, through one-to-one contact or group discussion at their courtyard. We treat minor ailments, vaccinate all babies and women, educate and motivate them on health, hygiene and family planning and refer them to the health complex when required. The community is very familiar to us as we were born and grew up here.

Health Assistant

Health assistants are recruited by the Directorate General of Health Services, while family welfare assistants are recruited by the Directorate General of Family Planning. Both receive basic training followed by periodic refresher courses and in-service training. The minimum qualification for health assistants and family welfare assistants is a secondary school certificate⁴². At present, there are 21 000 health assistants, supervised by 4250 assistant health inspectors, and 23 500 family welfare assistants, supervised by 4500 family planning inspectors.

The wide reach and popularity of the family welfare assistant programme can be explained by its emphasis on home-based contact, which is in response to the restricted mobility of women due to cultural and geographical factors. Most importantly, it rejected coercive approaches and responded to real needs at the time that the programme was conceived⁴³. Family planning efforts continue today, involving health assistants and family welfare assistants, who have broadened their scope to include many different aspects of preventive and, in some cases, curative health care.

It is primarily due to our regular home visits over the years that enabled married women of reproductive age to become aware and users of modern contraceptive methods, safe delivery practices, child health care and safe abortion services as well. Nowadays they often call us over cell phones and seek advice when they need it. This old-time familiarity and intimacy of FWAs with households has greatly contributed to the reduction of maternal and children's diseases, death and fertility.

Family Welfare Assistant

Although family welfare assistants, who provide predominantly family planning services, and health assistants, trained to perform a broader range of tasks, may operate in the same geographical area and together in the community clinics, there is little duplication of services, as they cater to the needs of different target groups.

Bangladesh Rural Advancement Committee and village health workers

In addition to government field workers, NGOs working in the health sector have developed different modalities for using community health workers which have also been extremely effective. Large NGOs have high levels of autonomy and flexibility, and they have been able to play an important role in improving health as well as in reaching populations that have been excluded because of isolation, stigma or lack of resources.

For example, the Bangladesh Rural Advancement Committee (BRAC; originally known as the Bangladesh Rehabilitation Assistance Committee) pioneered the community health volunteer cadre. BRAC was created immediately following the War of Liberation and initially worked on small-scale relief efforts with returning war refugees. By the end of 1972, BRAC had expanded its operation to focus on multisector programmes for the poor and landless, especially women. By the mid-1970s, BRAC's portfolio included microcredit, agriculture, fisheries, vocational training, adult literacy and health and family planning. It had also begun to set up community centres and village organizations to serve as activity hubs.

In 1979, with technical advice from the government and the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), BRAC launched its first large-scale nationwide health programme: the Oral Therapy Extension Programme to scale up use of ORS in order to combat the biggest killer of children, diarrhoeal disease. Over a ten-year period, 1200 BRAC employees went door to door in rural Bangladesh and taught 12 million mothers how to prepare and use the life-saving oral saline solution. ORS became popular in the community and BRAC's role in encouraging its use has been seen as a major factor in the significant reduction in infant and child mortality that has been documented. Bangladesh still has the highest ORS use rates in the world. Lessons learned in scaling up were soon translated into youth education programmes and other health programmes.

Since 2006, BRAC has been using trained birth attendants, health workers and volunteers to deliver maternal, neonatal and child health care in urban slums. A newly recruited cadre was created, fully trained and paid for by BRAC, without drawing on public facilities and, thus, did not weaken capacity in the public sector.

Today, BRAC's areas of work include a handicraft business, a dairy and food company, information technology, legal services for the poor, disaster relief services, non-formal primary education, and a university. In collaboration with

the government, BRAC delivers directly observed treatment, short-course (DOTS) for tuberculosis. BRAC's 64 000 village health workers touch the lives of more than 110 million people. As the largest NGO in the world, it has more than 120 000 employees, who work in 14 countries, including Afghanistan, Pakistan, the Sudan and Uganda^{44,45}.

Informal providers

Unlicensed informal practitioners of modern medicine have also played a role in the country's health gains. In addition to selling medicines at affordable rates, they diagnose and treat patients, including children and women, and they provide health education. Although there is no evidence of their effectiveness in providing health services or the value of training them⁴⁶, they must be included in any analysis because they provide more health care services than any other cadre of health worker in the country (see Box 3.2). More than 63% of children are cared for by unlicensed providers^{26,32}. Informal providers believe that they make good quality, reliable medicines available in rural areas.

