

# HEALTH SECURITY CHALLENGES IN SRI LANKA AND BANGLADESH

By Amal Jayawardane and Abbas Bhuiya



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THE NATIONAL BUREAU *of* ASIAN RESEARCH

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# Emerging Health Challenges for Sri Lanka in the New Millennium

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## EXECUTIVE SUMMARY

This essay examines the most significant health security challenges that will likely emerge in Sri Lanka in the next few decades.

### MAIN FINDINGS

- Sri Lanka has achieved a number of noteworthy successes in the area of health security. Infant mortality and fertility rates have dramatically declined, and life expectancy has increased considerably in the twentieth century.
- A demographic transition is underway in Sri Lanka as the relative proportion of the population over 60 years old is rapidly increasing. This trend presents new health security challenges because the elderly require specific medical treatment and care facilities.
- Non-communicable diseases have surpassed communicable diseases as the leading cause of death in Sri Lanka. Changes in consumption and lifestyle have increased the incidence of cardiovascular disease, diabetes, kidney disease, and cancer.
- Communicable diseases like dengue fever, HIV/AIDS, and tuberculosis, as well as the possibility of a flu epidemic, still pose significant health security challenges for Sri Lanka. Even though the actual number of deaths by communicable diseases is relatively small, the infectious nature of these diseases is cause for public concern.

### POLICY IMPLICATIONS

- Sri Lanka's rapidly changing demographics will present major health security challenges. The government must assume a greater role in healthcare because the traditional familial support system is no longer capable of adequately providing for the needs of the fast-growing elderly population.
- In order to combat the rising incidence of non-communicable diseases, Sri Lanka will need to enhance existing health infrastructure and effectively implement prevention programs.
- Unlike with non-communicable diseases, the Sri Lankan government comes under direct public criticism whenever there is an eruption of a communicable disease. Therefore, the government must be constantly prepared for potential outbreaks.
- Finding a peaceful political solution to the country's still-unresolved ethnic conflict will create the possibility of diverting a portion of defense expenditures to health and education.

Despite its low level of economic development, Sri Lanka has achieved a number of noteworthy successes in the area of health security, particularly in reducing mortality and fertility rates and increasing life expectancy. The country experienced a sharp decline in mortality during the second half of the twentieth century that was largely due to the eradication of malaria, highly subsidized health services, better sanitary conditions, and immunization campaigns. The crude death rate (CDR) declined from 19.8 per 1,000 people in 1946 to 6.0 in 2001. The infant mortality rate (IMR), which stood at 140.0 per 1,000 live births in 1946, dropped to 11.2 in 2003.<sup>1</sup> In fact, Sri Lanka is often cited internationally as a success story for its achievements in the areas of maternal and child health.<sup>2</sup> The country's total fertility rate (TFR) likewise declined from 4.1 live births per woman in the early 1970s to 2.1 by the mid-1990s, which was considered the replacement-level fertility rate for the country. Sri Lanka was the only country in the South Asian region to achieve such a low TFR before the dawn of the new century. The current trend in declining fertility is expected to continue in the future, dropping to below replacement level.<sup>3</sup> The life expectancy at birth has also considerably increased, and in 2006 stood at 68.4 years for males and 77.1 years for females (see **Table 1**). Among the countries in South Asia, Sri Lanka has the highest life expectancy, both at birth and at age 60.<sup>4</sup>

These achievements can be traced back to several key political initiatives and development programs. Universal franchise was introduced in 1931, and perhaps due to electoral considerations, politicians in Sri Lanka demonstrated a strong commitment to the expansion of health facilities throughout the country. Since 1950, the government has upheld a policy of providing universal health services free of charge at all government health institutions. With the introduction of universal free education in 1946, all segments of the population gained access to educational facilities. The literacy rate increased from 57.8% in 1946 to 87.2% in 1981; by the year 2001, the literacy rate for ages 15–24 had reached 95.6% (95.0% for males and 96.0% for females).<sup>5</sup> The expansion of free education and an overall high literacy rate helped officials communicate health-related information, even to rural areas.

During the twentieth century, the Sri Lankan government thus largely succeeded in the priority areas of the provision of maternal and child healthcare and the control of communicable diseases such as malaria. However, a new set of health security challenges have emerged, largely due to the demographic transition and changes in lifestyle. This essay examines three of the most significant health security challenges that Sri Lanka will face in coming decades: healthcare problems associated with an aging population, the increase of non-communicable diseases, and outbreaks of new communicable diseases.

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<sup>1</sup> K.A.P. Siddhisena, "Ageing Population in Sri Lanka and Its Policy Implications," in *ICPD—“15 Years On” Sri Lanka: A Review of Progress by 12 Sri Lankan Scholars and Practitioners*, ed. Bradman Weerakoon (Colombo: Family Planning Association of Sri Lanka, 2009), 61.

<sup>2</sup> See Amala de Silva, "Overview of the Health Sector," in *Economic Policy in Sri Lanka: Issues and Debates*, ed. Saman Kelegama (New Delhi: Sage Publications India, 2004), 426–28.

<sup>3</sup> W. Indralal De Silva, "Family Transition in South Asia: Provision of Special Services and Social Protection," *Asia-Pacific Population Journal* 20, no. 2 (2005): 18; and W. Indralal De Silva, *A Population Projection of Sri Lanka for the New Millennium, 2001–2101* (Colombo: Institute for Health Policy, 2007), 11–13.

<sup>4</sup> W. Indralal De Silva, *Construction and Analysis of National and District Life Tables of Sri Lanka, 2000–2002* (Colombo: Ministry of Healthcare and Nutrition, 2008), 24.

<sup>5</sup> "Sri Lanka: National Health System Profile—January 2005," World Health Organization (WHO), Regional Office for South-East Asia, 2005, 6, [http://www.searo.who.int/LinkFiles/Sri\\_lanka\\_CountryHealthSystemProfile-SriLanka-Jan2005.pdf](http://www.searo.who.int/LinkFiles/Sri_lanka_CountryHealthSystemProfile-SriLanka-Jan2005.pdf).



TABLE 1 Life expectancy in Sri Lanka

	Male (at birth)	Female (at birth)	Male (at age 60)	Female (at age 60)
1920–22	32.7	30.7	11.5	10.6
1944–47	46.8	44.7	14.3	14.5
1952	57.6	55.5	16.0	14.9
1962–64	63.3	63.7	16.6	17.0
1970–72	64.0	66.9	16.6	17.8
1980–82	67.7	72.1	18.0	20.0
2000–2	68.1	76.6	17.2	21.3
2006	68.4	77.1	17.3	21.5
2011 (est.)	68.8	77.6	17.5	21.8

SOURCE: W. Indralal De Silva, *Construction and Analysis of National and District Life Tables of Sri Lanka, 2000–2002* (Colombo: Ministry of Healthcare and Nutrition, 2008).

## The Demographic Transition and the Healthcare Problems of an Aging Population

Some notable changes have occurred in the age and sex structure of the Sri Lankan population due to the decline in fertility and the increase in life expectancy. A population is said to be aging when there is a significant increase in the relative proportion of the population that is elderly (60 years or older). This is a concern for most South Asian countries, especially Sri Lanka, which has the fastest-aging population in the region. The country's total population, estimated at 19.7 million in 2006, is expected to rise to 21.9 million by 2031.<sup>6</sup> Yet even though Sri Lanka's population growth will be modest, the elderly population is expected to double from 1.7 million in the 2001 census to 3.6 million by 2021. According to W. Indralal De Silva's projections, the elderly population will increase from 9.2% of the total population in 2001 to 14.5% in 2016 and 24.8% by the year 2041 (see **Table 2**).<sup>7</sup> In other words, Sri Lanka is a rapidly aging society in which one out of every four persons will be considered elderly by the end of the 2030s.

