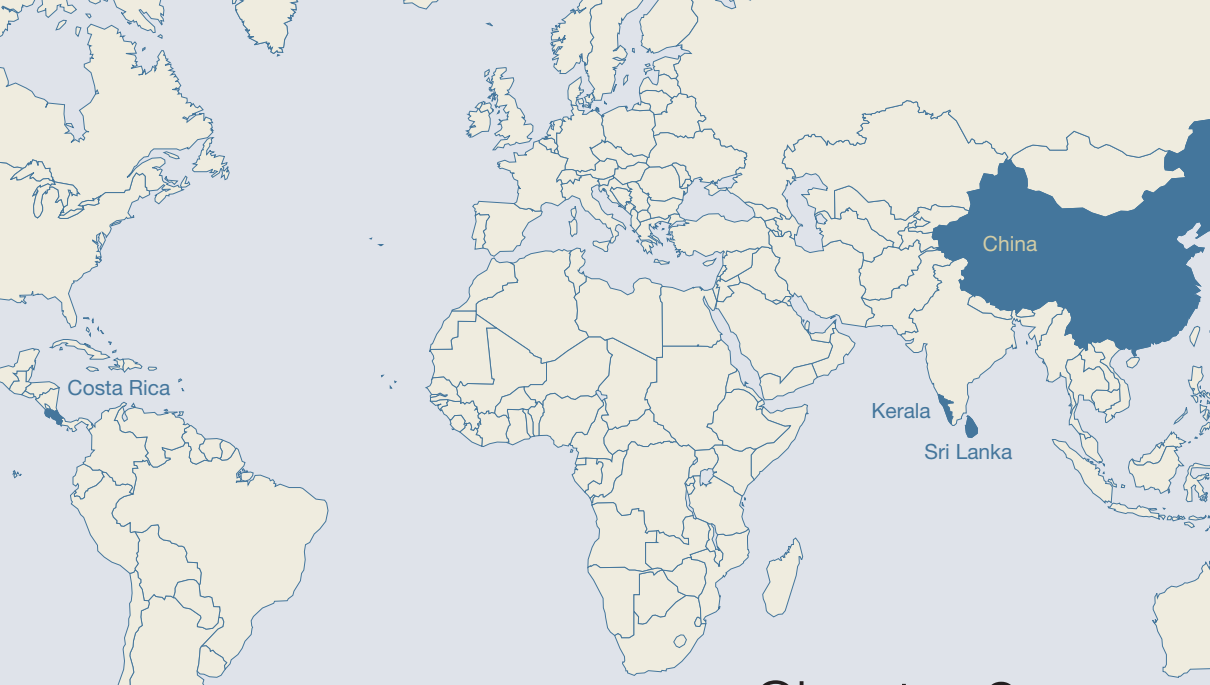


Chapter 8

GOOD HEALTH AT LOW COST REVISITED

Further insights from China, Costa Rica, Kerala and Sri Lanka 25 years later

Benjamin Palafox

LSHTM

Introduction

In Chapter 1, we saw how China, Costa Rica, Kerala and Sri Lanka, the four low-income case studies profiled in the original *Good health at low cost* report from 1985, had achieved remarkable health gains by the early 1980s. Although they attained these gains in different ways, there were some important similarities that offered crucial evidence in support of the principles advocated at the Alma-Ata conference in 1978 and provided insight into ways that might reduce infant, child and maternal mortality.

From the health system perspective, key factors that emerged were long-term (and above average) *investment in financial and human resources* for health, especially in primary care; *strong political commitment* to good health for the whole population; a high degree of *community involvement*; and *equity of access and use*. In addition, each country had enacted policies *beyond the health system*, implementing wide-ranging policies which addressed many different determinants of health, with a particular emphasis on expansion of education, especially for girls[1].

The case studies also demonstrated the value of integrating services both horizontally and vertically, ensuring the inclusion of prevention within essential primary care and the necessary linkages between primary care and the rest of the health system. In Kerala and Sri Lanka, the expansion of essential primary health services, with a focus on maternal and child health, was considered critical for the reduction of both child and maternal mortality. Results were attributed to an emphasis on integrated service provision models that improved access to antenatal and postnatal care, and dramatically increased rates of institutional delivery and use of skilled birth attendants. The care of young children was boosted by measures to improve rates of immunization and effective management of communicable disease. Costa Rica's early reforms strengthened primary care (with a focus on family planning) and improved access to higher levels of care, extending coverage of immunization, and improving nutrition and sanitation. China also saw improvements in maternal and child health. As well as implementing maternal and child health interventions like those in the other countries, it engaged in a series of nationwide campaigns to control the vectors of communicable diseases, improve sanitation and increase access to clean water. A key feature of the Chinese approach was the involvement of barefoot doctors, a cadre of village health workers working to improve health within their communities.

By the early 1980s, after years of implementing these policies, China, Costa Rica, Kerala and Sri Lanka had achieved life expectancy approaching that of some high-income countries. However, with this came an epidemiological

transition that rapidly increased the burden of chronic and other noncommunicable conditions, introducing a new set of challenges for health policy-makers. Adapting health systems to these new realities has been complicated by a number of important contextual changes since the mid-1980s, including uneven economic growth, political and economic crises, changing international trade flows, the emergence of new technology, and migration, all of which conspired to widen inequalities in wealth and, consequently, health. With relatively low per capita expenditure on health, how could they sustain progress already made, further reduce inequities in health and cope with the higher health care costs associated with an ageing population and changing lifestyles? Can these countries still be regarded as models of population health improvement by other developing countries?

In this chapter, we revisit the four original case studies and ask how each country has fared since 1985. We review the progress countries have made in improving infant and maternal mortality (as key indicators of health system performance), describe the main changes to their health systems and broad sociopolitical contexts, and examine the possible mechanisms through which these changes may have influenced population health. (Box 8.1 outlines the search strategy and data sources used to conduct this desk review, and Chapter 2 gives additional details on the conceptual framework, research approach and analytical methods.) We conclude by seeking lessons that can be learned from their experiences.

China

In 1978, Deng Xiaoping initiated wide-ranging economic reforms that swept away many elements of the centrally planned Chinese economy established by Mao Zedong. The introduction of free markets ushered in a process of rapid transition that set the country on track to become an economic powerhouse. In less than a decade, the country's economic base shifted away from agriculture to industrial production, with much of its output sold abroad. Since 1985, it has maintained a remarkable rate of economic growth of nearly 10% a year[2]. This achievement reflected many factors, but one of the most important was the establishment of special economic zones that allowed foreign investors to take advantage of low labour costs and favourable tax regimes. This facilitated the explosion of industrial manufacturing and fuelled the labour market in these zones and in urban areas in general. As a result, migration from rural to urban areas has increased the size of China's cities to meet the new labour demands, although more than half of its 1.3 billion people still live in rural areas.

Box 8.1 Desk review search strategy and data sources

We conducted a review of published, peer-reviewed literature using the PubMed and EconLit bibliographic databases. Relevant sources were searched first using both standardized terms and keywords based on the outcomes of interest (e.g. infant, child and maternal mortality). The results were then combined with searches based on relevant determinants of health. Health systems determinants were informed by the WHO Health Systems building blocks of service delivery, health workforce, information, medical products and technologies, financing, leadership. Non-health systems determinants were related to public expenditure, economic policy, rule of law, water and sanitation, education policy, social security, gender policy, public administration for public provisioning; plus structural factors (e.g. system of government, media, food supply, etc.), situational factors (e.g. elections, conflict, natural disasters, migration, etc.), cultural factors (e.g. religious values, accepted forms of hierarchy, awareness of rights, trust in institutions, etc.) and international or exogenous factors (e.g. foreign aid, international trade agreements, influence of civil society organizations, etc.) likely to influence policy. The results were then combined and limited to those pertaining to the four case countries for the years 1985–2009. Titles and abstracts of the remaining sources were screened for relevance and a review of bibliographies was conducted among selected documents to identify additional sources. This was supplemented with key informant interviews of national and international experts familiar with the case study contexts, and with a search of relevant grey literature since 1985. For this, we used similar keywords to search various document repositories such as the Eldis and British Library for Development Studies websites, and also those of multilateral organizations, such as WHO and the World Bank.

China's ascendancy in the global economy has been matched by progress in other areas. Since the late 1970s, it has managed to slow population growth to between 0.5% and 1.6% per year, and by 2008, the total fertility rate had fallen to 1.78 births per woman[2]. This is partially the result of the one-child policy introduced at the same time as the economic reforms. China has improved other key development indicators, particularly literacy, poverty and basic education. These developments were mirrored in health gains: between 1985 and 2008, overall life expectancy rose from 66.9 to 73.1 years, while vaccination coverage against diphtheria, pertussis and tetanus (DPT) among children under two years of age increased from 78% to 97% (Table 8.1).

