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Evaluation of Sri Lanka's National Policy and Strategic Framework for Prevention and Control of Chronic Non-Communicable Diseases 2010–2020



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**Office of the Deputy Director General (Non-Communicable Diseases), Ministry of Health, Sri Lanka
Bloomberg Philanthropies Data for Health Initiative
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Abbreviations and acronyms

BMI	Body Mass Index
CCP	Consultant Community Physician
CKD	Chronic Kidney Disease
COVID-19	2019 Novel Coronavirus
CRD	Chronic Respiratory Disease
CVD	Cardiovascular Disease
DBP	Diastolic Blood Pressure
DDG	Deputy Director General
DDG (MS) I	Deputy Director General (Medical Services) I
DDG (NCD)	Deputy Director General (Non-Communicable Diseases)
DHS	Demographic Health Survey
FCTC	Framework Convention on Tobacco Control
GDP	Gross Domestic Product
HEO	Health Education Officer
HLC	Healthy Lifestyle Centre
KII	Key Informant Interview
MCH	Maternal and Child Health
MO (NCD)	Medical Officer (Non-Communicable Diseases)
MRI	Medical Research Institute
N/A	Not Available
NATA	National Authority on Tobacco and Alcohol
NCD	Non-Communicable Disease
NCD Policy	The National Policy and Strategic Framework for Prevention and Control of Chronic Non-Communicable Diseases
NGO	Non-Governmental Organisation
NMAP 2016	National Multisectoral Action Plan for the Prevention and Control of Noncommunicable Diseases 2016–2020
PDHS	Provincial Director of Health Services
PHNO	Public Health Nursing Officer
RADaR	Rigorous and Accelerated Data Reduction
RDHS	Regional Director of Health Services
SARA	Service Availability and Readiness Assessment
SBP	Systolic Blood Pressure
SDGs	Sustainable Development Goals
SEAR	South-East Asia Region
SHSDP	Second Health Sector Development Project
SMS	Short Message Service
STEPS survey	STEPwise Approach to NCD Risk Factor Surveillance
UN	United Nations
UNEG	UN Evaluation Group
WHA	World Health Assembly
WHO	World Health Organization

Definitions

Morbidity

Any departure, subjective or objective, from a state of physiological or psychological well-being. In practice, morbidity encompasses disease, injury, and disability.

Mortality

Refers to the state of being mortal (destined to die). In medicine, a term also used for death rate, or the number of deaths in a certain group of people in a certain period of time. Mortality may be reported for people who have a certain disease; who live in one area of the country; or who are of a certain gender, age, or ethnic group.

Premature Mortality from Non-Communicable Diseases

Deaths that occur before the age of 70 years in a certain population from cardiovascular disease, cancer, diabetes, or chronic respiratory disease.

Prevalence

Prevalence, sometimes referred to as prevalence rate, is the proportion of persons in a population who have a particular disease or attribute at a specified point in time or over a specified period of time. Prevalence differs from incidence in that prevalence includes all cases, both new and preexisting, in the population at the specified time, whereas incidence is limited to only new cases.

Relative Risk Reduction

The relative risk reduction is the difference in event rates between two groups, expressed as a proportion of the event rate in the untreated group. In other words, it is the extent to which the risk of a poor outcome is reduced by an intervention.

Risk Factor

A risk factor is any attribute, characteristic, or exposure of an individual that increases the likelihood of developing a disease or injury.

Life Expectancy at Birth

The average number of years that a newborn could expect to live, if he or she were to pass through life exposed to the sex- and age-specific death rates prevailing at the time of his or her birth; for a specific year; in a given country, territory, or geographic area.

Executive Summary

Programme Overview

Globally, more than 36 million deaths are attributed to non-communicable diseases (NCDs) of which nearly half are categorised as premature. More than 80% of the burden of these premature deaths is borne by low- and middle-income countries. Major global milestones in combatting NCDs included: the World Health Assembly's adoption of Resolution WHA 53.14 in 2000 which reaffirmed the World Health Organization's (WHO) global strategy for the prevention and control of NCDs, the United Nations' (UN) release in 2011 of a Political Declaration of the High-Level Meeting of the General Assembly on the Prevention and Control of Non-Communicable Diseases, WHO's NCD Global Monitoring Framework from 2013, and the prominence given to NCDs in the sustainable development goals (SDGs) set forth by the UN General Assembly in 2015.

In Sri Lanka, the ageing population, rapid urbanization, and lifestyle changes have led to an epidemiological transition. By the turn of the century, chronic NCDs, particularly cardiovascular diseases, cancers, and chronic respiratory diseases, have become the main causes of hospital deaths, morbidity, and hospitalisations, resulting in a major burden to the country's health system. NCDs were identified as an important issue in the National Health Policy of Sri Lanka published in 1996. The Health Master Plan for 2007 to 2016 identified the prevention and control of NCDs as a priority intervention. This resulted in the establishment of a dedicated NCD Unit in the Ministry of Health to provide technical guidance for managing and preventing NCDs at the grassroots level.