Besides treating patients, we sell good quality, low-cost antibiotics and other allopath medicines at our chamber cum shop. Medical representatives of various pharmaceutical companies visit us regularly and keep us updated on the use of their products. We've made these modern medicines available to the villagers. Our clients do not need to go far away to buy such medicines. People do rely on our consultation and medicines for they are experienced with our practice for quite a long period of time.

A village doctor in a focus group discussion

During the early 1980s, the national government provided a one-year basic curative training course to approximately 16 000 village doctors, following the Chinese model of the "barefoot doctor". Although this programme did not last beyond 1982, many of its graduates are still working as local practitioners^{42,46}. Oversight is sketchy and the effectiveness of investing in the training of informal providers has not been rigorously evaluated; however, their presence in everyday rural life and the access they provide to medical advice and low cost antibiotics and other pharmaceuticals may have played a role in the reduction of childhood mortality and other diseases such as rheumatic heart disease^{27,47,48}.

In sum, novel approaches to human resources and service delivery have been associated with notable health advances in Bangladesh between 1980 and 2010. Low cost technologies and proven interventions are also credited with playing a large role in explaining these gains. Their role is described in more detail in the next section.

■ What else has Bangladesh done to improve health?

This section addresses the steps that Bangladesh has taken to adopt low cost technologies and adapt proven interventions to the local context. It starts by recognizing the role of grassroots innovation and development and moves on to programmes that have been successfully implemented, such as the Expanded Programme on Immunization, and others that aim to succeed in high-need areas, such as maternal health.

A global leader in developing low cost medical technologies

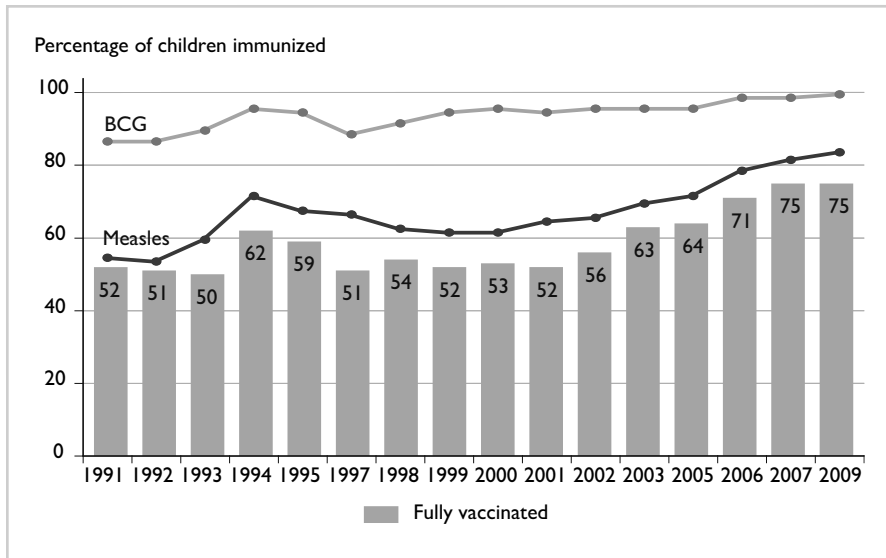
With a history going back before the War of Liberation, ICDDR,B has become a global leader in population and health research, with a worldwide reputation for developing innovative low cost technologies that have led to improvements in health. ICDDR,B is perhaps best known for its groundbreaking work on ORS, for the treatment of cholera, and for hosting the oldest demographic surveillance sites in a developing country. Zinc for the treatment of childhood diarrhoea is another example of a local innovation that was developed and scaled up in Bangladesh and is now being used in many other developing countries. Delivery kits, *Pustipack* (food supplementation packages), tetanus vaccination for pregnant women, and iodized salt are other important low cost interventions that have spread throughout Bangladesh and to other developing countries. Other innovations, such as a low cost mat that can be used during home deliveries to measure postpartum haemorrhaging, are currently being developed by ICDDR,B.