The period from the 1950s to the early 1980s has been regarded as China's watershed period for health, when enormous gains were achieved. Life expectancy

Table 8.1 Selected development indicators, China vs. middle-income countries

Indicator	China		Middle-income countries[a]	
	1985	2008	1985	2008
Vaccination, DPT (% of children aged 12–23 months)	78	97[b]	47	81
Primary school completion rate, total (% of relevant age group)	n/a	96.0	n/a	92.3
Poverty gap at $2 a day (purchasing power parity) (%)	47.3[c]	12.2[d]	n/a	10.7[e]
Literacy rate, adult total (% of people aged 15 and above)	65.5[f]	93.7	n/a	82.7
Fertility rate, total (births per woman)	2.64	1.78	3.68	2.43
Life expectancy at birth, total (years)	66.9	73.1	62.7	68.5

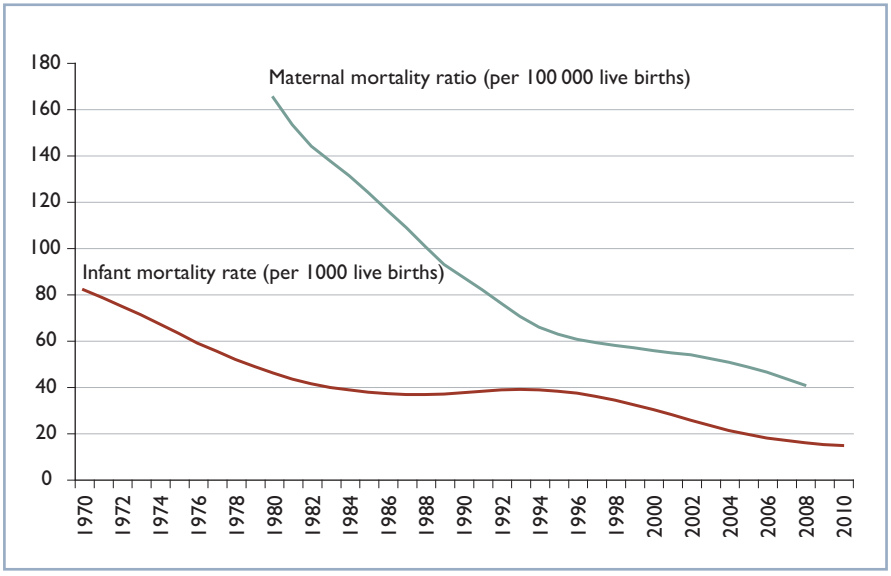
Source: Data from reference 2.

Notes: n/a: Not available; DPT: Three doses, diphtheria, pertussis and tetanus; [a] Based on World Bank income grouping; [b] Value is for 2009; [c] Value is for 1984; [d] Value is for 2005; [e] Value is for upper-middle-income countries, as defined by the World Bank (for comparison, the value for lower-middle-income countries is 54.1%); [f] Value is for 1982.

increased across the entire country. After this period, China continued to experience health gains in some areas, most notably in maternal mortality, where a dramatic fourfold reduction has been achieved since 1980, reaching 40 per 100 000 live births in 2008[3]. However, in other areas, particularly child mortality, China has not performed as well[4]. Following China's impressive gains in infant mortality described in the original *Good health at low cost*, progress halted for nearly a decade, remaining at approximately 40 deaths per 1000 live births, until resuming a downward trend during the late 1990s. By 2008, this indicator had stabilized at a rate of approximately 15 deaths per 1000[5,6] (Figure 8.1).

The slower progress in infant mortality has been attributed to growing health inequalities, linked to the sweeping changes in the economy. There were winners and losers, with the winners concentrated in the areas undergoing the greatest

Figure 8.1 Infant and maternal mortality, China, 1970–2009

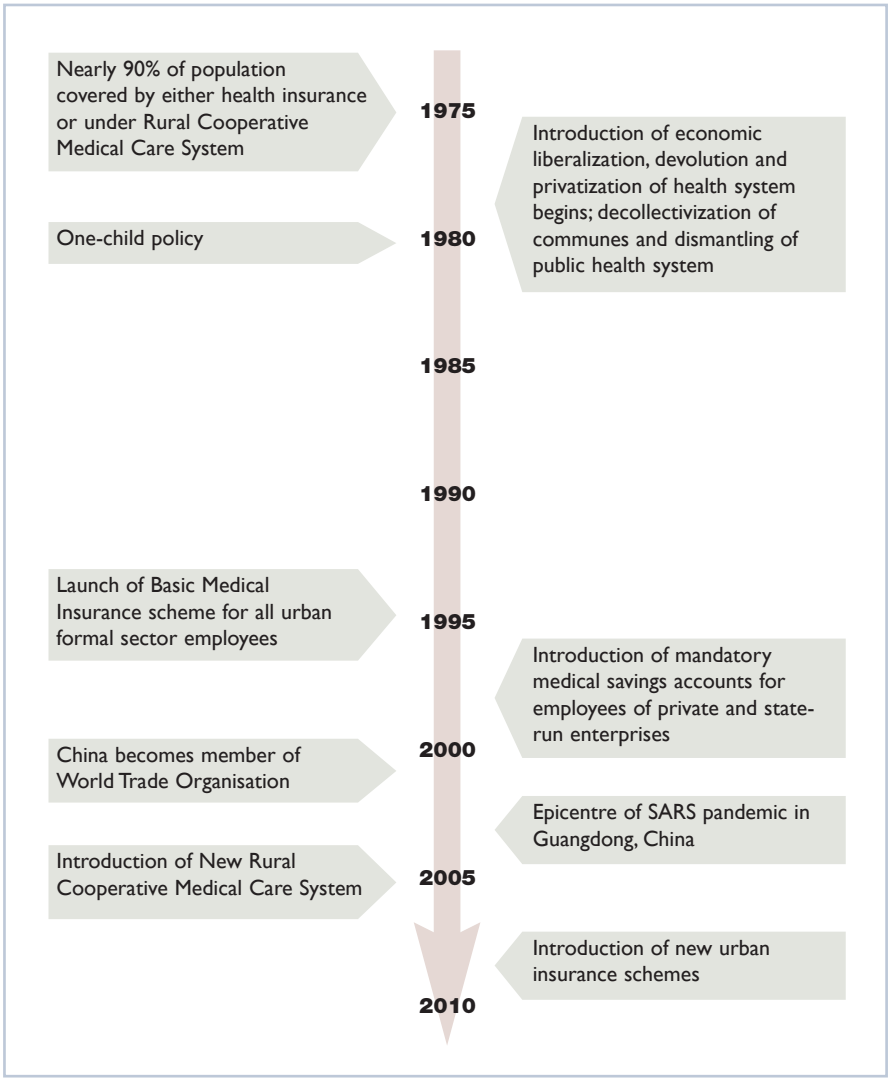


Sources: Data from references 3, 5 and 6.

economic reform[7,8]. A 2009 review of health and health care since economic liberalization found deepening inequalities between urban and rural areas, and among income groups[9]. For example, Shanghai, China's leading commercial centre, saw an improvement in life expectancy of four years between 1981 and 2000, to 78 years; while in Gansu, one of China's poorest provinces, the improvement was of only 1.4 years over the same period. Consequently, by 2000, a 13-year gap in life expectancy had opened up between the two regions; and when plotted against provincial GDP, a clear gradient in life expectancy was apparent[10]. Similar patterns were observed with infant mortality rates in rural areas. Rates were nearly five times higher in the poorest counties than in the wealthiest ones. These were also mirrored in under-5 mortality. Between 1996 and 2004, a sixfold difference emerged between the highest and lowest socio-economic quintiles, with a fall of 50% among wealthy rural populations compared with only 16% among the least wealthy groups[10].

The original *Good health at low cost* report linked China's remarkable health gains with its relatively well-developed social welfare system. In rural areas, where most Chinese people lived at the time, the commune played a central role. It owned the land and managed its use. It also administered the Rural Cooperative Medical Care System (RCMCS), a system that provided members of the community with a basic form of health protection. Basic curative, preventive

Figure 8.2 Timeline of key events influencing health, China, 1975–2010



and public health services were largely delivered through health centres owned by the commune and operated by barefoot doctors[11]. By the 1970s, 90% of the population had health coverage, either from the RCMCS in the rural areas or from different state-owned enterprises in the cities (Figure 8.2).

Health status in rural areas continued to improve immediately following the privatization of agricultural production; this has been attributed to improvements in agricultural productivity that increased not only household income in rural

areas but also nutrition[7,8]. However, these gains were short lived as the spread of economic liberalization left much of the rural population uninsured. Although many of those involved initially welcomed privatization of agricultural land previously owned by the communes, the process destroyed the economic basis upon which the RCMCS had operated[12]. Simultaneously, the central government reduced its investment in health care and other public services. Between 1978 and 1999, its share of national health care spending fell from 32% to 15%[12]. The areas it withdrew from were taken over by provincial and local authorities, who were required to fund them from local taxation. This favoured wealthy coastal provinces that had stronger tax bases over less wealthy rural provinces, and laid the basis for major and growing disparities between investment in urban and rural health care[12].

These overall reductions in funding had many negative consequences for the quality and affordability of local public health services. Out-of-pocket expenditure began to rise as health facilities relied increasingly on the sale of services to generate sufficient operating revenue, which was exacerbated by ill-conceived incentives, such as a salary bonus scheme that linked the size of the bonus to overall facility revenues[12,13]. Over the period of reform, income and the relative cost of treatment became increasingly important predictors of infant mortality as the health system began to rely more heavily on private expenditures[14]. By 2003, private expenditure reached 63% of total health spending, and 92% of private spending was out of pocket; however, by 2007, the proportion of spending from private contributions had declined to 55%[2].

Much of this decline has been the result of increasing government investment in the health sector made possible by the massive economic growth that has boosted government revenues. China's ageing population, the increasing prevalence of catastrophic health care costs, the severe acute respiratory syndrome (SARS) pandemic that originated in southern China, and the rising demand for rural health services have since made health a top government priority. One of the most significant developments has been the New Rural Cooperative Medical Care System (NRCMCS), introduced in 2005. While similar in spirit to its predecessor, which had become defunct by the late 1970s, this new programme is voluntary and the pooled risk fund is fed by members' contributions and by subsidies from central and local government. It works at the county level (much larger than the old communes) and focuses on protecting members from catastrophic medical expenses related to inpatient care (where the original RCMCS provided basic curative and preventive services).