With support and advocacy from the WHO Sri Lanka office, the NCD Unit prepared Sri Lanka's National Policy and Strategic Framework for Prevention and Control of Chronic Non-Communicable Diseases (hereafter NCD Policy), which was implemented in 2010. Through nine key strategies, the policy focused on promoting the health and well-being of the population by preventing chronic NCDs associated with shared modifiable risk factors, providing acute and integrated long-term care for people living with NCDs, and maximizing their quality of life. The guiding principles and strategic foci of the policy were influenced by existing global frameworks and the National Health Policy of Sri Lanka. The policy aimed to reduce premature mortality attributed to NCDs by 2% annually over the next decade.

In 2013, WHO published the Global Action Plan for the Prevention and Control of Non-Communicable Diseases 2013–2020. Consequently in 2016, Sri Lanka formulated the National Multisectoral Action Plan for the Prevention and Control of Non-Communicable Diseases 2016–2020 (hereafter NMAP 2016). The NMAP 2016 identified nine NCD targets to be achieved in 2025 and interim targets for 2020.

Sri Lanka's NCD Policy and NMAP 2016 both established targets to be achieved by 2020. Now that we have moved past the year 2020, it is time to examine the successes and challenges of achieving these targets. The purpose of this evaluation is to assess the extent to which the implementation of the NCD Policy met its objective of reducing premature mortality in Sri Lanka over the past decade. Our findings will inform future NCD policies and action plans in Sri Lanka.

Evaluation Methodology

Content Evaluation

For this portion of the evaluation, the contents of the NCD Policy and NMAP 2016 were compared with the existing global standards set forth by WHO, specifically the Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020. Furthermore, the disease conditions mentioned in the NCD Policy and NMAP 2016 were compared with a list of NCDs that were recommended for use in NCD strategic plans and adapted to the Sri Lankan context (23).

Process Evaluation

Qualitative thematic content analysis was used to provide an in-depth understanding of stakeholder viewpoints on coordination, leadership, and service delivery in implementing key aspects of the NCD Policy and NMAP 2016. The framework addressed the areas of fidelity, completeness, exposure, satisfaction, equity in coverage, rollout/initiation, and context for the NCD Policy and NMAP 2016. The framework was used to develop the interview process, Key Informant Interview (KII) guide, and codebook for content analysis. Qualitative data collection was done using stratified purposive sampling of 16 key stakeholders representing the national, provincial/regional, and service delivery levels. A rapid qualitative methodology was used to analyse the qualitative data.

Outcome Evaluation

Data estimates from national surveys related to NCDs and the WHO Global Health Observatory website were obtained and tabled by the year of reporting from the baseline to the endline targets for 2020, and compared with the targets listed in the NMAP 2016. The relative change was calculated and compared with the NMAP 2016 target.

Important Findings and Conclusions

Content Evaluation

The content analysis found that Sri Lanka's policy goals, specifically those identified in the NMAP 2016, were quite similar to the objectives and targets in WHO's Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020. In addition, six conditions associated with behavioural risk factors and 27% of conditions (breast cancers, cervical cancers, and asthma) with a broader set of risk factors were included in the NMAP 2016. No other conditions were referenced in the NMAP 2016. The NCD Policy does not cover haematological, neurological, vision, and hearing disorders, and other policies in Sri Lanka cover cancer control, mental health, chronic kidney diseases, and acute injuries.

Process Evaluation

Qualitative interviews with stakeholders revealed important viewpoints on the coordination, leadership, and implementation of the NCD Policy and NMAP 2016. The adapted framework highlighted stakeholders' perceptions of which areas had successes and which had challenges. A key challenge that emerged from interviews was a lack of human resources as an obstacle to implementing policy at both the national and subnational levels. Respondents mentioned a lack of training programs for updating staff with new knowledge. They noted that while allocation of financial resources was adequate, there were challenges in accessing the funds. Other areas that respondents stressed could use improvement included: intersectoral collaboration at various levels, social determinants and community participation from beneficiaries, and monitoring and evaluation to expand the capacity of the system.

Stakeholders also noted successes of the NCD Policy and NMAP 2016 implementation. For example, they considered Healthy Lifestyle Centres (HLCs) to be a useful platform for identifying individuals at risk for NCDs; however, respondents noted that male participation at the HLCs is still low. They viewed the recruitment of Public Health Nursing Officers (PHNOs) as beneficial, particularly for the performance of HLCs. There was also resounding consensus among participants that the national and regional NCD Units play an important role in implementing the NCD programme. This insight is important for evaluating the coordination mechanisms for implementing key activities of targeted NCD Policy measures from the perspective of those responsible for the implementation.

Outcome Evaluation

The outcome evaluation found that the prevalence of alcohol use, insufficient physical activity, tobacco use, and high blood pressure increased between 2006 and 2015 according to STEPS survey data. Although 2020 data were not available, trajectories based on the available data points did not indicate that the targets for each indicator in the NMAP 2016 would be met. While lack of data was a limitation of this evaluation, these findings suggest that NCD policies and programmes should be adapted to address the increasing risk profile in Sri Lanka. Regarding mortality due to NCDs, there was a relative reduction between 2010 and 2020 of 23% in premature deaths and 22.5% in the probability of dying prematurely from NCDs; however, wide confidence intervals suggest a wide margin of error. Thus, it is difficult to determine if the target in the NMAP 2016 was indeed met. Although the prevalence of risk factors for NCDs is likely increasing, NCD-attributed mortality is decreasing. This could be explained by increased access to NCD care and drug therapy.

