Resilient and people-centred health systems: Progress, challenges and future directions in Asia

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Chapter 9.   Sri Lanka

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9.1   Introduction

The Democratic Socialist Republic of Sri Lanka is an island nation separated from south-eastern India by a narrow strip of sea not more than 40 km at its widest point. The country is home to 21.4 million people and has a population density of 342.0 per sq.km. The population of Sri Lanka is predominantly Sinhalese, the majority of whom are Buddhists. Sri Lankan Tamils make up around 15.3% of the population and Sri Lankan Moors a further 9.3% (Department of Census and Statistics, 2015). In 2009, the Sri Lankan government won a war against Liberation Tigers of Tamil Eelam (LTTE), which was ongoing for over 25 years. A large proportion of the population is literate; life expectancy at birth is 75 years, the Human Development Index is 0.766, ranking Sri Lanka at the 72nd place (UNDP, 2016) and the Sustainable Development Goal (SDG) Index for Sri Lanka is 62 (Fullman et al., 2017).

The country has a fast ageing population (Table 9.1), a feature of this process being its feminization. Fifty-six per cent of the elderly population are women (Department of Census and Statistics, 2015); this proportion increases to 61% among those 80 years and above. A decline in the total dependency ratio is noted, with a lowering of child dependency and an increase in elder dependency.

9.1.1 Economic context

At the time of Independence, the country's economy was dependent on the export of tea, rubber, coconut and graphite. These commodities brought in favourable incomes, which supported the pursuit of a welfare economy focused on equity. This has paid dividends in terms of significant improvements in human development; however, the high consumption, low investment in economic development, declining commodity prices and failure to diversify led to a decline in the economy. A change in the political scenario in 1977 led to economic liberalization, which has been pursued since then (Indraratna, 1998).

Currently, Sri Lanka is an LMIC with a per capita GDP of US$ 4065.2 (2017). The economy grew markedly in the post-conflict period, reaching an annual GDP growth rate of 8% in 2010 but has had a declining trend from 2012.

Unemployment as a percentage of the total labour force has continuously declined from 1990 to 2016. The poverty head count ratio was reported to be 4.1 in 2016 (World Bank, 2018) and the income share held by the lowest 20% has declined since 2012 (World Bank, 2018). The main sectors of the economy are tourism, tea export, apparel and textile export. Overseas employment contributes substantially to foreign exchange earnings.

The service sector is the major contributor to the GDP (56.8%), employing 44% of the workforce; manufacturing industries contribute approximately 26.8% of the GDP and employ about 27% of the workforce, while agriculture accounts for approximately 6.9% of the GDP and employs 25% of the workforce (Ministry of Finance, 2017).

Table 9.1   Sri Lanka: Socioeconomic indicators, 1980–2017

Indicators	1980	1990	2000	2010	2015	2017
Population, total (in millions)	15.0	17.3	18.8	20.2	21.0	21.4
Population density (people per sq.km of land area)	239.8	276.3	299.5	322.1	334.3	342
Fertility rate, total (births per woman)	3.4	2.5	2.2	2.2	2.1	2.0 (2016)
Birth rate, crude (per 1000 people)	27.0	20.6	18.5	17.5	15.6	15.3 (2016)
Death rate, crude (per 1000 people)	6.3	6.5	7.0	6.5	6.8	6.9 (2016)
Population growth (annual %)	1.7	1.3	0.6	0.6	0.9	1.1
Population ages 65 years and above (% of total)	4.4	5.5	6.2	7.3	9.3	10.1
Age dependency ratio, old (% of working-age population)	7.3	8.8	9.3	10.9	14.1	15.3
Age dependency ratio, young (% of working-age population)	60.1	51.4	39.9	37.8	37.2	36.4
GDP (current US$, billions)	4.0	8.0	16.3	56.7	80.6	87.2
GDP per capita (current US$)	267.7	463.5	869.5	2808.5	3842.2	4065.2
GDP growth (annual %)	5.8	6.4	6.0	8.0	5.0	3.1
Gross national expenditure (% of GDP)	122.6	107.9	110.6	107.3	107.5	107.2
Tax revenue (% of GDP)	..	19.0	14.5	11.3	12.4	12.3 (2016)
Central Government debt, total (% of GDP)	..	96.6	96.9	71.6	77.7	..
Industry, value added (% of GDP)	29.9	26.3	27.3	26.6	27.2	27.2
Agriculture, forestry and fishing, value added (% of GDP)	27.8	26.7	19.9	8.5	8.2	7.7
Services, value added (% of GDP)	42.3	47	52.8	54.6	57.4	55.8
Labour force, total (in millions)		7.4	7.8	8.2	8.5	8.7
Unemployment, total (% of total labour force) (modelled ILO estimate)	..	..	7.7	4.9	4.7	4.1
Poverty headcount ratio at US$ 1.90 a day (2011 PPP) (% of population)	..	8.7	..	..	..	0.7 (2016)
Income inequality (Gini coefficient; World Bank estimate)	..	32.4	..	..	..	39.8 (2016)
Personal remittances, received (% of GDP)	3.8	5.0	7.1	7.3	8.7	8.2
Current health expenditure (% of GDP)	..	..	4.1	3.0	3.0	..

Key: GDP: gross domestic product; ILO: International Labour Organization; PPP: purchasing power parity

Source: World Bank, 2018

9.1.2   Political context

The third Constitution of Sri Lanka promulgated in 1978 provided for a unicameral parliament and an Executive President who is the head of State, head of Government and the commander in chief of the Armed Forces. The president heads the Cabinet and appoints ministers from among the members of parliament. The Parliament of Sri Lanka is a 225-member legislature with 196 members elected from 22 multi-seat electoral districts and 29 nominated from a national list (Parliment of the Democratic Socialist Republic of Sri Lanka, 1978).