An additional change has been observed in the country's sex ratio (the number of men per 100 women). During the last quarter of the twentieth century, the sex ratio at older age was male-favored; however, this pattern changed toward the end of the century. The sex ratio declined from 113 males per 100 females in 1981, to 96 males in 1994 and 89 males in 2001.<sup>8</sup> Presently, women constitute the majority of the elderly population.

These trends will have enormous implications for the state as well as for society in terms of providing for the healthcare needs of the elderly. In the past, there was no pressure to treat the

<sup>6</sup> De Silva, *Population Projection of Sri Lanka*, 45.

<sup>7</sup> *Ibid.*, 42.

<sup>8</sup> Siddhisena, "Ageing Population in Sri Lanka," 61.



TABLE 2 Projections of children, working-age adults, and elderly in Sri Lanka (2001–51)

	Children (<15 years old)		Working-age adults (15–59 years old)		Elderly (60+ years old)	
	population	% of total population	population	% of total population	population	% of total population
2001	4,922	26.3	12,080	64.5	1,731	9.2
2006	4,807	24.4	12,836	65.1	2,075	10.5
2011	4,692	22.8	13,294	64.7	2,570	12.5
2016	4,524	21.4	13,591	64.2	3,070	14.5
2021	4,196	19.4	13,778	63.8	3,605	16.7
2026	3,825	17.5	13,863	63.6	4,115	18.9
2031	3,520	16.1	13,826	63.2	4,536	20.7
2036	3,363	15.4	13,589	62.3	4,888	22.4
2041	3,299	15.2	13,026	60.0	5,386	24.8
2046	3,245	15.1	12,389	57.7	5,831	27.2
2051	3,149	14.9	11,874	56.2	6,080	28.8

SOURCE: W. Indralal De Silva, *A Population Projection of Sri Lanka for the New Millennium, 2001–2101* (Colombo: Institute for Health Policy, 2007), 42.

elderly population as a vulnerable group deserving special attention. This age group was not a very large segment of the population, and most elderly persons were looked after by family members at home. In a traditional society like Sri Lanka, the family is believed to have a moral responsibility to take care of its elderly members. However, given the country’s rapidly growing elderly population, the traditional family support system is no longer capable of satisfying these healthcare needs. The demographic transition has had an impact on the composition of the family unit and the level of family support for the elderly. The average household size has become smaller, with fewer children to care for the elderly. This problem has been further aggravated by urbanization, migration, and an increase in the number of women obtaining employment away from home.<sup>9</sup> Therefore, the traditional, home-based family care system has eroded considerably.

In addition, the increasing elderly population will have to be dependent on a gradually decreasing working-age population (those aged 15–59). The old-age dependency ratio in Sri Lanka, which in 2006 was estimated at around 16.2 persons for every 100 working-age persons, is expected to increase to 29.7 in 2026 and 36.0 by the year 2036.<sup>10</sup>

Elderly people require medical treatment for various health complications, including cardiovascular diseases, neurological and rheumatic diseases, and cancer, that demand costly diagnostic equipment and long-term hospitalization, treatment, and rehabilitation. The level of disability also increases

<sup>9</sup> De Silva, “Family Transition in South Asia,” 30.

<sup>10</sup> De Silva, *Population Projection of Sri Lanka*, 49; and Siddhisena, “Ageing Population in Sri Lanka,” 60.

with age. One study found that disability rates have increased dramatically among the elderly in Sri Lanka, doubling from 99.1 per 10,000 in 1981 to 199.1 per 10,000 in 2001. This trend poses new challenges for the Sri Lankan healthcare system because there is a shortage of professionals with special training in geriatric healthcare. Furthermore, the overall disability rate of the elderly is higher among females—who, as discussed above, now constitute a majority of the elderly population—than among males.<sup>11</sup>

Currently the number of healthcare professionals in Sri Lanka is inadequate, especially to meet the needs of the growing population of elderly people. With the liberalization of the economy in 1977, the private health sector received a major impetus. By the end of 2008, the number of institutions registered with the Private Health Services Regulatory Council stood at 220.<sup>12</sup> Yet although private hospitals are playing an increasingly important role in providing healthcare, they still lag behind government hospitals. In 2008, private hospitals were able to treat only about 10%–15% of inpatients. These were mostly middle-class people who could afford to receive inpatient treatment at private hospitals, as charges are very high. The private sector provides mainly curative care, which constitutes about 60% of outpatient services.<sup>13</sup>

The majority of the elderly live in rural areas and do not have adequate income to sustain themselves in their old age. A sizable percentage of the population is employed in the agricultural and non-formal sectors and lacks retirement benefits, such as a pension through the Employees' Provident Fund (EPF), the Public Service Provident Fund (PSPF), or the Employees' Trust Fund. The number of elderly people who have contributed to retirement programs covering farmers, fishermen, and other self-employed persons is also limited.<sup>14</sup> Because these groups are more vulnerable in their old age, the need for social protection such as through a universal pension scheme is growing. The introduction of such a program would no doubt strain the national budget inasmuch as the government would have to use general revenue streams to finance it. However, when the elderly become a substantial segment of the voting population, electoral considerations will compel the government to be more sensitive to this group's needs.

The trends discussed above clearly indicate that the elderly and their families are not in a position to handle the health costs associated with aging. As such, the state must play a bigger role in providing geriatric healthcare, which will be a major challenge for a developing country like Sri Lanka.

## The Increase of Non-Communicable Diseases

Unlike in the areas of maternal and child health, Sri Lanka has not performed well in managing non-communicable diseases (NCD). NCDs, such as cardiovascular disorders, diabetes, kidney disease, cancer, and mental illness, have rapidly increased over the last two decades and surpassed communicable diseases as the leading cause of death in the country. Chronic NCDs accounted for 71% of all deaths in Sri Lanka in 2001, whereas only 18% of deaths were due to injuries and 11% to communicable diseases or maternal and prenatal conditions. Analysis of age-standardized data for 1991–2001 shows that chronic NCD mortality is 20%–30% higher in Sri Lanka than in many developed

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<sup>11</sup> W. Indralal De Silva, W.P. Amarabandu, and H.R. Gunasekera, *Disability amongst the Elderly in Sri Lanka* (Colombo: Institute for Health Policy, 2008), 6.

<sup>12</sup> Central Bank of Sri Lanka, *Annual Report* (Colombo: Central Bank of Sri Lanka, 2009), 70.

<sup>13</sup> Central Bank of Sri Lanka, *Annual Report* (Colombo: Central Bank of Sri Lanka, 2008), 74.

<sup>14</sup> Siddhisena, "Ageing Population in Sri Lanka," 62–63.

countries.<sup>15</sup> Likewise, during the period 1997–2007, the five leading causes of hospital deaths were ischemic (coronary) heart diseases, pulmonary heart diseases, diseases of the gastrointestinal tract, neoplasms, and cerebrovascular diseases.<sup>16</sup> Given the future demographic environment of Sri Lanka with its aging population, NCDs will continue to be the leading cause of death.