Summary of Recommendations

In preparation for NCD programming in the next decade, the government of Sri Lanka should consider certain recommendations to address the increased burden of NCDs in the country. Overall, NCD strategies, including health promotion and education activities, should be customized for sociocultural differences in the population. To enhance screening at HLCs, evidence-based, targeted interventions should be implemented, including offering services after work hours. At the national level, policymakers should focus on strengthening the health system by conducting periodic national NCD surveys, promoting research on interventions, and implementing performance-based financial allocation for NCD activities.

There should also be a focus on efforts to encourage political and cross-sectoral support. The government of Sri Lanka should develop communication strategies to promote NCD activities to the public and strategies for stakeholder mapping, advocacy, and behaviour change. Finally, policymakers should consider including action plans on other diseases, such as haematological, neurological, vision, and hearing disorders, in the NCD Policy.

Although Sri Lanka has seen success in its NCD risk factor screening programme, the prevalence of behavioural risk factors associated with the major NCD disease groups has increased in Sri Lanka over the past decade. While the government has designed and implemented a policy that aligns well with global frameworks, it is important for Sri Lanka to better adapt policies to its own sociocultural context in order to implement a policy and action plan that can effectively reduce the burden of NCDs.

Programme Overview

Background

Global NCD Trends

Non-communicable diseases (NCDs) are the world's biggest killers. Globally, more than 36 million deaths are attributed annually to NCDs (specifically cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes), which represents about 63% of global deaths (1). Of these deaths, more than 14 million are categorised as premature. The World Health Organization (WHO) states that 86% of the burden of these premature deaths is borne by low- and middle-income countries, resulting in cumulative economic losses of US \$7 trillion (1). In 2000, the World Health Assembly (WHA) adopted Resolution WHA 53.14 on global strategy for the prevention and control of non-communicable diseases. A decade later in 2011, the United Nations (UN) issued a Political Declaration of the High-Level Meeting of the General Assembly on the Prevention and Control of Non-Communicable Diseases. This was then followed by WHO's NCD Global Monitoring Framework in 2013 to assist member states in designing and operationalising their own NCD policies.

NCDs are featured in the current sustainable development goals (SDGs) under Target 3.4, which focuses on reducing premature mortality attributed to NCDs by one third by 2030 and generally promoting well-being (2). Other SDG targets related to NCDs include targets 3.5, 3.6, 3.8, 3.a, and 3.b, further underscoring the burden of NCDs as a major hurdle to progress in global development (2).

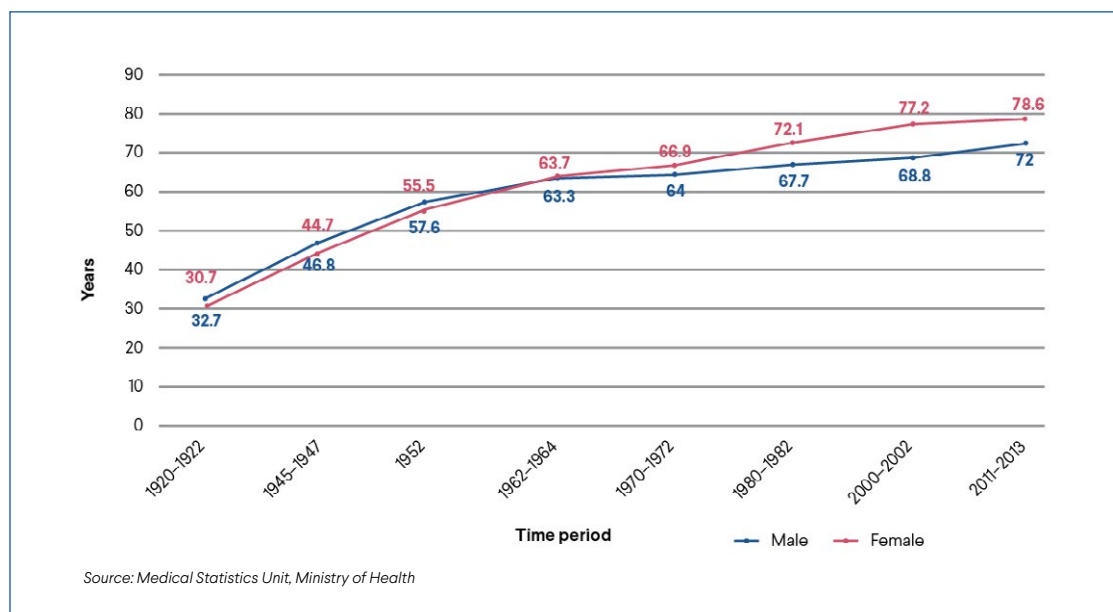
- Non-communicable diseases kill 36 million people each year, equivalent to 63% of all deaths globally.
- Each year, 14 million people die from an NCD between the ages of 30 and 69 years; 86% of these 'premature' deaths occur in low- and middle-income countries.
- Cardiovascular diseases account for most NCD deaths, or 17.9 million people annually, followed by cancers (9.0 million), respiratory diseases (3.9 million), and diabetes (1.6 million).
- These four groups of diseases account for more than 80% of all premature NCD deaths.
- Tobacco use, physical inactivity, the harmful use of alcohol, and unhealthy diets all increase the risk of dying from an NCD.
- Detection, screening, and treatment of NCDs, as well as palliative care, are key components of the response to NCDs.