In urban areas, formally employed residents have benefited from schemes implemented since 1995, such as the Basic Medical Insurance package and mandatory

medical savings accounts. However, these benefits excluded dependents, and large groups of urban residents, particularly economic migrants from rural areas, were left mostly unprotected. To address this gap, the government began to scale up its Urban Resident Basic Medical Insurance scheme in 2008. The voluntary programme enrolls entire households, to target children, the elderly, the disabled and other non-working urban residents. Like the NRCMCS, the scheme is funded by contributions and also by premium subsidies from the government.

The government has also attempted to reduce the cost of care by encouraging the use of lower-level facilities, although perceptions of poor-quality service at these lower levels still remain a barrier. In response, government funds are being invested in new primary, preventive and rehabilitative centres and in renovating older village clinics and township health centres. Funds are also being used for training, advertising health facilities and improving community participation in the health system. The NRCMCS includes representatives of the farmers and village committees served by the programme and the new scheme is under county-level management, making it more accountable and closer to those who access the benefits of the programme (Bloom G, personal communication, 2010).

At this early stage, definitive evidence of the impact of these reforms on health and service utilization is not yet available. A review of some recent studies indicates that adverse selection may be a problem with the new insurance schemes, skewing enrolment towards those already unwell[9]. Another review of pilot studies of these insurance schemes has shown only moderate protection from catastrophic spending and limited protection for the poorest beneficiaries, as out-of-pocket spending remains a problem[15]. This has not, however, discouraged the Chinese Government, which has targeted universal health insurance coverage as a priority[12]. With nearly 90% of rural residents covered by the NRCMCS (accounting for 815 million people), and 65% of urban residents covered by the corresponding urban scheme by 2008[16], this target appears to be well within reach.

Costa Rica

Costa Rica has long been recognized as one of the most politically and economically stable countries in Latin America. Since 1985, there has been steady annual growth in GDP, often as high as 8 to 9%[2,17]. Despite having a per capita GDP that is merely average for an upper-middle-income country (US$ 6564 in 2008)[2,17], this small nation of fewer than five million people has consistently been among the top Latin American countries in terms of the Human

Table 8.2 Selected development indicators, Costa Rica vs. Panama

Indicator	Costa Rica		Panama[a]	
	1985	2008	1985	2008
Vaccination, DPT (% of children aged 12–23 months)	90	86[b]	73	82
Primary school completion rate, total (% of relevant age group)	77.3	92.9	82.4	n/a
Poverty gap at US$2 a day (purchasing power parity) (%)	8.6[c]	1.3[d]	13.1[e]	7.06[f]
Literacy rate, adult total (% of people aged 15 and above)	92[g]	96	88[h]	94
Fertility rate, total (births per woman)	3.46	1.96	3.34	2.55
Life expectancy at birth, total (years)	74.6	78.9	71.4	75.7

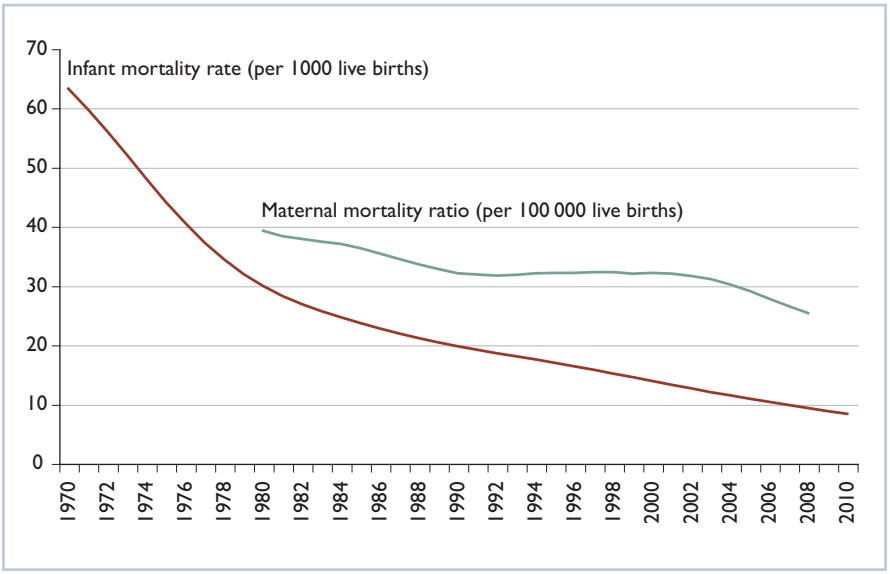
Source: Data from reference 2.

Notes: n/a: Not available; DPT: Three doses, diphtheria, pertussis and tetanus; [a] Selected as suitable comparator due to similar location, population, total GDP and GDP per capita; [b] Value is for 2009; [c] Value is for 1986; [d] Value is for 2007; [e] Value is for 1991; [f] Value is for 2006; [g] Value is for 1984; [h] Value is for 1980.

Development Index (HDI), a multidimensional measure of social and economic development that combines indicators of life expectancy, educational attainment and income: ranking 62 in the world and sixth among Latin American countries in 2010[18]. While many development indicators were already quite good in 1985, most have continued to improve since then and have even surpassed other countries in the region with comparable income levels, such as Panama (shown with Costa Rica in Table 8.2). For example, by 2008, the adult literacy rate was 96%, less than 2% of the population was living below the international poverty threshold of US$2 (adjusted for purchasing power parity) per day, more than 95% of the population had access to improved water and sanitation, and the total fertility rate was 1.96 births per woman[2].

Costa Rica has also maintained its impressive performance with respect to the health indicators documented in the original *Good health at low cost*, surpassing

Figure 8.3 Infant and maternal mortality, Costa Rica, 1970–2009



Sources: Data from references 3, 5 and 6.

all other countries of the same income level within the region. In 2008, life expectancy of 81.4 years for women and 76.6 years for men was second only to Canada in the western hemisphere[2]; the probability of maternal death was estimated to be approximately 25 per 100 000 live births; and infant mortality had declined steadily and is now estimated to be approximately 9.6 per 1000 live births, representing a sevenfold reduction over a three-decade span[3,5,6] (Figure 8.3).

This continued improvement is attributed to Costa Rica's long history of investment in social welfare, perhaps best represented by the Costa Rican Social Security Fund (CCSS), which was one of the first publicly administered social insurance models introduced in the region during the early 1940s. In addition to administering the national pension and other social security programmes, this autonomous public body also delivers most medical services free at the point of delivery, providing a comprehensive package of medical insurance benefits. The bulk of primary care is delivered through health centres and clinics that provide outpatient services, family and community medical services, and health promotion and prevention programmes, referring patients to higher levels of care as required. While the private sector is small in Costa Rica, public facilities may refer patients to the private sector when they are overloaded, or patients may choose to see a private physician to avoid long waiting times[17]. To address some

issues of insufficient capacity in the public sector, the CCSS also contracts out some services to private entities, mainly to health cooperatives for primary services in urban areas, but also to private laboratories for diagnostics. In addition to overseeing and regulating the health system, the Ministry of Health shares responsibility for public health service delivery with the CCSS.

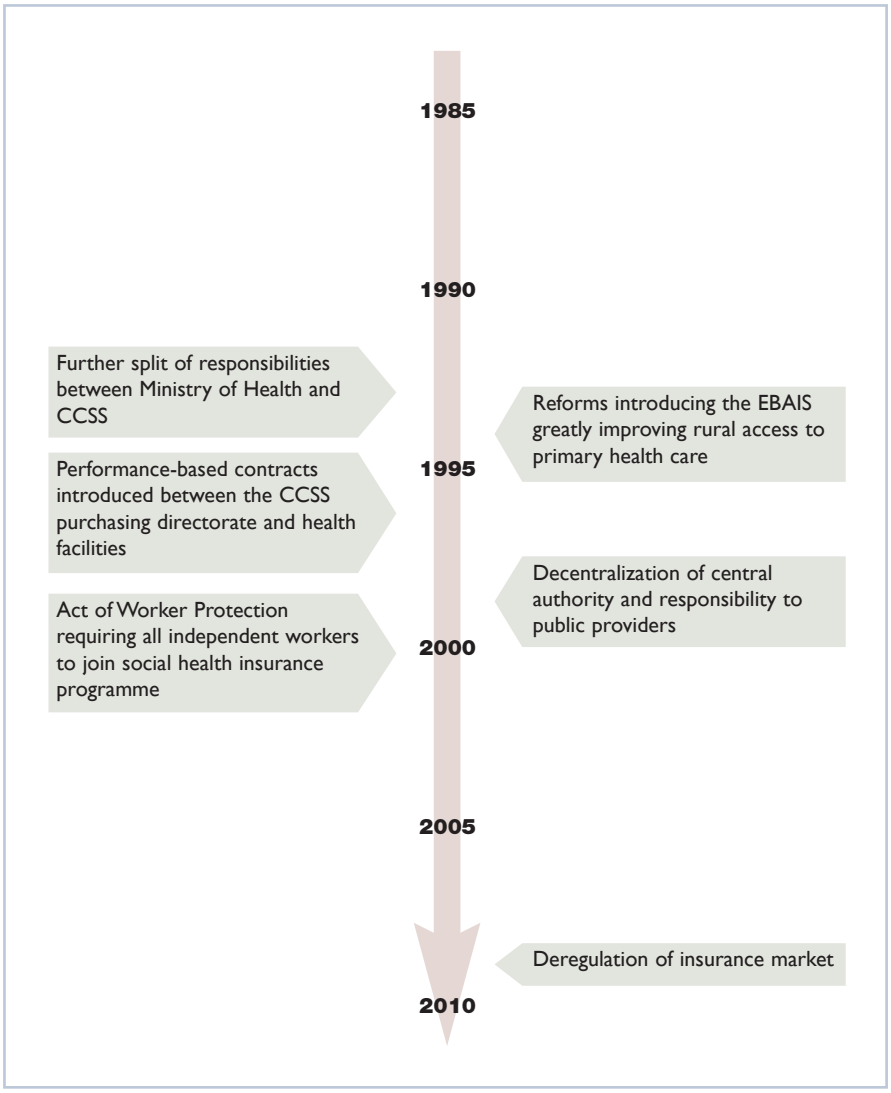
Total health expenditure as a proportion of GDP has remained consistent at approximately 8% (slightly higher than the average of approximately 7% for developing countries in Latin America and the Caribbean)[2]. In 2007, 27% of this expenditure was private, 85% of which covered out-of-pocket payments for ambulatory care in the private sector (Rosero-Bixby L, personal communication, 2010)[19]. Two thirds of the 73% public health expenditure was from the CCSS, making it the country's most important source of health financing[2,19]. As an independent public institution, the CCSS is financed primarily by contributions from employers (9.25% of payroll) and workers (5.5% of wages). Following worker protection legislation introduced in 2000, the self-employed are required to contribute 4.75% of their reported income, and the poor are covered by several subsidized schemes[19]. By 2006, 88% of the population was covered by the CCSS and 93% of the population had adequate access to primary care services[19].