Implementing proven programme interventions

Long before the emergence of contemporary global health initiatives, the government, the health sector and the population of Bangladesh placed strong emphasis on the importance of childhood immunization as a key mechanism for reducing childhood mortality. The Expanded Programme on Immunization in Bangladesh is considered to be a health system success because of its remarkable progress over the last 20 years. It provides almost universal access to vaccination services, as measured by the percentage of children under 1 year of age who receive BCG (a vaccine against tuberculosis). This increased from 2% in 1985 to 99% in 2009. Coverage for other vaccines has also improved substantially (Figure 3.6).

Although 75% of children aged 12 months nationwide are fully immunized, coverage remains low in some areas¹⁸. In 22 rural subdistricts, most of which are difficult to access, full immunization coverage ranges between 44% and 64%³².

Figure 3.6 National vaccination coverage by age 12 months among 12- to 23-month-old children from 1991 to 2009



Source: Adapted from reference 18.

Among children living in urban slums, coverage is only 45%^{49,50}. The MoHFW, UNICEF and other agencies are actively working to address the needs of these children in hard-to-reach areas.

The Integrated Management of Childhood Illness (IMCI) strategy is also a factor in the country's health gains. Introduced in Bangladesh in 2001, it focuses on effective treatment of diarrhoea, pneumonia, malaria, measles and malnutrition as a means of reducing under-5 mortality. By the end of 2008, 304 out of 508 *upazilas* had implemented IMCI and almost 94% of the health workers in these facilities had been trained in IMCI in the intervention areas where health system support was generally available. A study by Arefin and colleagues has revealed that implementation of IMCI led to improved health worker skills, health system support, and family and community practices, translating into increased care seeking for illnesses from appropriate health care providers. In the IMCI areas, care seeking for sick children from trained providers improved threefold, from about 8% in 2000 to 24% by mid-2007. In IMCI areas, more children under 6 months of age were exclusively breastfed and the prevalence of stunting in children aged 24–59 months decreased more rapidly than in non-IMCI areas. However, the study also found that IMCI implementation had no effect on mortality within the timeframe of the assessment⁵¹.

Piloting initiatives to improve maternal health outcomes

In recent years, the MoHFW has been investing in training skilled birth attendants and posting them to rural areas as a means of improving maternal health. Since the 1990s, doctors, nurses and paramedics have been trained as part of comprehensive emergency obstetric care available at district and subdistrict levels, and basic emergency obstetric care available at most *upazila* health complexes³². However, this led to a massive growth of the private sector, with providers either engaging in dual practice or leaving the public sector to run their own private maternity hospitals. The majority of births in Bangladesh still occur at home and most facility-based deliveries take place in the private sector. Between 2004 and 2007, the percentage of live births in public facilities remained at 6.1% and 7.1%, respectively, while the percentage of live births in private health facilities increased from 3.2% to 7.6% during the same time period. Skilled birth attendance remains low, at 18%, and the number of trained attendants at home-based deliveries has held steady at around 4% between 1996 and 2007³².

Overall, however, more women have access to emergency obstetric care. Nevertheless, 68% of caesarean sections (a proxy indicator of women's access to skilled care for complicated deliveries) take place in the private sector³¹. The delivery rate of caesarean sections for the poorest two quintiles is under 2%, so clearly there is unmet need for emergency obstetric care. It should be noted that achieving better outcomes may have been hampered by poor quality of services; a study that audited 191 comprehensive emergency obstetric care facilities found that one third of facilities were unable to manage complications of labour because there were no available qualified providers (obstetricians and anaesthetists)⁵².

More research is needed to understand why women do not make use of public sector facilities for normal deliveries³². There are indications that the main reasons are cultural preferences and the tradition of delivering at home, often with the help of a local or traditional health worker familiar to the family. However, cost may play an important role, especially for the poorest groups. The government has recently responded with a series of innovative policies seeking to reduce home delivery rates. In an effort to create incentives for behaviour change, a major initiative to reduce maternal mortality is currently underway. This is the maternal voucher scheme, pilot tested in 33 *upazilas* since 2007²³, which offers a set of services to encourage use of antenatal, safe-delivery and postnatal care, as well as a cash incentive for skilled birth attendance. The vouchers can be used with multilevel providers in the public sector and at approved organizations in the non-state sector. Provider incentives include a half face

value of the coupon for public providers (with the other half retained for facility improvement) and full-value reimbursement for non-state providers, with the intention of encouraging facility births. The higher rate of reimbursement for caesarean sections than for normal deliveries has, predictably, led to an increase in the provision of this service. Although there has not yet been an impact evaluation of the voucher scheme on maternal mortality, it has been enthusiastically received by health providers (including health assistants) and by beneficiaries⁵³.