The 13th amendment to the Constitution (1987) decentralized the administration to nine provinces. Provincial councils are directly elected, the leader of the council's majority party serves as the chief minister. Provincial ministers are elected from among the elected councillors. A provincial governor and a provincial secretary are appointed by the President; the latter heads the provincial administration. Below the provincial level are elected municipal councils and urban councils, responsible for municipalities and cities, respectively, and the Pradeshiya sabhas representing a demarcated cluster of villages (Parliament of the Democratic Socialist Republic of Sri Lanka, 1987).

Sri Lanka's judiciary consists of a Supreme Court – the highest and final superior court, a Court of Appeal, high courts and a number of magistrate courts. The legal framework of the country is derived from the British, Indian and American legal systems, while Kandyan, Muslim and Thesawalami laws are applicable to certain aspects of life and to defined sections of the population.

9.1.3   Natural and human-induced disasters

Sri Lanka is prone to floods, landslides and drought, the past six years witnessing several major incidents affecting thousands of people. The 2004 Indian Ocean Tsunami is reported as the worst natural disaster to affect the country with 35 000 fatalities, 5000 missing persons and financial damage exceeding US$ 1 billion (Ministry of Disaster Management – Sri Lanka, 2018).

Since Independence, Sri Lanka has experienced three armed conflicts, which impacted the whole country. Two insurgencies originated in the south of the country led by the Janatha Vimukthi Peramuna (JVP). About 60 000 people lost their lives and a considerable number were displaced from their homes although this did not result in a major population migration (Siriwardhana and Wickramage, 2014).

The war with the LTTE, which started in 1983, resulted in more than 100 000 deaths, hundreds of thousands of injured, and led to internal and further external displacement and migration of hundreds of thousands of people (Siriwardhana and Wickramage, 2014).

9.2   Health status and risk factors

9.2.1   Health status

Sri Lanka has been able to achieve a relatively high level of health despite being an LMIC. Table 9.2 shows that life expectancy at birth has been increasing steadily for both sexes, women enjoying 6.7 years of life more than men. Healthy life expectancy at birth also has shown an increase over the years but at a much slower rate than life expectancy, the difference between the two measures increasing over time.

Significant improvements have been made in crude death rates, infant and child mortality rates. The maternal mortality ratio (MMR) continues to decline, though at a slower pace during the past 5 years. The country has been able to eliminate malaria, filariasis, polio and neonatal tetanus (WHO, 2018).

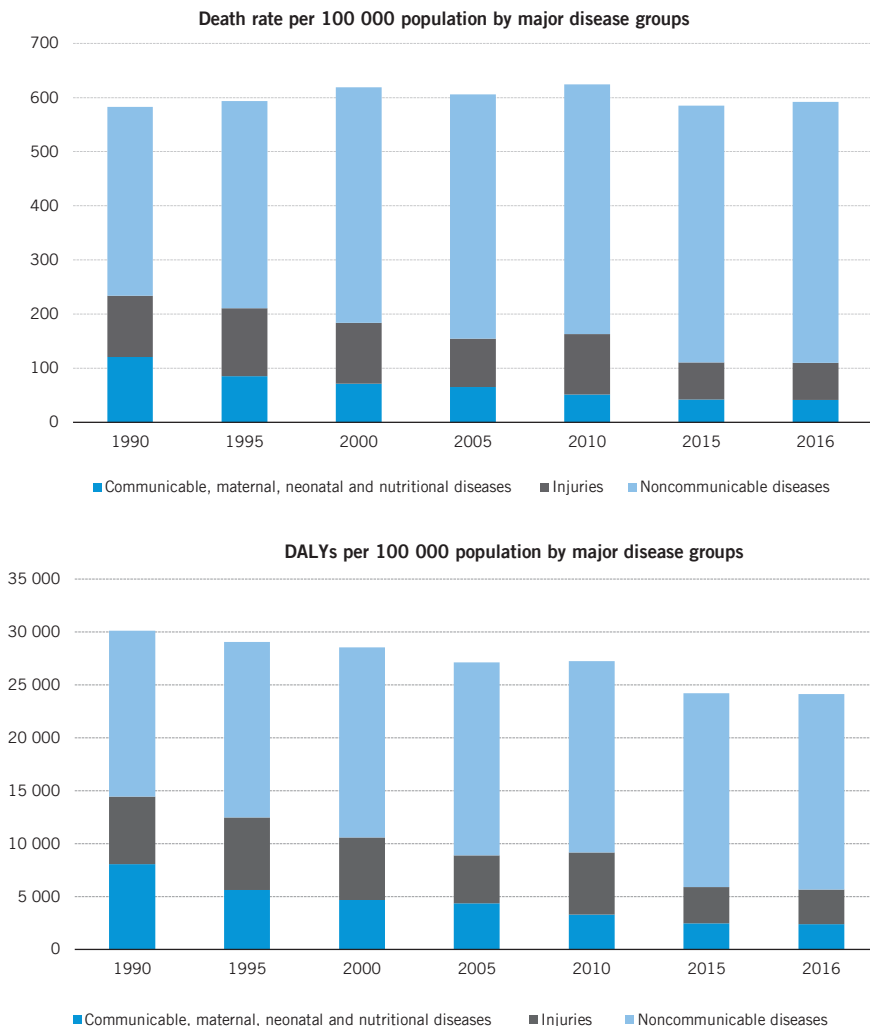**Table 9.2   Sri Lanka: Mortality and health indicators, 1970–2016**