Sri Lanka Health Profile

By the turn of the millennium, Sri Lanka benefited from achievements in controlling communicable diseases, improving maternal and child health, and minimising vaccine-preventable diseases that had occurred in the previous century due to the introduction of universal healthcare and education. Life expectancy at birth in Sri Lanka began to increase in the middle of the 20th century and continued an upward trend (Figure 1). During this time, life expectancy in Sri Lanka was well above other middle-income countries and on par with that of developed countries (3).

Sri Lanka has gone through a demographic transition closer to that of richer Asian economies than to regional neighbours in South Asia. The Sri Lankan population is ageing as life expectancies have lengthened and birth rates have fallen. About 3.5% of Sri Lanka's population is

Figure 1
Life Expectancy at Birth in Sri Lanka 1920–2013



classified as elderly (over 64 years). One key effect of an ageing population on the economy is slower growth in gross domestic product (GDP) per capita, resulting from slower growth of the working-age population. Challenges to the healthcare system also increase as the elderly population grows. The fiscal burden associated with increased costs for pensions, healthcare, and long-term care will increase and become exacerbated by the relative loss in tax revenue from slower economic growth (3).

Sri Lanka experienced strong economic growth in the last three decades, averaging 5% from 1971 to 2015. Poverty also significantly declined during this period, with the poverty rate declining from 28.8% in 1995–96 to 6.7% in 2012 (3). These improvements were accompanied by growth in the urban population (defined as people living within the 23 municipal and 41 urban councils), which increased from 14.6% of the total population in 2001 to 18.2% in 2012. Some studies suggest a higher current urbanization rate of more than 40%. According to the official estimates, Sri Lanka has an annual increase of 3%–4% in its urbanization rate, with an estimated 60% of the country's population living in urban centres by 2020 (3). Complementing this urbanization drive is a shift of the labour force from agriculture to service sectors.

Simultaneously with these demographic and socioeconomic changes, chronic non-communicable diseases overtook communicable diseases as the main cause of mortality and morbidity in the country (4). An ageing population, rapid urbanization, and lifestyle changes are key contributory factors in this epidemiological transition. In the 21st century, chronic non-communicable diseases—particularly cardiovascular diseases, cancers, and chronic respiratory diseases—are among the main causes of hospital deaths (Table 1 and Figure 2) and account for more than 40% of hospital deaths in Sri Lanka (Figure 3).

NCD Disease Burden in Sri Lanka

Similarly to global patterns, NCDs are among the leading causes of death in Sri Lanka. Throughout the first decade of the 21st century, chronic NCDs remained in the top 10 causes of hospital deaths in the country (Table 1), reflecting an upward trend of deaths attributed to NCDs.

Morbidity and hospitalisation due to NCDs resulted in a major burden to the health system of the country as shown in Table 2. Hospitalisations due to NCDs were significantly higher than those due to other causes.

There was a general upward trend in hospitalisations due to NCDs from 2003 to 2009 as seen in Figure 4.

Table 1

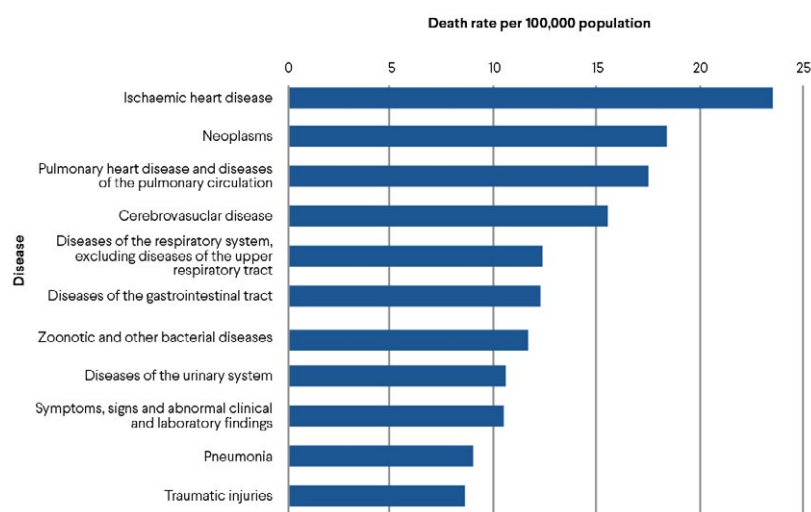
Leading Causes of Hospital Deaths 2002–2009, as Percentages of Total Deaths During Those Years