■ **Role of factors outside the health system in explaining health gains**

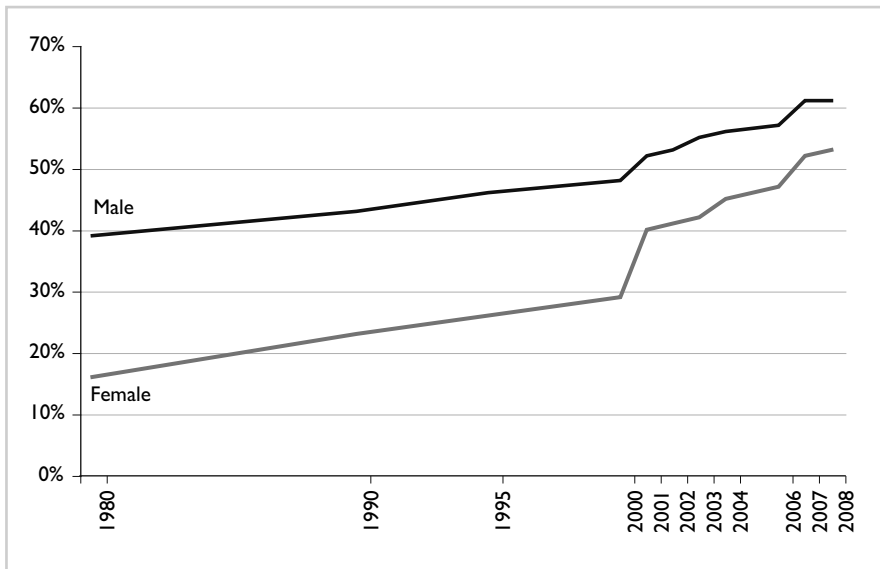
Broader poverty reduction initiatives have positively impacted on life expectancy and child mortality in Bangladesh. For example, participation in microcredit programmes has been associated with better child survival^{54,55}. The expansion of roads and electricity has facilitated the country's huge improvement in childhood immunization, particularly measles control. This section elaborates on three factors outside the health system that are deemed to have had the most significant impact on health gains to date: education, women's empowerment and disaster preparedness.

Education

One non-health system factor – better education – seems to have a direct relationship with health, earning potential and the ability of individuals and families to deal with the consequences of complex health conditions⁵⁶. Bangladesh increased its net primary education enrolment from 74% in 1991 to 87% in 2005. A larger percentage of girls and women aged 15–19 have completed primary education (77.9%) than men and boys (68.6%) in the same age group.

Literacy rates for men increased from 38.9% in 1980 to 61% in 2008, and for women from 15% in 1980 to 54% in 2008 (Figure 3.7). Although the improvement is significant, especially for women, literacy in Bangladesh remains much lower than in other south Asian countries, including India, Nepal and Pakistan⁵⁸. In addition, there is disparity between urban and rural literacy: the rural combined rate for men and women is 46.4%, versus 56.9% for urban areas.

A mass education campaign beginning in the mid-1980s aimed to enroll all girls in primary schools. It is believed to have contributed to women's empowerment as well as to higher literacy rates, contributing to the uptake and success of

Figure 3.7 Adult literacy rate

Sources: References 21 and 57.

microcredit programmes. BRAC has been instrumental in the provision of education, especially to girls, and they can also attend government-run primary and secondary schools for free, where they also receive textbooks and a stipend. All the people interviewed agreed that these efforts have encouraged parents to send their daughters to school.

Women's empowerment

Women's empowerment, a major agenda item for the past three decades in Bangladesh, is believed to have had a positive impact on health. Many studies describe the positive associations between work, marriage and education³⁶ and the contribution of work to maternal and child health in Bangladesh. Women who work are more likely to use contraception and are more likely to seek health services for their children⁵⁹.