The prevalence of diabetes has also recently increased, especially in urban areas, with one in five adults now having prediabetes or diabetes.<sup>17</sup> This disease has affected all levels of the population, including the younger generation. Diet-related problems such as overweight and obesity are similarly on the increase. It is estimated that in 2025 diet-related factors, primarily saturated fat intake, will account for almost 40% of cardiovascular disease (CVD). The same study predicts that diabetes will contribute to approximately 29% of CVD cases and 18% of strokes, while obesity and excess weight will account for about 24% of diabetes cases and 27% of hypertension cases.<sup>18</sup>

Lifestyles have changed considerably in Sri Lanka, adding major risk factors for developing chronic NCDs. These risk factors include unhealthy dietary habits, job stress and tension, physical inactivity, smoking, and harmful alcohol use. The high-calorie, high-fat diet that was previously considered a luxury has now become common. The consumption of unhealthy foods that are high in salt, sugar, and saturated fat can be linked to the increase of CVD and stroke.

Sri Lanka's level of alcohol consumption is also partly responsible for the prevalence of NCDs. The per capita consumption of legally permitted brands increased from 1.80 liters in 1981 to 6.68 liters in 2001.<sup>19</sup> Moreover, poor people who cannot afford to pay the high prices of legal brands depend on illicit liquor, which causes many additional health hazards. Sri Lanka's per capita rate of alcohol consumption is significantly higher if illicit brands are included.

Excessive alcohol consumption not only increases the risk of CVD, cirrhosis, and accidental injury but also contributes to the aggravation of poverty. In fact, the poor are found to spend a higher percentage of their income on alcohol. A survey conducted in some districts in Sri Lanka found that the total expenditure on tobacco and alcohol exceeded the amount of government assistance given to the community under the poverty-alleviation program.<sup>20</sup> In addition, alcohol use creates many social problems such as domestic violence, child abuse and disruption of children's education, workplace absenteeism, and increased crime. The consumption of alcohol is also partly responsible for the high rate of road accidents in Sri Lanka.

In its National Health Master Plan for 2007–16, the government recognized the prevention and control of chronic NCDs as a priority issue. The Ministry of Healthcare has established a separate division to launch a comprehensive NCD program throughout Sri Lanka. The NCD division conducts programs using the existing health infrastructure so that these activities will be sustainable and have long-term effects.

One positive development in the campaign to lower NCDs is the decline in smoking among Sri Lankans over the past few years. In addition to heavily taxing the tobacco industry—about 8% of total state revenue comes from these taxes—the government has also implemented several tobacco-control

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<sup>15</sup> "The National Policy & Strategic Framework for Prevention and Control of Chronic Non-Communicable Diseases," Ministry of Healthcare and Nutrition, Sri Lanka, 2009, 3.

<sup>16</sup> "Annual Health Statistics," Ministry of Health, Sri Lanka, 2006, 37.

<sup>17</sup> *Ibid.*, 4.

<sup>18</sup> "Case Study for Sri Lanka," *Food and Nutrition Bulletin* 22, no.4 (supplement) (2001), 44.

<sup>19</sup> "Sri Lanka: National Health System Profile," 8.

<sup>20</sup> See the country profile on Sri Lanka in the WHO's *Global Status Report on Alcohol 2004* (Geneva: WHO, 2004); and Harendra de Silva and Eshani Kalpage, *An Islandwide Study on Alcohol Use in Sri Lanka* (Colombo: Gunaratne, 2008), 10.

policies. Sri Lanka was the first country in Asia to ratify the World Health Organization (WHO) Framework Convention on Tobacco Control in 2003, and in December 2006 the government enacted the National Authority on Tobacco and Alcohol Act. This act also includes a ban on smoking in public places such as government offices, public transportation, shopping complexes, restaurants, and hotels, as well as a ban on tobacco product promotions. Due to this anti-tobacco campaign, sales of tobacco products have dropped, while government revenue has increased because of the heavy taxes.

## Communicable Diseases

Even though NCDs are now the leading cause of death in Sri Lanka, communicable diseases remain a health burden. Thus, the government has to shoulder a “double burden” in dealing with the country’s healthcare needs. Even though the actual number of deaths caused by communicable diseases is relatively small, the infectious nature of these diseases is cause for public concern, with a large number of patients seeking treatment at hospitals. Unlike in the case of NCDs, it is the government that comes directly under public scrutiny whenever there is an eruption of a communicable disease. Therefore, the government has to be constantly prepared for a potential outbreak.

Dengue fever is a communicable disease that causes significant concern in Sri Lanka. It was first reported in the country in 1965, and since then there have been several outbreaks at regular intervals. In 2004, there were 16,101 suspected cases, although the final death toll was only 88. The number of cases reported was 11,963, with 47 deaths, in 2006<sup>21</sup> and dropped to 6,430, with 24 deaths, in 2008. In 2009, however, there was a sudden spread of the disease, causing 32,442 reported cases and claiming 3,100 lives.<sup>22</sup>

Other communicable diseases of concern include HIV/AIDS, tuberculosis (TB), diarrheal diseases, and malaria. Although the prevalence of HIV/AIDS in Sri Lanka is considered low, the potential exists for it to spread with the increasing number of sex workers and overseas migrants. TB continues to be a serious public health problem; about 9,000 new cases of TB are reported every year, of which around 60% are cases of smear-positive pulmonary TB.<sup>23</sup> Diarrheal diseases will also continue to be a formidable health problem in the country. The government has been able to control malaria to a great extent; however, eradication efforts must continue to prevent the disease from reaching epidemic proportions.

Besides already-existing communicable diseases, Sri Lanka is also affected by global epidemics that occur from time to time. The most recent one involved H1N1 influenza, also known as swine flu. Influenza A (H1N1) virus was first reported in Sri Lanka in June 2009, and by February 2010 some 642 cases had been reported, with 48 deaths.<sup>24</sup> Thus, the government needs to prepare a national pandemic response plan to deal with the many types of communicable diseases.

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<sup>21</sup> “Preparing to Tackle Emerging and Re-emerging Communicable Diseases in Sri Lanka,” WHO, Regional Office for South-East Asia, 2007.

<sup>22</sup> “Dengue Mosquito Has Its Way,” *Sunday Times* (Colombo), December 27, 2009.

<sup>23</sup> National Programme for Tuberculosis Control and Chest Diseases, <http://203.94.76.60/TBWeb/index.htm>.

<sup>24</sup> Ashwin Hemmathagama, “Sri Lanka: Government Confident Tackling Influenza A (H1N1) Pandemic,” *Asian Tribune*, January 6, 2011, <http://www.asiantribune.com/news/2011/01/05/sri-lanka-government-confident-tackling-influenza-h1n1-pandemic>.

## Conclusion

By international standards, the ratio of Sri Lanka's national health expenditure to GDP has historically been low. The country's spending on health was below 2% of GDP during the second half of the twentieth century.<sup>25</sup> In the past, the government was able to manage health problems with a small budget because the priority areas were limited to the provision of maternal and child care and the eradication of communicable diseases. Meeting the needs of Sri Lanka's growing elderly population and those who suffer from NCDs presents additional challenges that will require a higher level of health expenditure from the state. In 2008 the total health budget was increased by 8.50% to 75 billion rupees; however, the government health expenditure still amounted to only 1.69% of GDP.<sup>26</sup> In fact, the total health expenditure as a percentage of GDP has been trending downward in recent years. In 2010, it was 1.32%, down from 1.48% in 2009, 1.69% in 2008, and 1.92% in 2007.<sup>27</sup>

A significant reason for this low level of health spending was the country's involvement in a protracted civil war that lasted for about three decades. In 2008, Sri Lanka's defense expenditure was 166.4 billion rupees (\$1.48 billion), which amounted to roughly 5% of the GDP. In the 2009 budget, the defense expenditure was further increased to 200 billion rupees (\$1.82 billion). The end of the separatist war in May 2009 has not yet resulted in any decrease in defense spending. According to the recent budget proposals, 230 billion rupees (\$2.1 billion) would be spent on defense in 2012, up from 215 billion rupees (\$1.92 billion) in 2011.<sup>28</sup> The country's defense secretary, Gotabhaya Rajapaksa, maintains that the government has been forced to keep the defense expenditure high in order to guard against the possible resumption of violence by Tamil separatists who are trying to regroup and re-emerge.<sup>29</sup> The defense expenditure today is much more than the entire allocation for social expenditure.