Causes of death	2002	2003	2004	2005	2006	2007	2008	2009
Ischaemic heart disease	9.9	12.5	11.6	11.4	12.6	13.1	12.5	12.8
Neoplasms	6.1	4.4	9.5	8.3	9.9	10.1	9.8	10.0
Pulmonary heart disease and diseases of the pulmonary circulation	7.6	9.1	8.4	15.4	10.0	10.1	10.0	9.5
Cerebrovascular disease	7.4	9.1	8.9	7.7	8.9	9.2	8.7	8.4
Diseases of the respiratory system, excluding diseases of the upper respiratory tract	5.8	6.9	6.8	7.3	6.9	6.5	8.0	6.7
Diseases of the gastrointestinal tract	9.1	10.8	9.4	8.5	6.9	7.0	7.0	6.6
Zoonotic and other bacterial diseases	3.5	4.3	4.1	4.2	4.9	5.6	6.2	6.3
Pneumonia	3.5	4.4	4.3	4.3	4.4	4.0	5.9	4.9
Traumatic injuries	3.2	4.2		5.0	3.8	4.0	3.7	4.6
Toxic effects of pesticides	4.0	4.5	4.0		3.8	3.3	2.6	2.4

Source: Medical Statistics Unit, Ministry of Health

Figure 2

Leading Causes of Hospital Deaths in 2009



Source: Medical Statistics Unit, Ministry of Health

Cardiovascular diseases, diabetes mellitus, chronic respiratory diseases, and chronic kidney diseases currently account for 75% of all deaths and are among the top 10 causes of death in Sri Lanka. Nearly 1 in 5 people in Sri Lanka die prematurely from NCDs (5). In addition to mortality, the chronic morbidity of these diseases continues to have major economic impacts on individuals, families, communities, and the country at large. In Sri Lanka, which has a mostly public-financed healthcare system, this creates an immense strain on the country's health infrastructure (6). Recognizing this challenge, Sri Lanka has prioritised the need to tackle NCDs in order to mitigate their social and economic consequences. Sri Lanka was able to drastically reduce maternal and child mortality with relatively little public spending per capita on health infrastructure. Despite a robust healthcare system, as Sri Lanka continues to go through epidemiological transition and grapple with the consequences of an ageing population, it also struggles to garner the investment needed to adapt its healthcare system to adequately address the changing

Figure 3
Hospital Deaths Due to NCDs 2002–2009

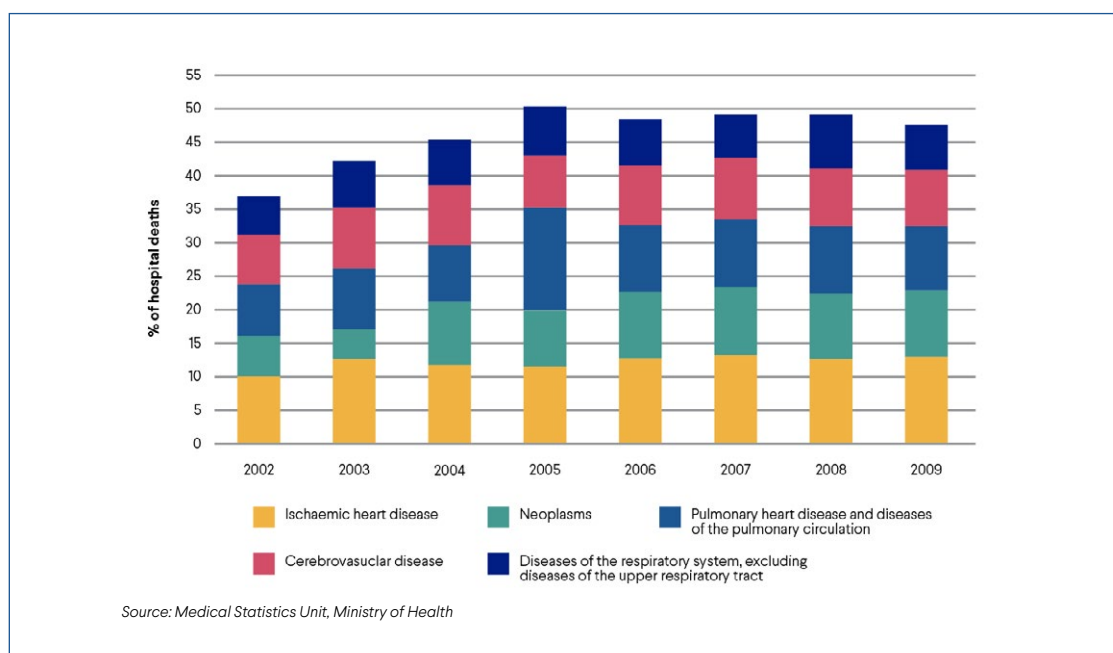
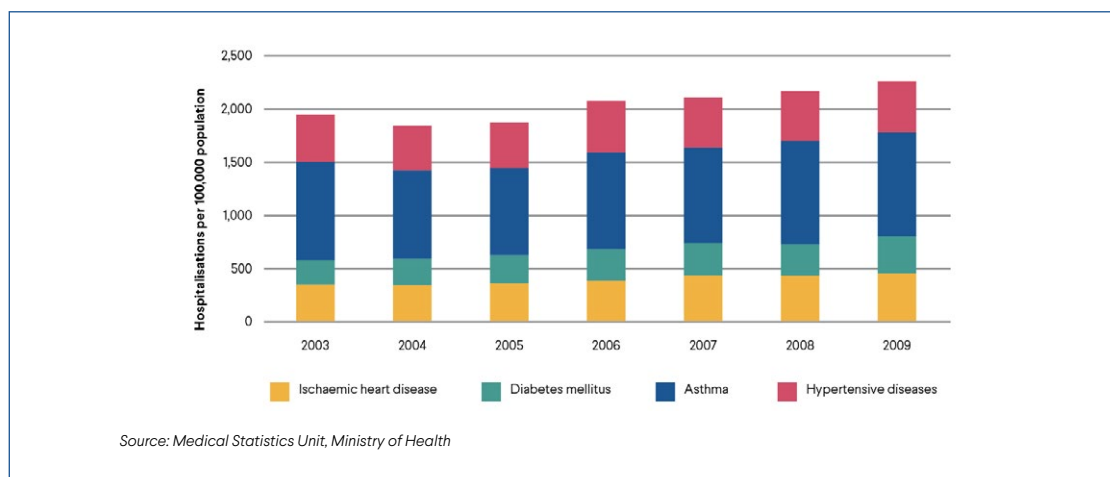