Indicators	1970	1980	1990	2000	2010	2015	2016
Life expectancy at birth, total (years)	64.1	68.2	69.4	71.0	74.4	75.1	75.3
Life expectancy at birth, men (years)	62.4	66.3	66.3	67.5	70.9	71.7	71.9
Life expectancy at birth, women (years)	66.2	70.4	73.2	74.9	77.9	78.4	78.6
Mortality rate, men (per 1000 adult men)	248.3	224.1	258.9	244.8	202.1	198	195.7
Mortality rate, women (per 1000 adult women)	171.4	138.2	120.8	99.9	78.8	74.1	72.9
MMR, modelled estimate (per 100 000 live births)	..	..	75.0	57.0	35.0	30.0	..
IMR per 1000 live births	54.0	39.6	18.1	14.2	10.0	8.2	7.8
Child mortality per 1000 live births (under 5)	71.7	50.1	21.3	16.5	11.6	9.5	9.1

Key: IMR: infant mortality rate; MMR: maternal mortality ratio
Source: World Bank, 2018

Fig. 9.1 shows that NCDs form the bulk of the disease burden and account for the highest deaths per 100 000 population, the next highest being injuries, suggesting that the country is in the late stages of the epidemiological transition. A steady decline in DALYs due to all three categories is noted.

Fig. 9.1   Sri Lanka: Deaths and DALYs per 100 000 population by major disease groups, 1990–2016

Death rate per 100 000 population by major disease groups

■ Communicable, maternal, neonatal and nutritional diseases   ■ Injuries   ■ Noncommunicable diseases

DALYs per 100 000 population by major disease groups

■ Communicable, maternal, neonatal and nutritional diseases   ■ Injuries   ■ Noncommunicable diseases

Source: Institute for Health Metrics and Evaluation, 2017

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Ischaemic heart disease, cerebrovascular diseases and diabetes are the three leading causes of death in Sri Lanka – all three have been increasing since 2005, the highest increase being in diabetes (46.1%). These are followed by Alzheimer disease, asthma and self-harm – Alzheimer showing a 35% increase while the other two have shown a decline. Of the causes of death ranked among the first ten, the highest decrease in the number of deaths is seen for self-harm (17%). Most premature deaths are caused by ischaemic heart disease, self-harm, diabetes, cerebrovascular diseases and road injuries (Institute for Health Metrics and Evaluation, 2018).

Data on hospital deaths (MoH, 2016) show that both in 2010 and 2016, ischaemic heart disease and neoplasms were the two leading causes, accounting for 23.9% and 26.1%, respectively, of all deaths. In 2016, zoonotic and bacterial diseases had a higher proportion of deaths compared to 2010, probably due to the epidemics of H1N1 and dengue/dengue haemorrhagic fever (DHF) seen that year (Table 9.3).

Table 9.3   Sri Lanka: Leading causes of hospital deaths (based on public sector data, 2010 and 2016)

Rank	Condition	2010 %	Condition	2016 %
1	Ischaemic heart disease	12.8	Ischaemic heart disease	14.1
2	Neoplasms	11.1	Neoplasms	12.0
3	Pulmonary heart disease and diseases of the pulmonary circulation	8.7	Zoonotic and other bacterial diseases	11.6
4	Cerebrovascular disease	8.7	Pulmonary heart disease and diseases of the pulmonary circulation	8.7
5	Disease of the respiratory system excluding upper respiratory tract infection (URTI)	7.0	Disease of the respiratory system excluding URTI	8.3
6	Zoonotic and other bacterial diseases	6.6	Cerebrovascular disease	8.2
7	Diseases of the gastrointestinal tract	6.2	Pneumonia	6.4
8	Diseases of the urinary system	5.7	Diseases of the urinary system	6.2
9	Pneumonia	5.2	Diseases of the gastrointestinal tract	5.5
10	Symptoms, signs and abnormal clinical and laboratory findings	5.0	Traumatic injuries	3.9

Source: Ministry of Health, Nutrition and Indigenous Medicine, 2016

In both sexes, ischaemic heart disease and diabetes mellitus are the leading contributors to DALYs, followed by cerebrovascular disease, malignancies and hearing loss among women, while in men the 3rd, 4th and 5th ranks

are taken by cirrhosis, cerebrovascular disease and road injury. These same causes in both men and women have the highest years of life lost (YLLs), suggesting premature loss of life, which has the potential to impact the economic productivity of the country.

Years lost due to disability (YLDs) indicate conditions that people live with and for which services need to be provided. In both sexes, diabetes mellitus and hearing loss have a high number of years lived with disease, while back and neck pain appears to be a problem women endure (Table 9.4).

Table 9.4   Sri Lanka: Leading causes of DALYs by sex, 2016 estimates

Rank	Top ten ranking for men	YLLs (x 1000)	YLDs (x 1000)	DALYs (x 1000)	Top ten ranking for women	YLLs (x 1000)	YLDs (x 1000)	DALYs (x 1000)
1	Ischaemic heart disease	405.2	13.4	418.6	Ischaemic heart disease	241.5	10.1	251.5
2	Diabetes mellitus	129.3	63.8	193.1	Diabetes mellitus	138.5	69.6	208.1
3	Cirrhosis of the liver	173.4	2.1	175.5	Stroke	106.4	20.6	127.0
4	Stroke	148.5	15.9	164.4	Other malignant neoplasms	97.3	0.2	97.4
5	Road injury	115.9	13.5	129.4	Other hearing loss	0	88.4	88.4
6	Other malignant neoplasms	125.2	0.2	125.4	Asthma	62.9	23.3	86.2
7	Self-harm	110.3	1.2	111.5	Alzheimer disease	67.4	16.7	84.2
8	COPD	69.5	38.8	108.3	Back and neck pain	0	69.4	69.4
9	Other hearing loss	0	90.4	90.4	Kidney disease	57.3	10.0	67.3
10	Asthma	66.3	22.1	88.4	COPD	41.1	24.7	65.8

Key: COPD: chronic obstructive pulmonary disease; DALY: disability-adjusted life year; YLD: years lost due to disability; YLL: years of life lost
*Source:* WHO, 2018

9.2.2   Risk factors

The WHO STEPwise approach to surveillance of NCDs (STEPS) in Sri Lanka (WHO, 2015) estimated that 90% of Sri Lankan adults (18–69 years) have at least one of the NCD risk factors, 73.5% have 1–2 risk factors, and 18.3% have 3–5 risk factors), the prevalence being similar among men and women.