The war was also a burden on the healthcare system, as hospitals had to treat wounded soldiers as well as civilian victims of terrorist attacks. Although the war ended with the complete military defeat of the Liberation Tigers of Tamil Eelam (LTTE) in May 2009, it should be noted that the elimination of the LTTE will not necessarily bring peace and stability as long as the root causes of the ethnic conflict remain unresolved. Therefore, it is absolutely necessary to offer a political solution acceptable to the minority communities in the country. If peace prevails, there is at least a possibility of diverting part of the defense expenditure to other sectors such as health and education.

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<sup>25</sup> De Silva, "Overview of the Health Sector," 437.

<sup>26</sup> Central Bank of Sri Lanka, *Annual Report*, 2008, 73.

<sup>27</sup> Central Bank of Sri Lanka, *Annual Report* (Colombo: Central Bank of Sri Lanka, 2010), 71 and table 32.

<sup>28</sup> "Government to Raise the Defence Spending," Ada Derana, October 18, 2011, <http://www.adaderana.lk/news.php?nid=15436>.

<sup>29</sup> "Sri Lanka Is Still Under Threat—Warns Secretary Defence," Ministry of Defence and Urban Development, Sri Lanka, January 1, 2012, [http://www.defence.lk/new.asp?fname=20120111\\_01](http://www.defence.lk/new.asp?fname=20120111_01).



# Health Threats as Nontraditional Security Challenges for Bangladesh

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## EXECUTIVE SUMMARY

This essay discusses health problems that have the potential to emerge as nontraditional security challenges for Bangladesh in the coming decades.

### MAIN FINDINGS

- The health scenario of Bangladesh has improved in terms of increased life expectancy, immunization success, fertility rate reduction, and a reduced proportion of severe undernutrition among children.
- Maternal health is a notable health security concern because Bangladesh has one of the highest maternal mortality rates in Asia.
- There have been significant advancements in the prevention and treatment of communicable diseases in Bangladesh. However, influenza outbreaks and the increased prevalence of HIV/AIDS and tuberculosis have the potential to become health security challenges in the future.
- It is estimated that two-thirds of Bangladesh's groundwater is contaminated by arsenic. This poses a major health security challenge since many people still consume arsenic-contaminated water.
- Increased life expectancy is causing a demographic change as a larger percentage of the population is aging. Due to this trend, non-communicable diseases such as hypertension and diabetes will likely continue to rise.

### POLICY IMPLICATIONS

- Bangladesh needs effective programs to improve access to healthcare facilities and skilled delivery care.
- Awareness should be raised within communities, especially among the marginalized and the poor, about health challenges and effective measures for the prevention and management of emerging health threats.
- Policymakers in Bangladesh should mitigate the conditions favoring the emergence and spread of new infectious diseases by enacting measures to curb opportunities for transmission.
- The population's vulnerability to emerging health threats can be diminished through renewed public health efforts that involve social movements and collaborations on global health promotion.

In the coming decades, Bangladesh will face serious health security challenges due to the persistence and emergence of communicable and non-communicable diseases. Bangladesh is particularly vulnerable to nontraditional security threats to its health sector because of rapid population growth, pervasive poverty, poor environmental conditions, and climate change.

Bangladesh is a geographically small country with a huge population. The population density is 979 people per square kilometer. With a current annual growth rate of 1.39%,<sup>1</sup> the population is expected to increase to 172 million by 2020 and stabilize at 210 million by the year 2060, if replacement-level fertility is achieved, which has not yet been the case.<sup>2</sup> There is growing awareness of the demographic and epidemiological transitions that come with a higher life expectancy, as the adverse effects of increased population density threaten both social cohesion and environmental sustainability. Increased population pressure also leads to intense competition for limited resources, resulting in shortages of food and safe water supplies, soil exhaustion, deforestation, air and water pollution, and environmental instability, and affects other prerequisites for human well-being and survival.

This essay discusses the major health security challenges that Bangladesh will face in the coming decades. The first section examines the progress that has been made in Bangladesh's health scenario. In the second section, three communicable diseases are discussed with reference to emerging health security challenges. The third section examines current non-communicable disease (NCD) concerns in Bangladesh.

## Progress in Bangladesh's Health Scenario

Bangladesh has made significant progress in raising life expectancy over the past few decades, particularly among females and the poor.<sup>3</sup> A child born in Bangladesh today can expect to live 64 years on average,<sup>4</sup> nearly double the age of those born 55–60 years ago.<sup>5</sup> Apart from advancements in medicine, the gain in life expectancy, which has been increasing steadily since the mid-1980s, is an outcome of successful, large-scale public health and development programs such as immunization<sup>6</sup> and the management of diarrheal diseases—a major cause of childhood mortality—with a simple oral rehydration therapy.<sup>7</sup> Poverty alleviation and social development programs such as microfinance and female education have also contributed to increased life expectancy in Bangladesh.<sup>8</sup>

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<sup>1</sup> *Statistical Pocketbook of Bangladesh—2008* (Dhaka: Bangladesh Bureau of Statistics, 2008).

<sup>2</sup> These projections are based on population estimates by the Government of Bangladesh and the UN Development Programme (UNDP) in Bangladesh.

<sup>3</sup> Binayak Sen, Mustafa. K. Mujeri, and Quazi Shahabuddin, *Operationalizing Pro-Poor Growth: Bangladesh as a Case Study* (New York: World Bank, 2004); and Abbas Bhuiya, Mushtaque Chowdhury, Faruque Ahmed, and Alayne M. Adams, "Bangladesh: An Intervention Study of Factors Underlying Increasing Equity in Child Survival," in *Challenging Inequities in Health: From Ethics to Action*, ed. Timothy Evans, Margaret Whitehead, Finn Diderichsen, Abbas Bhuiya, and Meg Wirth (New York: Oxford University Press, 2001), 226–39.

<sup>4</sup> National Institute of Population, Research and Training (NIPORT), Mitra and Associates, and Macro International, *Bangladesh Demographic and Health Survey 2007* (Dhaka, 2009).

<sup>5</sup> UN Department of Economic and Social Affairs, *UN World Population Prospects: The 1996 Revision*, October 1996.

<sup>6</sup> Jeroen Van Ginneken, *Health and Demographic Surveillance in Matlab: Past, Present and Future* (Dhaka: International Centre for Diarrhoeal Disease Research, 1998); and Kanta Jamil, Abbas Bhuiya, Kim Streatfield, and Nitai Chakrabarty, "The Immunization Programme in Bangladesh: Impressive Gains in Coverage, but Gaps Remain," *Health Policy and Planning* 14, no. 1 (1999): 49–58.