In the context of growing international and national advocacy for equal rights and opportunities for women, in 1978 the Government of Bangladesh established the Ministry of Women and Children Affairs (MoWCA). The Ministry has been actively engaged in promoting quotas for women in the civil service, the police and defence forces and other services, and provisions have been made for reserved seats for women in the national parliament⁶⁰. The MoWCA works in

partnership with the MoHFW, Ministries of Home Affairs, Law and Social Welfare and many NGOs on a number of collaborative programmes. For example, the MoWCA, together with the MoHFW and the Ministry of Home Affairs, has created and operates crisis management centres in larger hospitals that provide medical and legal support to women who are victims of rape, acid burns and other violent acts. The enactment of a law to severely punish those who throw acid at women has been credited with a dramatic reduction in this once common heinous act. However, a 2007 World Bank paper reported that Bangladesh had the second highest incidence of violence against women in the world and that such violent acts were widely accepted: 50% of women interviewed thought that it was a husband's right to beat his wife; 85% felt that it was his right to hit his wife if she was disobedient⁶¹.

The changing employment and social status of women has influenced their position within families and has contributed to lower fertility and better access to key services. Cultural traditions and preferences (for example, for large families) have changed in line with a shift from agriculture and exposure to mass media. For example, women have been further empowered outside of their homes through employment in the garment industry and through the opportunity to access microcredit. However, each of these major societal changes has yet to fully empower women or impact decisively on health outcomes or on health care decision-making for all women⁵⁴.

Many women living in rural villages are still not making health-related decisions for themselves or for their families. Only 33% of currently married women decide independently on daily household purchases, and only 8–19% make independent decisions on matters such as major household purchases (8.5%), their own health care (13.8%) or a child's health care (18.8%)³². Despite these alarming statistics, grassroots organizations postulate that improvements are occurring and that the long-term impact of women's economic and social empowerment may only be seen 10 to 20 years from now.

Women's empowerment – through education and income-generating activities, improved communication and connectivity (for example, mobile phones), involvement in microcredit programmes, older age at marriage, exposure to media and so on – is seen as essential for reducing the number of maternal deaths. However, cultural norms continue to serve as speed bumps on the road to progress, including the traditional preference to deliver at home, the slow growth of women's decision-making for health care, and women's general inability to determine the use of funds within the household.

Disaster preparedness

Bangladesh's geography and climate make it especially susceptible to natural disasters, with profound consequences for health. Droughts, cyclones and floods present a seemingly endless cycle of challenges. Yet, since the 1980s Bangladesh has become a global example of successful disaster preparedness and response. The building of storm shelters, embankments and barricades, preparing the population to respond, and establishing effective procedures for early warning and coordination of responses have served to mitigate the impact of the unavoidable.

This can be illustrated by comparing Bangladesh's relative success in saving lives after Cyclone Sidr in November 2007 with the devastation (more than 138 000 deaths) and delays in distributing aid in neighbouring Myanmar after Cyclone Nargis in May 2008.

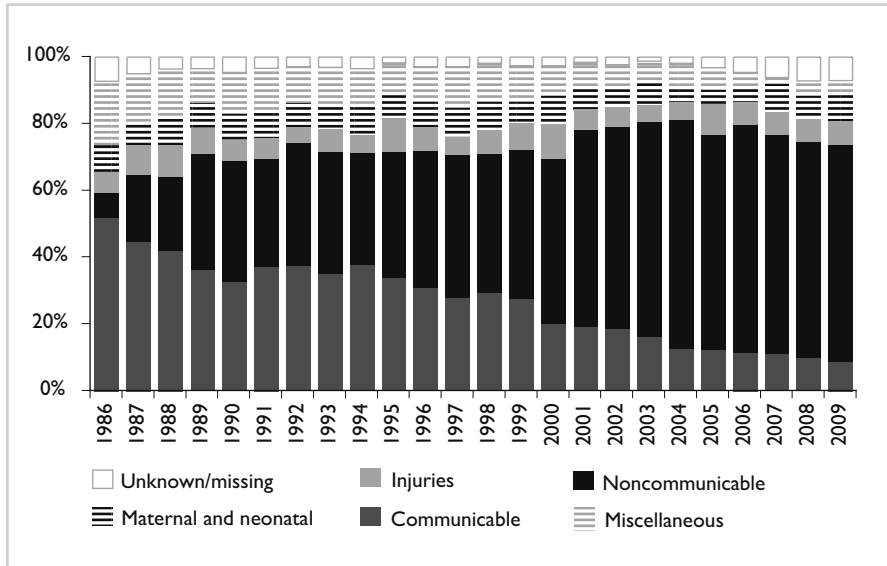
Disaster preparedness is an example of the country's ability to coordinate plans and implement effective action, demonstrating good governance across many public sectors. This shows that incentives to coordinate plans and mount effective action have not been unique to the health sector, and reflect good governance across many public sectors.