Health system reforms since 1985

In addition to the factors already noted in the original *Good health at low cost* volume, including sustained public health expenditures, political stability and commitment, clear national consensus on the role of the health system and popular support for the CCSS[17,20–22], several reforms that were implemented from 1994 onwards further strengthened the Costa Rican health system and have been linked with improved health outcomes (Figure 8.4). These reforms, which followed the vision for the health system set out in the 1970s, have been associated with reductions of 8% and 2% in child and adult mortality rates, respectively[20], and fall into two main categories: further extending coverage and quality of primary care, focusing on underserved areas; and further improving the management, financing and delivery of medical services under the CCSS.

Achieving universal access to primary care, particularly in underserved rural areas, was greatly facilitated by the introduction of the EBAIS community clinics (*Equipos Básicos de Atención Integral en Salud*). Each clinic is responsible for a geographical area that covers approximately 4000 people and offers a full range of primary care, health promotion and preventive services. Where necessary, the EBAIS is mobile. At a minimum, EBAIS clinics are staffed by a doctor, a nurse and a technician, who are supported by personnel from the higher-level

Figure 8.4 Timeline of key events influencing health, Costa Rica, 1985–2010



administrative grouping (known as the health area) to which the EBAIS belongs. These can include laboratory technicians, social workers, dentists, nutritionists, pharmacists and medical records specialists[23]. During the first stage of implementation, 232 EBAIS were established in 1995, with priority given to the most underserved communities. By 2004, there were a total of 855 EBAIS across the country[19].

The literature is characterized by broad consensus on the favourable impact that expansion of primary care has had on improving equitable access in Costa Rica. Prior to 1994, access to primary care was restricted to approximately 25% of the population. One analysis found that in the areas where reforms were implemented after 1995, the percentage of the population with adequate access to health services had risen from 64% to 79% by 2000[20], while the national rate of health coverage rose to 69% over the same period. Today, coverage is nearly universal[17,19,23,24]. Data presented in the original *Good health at low cost* showed that, between 1972 and 1980, 41% of the decline in infant mortality could be attributed to primary care interventions, while an additional 32% was due to improvements in secondary care. Socioeconomic progress and declining fertility rates explained the remaining decline[25]. In 1991, further analysis supported these original conclusions[26]. Although there is little evidence directly linking continued health gains in Costa Rica since 1985 to continued improvements in primary care access, the country's previous experience suggests that it may be continuing to play a part.

While the EBAIS greatly enhanced the physical reach of the CCSS, other important reforms implemented since the 1990s have focused on the organization's administrative structure. One such reform was the creation of a purchasing division within the CCSS, further separating the financing, purchasing and service provision functions of the organization. This allowed for improvements in quality and efficiency, such as the shifting away from a historical budgeting approach to resource allocation towards one intended to enhance production, user satisfaction and clinical practice, based on performance management contracts between the newly created purchasing division and service providers[17,27].

Another important reform during this period was the 1998 Law on Decentralization[28], which aimed to improve health system responsiveness by means of administrative decentralization of the CCSS. One of the mechanisms supporting this transfer of power was the creation of democratically elected community health boards to supervise the delivery of local services. This broadened community participation as local decision-makers became involved in setting priorities and performance targets for health[17,19].

However, the financial sustainability and equity of Costa Rica's state-driven model remain pressing issues as the cost of financing the health system continues to increase with the ageing population and the changing burden of disease. Despite the large operating revenues provided through member contributions, the government continues to commit substantial portions of its annual budget to health. For example, more than a fifth of total government expenditure went

to health between 2003 and 2007[2]. As the success of the health system is dependent on the principle of solidarity to maintain high participation rates in the scheme across all population groups and enhance the progressive character of the overall system, low rates of affiliation (52%) among the economically active population and the high prevalence of contribution evasion among employers and workers alike threaten financial sustainability[19]. Until recently, the government of Costa Rica resisted the introduction of private insurance, largely because it did not believe it was in the citizens' best interest and because it feared that, once introduced, foreign corporations would quickly dominate the entire insurance market[27]. From this perspective, the deregulation of the health insurance market in 2009 to allow private medical insurance creates an obvious risk to equity, with scope for wealthy and healthy patients to opt out of publicly funded care, so undermining popular support for the CCSS. Costa Rica's experience will undoubtedly continue to yield further insight into best practices in health financing.

Kerala

For most of the 20th century, the economy of this southern Indian state lagged behind much of the rest of the country. Between 1970 and 1987, Kerala's annual growth in net domestic product was an average of 1.9%, nearly half of the all-India figure. But post-1987, the state's economy grew at a rate of 5.8% per year, and by 2000, its per capita income was 20% higher than the all-India figure [29]. This growth has largely been driven by the service sector, related to transportation, trade, hotels, restaurants and telecommunications, rather than the more conventional production of commodities. The increasing demand for these services has been linked to the increase in disposable income and ownership of assets such as homes, vehicles and appliances, which were supported largely by the huge influx of remittances from Keralites who since the 1970s have migrated to work in other parts of India and in the Gulf States[30].

Underlying Kerala's remarkable change in economic growth was the state government's long political commitment to investment in social welfare and equality, as characterized by the development of universal access to education, strong labour organization and popular movements promoting dialogue among castes. Since its formation in 1956, Kerala has consistently ranked higher on the HDI than all other states in India. By 2005, Kerala had nearly achieved universal elementary education and had attained a gender ratio of 1.058 females to every male: identical to that in Europe and North America, but quite different from many other parts of India where selective female abortion is widespread[29]. Gaps in human development also continue to close across gender and social groups. Census data

Table 8.3 Selected development indicators, Kerala vs. all India

Indicator	Kerala		India	
	1992–1993	2005–2006	1992–1993	2005–2006
Vaccination, DPT (% of children aged 12–23 months)	n/a	84.0	46.9	55.3
School attendance (% of children 6–10 years)	94.8	98.4	68.4	82.9
Literate persons (% of total population aged 15–49)	89.8[a]	93.5[b]	52.2[a]	63.4[b]
Undernutrition prevalence, weight for age (% of children under 5 years)	28.5[c]	22.9	53.4[c]	42.5
Fertility rate, total (births per woman)	2.0	1.9	3.4	2.7

Sources: Data for 1992–1993 from reference 32, unless stated otherwise; Data for 2005–2006 from references 33 and 34.

Notes: n/a: Not available; DPT: Three doses, diphtheria, pertussis and tetanus; [a] Values are for 1991 and data from reference 29; [b] Values are derived from combining weighted national estimates for women and men; [c] Values are for children under 4 years.

from 1961 to 1991 show that the literacy gap between the general and rural scheduled caste populations (representing those on Kerala's social margins) has consistently narrowed. The same data also show that the state's growth in literacy was higher than in all other Indian states, with the greatest relative gains among women. The availability of schools and good road networks, typical outputs of the state government's past investments, were identified as key factors in explaining the observed gains in literacy[31] (Table 8.3).

This continued performance on development indicators is also mirrored in Kerala's improving population health, better than all other Indian states. In 1980, overall life expectancy at birth was 66 years[35], and by 1995, it had risen to 70.4 years for males and 75.9 years for females compared with Punjab, which during the same period had the next-best life expectancy across India, at 66.7 years for males and 68.8 years for females[29]. Infant mortality experienced a dramatic decline and more than halved from 1981 to 2005–2006, when it was estimated at approximately 15 deaths per 1000 live births (Table 8.4). By

Table 8.4 Infant and maternal mortality, Kerala, 1981 to 2005–2006

Health indicator	1981[36]	1992–3[32]	1998–9[37]	2005–6[33]
Infant mortality rate (per 1000 live births)	39.1	23.8	16.3	15.3
Maternal mortality ratio (per 100 000 live births)	n/a	n/a	n/a	95[36]

Sources: References 32, 33, 36, 37.