<sup>7</sup> Stephen P. Luby, W. Abdullah Brooks, K. Zaman, Shahed Hossain, and Tahmeed Ahmed, "Infectious Diseases and Vaccine Sciences: Strategic Directions," *Journal of Health Population and Nutrition* 26, no. 3 (2008): 295–310; and A.M. Raza Chowdhury and Richard A. Cash, *A Simple Solution: Teaching Millions to Treat Diarrhoea at Home* (Ann Arbor: University of Michigan Press, 1996).

<sup>8</sup> A.M. Raza Chowdhury and Abbas Bhuiya, "The Wider Impacts of BRAC Poverty Alleviation Programme in Bangladesh," *Journal of International Development* 16, no. 3 (2004): 369–86.

The success of immunization in Bangladesh has been termed a near miracle. Whereas less than 2% of children were fully immunized against the six major vaccine-preventable diseases (tuberculosis, diphtheria, pertussis, tetanus, polio, and measles) in the late 1980s, over 60% of children were immunized during the early 1990s, and 82% in 2007.<sup>9</sup> The success has been attributed to the Expanded Programme on Immunization (EPI), which was launched in 1979 but intensified in 1986.<sup>10</sup> The commitment of the government, donor support, and the involvement of NGOs and civil society helped the program attain spectacular success within a very short period of time.<sup>11</sup> In particular, Bangladesh has made significant progress in the control of tuberculosis (TB), as reflected in the dramatic increase in the disease's detection rate, which rose from 21% in 1994 to 71% in 2006. The most significant improvements in identifying TB patients occurred between 2002 (34%) and 2006 (71%)—during this period the detection rate doubled.<sup>12</sup> Likewise, the success rate of treatment gradually and consistently increased from 73% in 1994 to 92% in 2006.<sup>13</sup>

The reduction in Bangladesh's total fertility rate has also been quite notable. In the early 1970s the fertility rate was 6.3 children per woman of reproductive age;<sup>14</sup> this figure had decreased to 2.7 children by 2006–7.<sup>15</sup> The state-run family planning program has been a success, with a contraceptive prevalence rate of 56% during 2000–2007—a sevenfold increase from 8% in the mid-1970s.<sup>16</sup>

By contrast, improvement in the nutrition sector has been slow. Bangladesh is battling “a silent emergency” with 48.6% of the country's 20 million children aged six months to five years chronically malnourished.<sup>17</sup> Although the country has made significant improvements in reducing the incidence of severe undernutrition among children in the last twenty years, moderate undernutrition remains a pervasive problem. Nearly half of all children below five years of age are either underweight or stunted, with large disparities between genders, geographical regions, and economic groups.<sup>18</sup>

Maternal health is another area where progress has been slow. The most recent estimate of the country's maternal mortality ratio (in 2003) found 320 deaths per 100,000 live births, one of the highest rates in Asia.<sup>19</sup> Most maternal deaths (80%) happen at home because that is where more than 90% of births occur. Women are usually cared for by traditional birth attendants (75.6%) and relatives (10.8%) rather than by trained health workers; thus, the risk of maternal mortality remains high.<sup>20</sup> While socioeconomic inequalities in health outcomes and healthcare utilization persist in general, the magnitude is largest in maternal health and the utilization of safe delivery services.

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<sup>9</sup> Kanta Jamil et al., “The Immunization Programme in Bangladesh”; A. Mushtaque R. Chowdhury, Abbas Bhuiya, Simeen Mahmud, A.K.M. Abdus Salam, and Fazlul Karim, “Who Gets Vaccinated in Bangladesh? The Immunization Divide,” Bangladesh Health Equity Watch, 2002, 23; and *Bangladesh Demographic and Health Survey 2007*.

<sup>10</sup> Chowdhury et. al., “Who Gets Vaccinated in Bangladesh?” 23.

<sup>11</sup> Ibid.

<sup>12</sup> “A Situation Analysis Report on Health (MDG 4, 5 and 6)—Bangladesh: A Baseline for Needs Assessment and Costing,” Government of Bangladesh and UNDP Bangladesh, 2009.

<sup>13</sup> Ibid.

<sup>14</sup> M.M. Islam et al., “Fertility Transition in Bangladesh: Understanding the Role of the Proximate Determinants,” *Journal of Biosocial Science* 36, no. 3 (2004): 351–69.

<sup>15</sup> *Bangladesh Demographic and Health Survey 2007*.

<sup>16</sup> Ibid.

<sup>17</sup> “UN: Many Bangladesh Children Malnourished,” UN World Food Programme, News Release, March 30, 2009, <http://www.wfp.org/content/un-many-bangladesh-children-malnourished>.

<sup>18</sup> Anil B. Deolalikar, “Poverty and Child Malnutrition in Bangladesh,” *Journal of Developing Societies* 21, no. 1–2 (2005): 55–90.

<sup>19</sup> Government of Bangladesh and the United Nations, “Millennium Development Goals: Bangladesh Progress Report,” February 2005.

<sup>20</sup> World Health Organization Country Office for Bangladesh and Government of Bangladesh, “Family and Community Health: Making Pregnancy Safer,” 2010, [http://www.whoban.org/en/Section15/Section18\\_46.htm](http://www.whoban.org/en/Section15/Section18_46.htm).

Women in the highest wealth quintile were eight times as likely to obtain skilled delivery care and nine times as likely to deliver at a health facility as those in the lowest quintile.<sup>21</sup>

## Communicable Diseases in Bangladesh

Cholera and smallpox are among the many communicable diseases that used to take a heavy toll in Bangladesh. Although the country became free of smallpox in 1975, its population remains affected by cholera and other diarrheal diseases. However, with the increase in public awareness of water quality and diarrheal diseases and the availability of appropriate management, both the incidence and case fatality rates of diarrheal diseases have diminished drastically.<sup>22</sup> Tetanus, polio, and measles, which used to be major causes of childhood death, are no longer significant due to widespread immunization coverage.

While there have thus been significant advancements in the prevention and treatment of communicable diseases in Bangladesh, several diseases have the potential to threaten health security in the coming decades. Many infectious diseases have emerged while others have unexpectedly reappeared. The outbreak of an influenza strain, such as H1N1, and the increased prevalence of HIV/AIDS and TB are of greatest concern.

### *Influenza Outbreak*

Bangladesh faces the threat of a potentially catastrophic influenza outbreak due to the close contact between the animal and human populations. Given that the country is predominantly rural, there is a particularly high rate of bird and human interaction. **Figure 1** presents data on an outbreak of H1N1 influenza in 2009. The chart clearly shows the potential for an expansive outbreak in the country. Given the nature of human settlements, frequency of animal and human contact, poor hygiene practices, crowding, and unfamiliarity with confinement as a way to prevent the spread of sickness, combined with the high level of illiteracy and the inadequacy of the health system in the country, H1N1 has the potential to cause a rapid outbreak and subsequent public health disaster.

### *HIV/AIDS*

Bangladesh still has a low rate of HIV/AIDS, despite its proximity to high-prevalence countries in the region and the prevalence of high-risk behavior within its own population. However, there is still potential for HIV/AIDS to become a health security threat. Contrary to popular belief, there is a high prevalence of extramarital and unprotected sexual practices, needle-sharing among intravenous drug users, and transmission of unscreened blood.<sup>23</sup> Thus, the possibility of an HIV/AIDS epidemic is quite high, unless aggressive measures are taken.