Table 2
Hospitalisations Due to Selected Diseases 2003–2009

Disease	Number of hospitalisations per 100,000 population						
	2003	2004	2005	2006	2007	2008	2009
Ischaemic heart disease	341.7	336.4	353.9	399.9	427.1	423	450.4
Diabetes mellitus	231.1	246.8	265.2	296.8	307.3	296.7	343.9
Asthma	921.4	832.1	817.3	910.4	893.5	970.2	973.8
Hypertensive diseases	444.1	417.2	429.1	480.4	469.8	466.4	478.5
Tuberculosis	42.2	58	43.1	37.1	35.2	34.9	38.3
Diphtheria							
Whooping cough	0.8			0.7			
Rabies	0.5	0.5	0.3	0.3	0.3	0.3	0.2
Measles	1.3	0.7	0.7	0.5	0.7	0.7	0.8
Malaria	68.4	44.8	24.4	11.4	5.2	3.1	5.2
Nutritional deficiencies	10.9	8.8	11.7	6.9	7.2	7.9	9.1
Diseases of the liver	126.9	119.8	106.5	85.8	87.3	86.2	84.3

Source: Medical Statistics Unit, Ministry of Health

Figure 4
Hospitalisations Due to Selected NCDs 2003–2009

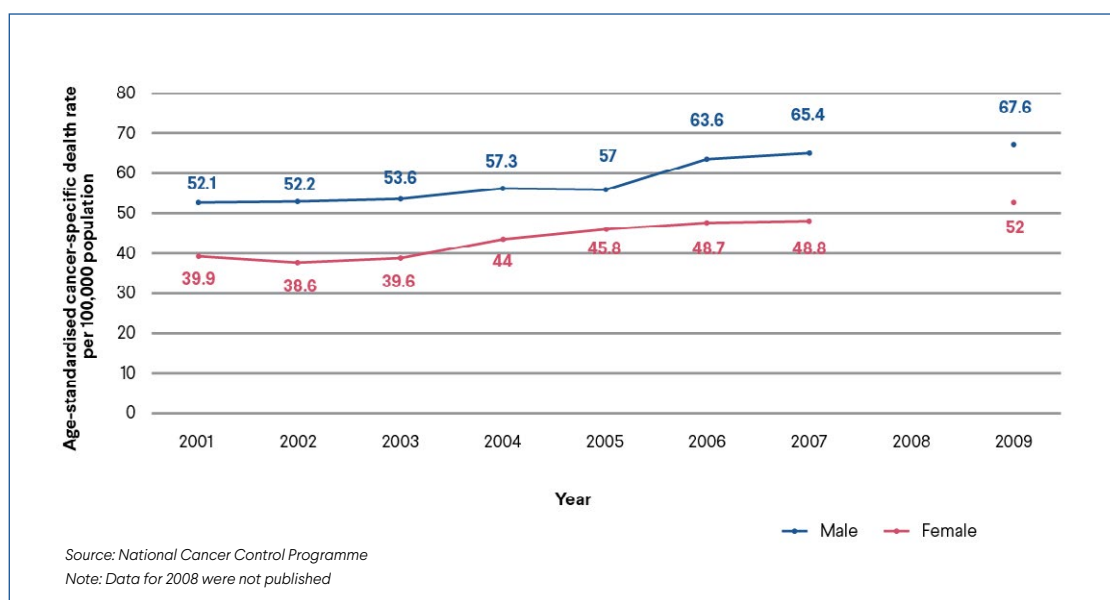


disease profile from communicable to non-communicable disease. In its current status as a lower-middle-income country, resource constraints are a challenge, and investment in policy activities and programme implementation related to reducing the burden of NCDs must be strategic and cost-effective. It is critical for the government to develop, effectively implement, and periodically evaluate targeted health policies.