Estimates of the Global Burden of Disease (GBD) study (2016) show that the risk factors contributing to the most DALYs in Sri Lanka were high fasting plasma glucose level followed by dietary risks (2nd), high blood pressure (3rd), high BMI (4th) and tobacco use (5th). In comparison with 2005, high fasting plasma glucose level had surpassed dietary risk as the leading risk factor. Alcohol and drug use showed the highest increase (45.6%) followed by high BMI (37.7%) (Institute for Health Metrics and Evaluation, 2018) (Fig. 9.2).

Fig. 9.2   Sri Lanka: Top 10 risks contributing to DALYs and percent change, all ages, 2005 and 2016
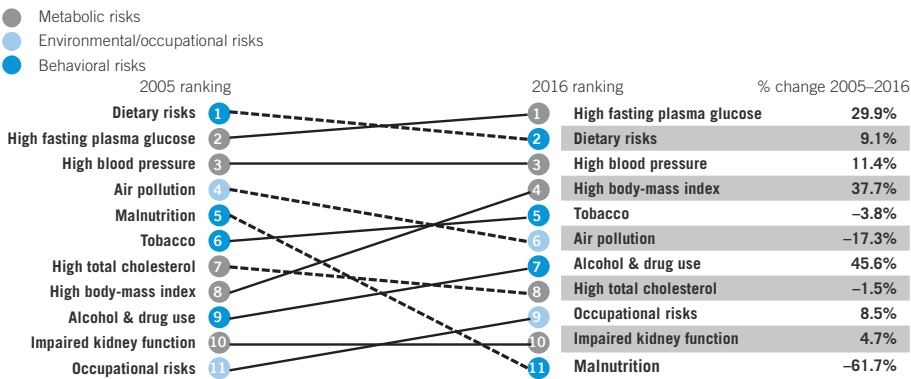
Source: Institute for Health Metrics and Evaluation, 2018

It is estimated that tobacco-related illness causes about 20 000 deaths per year in Sri Lanka, i.e. about 15.6% of all deaths (MoH, 2009). According to the STEPS survey 2015, 45.7% of men and 5.3% of women were current users of a tobacco product, most being daily users. Prevalence of current smoking was 29.4% in men, more than two thirds of whom were daily smokers. A little over a third (34.8%) of the men were current alcohol users and 17% of men reported heavy episodic drinking during the 30 days preceding the survey (WHO, 2015). In 2015, it was estimated that the costs of managing alcohol- and tobacco-related illness in the public sector was 21.9% and 16.4%, respectively, of the total health costs in that year (National Authority on Tobacco and Alcohol, 2017; Ranaweera et al., 2018).

Both routine data and surveys (NCD risk factor survey [WHO, 2015], Demographic and Health Survey [DHS] of 2016) highlight the increasing problem of overweight and obesity in the country. The NCD risk factor survey (WHO, 2015) identified that nearly one fourth of the men (24.6%) and one third of the women (34.3%) 18–69 years of age were either overweight or obese (WHO, 2015). The DHS 2015 reported that of the women 15–49 years of age, who were not pregnant and who had not had a birth in the 2 months prior to the survey, 32% were overweight (BMI 25.0–29.9 kg/m^2) while 13% were obese (BMI 30 kg/m^2 or more). Routine data (Ministry of Health, Nutrition and Indigenous Medicine, 2018b) reports show that 21.3% of women who registered for ANC before 12 weeks of pregnancy had a BMI of over 25 kg/m^2.

Sri Lanka continues to have unacceptable rates of childhood undernutrition. It is well recognized that good nutrition during the first 1000 days of life has lasting health benefits in life and that low birth-weight babies are programmed to be at increased risk of NCDs in later life (Barker, 2007). Prevalence of low birth weight has been fluctuating between 13.3% and 11.4% during the years 2007–2015 (Ministry of Health, Nutrition and Indigenous Medicine, 2018b). The DHS 2016 reported a higher rate of 16.7% among live births in the five years preceding the survey, based on the Child Health and Development Record.

Maternal BMI being a major determinant of low birth weight, it is important to note that undernutrition is also seen among women in the reproductive age group. The Reproductive Health Management Information System (RHMIS) reports that in the period 2009–2015, a fifth to a quarter of women who registered for ANC before 12 weeks had a BMI of less than 18.5 kg/m^2 (Ministry of Health, Nutrition and Indigenous Medicine, 2018b)

Linear growth retardation in the first 2 years of life and subsequent obesity are known risk factors for NCDs, especially CVDs (Black et al., 2013). The DHS 2015 reported that 17% of children under 5 years of age are stunted, with 4% being severely stunted, 15% are wasted and 21% are underweight. Stunting has remained the same as in the DHS 2006 and it is noted that there are wide inter-district and -sectoral variations in all three measures (Department of Census and Statistics, 2016).