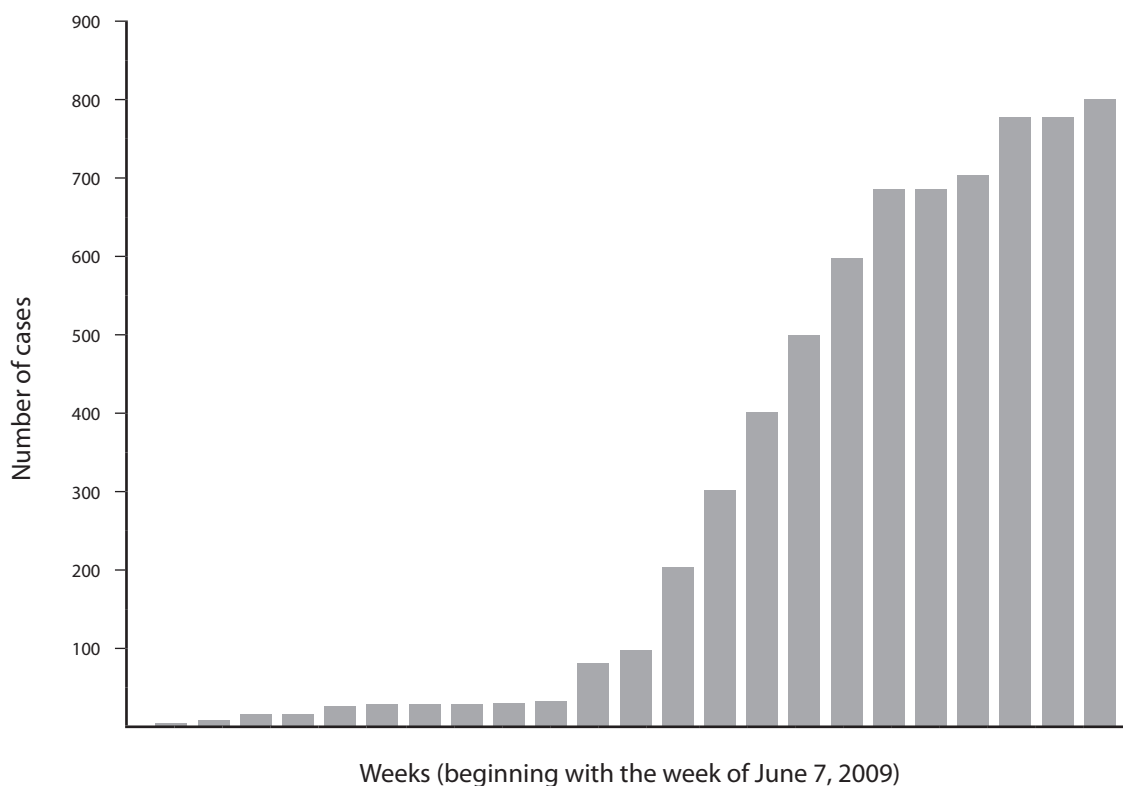
**Figure 2** shows the trend in the prevalence of HIV among intravenous drug users in Bangladesh. Additionally, there is clear evidence of a concentrated epidemic among intravenous drug users in a locality of Dhaka. Given the dynamics of human relationships and movements, HIV has the

<sup>21</sup> Michael A. Koenig, Kanta Jamil, Peter K. Streatfield, Tulshi Saha, Ahmed Al-Sabir, Shams El Arifeen, Ken Hill, and Yasmin Haque, "Maternal Health and Care-Seeking Behavior in Bangladesh: Findings from a National Survey," *International Perspectives on Sexual and Reproductive Health* (formerly *International Family Planning Perspectives*) 33, no. 2 (2007): 75–82.

<sup>22</sup> Luby et al., "Infectious Diseases and Vaccine Sciences: Strategic Directions."

<sup>23</sup> Nazrul Islam Mondal et al., "HIV/AIDS Acquisition and Transmission in Bangladesh: Turning to the Concentrated Epidemic," *Japanese Journal of Infectious Diseases* 62, no. 2 (2009): 111–19.

FIGURE 1 Cumulative confirmed cases of pandemic H1N1 by week in Bangladesh, 2009



SOURCE: World Health Organization (WHO), “Pandemic (H1N1) 2009—Update 64,” [http://www.who.int/csr/don/2009\\_09\\_04/en/index.html](http://www.who.int/csr/don/2009_09_04/en/index.html).

potential to spread among those most at risk, as well as within the general population. **Figure 3** presents the projected scenario of an HIV/AIDS epidemic in the country and how it would affect various population groups. The largest group affected would be clients of sex workers, followed by sex workers, intravenous drug users, and males having sex with males.<sup>24</sup>

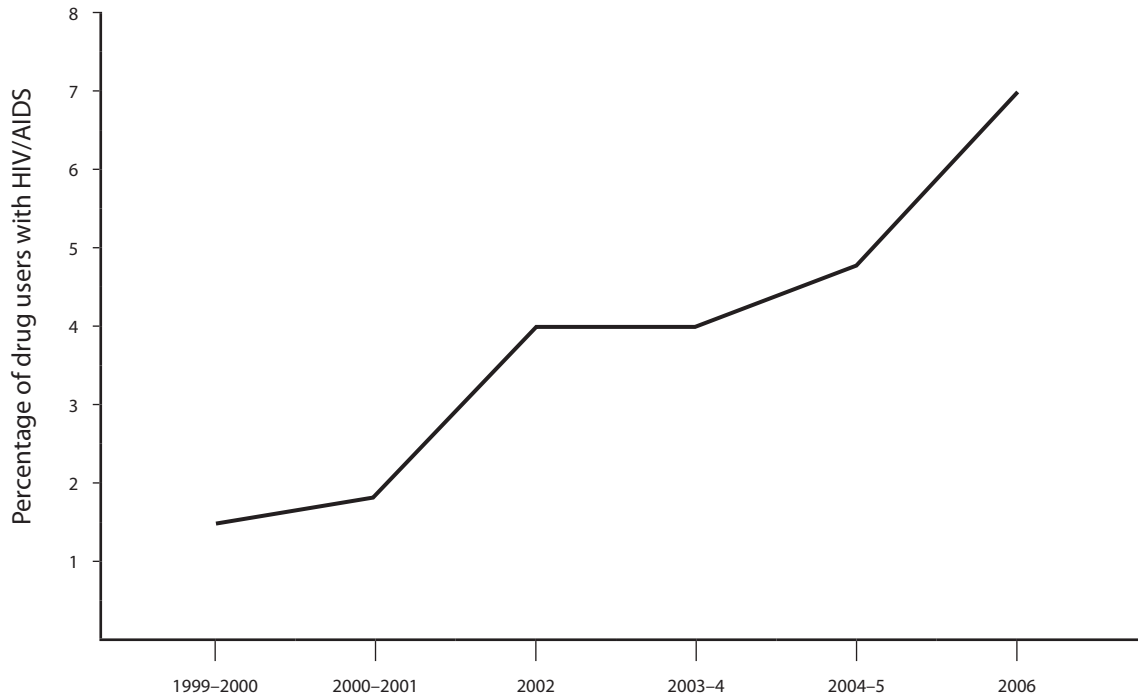
### *Tuberculosis*

Although Bangladesh is showing signs of improvement, TB still remains a health security threat. Bangladesh ranks 6th on a list of 22 countries with the highest rates of TB infection. Although the latest data is not yet available, as HIV/AIDS has become a more serious pandemic globally, several old infectious diseases—including TB, malaria, cholera, and dengue fever—have unexpectedly become problematic because of increased antimicrobial resistance, new ecological niches, weak public health services, and the activation of infectious agents in people whose immune systems are already weakened by AIDS.<sup>25</sup>

<sup>24</sup> Mondal et al., “HIV/AIDS Acquisition and Transmission in Bangladesh.”