In the early 1990s, Sri Lanka’s Ministry of Health recognized the parallel trends of increased chronic NCD burden and improving economic and demographic conditions. While infant and maternal mortality had drastically decreased, mortality and morbidity from NCDs steadily increased. Cardiovascular diseases, diabetes mellitus, chronic respiratory diseases, chronic renal disease, and cancers had become a significant disease burden in Sri Lanka (4). Throughout the first decade of the 21st century, chronic NCDs were in the top 10 causes of hospital deaths in the country (Table 1).

The disease burden of Sri Lanka more closely resembles the profile of a high-income country than that of a low-income country, with NCDs contributing to the majority of the burden in contrast to other countries in South-East Asia (7). In addition, the NCD burden in Sri Lanka has been on an upward trend, with higher mortality rates (20% to 50% higher) attributed to NCDs when compared with developed countries. Between 2003 and 2009, morbidity and mortality due to chronic NCDs—specifically diabetes mellitus, hypertensive diseases, and ischaemic heart disease—steadily increased (Table 2) as did death rates attributed to cancer (Figure 5).

Figure 5
Age-Standardised Cancer-Specific Death Rate per 100,000 Population 2001–2009



NCD Risk Factors

The prevalence of NCD risk factors at a population level is a major influencer of morbidity and mortality. Sri Lanka, in partnership with the WHO Sri Lanka office, implemented the WHO recommended framework for NCD surveillance. A critical part of the framework is the national STEPS survey which includes data on the prevalence of NCD risk factors. The survey is conducted nationally every five years. The STEPS survey was done in 2003 and repeated in 2006 and 2015 at a national scale and is set to be conducted in April 2021. Other national surveys that collect data about NCDs include the Global School-Based Student Health Survey (8), the Sri Lanka National Youth Health Survey (9), and the Service Availability and Readiness Assessment (SARA) (10).

According to the 2003 STEPs survey, the prevalence of daily smoking was 16.7% in both sexes and 32.6% among males. Meanwhile, 35.9% (60.3% among males) of the participants were current consumers of alcohol, and 43.8% (87.4% among males) had more than five drinks during the previous week. Fruit and vegetable consumption was found to be very low, with almost 97% of the participants eating fewer than five servings of fruits or vegetables per day. The percentage of participants who were found to be physically inactive was 15.6% with more females being physically inactive (19.1%). Only 4.3% of the participants were found to be obese (body mass index ≥ 30 kg/m²) with an average body mass index (BMI) of 22.64 kg/m². The percentage with high blood pressure (systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg) was found to be 6.9% (11). The prevalence of both obesity and hypertension was comparatively low in Sri Lanka compared with global figures for the time period (12, 13).

The next STEPS survey of Sri Lanka was conducted in 2006. According to the survey, the prevalence of daily smoking had declined to 11.5% in both sexes, and among males, it had decreased to 22.8%. The 2006 STEPS survey includes additional indicators about NCD risk factors compared with the previous pilot survey; accordingly, 15% of the participants were current smokers (29.9% among males). For alcohol consumption, the percentage of current drinkers was 13.5% (26% among males), and the percentage of non-current drinkers was 15.8% (26.8% among males). There was an improvement in fruit and vegetable consumption, and the percentage of participants eating fewer than five servings of fruits or vegetables per day decreased to 82.4%. A quarter (25%) of the participants had a low level of physical activity. This is worse than the situation in 2003. Mean BMI increased to 23.1 kg/m², and the prevalence of obesity also increased to 4.7%. The percentage of participants who were found to be overweight was 20.3% (24.6% among females). The percentage of participants with high blood pressure (systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg) increased to 16.1% (14).

The 2006 STEPS survey calculated the percentage of participants who had NCD risk factors. Of these participants, 88.9% had 1 to 3 risk factors while 3.5% had 4 to 5 risk factors (14).

Data from these surveys depict a challenging landscape to combat NCDs in Sri Lanka. Nearly one-third of adult males in the country are tobacco users. One out of 4 people have raised blood pressure, and nearly a third of women are obese and overweight. Consumption of salt is nearly two times higher than recommended (15).

NCD Policy Initiatives

In order to address the complexity of NCDs and their compounding consequences, Sri Lanka has prioritised NCDs at the national level and integrated NCDs into multiple strategic plans and frameworks. In 1996, Sri Lanka published its National Health Policy. The first aim of the policy was to increase life expectancy by decreasing the mortality and morbidity attributed to communicable and non-communicable diseases. Cardiovascular disease, hypertension, diabetes mellitus, and mental health were included in the list of priority diseases. Sri Lanka has also published national policies addressing specific risk factors and diseases, including the National Authority on Tobacco and Alcohol (NATA) Act in 2006. As the first country in Asia and fourth in the world to ratify the Framework Convention on Tobacco Control (FCTC), Sri Lanka enacted legislation for tobacco and alcohol control, which was an obligation under the treaty. Consequently, the