Note: n/a: Not available.

comparison, Maharashtra, the state with the second-lowest infant mortality rate, experienced 48 per 1000 live births in 2000[29]. It is also remarkable that infant mortality rates in Kerala show almost no difference between rural and urban areas, unlike the rest of the country where a large gap persists[29]. While reliable time series data do not exist for maternal mortality in Kerala, in 2006, it was estimated to be 95 deaths per 100 000 live births, approximately one third of the estimated rate for India as a whole[38].

Despite its low mortality overall, Kerala now has some of the highest rates of noncommunicable disease mortality and morbidity in the country[39,40]. A recent study of adult mortality patterns within a rural community showed that coronary heart disease has now overtaken communicable diseases to become the leading cause of death in the state, and that the burden of coronary heart disease deaths now exceeds that of industrialized countries[41]. The prevalence of obesity is also rapidly increasing, and Kerala has the second highest rate of obesity among women of all states in India (21% with body mass index of 25+, while the national average is 11%)[29]. Trends in alcohol consumption are also a cause for concern because, although the overall Indian average is low, consumption in Kerala is the highest in the country, at more than double the all-India average[29,42].

Health system changes since 1985

Kerala's current health system is composed of parallel public and private sectors. While traditional medicine is important in the state's health system, the share of modern (that is, allopathic or western) health services is highest in Kerala among all Indian states[43]. The public sector has a well-developed network of health facilities (a legacy of Kerala's prior investment in social welfare), with nearly 200 hospitals and more than 1000 primary health facilities, each staffed with a

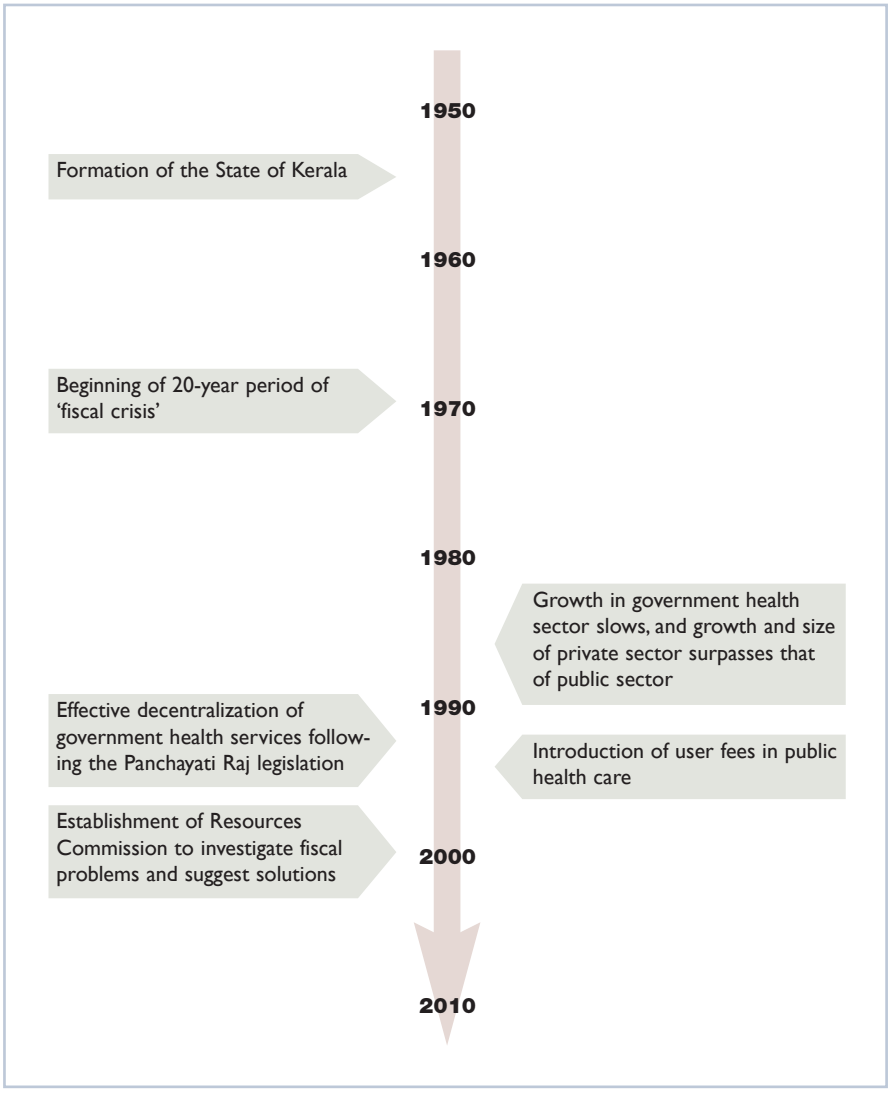
doctor providing a full range of treatment and prevention services (for example, vaccinations and family planning)[44]. As elsewhere in India, private sector growth increased dramatically in the early 1980s and quickly surpassed that in the public sector (Figure 8.5). For example, between 1986 and 1996, the number of private sector beds rose by 40%, from 49 000 to 67 500, while the number of beds in public facilities grew by only 5.5% over the same period, from 36 000 to 38 000[45]. But despite varying degrees of service quality[46], a lack of regulation[47] and concerns of supplier-induced demand[48], the private sector now handles most of the caseload in the state and has also surpassed the public sector in other areas, including the availability of advanced diagnostics, such as magnetic resonance imaging. However, unlike Sri Lanka, where private-sector outpatient services tend to complement the hospital-dominated public sector, the private sector in Kerala offers a mix of services that are in direct competition with the public sector.

The shift from the public to private sector was facilitated by a number of developments. Fiscal crisis in the 1970s and in the 1990s led to the introduction of poorly implemented cost-recovery mechanisms (i.e. user fees) that generated insufficient operating revenues. The fiscal crisis also decreased health budgets, and funds earmarked for health were increasingly used to meet salaries. Between 1985 and 2003, the share of health in the state revenue budget fell from 7.7% to 5.4%[49]. Shortages of medicines and other consumables decreased the quality of public-sector services and negatively impacted upon popular confidence in the government-funded health system, encouraging patients to seek private health care. Increased purchasing power among poorer groups (brought about by increasing incomes across all socioeconomic groups and decreasing fertility rates) further fuelled the already high demand for modern health services, so much so that by the mid-1980s health service use – both among low- and high-income groups – was already shifting towards the private sector.

These factors have compounded over the years and the effect is clearly seen in current patterns of health spending. Compared with all other Indian states, Kerala spends at least twice the annual amount per household, at nearly US$ 38 per capita in 2004–2005[a]; and 86.3% of this falls upon households as out-of-pocket spending. Public funds account for slightly less than 11% of total health expenditure, and are raised from both tax and non-tax revenues at national and state level, with a small proportion also generated from user fees[49]. Funds from the central government are allocated to states to implement national

[a] Historical exchange rate of US$ 1 to 44.94 Indian rupees was used, averaged over the fiscal year from 1 April 2004 to 31 March 2005. Exchange rate obtained from http://www.oanda.com/currency/historical-rates.

Figure 8.5 Timeline of key events influencing health, Kerala, 1955–2010



programmes, while programmes delivered by local governments (*panchayats*) are financed by transfers from the state government.

Not surprisingly, the reliance on household spending has had adverse implications for poor and marginalized groups. One study that looked at household spending on health across income groups showed that the poor spent 40% of their income on health care in 1996, while the rich spent only 2.4%. Compared

with what they were spending ten years previously, this represents a 450% increase in out-of-pocket expenditure among poor households compared with an increase of 12% for rich households[50]. A more recent study of inpatient health expenditure in rural Kerala showed private spending to be significantly male biased, as greater amounts tended to be spent on the hospitalization of men (about US$ 129) compared with women (about US$ 93)[51]. Access in rural areas is further threatened by the persistent underfunding of primary care, and public sector shortages of doctors and essential commodities, such as drugs, result in the rural poor shifting to private health care at a much higher cost[52]. As in other settings, health inequities are closely linked to such inequalities in access.

The decentralization reforms introduced with the Panchayati Raj legislation[53,54] in the mid-1990s transferred much of the decision-making related to social welfare from the central government to the state and local (*panchayat*) levels. These are considered to be the most likely reforms to address the inequities in health that have emerged and have persisted since the 1980s. Theoretically, decentralization of responsibility to the *panchayat* level was intended to make public services, including the health system, more responsive to the communities being served through greater involvement of the community in decision-making processes[55]. However, the full impact of these reforms on the health sector has yet to be realized.

One evaluation suggested that decentralization had not yet brought any significant change to the health sector[56]. The analysis showed that *panchayats* in Kerala had, in fact, allocated a lower level of resources to health than what had been allocated by the state government prior to decentralization. This was largely due to the absence of sufficient support, innovation and technical expertise at the local level to compete effectively for limited *panchayat* funds. In addition, a directive issued by the State Planning Board barred spending of *panchayat* funds for the purchase of medicines or the maintenance of health facilities, thus compounding the public-sector quality issues[56].

Despite its many years of steady economic growth, greater fiscal pressure may also arise as state government revenues continue to be eroded by remittances from foreign workers from which income taxes are not obtained. This is coupled with the continuing shift away from the primary sector towards the tertiary sector (i.e. the state economy now relies heavily on retail sales, from which it is also difficult to extract tax revenues) (Acharya A, personal communication, 2010). An ongoing challenge for the government will be to ensure that the state's economic prosperity is effectively translated into public goods and used to address key health issues, such as obesity and chronic disease, and to tackle the widening inequities that affect access to health services.