9.3 The health system

9.3.1 Organization and governance

Contemporary Sri Lanka has a pluralistic health system, comprising western allopathic, the four traditional Sri Lankan systems of care, namely: Ayurveda, Siddha, Unani, Deshiya-Chikitsa, as well as Acupuncture. In both systems, health care is provided by the government, private sector and very limited services by non-profit organizations. The traditional systems of care are used by a minority of the population and data are not routinely available (Ministry of Health, Nutrition and Indigenous Medicine, 2016). This section describes the allopathic health services of the country (Fig. 9.3).

Fig. 9.3 Sri Lanka: Organization of the health-care system
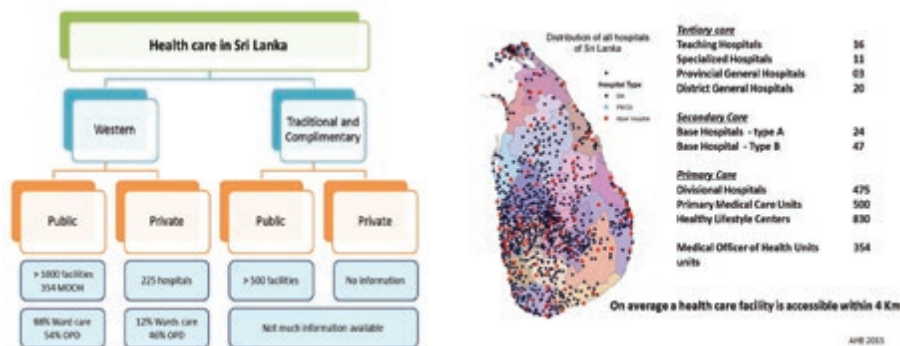
Source: Ministry of Health, Nutrition and Indigenous Medicine, 2017 and authors' own data

The country's government health system is recognized as a high-impact, low-cost model that provides all its citizens with moderate-quality services. Comprehensive promotive, preventive and curative services are available through the public sector allopathic services and are spread all over the island. The system is funded by public finances, universally accessible and free of charge at the point of delivery, ensuring equal access to low socioeconomic groups (Smith, 2018). The public sector provides 88% of inpatient care and half of outpatient care, with the private sector providing the remainder of inpatient and outpatient care (Ministry of Health, Nutrition and Indigenous Medicine, 2018a; Withanachchi and Uchida,

2006). An expanding private sector is operating in selected urban settings, complementing the State sector hospitals.

An important change in the system of health-care provision came with the devolution of power to the provinces in 1989, resulting in the establishment of provincial health ministries, provincial and divisional directors of health services and shared responsibilities for the provision of care. Teaching hospitals, specialized hospitals, provincial general and selected district general hospitals are under the central Ministry of Health (MoH), while the rest of the facilities, including preventive health-care services, are under the administrative purview of the provincial health ministries.

The private sector comprises a mix of large hospital groups, small hospitals and private nursing homes, as well as full-time and part-time general practices. Private hospitals are located mainly in urban areas and are staffed by both full-time private doctors and government doctors working in their off-duty hours. Private general practices mainly provide ambulatory care and have wide coverage throughout the island. These are supervised by full-time general practitioners, some of whom are specialists in general practice or by government medical officers working part time. The increase in private sector services has been backed by industry-driven chains of pharmaceutical and laboratory services, as well as small-scale individual-owned laboratories and privately owned pharmacies.

9.3.2 Patient-centredness

Investment in health-care services by successive governments has resulted in increased population coverage; a primary care facility supervised by a qualified medical officer (at least MBBS) being physically accessible within 4 km on average (Ministry of Health, Nutrition and Indigenous Medicine, 2016). Despite the existence of a formal referral system within the structured network of institutions, people are not restricted from accessing specialized care directly at any level of care provision. Although this provides for individual preference, continuity, coordination and integration of care are poorly served. Physical comfort of patients is an aspect that needs considerable improvement within the network of government health-care institutions.

9.3.3 Financing

The public sector health services are financed from the tax revenue, with a very small percentage from international development assistance. The health spending is mostly from the Central Government (Health Economics Cell, 2016) with a small contribution from provincial and local governments. It must be noted that the finances for provincial and local governments also come principally from the Central Government through the finance commission (Ministry of Finance, 2017).

Public expenditure on health care has fluctuated between 2% and 1.66% of the GDP between 2006 and 2015, while the total health expenditure has stagnated at around 3% of the GDP. In 2013, the total health expenditure was estimated to be around US$ 2 billion, with the public–private contribution ratio being 55:45. Per capita health expenditure was estimated to be US$ 97 (Health Economics Cell, 2016).

The National Health Accounts for 2013 showed that 91% of health expenditure was utilized by the curative sector and 4.5% by the preventive sector. NCDs accounted for 35% while infectious and parasitic diseases accounted for 22% of the total health expenditure (Health Economics Cell, 2016).

Private health services are funded mostly by out-of-pocket spending by households. The bulk of household spending on health is for fees to private medical practitioners (36%), purchase of medical and pharmaceutical items (24%) and payments to private hospitals and nursing homes (22%). The Household Income and Expenditure Survey (HIES) (2012–13) shows that 5.3% of households spent more than 10% of their total expenditure on health, while 0.9% of households spent more than a quarter of the total expenditure on health care (Hui, Tores and Travis, 2018).

9.3.4 Physical and human resources

The State curative facilities are organized as a tiered structure, each providing a defined level of care. They range from teaching hospitals attached to universities with superspecialties, provincial, district general and base hospitals with selected specialties to divisional hospitals

(outpatient care and inpatient care) and primary medical care units offering only outpatient care. There are also a few specialized hospitals which serve as centres of excellence in the system (Table 9.5).