■ Lessons learned and future challenges

This chapter describes how Bangladesh has made tremendous progress in improving population health since 1971, an achievement made all the more impressive because the country came into being as one of the poorest nations in the world.

Like many other low-income countries, Bangladesh is in the midst of a demographic and epidemiological transition. Notable successes have been achieved in reducing fertility, and improving access to vaccinations and other basic interventions, often delivered by NGOs. Yet while these programmes were effective responses to the formidable challenges of the past, some of them may have already run their course. New approaches that incorporate innovation while responding to cultural and socioeconomic realities must be developed in response to changing threats. This is because the population is ageing and approximately 51% of deaths are now due to noncommunicable diseases and other chronic health conditions¹⁸ (Figure 3.8). While efforts to lower maternal, newborn and child mortality need to continue in order to attain the health MDGs, the health system must expand further in order to meet the needs of the population, particularly the poor. At the moment, treatment for noncommunicable diseases

Figure 3.8 Causes of mortality in rural Bangladesh (Matlab), 1986–2009



Source: Adapted from Streatfield PK, personal communication, Matlab data.

in the public health system is neither free nor subsidized at the point of service, despite an increasing demand for care, especially among the poor (Streatfield PK, personal communication May 2011). The burden of noncommunicable diseases is likely to be both significant and costly in Bangladesh. The extent to which the government should cover the costs of treatment has major budgetary implications and needs to be debated.

Another concern is that even if Bangladesh achieves the MDG target for improving nutrition (MDG1), the prevalence of malnutrition will still be more than 33%, because the baseline was so high. Other challenges that Bangladesh must overcome are described in Box 3.4. In addition, access to employment, housing and basic services (such as safe drinking water and sanitation) by the poor in urban areas is a growing concern. Socioeconomic inequalities in health and access to basic services have yet to be adequately addressed by policy-makers⁶⁵.

In order to continue making improvements in the health of the population, the Government of Bangladesh must re-commit to relatively low cost and less complex interventions. Efforts to increase skilled birth attendance should continue to be scaled up. Hard-to-reach rural and urban slums should be

Box 3.4 Remaining and future challenges in Bangladesh

Skilled attendance at birth remains very low (18%), and the number of home births is very high (85.3%). Concomitantly, non-medically indicated caesarean sections are rising, driving up the cost of health care and potentially endangering the health of the mother and her baby.

More than 40% of children younger than 5 years of age are either underweight or stunted, or both³², and about 17% are wasted.

Injuries account for more than one third (38%) of all classifiable deaths among children between 1 and 17 years of age. The leading causes of injury-related death among children are drowning (59.3%), road traffic accidents (12.3%), animal bites (9.3%) and suicide (8.0%)⁶².

Approximately 20 million people in Bangladesh are exposed to excessive levels of arsenic in drinking water^{13,63}, which is associated with an increased risk of hypertension, diabetes and skin, lung, bladder and kidney cancers.

The leading causes of death are from noncommunicable diseases, especially heart disease and diabetes. However, the health system is not prepared to prevent, treat or manage these illnesses^{42,64}.

targeted for primary health care with an emphasis on proven successful interventions that currently are not equitably shared across the population, such as childhood immunization. Furthermore, because of the increasing role of the private sector in providing health services and medical products to the population, the government should develop new techniques to engage with and oversee quality, distribution and the effectiveness of this important player. However, this largely unregulated sector, while saving lives, may also encourage costly and unnecessary procedures, potentially driving poor households into further poverty. Caesarean sections, an important source of revenue for providers, have risen dramatically in recent years, reaching levels beyond medical need in subgroups of the population. This may be but one example of how perverse financial incentives in an unregulated private sector can drive up unnecessary health care costs, potentially endangering the health of the population¹⁹.

To address Bangladesh's most pressing health challenges, the government will need to apply the same principles that it has used so effectively at the community level in lowering the fertility rate, increasing life expectancy and reducing infant and child mortality. These principles are political commitment, working with the non-state sector and embracing innovative, low cost solutions.

Building on past success in areas such as family planning, child mortality and immunization, with an eye on efforts by neighbours in India and Thailand, key players within Bangladesh see universal coverage as an attainable goal for continuing to achieve ‘good health at low cost’.

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