Sri Lanka

Despite nearly three decades of civil war, Sri Lanka has performed well economically for many years, experiencing steady growth in GDP since 1985, with peak annual growth of 8% in 2006. In addition, with an estimated per capita GDP of US$ 2013 in 2008, this country of 20 million people has the highest per capita income in south Asia[2]. While its economy historically relied on agricultural commodities, over the course of the last century, Sri Lanka has moved steadily towards an industrialized economy with the development of food processing, textiles, telecommunications and the finance sector. Also, there are now nearly 1.5 million Sri Lankan citizens working abroad, including many in the Gulf States and the Middle East. Remittances from these migrant workers, estimated to total US$ 2.9 billion in 2008, are an important source of foreign exchange and have contributed to rising household incomes[57].

In the first decade of this century, however, Sri Lanka has had to cope with a series of challenges. For example, in 2001, Sri Lanka experienced its first-ever recession, a period characterized by power shortages, budgetary problems and intensification of the civil strife that started in the early 1980s. The December 2004 tsunami devastated several areas along the southern and eastern coasts of Sri Lanka. A short time later, there was a resurgence of fighting in the ongoing civil war, continuing until May 2009, when government forces declared the conflict over. Since then, Sri Lanka has experienced a post-war economic boom; however, more than 300 000 people remain internally displaced as a result of the conflict[58], and despite being relatively low (5.9% in 2009), unemployment also persists, disproportionately affecting women and educated youth[57].

Since 1985, Sri Lanka has been able to maintain progress on a number of indicators related to human development, largely primed by its early commitment to social welfare. As a result, a number of these indicators have significantly improved, while others, such as poverty and undernutrition, persist. Table 8.5 shows key changes, and compares them with India's.

Key indicators on population health outcomes have also generally improved since 1985. Total life expectancy in 2008 reached 74 years[2]; infant mortality has experienced a threefold reduction to approximately 10 per 1000 live births, and maternal mortality is currently estimated to be 30 per 100 000 live births, less than half compared with that two decades earlier[3,5,6]. However, as is clear from Figure 8.6, the pre-1985 downward trajectory in both of these mortality indicators was not maintained. Indeed, at times during the post-1985 period, rates of infant and maternal mortality increased before returning to their downward trajectory. Furthermore, these health gains have not been equally distributed

Table 8.5 Selected development indicators, Sri Lanka vs. India

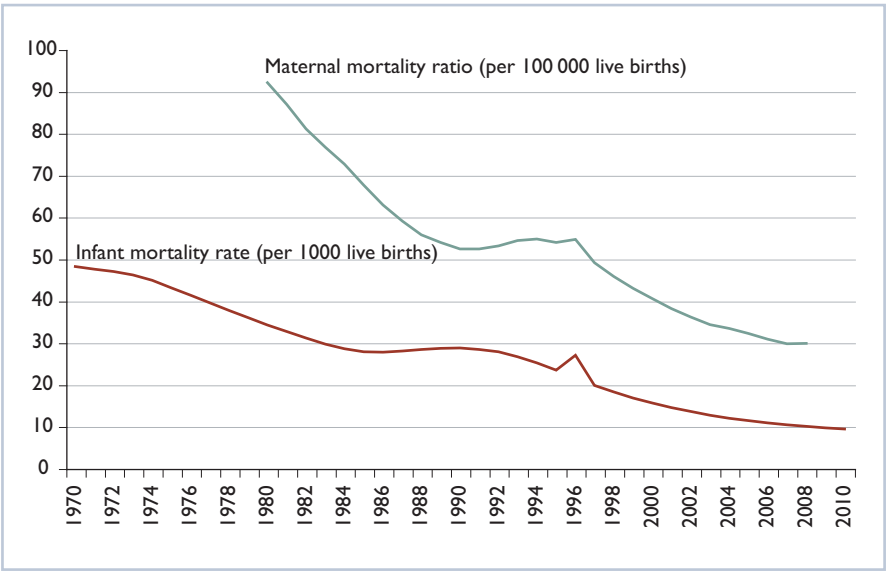
Indicator	Sri Lanka		India[a]	
	1985	2008	1985	2008
Vaccination, DPT (% of children aged 12–23 months)	70	97[b]	18	66
Primary school completion rate, total (% of relevant age group)	83.0	98.4	n/a	93.6[c]
Poverty gap at $2 a day (purchasing power parity) (%)	16.1	11.9	36.7[d]	30.4[e]
Literacy rate, adult total (% of people aged 15 and above)	86.8[f]	90.6	40.8[f]	62.8[g]
Undenutrition prevalence, weight for age (% of children under 5 years)	29.3[h]	21.1[i]	n/a	43.5[g]
Fertility rate, total (births per woman)	2.92	2.33	4.32	2.74
Life expectancy at birth, total (years)	69.0	74.1	56.9	63.7

Source: Data from reference 2.

Notes: n/a: Not available; DPT: Three doses, diphtheria, pertussis and tetanus; [a] Selected as suitable comparator due to similar location and World Bank income group; [b] Value is for 2009; [c] Value is for 2007; [d] Value is for 2002; [e] Value is for 2005; [f] Value is for 1981; [g] Value is for 2006; [h] Value is for 1987; [i] Value is for 2007.

throughout the population, and some groups even experienced worsening health during this period. Life expectancy for women in 2008 (78 years) was eight years longer than that of men[2]; significantly higher mortality overall was reported among tea, rubber and coconut plantation workers (although some decline has been observed more recently)[59]; and there is higher maternal mortality in the northern and eastern districts affected by conflict. For example, in 1995–1996, the maternal mortality ratio in these districts was 3.5 times higher than that of the entire country, most likely due to poorer access to health services, education, nutrition, water and sanitation[60].

Figure 8.6 Infant and maternal mortality, Sri Lanka, 1970–2009

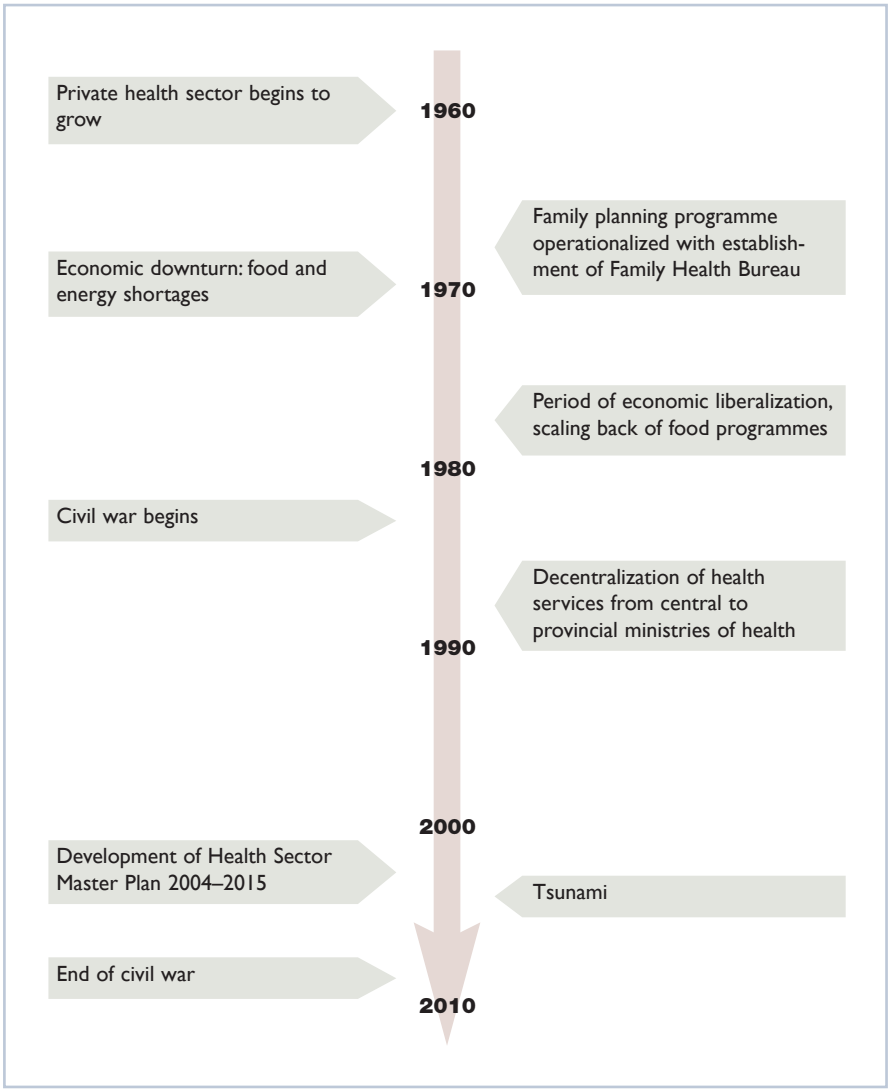


Sources: Data from references 3, 5 and 6.

The health system and its performance since 1985

As in other social sectors, the foundation for Sri Lanka's current health system was laid prior to 1960 and no major structural changes have occurred since then (Figure 8.7). Today, the overall health system is composed of parallel public and private sectors. The comprehensive public system is financed and operated by the Ministry of Health in Colombo and eight provincial departments of health, and almost all care from preventive services to specialist tertiary care is free at the point of delivery. Units run by medical officers provide most preventive and public health services through teams of health workers[59]. Having grown steadily since the 1960s, the private sector is also very prominent and focuses mainly on outpatient care, but there is also a small private hospital sector concentrated in the capital[59]. Much private sector activity is actually provided by government medical officers working during their off-duty hours. This practice allows these public servants to supplement their relatively meagre government wages and promotes the retention of health professionals in the public service. As such, the overall outpatient load is shared between the public and private sectors, while the public sector provides more than 95% of inpatient care[59].