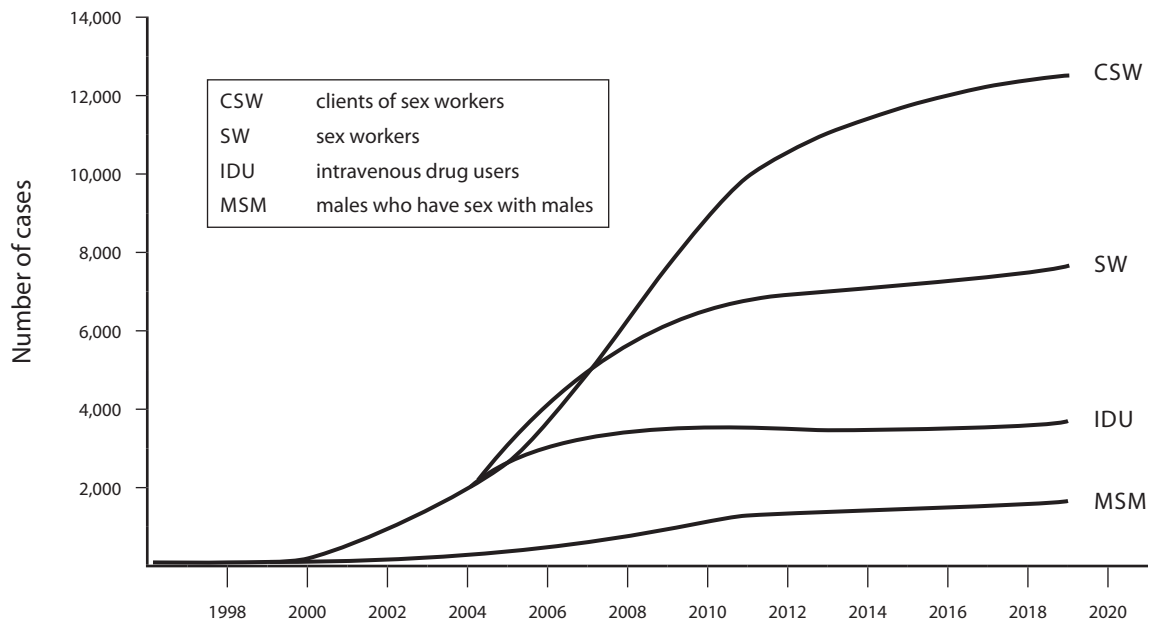
<sup>25</sup> Anthony J. McMichael and Colin D. Butler, “Emerging Health Issues: The Widening Challenge for Population Health Promotion,” *Health Promotion International* 21, supplement 1 (2006): 15–24.

FIGURE 2 HIV prevalence among injecting drug users in Bangladesh, 1999–2006



SOURCE: Tasnim Azim et al., “HIV and AIDS in Bangladesh,” *Journal of Health, Population and Nutrition*, 26, no. 3 (2008): 311–24.

FIGURE 3 Projected number of living HIV cases among most-at-risk groups in Bangladesh



SOURCE: Nazrul Islam Mondal et al., “HIV/AIDS Acquisition and Transmission in Bangladesh: Turning to the Concentrated Epidemic,” *Japanese Journal of Infectious Diseases* 62, no. 2 (2009): 111–19.

**Table 1** presents the current situation of TB in Bangladesh. As stated above, a major determinant for the future of the TB scenario is the prevalence of HIV/AIDS. TB often takes a heavy toll on those infected with HIV due to their compromised immune systems. Therefore, Bangladesh's ability to combat TB will depend on how well the country can prevent an HIV/AIDS epidemic.

**TABLE 1** Tuberculosis (TB) in Bangladesh

<b>World rank</b>	6th
<b>Total cases</b>	0.3 million
<b>Incidence rate</b>	225 per 100,000
<b>Prevalence rate</b>	391 per 100,000
<b>Case detection rate</b>	65%
<b>Treatment success rate</b>	91%
<b>DOTS coverage</b>	100%
<b>Total deaths per year</b>	70,000

**SOURCE:** WHO, Regional Office for South-East Asia, "TB in South-East Asia—Country Profiles: Bangladesh," 2006, [http://www.searo.who.int/en/Section10/Section2097/Section2100\\_14792.htm](http://www.searo.who.int/en/Section10/Section2097/Section2100_14792.htm).

**NOTE:** DOTS = directly observed therapy, short-course.

## Non-Communicable Diseases in Bangladesh

In Bangladesh, the continuing demographic transition that involves falling birth rates, a rising life expectancy, a decline in the proportion of the population under the age of fifteen, and a growing proportion of elderly people, as well as the large-scale contamination of groundwater with arsenic, has led to a rise in non-communicable diseases (NCD), thus changing the disease profile of the population. With a decline in death rates from communicable diseases, especially during infancy and childhood, the incidence of NCDs (hypertension, heart disease, diabetes, rheumatism, and cancer) has increased. These diseases now account for 37% of illnesses that result in death, a much higher percentage than a decade ago.<sup>26</sup>

### *Arsenic*

By the time Bangladesh was able to shift from drinking surface water to underground water to prevent waterborne gastrointestinal diseases, it came as a surprise that the pathogenically safe underground water was heavily contaminated with arsenic and thus not safe for human consumption. By 1989, it had been revealed that two-thirds of the country's underground water sources had levels of arsenic that were far above the World Health Organization's recommended

<sup>26</sup> S. Mahmud and S. Begum, "Health Status in Bangladesh: An Overview," background paper for *Human Development Report in South Asia 2005*, ed. Mahbub ul Haq (Oxford: Human Development Center, 2006).



level of arsenic content.<sup>27</sup> Considering the potential consequences of arsenic ingestion for human health and acknowledging that the country is the world's largest case of groundwater contamination, arsenic poisoning in Bangladesh has been identified as one of the largest cases of mass poisoning in human history.

The consequences of arsenic contamination for human health include a wide variety of conditions, ranging from metabolic disorders such as diabetes to cancer of human skin and vital organs. Initial efforts to control this crisis included the screening of tube-well water in contaminated areas. Contaminated tube wells were painted red to warn people not to use water from them. In addition to the screening of tube-well water, water filtration was introduced. Filtration techniques ranged from village-based sand filters to home-based, small-scale filtration systems. However, momentum was lost to some extent after the initial years of the mitigation program. Small-scale studies suggest that the attempt to shift people from using arsenic-contaminated water sources to arsenic-free sources has weakened. Thus, the exposure to arsenic-contaminated water due to ingestion continues, and as a result it is highly likely that a huge percentage of the population will suffer the health consequences of arsenic exposure. It is not difficult to imagine the significant threat that such mass poisoning poses to human security in Bangladesh.

### *Hypertension and Diabetes*

As a consequence of increased life expectancy, Bangladesh's population is aging. The proportion of people above the age of 60 is steadily increasing. This demographic shift has resulted in an epidemiological shift, causing a double burden of infectious diseases and NCDs. The health problems faced by the elderly population are different in nature than those of the younger population. The elderly population is more likely to be afflicted by NCDs, whereas infectious diseases pose a greater threat to the younger population.