Table 9.5   Sri Lanka: Numbers and types of government hospitals with associated bed numbers at line ministry and provincial level

Hospital type	Number of hospitals			Bed strength		
	Line ministry	Province	Total	Line ministry	Province	Total
National hospital	1	-	1	3294	-	3294
Teaching hospitals	20	-	20	19 503	-	19 503
Provincial general hospitals	3	-	3	5160	-	5160
District general hospitals	10	9	19	6623	4524	11 147
Base hospitals – type A	5	22	27	1439	7473	8912
Base hospitals – type B	3	49	52	701	7204	7905
Divisional hospitals – type A (>100 beds)	2	61	63	355	5254	5609
Divisional hospitals – type B (50–100 beds)	2	136	138	100	8071	8171
Divisional hospitals – type C (<50 beds)	1	288	289	59	6816	6875
Primary medical care units	1	505	506	0	198	445
Total	**48**	**1070**	**1118**	**35 814**	**39 540**	**76 781**

Source: Ministry of Health, Nutrition and Indigenous Medicine, 2018c

The preventive and promotive arm of the health-care system provides a comprehensive care package at the field level through an island wide network of 354 health units/medical officer of health units. Both domiciliary and clinic-based care is delivered to a geographically defined population by a team of health-care professionals. Health services are mainly focused on maternal and child health (MCH), school health, environmental sanitation, food and water hygiene, and prevention and control of communicable diseases.

Most of the human resource categories in Sri Lanka are trained within the country. The nine medical faculties under the Ministry of Higher Education are responsible for the production of medical, dental and selected paramedical categories supplementary to medicine. The Post Graduate Institute of Medicine, attached to the Faculty of Medicine, University of Colombo, functions as the only postgraduate training facility for the

country. Competitive entry examinations limit the number of candidates admitted for postgraduate training and opportunity to complete publicly funded postdoctoral attachments at identified centres of excellence. Registration by the Sri Lanka Medical Council is mandatory to practise medicine in the country; the Sri Lanka Medical Council functions as the gatekeeper for maintaining the standards of medical practitioners allowed to practise in Sri Lanka.

Institutions under the MoH produce almost all other human resources (nursing officers, pharmacists, laboratory technicians, ECG technicians, midwives, public health inspectors, etc.) for the government sector. Eighteen nurse training schools follow a standard curriculum of three years and produce around 2500 nurses annually. Similarly, there are State-owned training schools for pharmacy, laboratory technology, public health inspectors and public health midwives. Major private hospital groups in Sri Lanka run their own schools for training nurses, which are attached to their hospitals. Despite using accredited training curricula, these training schools are not allowed access to the State facilities nor can their nurses get employment in the public sector.

To improve the coordination of planning, production, deployment and retention of health workers, a human resources for health (HRH) coordination unit was established in 2016. Retaining human resources in rural areas continues to be a challenge in many parts of the country. A structured continuous health professional development system, linked to career development pathways, is needed for all staff categories. While the country prides itself on the vast network of community-based family health workers, re-tooling and re-scaling of front-line health functionaries is needed to address the epidemic of NCDs facing the country. Specific human resource skills in geriatrics, palliative care medicine, rehabilitation care, speech therapy and occupational therapy also need to be developed. Table 9.6 summarizes the available data on health-care worker status in Sri Lanka.

Table 9.6   Sri Lanka: Trends in key health professionals per 100 000 population, 2000–2012

Year	Medical officers	Dental surgeons	Registered/assistant medical officers	Nurses	Public health nurses	Public health inspectors
2000	41.1	3.3	7.0	76.0	1.4	7.7
2005	51.9	4.9	6.5	101.4	1.6	7.7
2010	71.0	5.5	5.4	171.2	1.8	7.0
2012	78.6	6.0	5.6	180.3	1.6	7.5

Source: Yiengprugsawan, Healy and Kendig, 2016

9.3.5   Provision of services

Management of NCDs

Taking into consideration the burden posed by NCDs, the central MoH created a special NCD Bureau in 2016, under a Deputy Director General of Health Services. The Bureau brings together all NCD-related programmes currently carried out by different actors within and outside the MoH, such as the National Authority on Tobacco and Alcohol, Family Health Bureau, Food Control unit, Environment and Occupational Health and the Nutrition Coordination unit of the MoH.

Sri Lanka has endorsed the WHO FCTC and has already incorporated the following measures: increased taxation (some varieties taxed up to 75%), 80% pictorial warnings on packaging, establishment of a tobacco quit help-line and plain packaging of tobacco products by 2019. A traffic light system has been introduced for labelling of sugar content, and a sugar-sweetened beverage tax was also introduced in 2017.

Recognizing the need for special services geared to serve the needs of NCDs, the MoH has established around 900 healthy lifestyle centres covering the entire country. These provide screening for NCDs and risk factors, referral for care, health promotion and behaviour change education. The services provided by Well Women Clinics, which have been in operation within the preventive care sector, have been extended to include NCD and risk factor screening.

As a means of financial risk protection for the population accessing government services for procedures that need special supplies and commodities, efforts have been made to ensure increased supplies within the government system and reduce waiting times for these procedures, thus decreasing the likelihood of patients using the private sector. A list of 18 drugs considered essential for management of NCDs (MoH, 2013) has been published and the supply chain management system within the MoH has been strengthened. In addition, substantial price reductions were made for a list of 48 essential drugs, including drugs commonly used in the treatment of NCDs through a price cap regulation (Parliament of the Democratic Socialist Republic of Sri Lanka, 2015).

A Parliamentary Select Committee was established to examine the alarming increase in road traffic accidents, which resulted in a National Action Plan on Road Safety. The MoH has initiated surveillance of injuries needing admission at sentinel sites with a view to planning measures to reduce resultant mortality and morbidity.