Figure 8.7 Timeline of key events influencing health, Sri Lanka, 1960–2010



Good access to health services is likely to explain at least some of the country's overall health performance. After decades of government investment in hospital infrastructure, most Sri Lankans live within 3 km of a public facility[59], and since 2000, there has been an average of three hospital beds per 1000 people (compared with the average of two beds per 1000 people in middle income countries)[2]. Another legacy of this early investment is the low overall spending

on health: in 2007, total health expenditure was estimated to be 4.2% of GDP, slightly lower than other countries at the same income level[2]. However, just 47% of this expenditure is now public (constituting 8.5% of total government expenditure), leaving more than half of health spending financed privately, 86% of which comes out of pocket, as private health insurance coverage is low[2]. Increasing private expenditure is the main driver of increasing health expenditure overall. The majority of public funding goes towards the provision of in-patient services, while the bulk of private funding is spent on outpatient care[59]. These public–private divisions in provision and spending have imparted to Sri Lanka's overall health system several interesting performance characteristics, most notably with respect to equity and quality.

Good geographic access and lack of financial barriers to public facilities combine with several aspects of health financing to produce a relatively equitable health system in Sri Lanka. First, public health spending is relatively progressive, reflecting the role of direct taxation. The ability of the rich (who would typically contribute more but use services less) to opt out of the public system has tended to leave public outpatient care dominated by the poor[61], resulting in the poorest quintile benefiting from 27% of public spending in this sector, compared with 11% for the richest quintile in 2003–2004[59]. However, because of the tendency to use the public system for inpatient care across all income groups, government spending for this type of care is more evenly distributed (18% for the poorest quintile versus 16% for the richest, although this takes no account of the much greater health needs of the poor)[59].

The high use of public sector inpatient care by all groups provides some protection from catastrophic health expenses by limiting out-of-pocket payments. One study that looked at the incidence of such expenses across a number of Asian countries showed that only a very small percentage of Sri Lankan households were affected, which was much better than in many other low- and middle-income countries[62]. High utilization of inpatient services in the public sector is maintained by a perception of good quality based on the widely held view that public hospitals have the best staff and equipment to deal with serious conditions[61,63]. In outpatient clinics, on the other hand, perceived low quality of public sector services persuades richer patients to pay for private care[59].

It has been argued that the high standard of training received by practitioners in the public sector has helped to create and maintain quality in the private sector, since, as a consequence of dual practice, most doctors are drawn from the public sector and are believed to apply the same practice standards in both sectors. One study conducted in 2001 estimated that between 50% and 70% of the private sector caseload was being seen by doctors regularly employed in the public

sector[64]. This means that although use of the private sector has grown it has not involved the expansion of unqualified, informal providers, which characterize this sector in many other developing countries[60]. Furthermore, because most private practitioners are drawn from public cadres working within the same area, both patients and providers already know which private providers offer a high standard of care (Russell S, personal communication, 2010). There are, of course, well-known disadvantages arising from dual practice, including the incentive to exert more effort in the more lucrative private sector or even to stimulate private demand by underperforming in public practice[65].

Overall, Sri Lankans place a great deal of confidence in their health system – both public and private sectors – because of the quality care, ease of access and level of risk protection it provides. Nevertheless, decreasing levels of government health investment have affected hospital care, which could drive greater numbers of patients to seek care in the private sector. For example, between 1987 and 2004, the percentage of patients who sought modern care from the private sector (including clinics, hospitals and pharmacies) increased by nearly 8%, to reach 45.1%, while recent analysis of the impact of government health spending indicates a shifting of benefit from the poor to the urban better-off[59]. It is recognized that the continued shift of patients out of the public system may destabilize the health system by undermining popular support for government health services[59]. With the recent end of the longstanding civil war, an opportunity has arisen for the 12–14% of total government expenditure previously spent on the military to be redistributed across other national priorities[2].

Concluding remarks: Further insights after 25 years?

The original *Good health at low cost* in 1985 concluded with three recommendations for other developing countries seeking to improve population health. Countries should work first to ensure *equitable access* to public health services and health care; second, to provide *universally accessible education*; and third, to guarantee *adequate nutrition* to all levels of society. Taken together with other important features identified from the case studies, including universal franchise, promotion of social and economic equality, and development of public infrastructure, these are all products of what has been defined as the 'support-led security' approach to development[66]. A sustained long-term commitment to this approach by each of the governments studied aided the formation of a virtuous cycle of human development that served to build popular trust and confidence in the state's ability to provide for its citizens' needs, leading governments to be more responsive and accountable to these needs.

From examining how China, Costa Rica, Kerala and Sri Lanka have fared 25 years later, it is evident that the benefits of these virtuous cycles continue to compound and have contributed to the impressive health gains observed since 1985. While the original lessons clearly continue to be relevant today, revisiting these case studies in light of the many contextual changes that have occurred since 1985 has generated new lessons on how health systems can respond to meet the challenges that are posed not only by increasing burdens of chronic disease and ageing populations but also by changing economic and social realities, such as migration, values and the ever increasing number of actors involved in health.

Echoing the first recommendation from the original *Good health at low cost*, ensuring access to modern health services remains crucial to improving population health. But in contrast to the early stages of health system development where the aim was to provide a basic level of care to the entire population, *this priority has broadened to encompass higher levels of care and preventive services* in order to adapt to changing health needs. One of the guiding principles of this expansion is guaranteeing that it happens in an equitable way to counterbalance the effects of changing economic conditions and demographic trends that continually work to widen health inequalities.

Second, achieving equity of access was also shown to be dependent on the acceptability of the care being provided – a concept that has evolved beyond the cultural acceptability as defined by Alma-Ata in 1978 to *also include values driven by increasing consumer awareness*. In several of the case studies, the role that differences in real and perceived quality played was clear in shifting utilization away from readily available care towards more expensive care in either the private sector or in urban areas. Quality was also seen to be important in maintaining popular confidence in publicly funded health services and public institutions. This confidence is a key factor in keeping health as a political priority and ensuring the financial sustainability of the health system.

Both of these lessons underscore the third emerging theme from the case studies: that *governments continue to play a central role* in developing health systems. It is interesting to note that the motivation for the original *Good health at low cost* volume was partially a reaction to the privatization discourse that dominated the politics of the 1980s, and that updating these case studies has once again highlighted the importance of continued government leadership in developing accessible and responsive health systems. While there is no one-size-fits-all model for such participation, the case studies have clearly shown that governments have a variety of tools at their disposal to help to build and maintain equitable access and quality care. Direct provision of health services through

public-sector facilities was an important avenue to ensure equitable access in each of the case studies. The case studies also described several mechanisms by which government involvement influenced the quality of care (e.g. direct investment, regulation, efficiency interventions). But with tightening budgets and the unavoidable increases in private-sector participation and out-of-pocket expenditures, perhaps where government involvement can have the greatest impact is through the design, implementation and regulation of financial protection mechanisms that are appropriate for the context, sustainable and pro-poor.

ACKNOWLEDGEMENTS

I would like to thank Gerald Bloom (Institute of Development Studies, University of Sussex), Arnab Acharya (London School of Hygiene & Tropical Medicine), Steven Russell (School of International Development, University of East Anglia), Luis Rosero-Bixby (Centro Centroamericano de Población, Universidad de Costa Rica), and Kent Ranson (World Health Organization) for their contribution to this work. I would also like thank Dina Balabanova, Gill Walt, Anne Mills and Martin McKee, all from the London School of Hygiene & Tropical Medicine, and Joanne McManus for their guidance and helpful suggestions.

REFERENCES

1. Halstead SB, Walsh JL, Warren KS, eds. *Good health at low cost*. New York: Rockefeller Foundation; 1985.
2. World Bank. *World development indicators* [online]. 2009 (http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=, accessed 30 May 2010).
3. Hogan MC et al. Maternal mortality for 181 countries, 1980–2008: a systematic analysis of progress towards Millennium Development Goal 5. *Lancet* 2010; 375(9726):1609–23.
4. Wagstaff A et al. *Reforming China's rural health system*. Washington, DC: World Bank; 2009.
5. Rajaratnam JK et al. Neonatal, postneonatal, childhood, and under-5 mortality for 187 countries, 1970–2010: a systematic analysis of progress towards Millennium Development Goal 4. *Lancet* 2010; 375(9730):1988–2008.

6. IHME. *Datasets*. Seattle, WA: Institute for Health Metrics & Evaluation, Department of Global Health, University of Washington; 2010 (http://www.healthmetricsandevaluation.org/resources/datasets.html, accessed 21 May 2010).

7. Banister J, Zhang X. China, economic development and mortality decline. *World Development* 2005; 33(1):21–41.

8. Audibert M, Mathonnat J, Chen Y. *Does external openness influence the infant mortality rates? An econometric investigation for the Chinese provinces*. Clermont-Ferrand: Centre d'Etudes et de Recherches sur le Développement International; 1999 (CERDI Working Paper: 1998311998).

9. Wagstaff A et al. China's health system and its reform: a review of recent studies. *Health Economics* 2009; 18(Special Issue):S7–23.

10. Tang S et al. Tackling the challenges to health equity in China. *Lancet* 2008; 372(9648):1493–501.

11. Sidel VW. The barefoot doctors of the People's Republic of China. *New England Journal of Medicine* 1972; 286(24):1292–300.