**Figure 4** presents the burden of disease on the population over 60 years of age in Matlab, Bangladesh. Hypertension and diabetes are the most noteworthy NCDs. Among the population aged over 20 years, the prevalence of diabetes was estimated to be 6.1%,<sup>28</sup> and for adults 25 and older the prevalence of hypertension was estimated to range from 15% to 28%.<sup>29</sup> With the prevailing lifestyle and dietary practices, it is believed that these two diseases have already taken the shape of a silent epidemic in Bangladesh.

## Conclusion

Bangladesh is exposed to many communicable and non-communicable health threats and is at risk of a reversal of its hard-won health gains. The country has made significant progress in recent years in many of its social development indicators, particularly in health. However, challenges remain, especially concerning the maternal mortality rate, which remains one of the highest in the world. A concerted effort by the public sector, donors, and NGOs, as well as civil society, is required for the establishment of effective programs that will improve access to proper healthcare facilities and skilled delivery care.

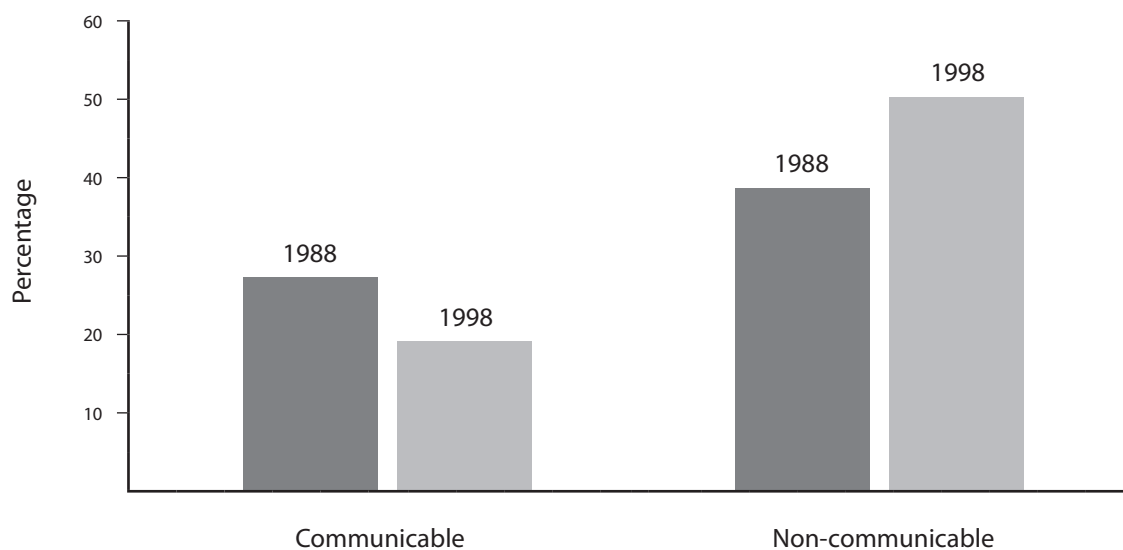
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<sup>27</sup> British Geological Survey, "Arsenic Contamination of Groundwater in Bangladesh," <http://www.bgs.ac.uk/arsenic/>.

<sup>28</sup> International Diabetes Federation, *Diabetes Atlas*, 2011, available at <http://www.idf.org/content/sea-data>.

<sup>29</sup> Hoang Van Minh et al., "Blood Pressure in Adult Rural INDEPTH Population in Asia," *Global Health Action*, supplement 1 (2009): 60–67.

FIGURE 4 Shift in the burden of non-communicable diseases in Matlab, Bangladesh



SOURCE: Abdur Razzaque, Gordon Carmichael, and Peter Kim Streatfield, “Adult Mortality in Matlab, Bangladesh: Levels, Trends, Socio-Demographic Differentials and Causes of Death,” *Asian Population Studies* 5, no. 1 (2009): 85–100.

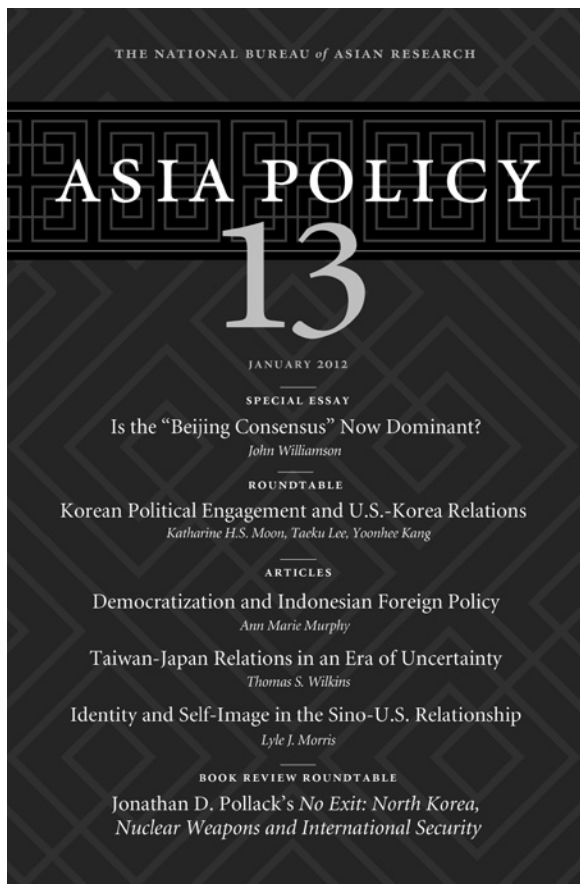
In addition, many infectious diseases have emerged, and others have unexpectedly reappeared. While there have been significant advancements in the prevention and treatment of communicable diseases, several diseases have the potential to threaten health security in coming decades. Of the emerging communicable diseases, H1N1-caused influenza, HIV/AIDS, and TB have the potential to significantly affect the population and are thus of the greatest concern. The spread of emerging infectious diseases and health threats can be contained by raising awareness within communities, especially among the marginalized and the poor, about effective measures for the prevention and management of specific diseases. Furthermore, knowledge of the conditions favoring the emergence and spread of new infectious diseases can help policymakers effectively formulate measures that will mitigate opportunities of transmission and long-distance spread.

With respect to NCDs, Bangladesh is exposed to health problems resulting from arsenic poisoning of underground drinking water and from diabetes and hypertension due to demographic changes and the related epidemiological transition. The consequences of arsenic contamination call for immediate measures to control this crisis, such as screening tube-well water in contaminated areas, improving filtration techniques, and raising awareness within communities of the need to increase access to arsenic-free sources. Changes in lifestyle, screening for diabetes and hypertension, knowledge of disease management, and adequate access to healthcare facilities are prerequisites for the effective regulation of the consequences of NCDs. Finally, renewed public health efforts that involve social movements and collaborations on global health promotion can protect vulnerable populations from emerging health threats.

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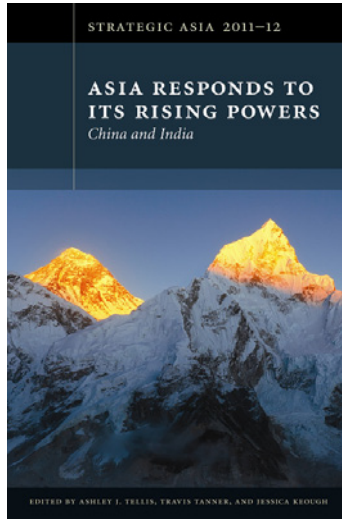
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