The MoH has endorsed the reorganization of primary health care as the means of improving effective access, quality and continuity of care for the majority of NCDs. This envisages a "shared care cluster system" where a primary health-care institution that serves a defined population is linked to specific higher-level institutions. An essential service package and a service delivery model to provide this care are being developed currently. Improved supply chain management, laboratory service, an improved skill mix and a personalized health record are important components of the envisaged plan (Ministry of Health, Nutrition and Indigenous Medicine, 2018a).

Management of communicable diseases, including emerging diseases

Prevention and control of communicable diseases and emerging diseases come under the Deputy Director General for Public Health Services of the MoH. Vertical programmes function for prevention and control of TB, HIV/STIs, filariasis, leprosy, rabies, dengue and malaria. The Epidemiology Unit established in 1959 functions as the national focal point for disease surveillance.

The country commenced the Expanded Programme on Immunization in 1978. It has periodically added new vaccines to the Programme (measles 1984, measles and rubella, and adult tetanus and diphtheria 2001, hepatitis B 2003 and *Haemophilus influenzae* type B [HiB] 2008) (Epidemiology Unit: Ministry of Health, Nutrition and Indigenous Medicine, 2018). The Programme has achieved near universal coverage and, in 2016, it recorded 99.2% coverage for BCG, 96% coverage for both the triple (DPT–HepB–HiB) and the polio vaccines, and 97.1% coverage for measles (Department of Census and Statistics, 2016).

The HIV prevalence in Sri Lanka is low, at <0.1%, and is concentrated among key population groups. The prevalence of TB has remained stagnant over the past decade and continues to be endemic in several areas, the estimated incidence being 65 per 100 000 population (United Nations Sri Lanka, 2018). The number of patients presenting with multidrug-resistant (MDR)-TB has increased over the years, causing concern (Ministry of Health Nutrition and Indigenous Medicine, 2016).During the year 2017, the country experienced the worst outbreak of Dengue with around 186000 new incidences and around 300 deaths as well as seeing a rise in H1N1 infections which increased mortality and morbidity due to infectious disease. The re-emergence of diseases such as leprosy is noteworthy. Leishmaniasis has gained importance with increasing exposure of populations to the vector. Increasing AMR to commonly used antibiotics is a major concern.

Sri Lanka maintains strict preparedness for pandemic measures and has been able to prevent any serious outbreak from occurring in the country.

Management of MCH

From 1926, Sri Lanka has had a system for delivery of MCH care, which has produced significant gains in terms of infant mortality rate (IMR) (8), neonatal mortality rate (NMR) (5.8), under-5 mortality rate (9.4) and MMR (26.8) (Ministry of Health, Nutrition and Indigenous Medicine, 2016). However, the rate of decline of these indicators has slowed down in the past decade and has been accompanied by a change in the relative importance of the causes of mortality. Further improvements in the IMR and under-5 mortality rate will depend to a large extent on improvements in perinatal mortality and morbidity. These will necessitate improved coordination

between field and institutional services, re-tooling of the skill mix of human resources, multidisciplinary care teams, highly specialized facilities and improvement in quality of care, all needing substantial financial investments (Family Health Bureau: Ministry of Health, 2015; Rajapaksa et al., 2014).

9.4 Performance of the health system

9.4.1 Effectiveness and quality

Sri Lanka is acknowledged as a country that has an effective, equitable, low-cost health-care system (Smith, 2018). Health outcomes are better than those in many countries in the region and countries with a comparable income (World Bank, 2018). Data from the GBD project have been used to develop a health-care access and quality index using 30 cause-specific mortality rates for 30 conditions. Sri Lanka has a score of 72.8 out of a possible 100, an improvement from the 1990 figure of 56.9. The current figure is better than that of most of the neighbouring countries such as Indonesia, Malaysia and Thailand (Barber et al., 2017). The SDG Index calculated using 37 of the 50 SDGs is a proxy measure of the overall effectiveness of the health-care system. Sri Lanka, with a score of 62 out of 100, ranks 70th out of 188 countries, Malaysia and Maldives are ranked higher than Sri Lanka, while other countries in the region are ranked below Sri Lanka. In respect of this Index too, the country has shown progress from a score of 38 in 1990 to the current score (Fullman et al., 2017).

A National Health Performance Framework – a framework for monitoring the performance of the State health system – has been adopted. Financial allocation, service provision and service utilization are documented regularly and are published online. Health coverage indicators, health conditions and risk factor survey reports are also made available and are accessible to the general public.

The State has endorsed the SDG framework and keeps track of 46 health-related indicators nationally and at the subnational level. An SDG tracker for Sri Lanka is available online (United Nations Sri Lanka, 2018) with free access. However, a culture of accessing these statistics is not evident in the general population.

The quality of outpatient primary care in Sri Lanka is generally considered high for an LMIC. The quality of care in the public sector was seen to be better than that in the private sector in many areas, despite financial constraints (Rannan-Eliya et al., 2015a). Studies have shown that the quality of diagnosis and management aspects of care in the public sector is similar to that of the private sector. However, the private sector allows patients a choice of providers and better quality care in non-clinical areas (Rannan-Eliya et al., 2015b).

Russel and Gilson (2006) studying an urban population in Sri Lanka found that, irrespective of income group, people relied on the government sector for technical competence, especially in receiving inpatient care. But service providers in the government sector were found to lack soft skills and interpersonal skills so that high-income people and even a considerable proportion of middle-income ones opted to seek care in the private sector for moderate illnesses. Similarly, children with high-risk symptoms were taken to government sector institutions whereas children with low-risk symptoms were taken to the private sector.