12. Blumenthal D, Hsiao W. Privatization and its discontents: the evolving Chinese health care system. *New England Journal of Medicine* 2005; 353(11):1165–70.

13. West LA, Wong CPW. Fiscal decentralization and growing regional disparities in rural China: some evidence in the provision of social services. *Oxford Review of Economic Policy* 1995; 11(4):70–84.

14. Grigoriou C, Guillaumont P. *Child mortality under Chinese reforms*. Clermont-Ferrand: Centre d'Etudes et de Recherches sur le Développement International; 2004 (CERDI Working Paper: 2004102004).

15. Sun X et al. Catastrophic medical payment and financial protection in rural China: evidence from the New Cooperative Medical Scheme in Shandong Province. *Health Economics* 2009; 18(1):103–19.

16. Qingyue M, Shenglan T. *Universal coverage of health care in China: challenges and opportunities*. Geneva: World Health Organization; 2010.

17. Unger JP et al. Costa Rica: achievements of a heterodox health policy. *American Journal of Public Health* 2008; 98(4):636–43.

18. UNDP. *Human development reports* [online]. New York: United Nations Development Programme; 2010 (http://hdr.undp.org/en/, accessed 4 January 2011).

19. Cercone J, Pacheco Jimenez J. Costa Rica: "good practice" in expanding health care coverage – lessons from reforms in low- and middle-income countries. In: Gottret P, Schieber GJ, Waters HR, eds. *Good practices in health financing: lessons from reforms in low- and middle-income countries*. Washington, DC: World Bank; 2008:183–226.

20. Rosero-Bixby L. [Assessing the impact of health sector reform in Costa Rica through a quasi-experimental study.] [In Spanish] *Revista Panamericana de Salud Pública* 2004; 15(2):94–103.

21. McGuire JW. *Politics, policy, and mortality decline in Costa Rica*. Middletown, CT: Wesleyan University; 2007.

22. deBertodano I. The Costa Rican health system: low cost, high value. *Bulletin of the World Health Organization* 2003; 81(8):626–27.

23. Clark MA. Reinforcing a public system: health sector reform in Costa Rica. In: Kaufman RR, Nelson JM, eds. *Crucial needs, weak incentives: social sector reform, democratization, and globalization in Latin America*. Baltimore, MD: Johns Hopkins University Press; 2004:189–216.

24. Kruk ME et al. The contribution of primary care to health and health systems in low- and middle-income countries: a critical review of major primary care initiatives. *Social Science & Medicine* 2010; 70(6):904–11.

25. Rosero-Bixby L. Infant mortality decline in Costa Rica. In: Halstead SB, Walsh JL, Warren KS, eds. *Good health at low cost*. New York: Rockefeller Foundation; 1985:125–38.

26 Rosero-Bixby L. Socioeconomic development, health interventions and mortality decline in Costa Rica. *Scandinavian Journal of Social Medicine*. Supplement 1991; 46:33–42.

27. Homedes N, Ugalde A. Why neoliberal health reforms have failed in Latin America. *Health Policy* 2005; 71(1):83–96.

28. Costa Rica. Decentralization of hospitals and clinics (GLIN ID 87021). *La Gaceta, Diario Oficial*, December 1998

29. Centre for Development Studies. *Human Development Report 2005*. Thiruvananthapuram: State Planning Board, Government of Kerala; 2006.

30. Pushpangadan K. *Remittances, consumption and economic growth in Kerala: 1980–2000*. Trivendrum: Centre for Development Studies; 2003.

31. Narayanamoorthy A, Kamble BN. Trends and determinants of rural literacy among scheduled caste population: a state level analysis. *Journal of Educational Planning and Administration* 2003; 17(1):35–52.

32. International Institute for Population Sciences. *National family health survey (MCH and family planning), 1992–93: India.* Bombay: International Institute for Population Sciences; 1995.

33. International Institute for Population Sciences and Macro International. *National family health survey, 2005–06: India*, *Volume I*. Mumbai: International Institute for Population Sciences; 2007.

34. International Institute for Population Sciences and Macro International. *National family health survey, India, 2005–06: Kerala*. Mumbai: International Institute for Population Sciences; 2008.

35. Krishnan T. Health statistics in Kerala State, India. In: Halstead SB, Walsh JL, Warren KS, eds. *Good health at low cost*. New York: Rockefeller Foundation; 1985:39–46.

36. Directorate of Economics and Statistics, Government of Kerala. *Annual reports on sample registration*. Thiruvananthapuram: Government of Kerala; 1981.

37. International Institute for Population Sciences and ORC Macro. *National family health survey (NFHS-2), 1998–99: India*. Mumbai: International Institute for Population Sciences; 2000.

38. National Rural Health Mission. *Kerala State file* [online]. Mumbai: Ministry of Health & Family Welfare, Government of India; 2010 (http://www.mohfw.nic.in/NRHM/State%20Files/kerala.htm, accessed 1 June 2010).

39. Kumar BG. Low mortality and high morbidity in Kerala reconsidered. *Population and Development Review* 1993; 19(1):103–21.

40. Narayana D. High health achievements and good access to health care at great cost: the emerging Kerala situation. In: Haddad S, Barı E, Narayana D, eds. *Safeguarding the health sector in times of macroeconomic instability: policy lessons for low- and middle-income countries*. Trenton: Africa World Press/IDRC; 2008.

41. Soman CR et al. All-cause mortality and cardiovascular mortality in Kerala State of India: results from a 5-year follow-up of 161 942 rural community dwelling adults. *Asia-Pacific Journal of Public Health 2010*; May 10 [Epub ahead of print].

42. WHO. *Global status report on alcohol 2004*. Geneva: World Health Organization, Department of Mental Health and Substance Abuse; 2004.

43. Panikar P. *Health transition in Kerala.* Thiruvananthapuram: Kerala Research Programme on Local Level Development, Centre for Development Studies; 1999.

44. Sato H. Social security and well-being in a low-income economy: an appraisal of the Kerala experience. *Developing Economies* 2004; 42(2):288–304.

45. Kutty VR. Historical analysis of the development of health care facilities in Kerala State, India. *Health Policy and Planning* 2000; 15(1):103–9.

46. Levesque JF et al. Outpatient care utilization in urban Kerala, India. *Health Policy and Planning* 2006; 21(4):289–301.

47. Nabae K. The health care system in Kerala: its past accomplishments and new challenges. *Journal of the National Institute of Public Health* 2003; 52(2):140–5.

48. Dilip TR. Utilization of inpatient care from private hospitals: trends emerging from Kerala, India. *Health Policy and Planning* 2010; 25(5):437–46.

49. Rao KS et al. *Financing of health in India (Section IV)*. New Delhi: National Commission on Macroeconomics and Health, Ministry of Health & Family Welfare, Government of India; 2005.

50. Kunhikannan T, Aravindan K. *Changes in the health status of Kerala 1987–1997*. Thiruvananthapuram: Kerala Research Programme on Local Level Development, Centre for Development Studies; 2000.

51. Ashokan A, Ibrahim P. Inpatient health care expenditure: some new evidences from rural Kerala. *Indian Journal of Economics and Business* 2008; 7(2):297–307.

52. Nair VM. Health in South Asia: future of Kerala depends on its willingness to learn from past. *British Medical Journal* 2004; 328(7454):1497.

53. Constitutional (73rd Amendment) Act (1992).

54. Kerala Panchayt Raj Act (13/1994) (1994).

55. Drèze J, Sen A. *India: economic development and social opportunity*. Oxford: Clarendon Press; 1995.

56. Varatharajan D, Thankappan R, Jayapalan S. Assessing the performance of primary health centres under decentralized government in Kerala, India. *Health Policy and Planning* 2004; 19(1):41–51.

57. US Department of State. *Background note: Sri Lanka*. Washington, DC: Department of State; 2010 (http://www.state.gov/r/pa/ei/bgn/5249.htm, accessed 12 July 2010).

58. Amnesty International. *Sri Lanka's displaced face uncertain future as government begins to unlock the camps*. Updated 11 September 2009 (http://www.amnesty.org/en/news-and-updates/news/sri-lanka-displaced-uncertain-future-government-unlock-camps-20090911, accessed 7 July 2010).

59. Rannan-Eliya RP, Sikurajapathy L. Sri Lanka: "good practice" in expanding health care coverage. In: Gottret P, Schieber GJ, Waters HR, editors. *Good practices in health financing: lessons from reforms in low- and middle-income countries*. Washington, DC: World Bank; 2008:311–54.

60. McNay K, Keith R, Penrose A. *Bucking the trend: how Sri Lanka has achieved good health at low cost – challenges and policy lessons for the 21st century*. London: Save the Children; 2004.

61. Russell S, Gilson L. Are health services protecting the livelihoods of the urban poor in Sri Lanka? Findings from two low-income areas of Colombo. *Social Science & Medicine* 2006; 63(7):1732–44.

62. van Doorslaer E et al. Catastrophic payments for health care in Asia. *Health Economics* 2007; 16(11):1159–84.

63. Russell S. Treatment-seeking behaviour in urban Sri Lanka: trusting the state, trusting private providers. *Social Science & Medicine* 2005; 61(7):1396–407.

64. Rannan-Eliya R et al. *Equity in financing and delivery of health services in Bangladesh, Nepal and Sri Lanka*. Colombo: Institute of Policy Studies; 2001.

65. Ferrinho P et al. Dual practice in the health sector: review of the evidence. *Human Resources for Health* 2004; 2(1):14.

66. Drèze J, Sen A. *Hunger and public action*. Oxford: Clarendon Press; 1989.