9.4.2 Accessibility

The State provides access to a health-care facility within 4 km of the population. Each district has at least one tertiary care facility and one secondary care facility. Emergency care is provided at all facilities. Specialized care is made available at the secondary and tertiary levels of care. Despite having comprehensive care in each district, many services are seen to be inequitably distributed (Ministry of Health, Nutrition and Indigenous Medicine, 2016).

In spite of the geographical dispersion of facilities, the rate of utilization is poor among the working population (Ministry of Health, Nutrition and Indigenous Medicine, 2016). The STEPS survey identified that a third of the adult population had never been screened for hypertension, as was the case for diabetes (WHO, 2015). This is attributed to limited service availability during time periods convenient to the working population.

9.4.3 Resilience

The Sri Lankan population is ageing fast. Around 75% of the current disease burden is attributed to NCDs. Deficiencies in the current system in addressing NCDs and the needs of the elderly have been identified for reorganization. Reorganization of primary care to address this emerging burden and to improve access to quality care for the entire population is being planned. The strengths and successes of the current field health services of the preventive sector will be harmonized to develop a suitable service delivery model for the primary health care curative system.

Inadequate tax revenues and government debt have limited further allocations for health. Low spending on health by the State is coupled with issues in continuous financial flows and public financial management. The Inland Revenue Act, 24 of 2017, in effect from 1 April 2018, was introduced by the government to increase the tax revenue of the country. Increasing tax revenues needs to be complemented with identification of additional financing mechanisms such as earmarked taxes from alcohol, tobacco and sugar-sweetened beverages, and increasing recovery from insurance for increasing the health budget. Revisiting the public financial management system as well as addressing inefficiencies will be critical for sustaining and increasing the resources for health.

The medical officer of Health units focusing on MCH care, the curative care facilities providing outpatient and inpatient care, as well as the TB, STI, filariasis, malaria and leprosy programmes are designed vertically with varied levels of functional integration. Most of these programmes have their own budget lines, own cadres of medical officers and support staff. The reorganization envisages an integrated system to improve efficiency.

The State employs around 141 000 health-care workers. The HRH coordination unit of the MoH   coordinates the recruitment, training, deployment and planning of all human resources. All State employees are entitled to a pension, medical schemes and subsidized State-sponsored loans. Some of the higher grade professionals are entitled to additional allowances (communication and research), State-funded postgraduate education and vehicle permits with a duty concession. Periodic compulsory transfer schemes, which allow the possibility of shifting to better work settings with increasing seniority, have contributed to the continuous

retention of human resources in difficult stations. Having the opportunity to enhance incomes through private practice during off-duty hours has facilitated rural retention and minimized brain drain.

9.5   Conclusions

Future developments

The MoH has identified the reorganization of primary health care as the means of achieving UHC and specifically as a means of addressing the growing burden of NCDs. Towards this end, it has formulated a strategic plan that will drive the provision of health-care services in the coming years (Ministry of Health, Nutrition and Indigenous Medicine, 2018a). These planned programmes would underpin the progress Sri Lanka has made in addressing the issues of equity and social determinants of health.

This strategic plan will consist of a package of essential services focused on the management of NCDs in the community, linking curative, preventive and promotive services, and would ensure patient-centred continuity of care. The reforms envisage the incorporation of new technology into the health-care system in a judicious and equitable manner.

The first step in the planned reforms would be a redefinition of primary care institutions with empanelling of populations to each institution and the identification of a practicable referral system. It would also include the rationalization of human resources with a skill mix necessary for optimum service delivery at each level. These would be complemented by ancillary services and essential supplies.

An individualized patient record system would form an integral part of the envisaged reorganization. Each person will be provided a secure smart health card, which will contain personal health information accessible at both public and private health-care delivery points. This would further strengthen the synergies between the private and public sectors and facilitate continuity of care. The patient information system would be synchronized with institutional as well as disease notification and surveillance systems.

An important arm of the reforms envisages building on the health literacy of the populations to engage and empower individuals to take more responsibility for their own health and to leverage technological advances and innovations for this purpose.

The health emergency preparedness and response system and the capacity of the health system to respond to health issues arising due to climate change would be further strengthened.

Challenges

Although the country has made remarkable progress over the years, particularly in the fields of communicable diseases and MCH, the system has not evolved appropriately to meet the changing demands of the demographic and epidemiological transition. Hence, the health services of Sri Lanka would continue to be challenged by the rapidly ageing population and the changing disease burden.

Furthermore, the MCH statistics indicate stagnation over the past decade, associated with changes in the causes of mortality. The current MCH strategies need to be re-examined to address these challenges.

While the health system has been able to deliver a set of essential services in an equitable fashion, maintaining equity while improving the quality of services to meet client expectations and satisfaction remains a challenge.

The present structure for delivery of care is fragmented into functional silos. Although this has produced the desired results in the past, a more integrated approach to service delivery is needed to address the emerging challenges. Given the financial limitations, another challenge would be to reorient the system so that human and other resources function in a synchronized manner with optimal productivity.

Sri Lanka has been delivering good health care at low cost; however, further incremental improvements will necessitate further substantial investments. Improving the health of the population entails addressing equity in social and economic policies, the environment and personal behaviours of the people in an integrated and comprehensive manner, rather than a narrow focus on delivery of health services. The challenge is in accomplishing this.

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The Asia Pacific Observatory on Health Systems and Policies (the APO) is a collaborative partnership of interested governments, international agencies, foundations, and researchers that promotes evidence-informed health system policy regionally and in all countries in the Asia Pacific region. The APO collaboratively identifies priority health system issues across the Asia Pacific region; develops and synthesizes relevant research to support and inform countries' evidence-based policy development; and builds country and regional health systems research and evidence-informed policy capacity.

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