Table 3
NCD Risk Factor Data from STEPS 2003 and 2006 Surveys

Indicator	2003			2006		
	Males	Females	Both sexes	Males	Females	Both sexes
Smoking						
Non-daily smoker	7.7%	0.3%	4.0%	7.0%	0.1%	3.5%
Daily smoker	32.6%	0.7%	16.6%	22.8%	0.3%	11.5%
Non-smoker	59.7%	99.1%	79.4%	70.1%	99.6%	85.0%
Alcohol						
Abstainer	24.0%	74.9%	49.4%	47.2%	93.8%	70.8%
Current drinker	60.3%	11.5%	35.9%	26.0%	1.2%	13.5%
Not current drinker				26.8%	5.0%	15.8%
Percentage who had five or more drinks on any day in last week	87.4%	0.1%	43.8%			
Percentage who drank alcohol on five or more days/week	7.9%	0.5%	7.9%			
Fruit and vegetable consumption						
Fewer than five servings of fruits/vegetables per day	97.1%	96.8%	96.9%	81.4%	83.3%	82.4%
Five or more servings of fruits/ vegetables per day	2.9%	3.2%	3.1%	18.6%	16.7%	17.6%
Physical activity						
High level				64.7%	42.5%	53.5%
Moderate level				17.4%	25.6%	21.5%
Low level				17.9%	31.9%	25.0%
Inactivity	12.1%	19.1%	15.6%			
BMI classification						
Underweight (< 18.5 kg/m ²)				19.1%	14.3%	16.7%
Normal weight (18.5–24.9 kg/m ²)				61.3%	55.3%	58.3%
Overweight (25–29.9 kg/m ²)				15.9%	24.6%	20.3%
Obese (≥ 30 kg/m ²)	2.0%	6.6%	4.3%	3.6%	5.9%	4.7%
Raised blood pressure						
Systolic blood pressure < 140 mmHg and diastolic blood pressure < 90 mmHg (excluding those on medication)				81.5%	86.4%	83.9%
Systolic blood pressure ≥ 140 mmHg and or diastolic blood pressure ≥ 90 mmHg (excluding those on medication)	5.6%	8.1%	6.9%	18.5%	13.6%	16.1%
Raised risk						
0 Risk factors				8.2%	7.0%	7.6%
1–3 Risk factors				88.0%	89.8%	88.9%
4–5 Risk factors				3.8%	3.2%	3.5%

Source: STEPS 2003 & 2006 survey reports

National Authority on Tobacco and Alcohol (NATA) was established as the government institution to streamline alcohol and tobacco prevention in Sri Lanka (16).

The 2007–2016 Health Master Plan further identified prevention and control of NCDs as a priority intervention. This resulted in the establishment of a dedicated NCD Unit embedded in the Ministry of Health. The core mandate of the NCD Unit is to work with regional government Medical Officers to provide technical support in best practices for the management and prevention of NCDs. Multiple pilot programmes were launched to determine effective modules for health promotion and cost-effective treatment of NCDs.

National policy and strategic framework for prevention and control of chronic non-communicable diseases in sri lanka

Recognizing that a significant proportion of the NCD burden is preventable if evidence-based policies are in place and relevant programmes are implemented, stakeholders agreed about the need for a comprehensive NCD policy and strategic framework for Sri Lanka. In 2007, the WHO Sri Lanka office started an initiative to develop an NCD Policy. In 2008, the NCD Unit in the Ministry of Health began formulating an NCD Policy for Sri Lanka with a focus on screening, health promotion, and data about risk factors and mortality from earlier STEPS surveys and the Registrar General's Department. Although WHO and the NCD Unit were motivated to move forward, it took approximately two years to develop the draft NCD Policy. Simultaneously with this initiative, the Japanese International Cooperation Agency launched an NCD control and prevention programme in 2008. Key activities included the implementation of screening and health promotion programmes to prevent and reduce behavioural risk factors for NCDs and curb morbidity and mortality attributed to NCDs through early intervention. (Panapitiya P.W.C. and Karunapema R.P.P., personal communication, 28 July 2020).

In the meantime, the NCD Unit in the Ministry of Health conducted a desk review of published articles, reports, and similar policies. Necessary background information was collected from STEPS survey reports, published articles, and reports and official publications of the Ministry of Health, Medical Statistics Unit, and other government agencies such as the Registrar General's Department. Experts in the Ministry of Health formulated the main strategies for the NCD Policy after analysing the key strategies used by countries in the South-East Asia Region and other regions to prevent and control NCDs. They also took into consideration international recommendations and guidance on NCDs, including the World Health Assembly's adoption of Resolution WHA 57.17 in 2004 which reaffirmed the World Health Organization's Global Strategy on Diet, Physical Activity and Health; the 2005 WHO report Preventing Chronic Diseases: A Vital Investment; and WHO's 2008–2013 Action Plan for the Global Strategy for the Prevention and Control of Noncommunicable Diseases (17).

By 2009, both the WHO Sri Lanka office and the Ministry of Health had drafted policies to tackle the growing NCD burden in the country. They consulted with national and international stakeholders, including the Sri Lanka Medical Association, to refine their draft policies (Panapitiya P.W.C. and Karunapema R.P.P., personal communication, 28 July 2020). These initiatives coalesced into the development of the National Policy and Strategic Framework for Prevention and Control of Chronic Non-Communicable Diseases (NCD Policy) in 2010. Central to this policy was the national rollout of a community-based decentralized health promotion and screening programme.

The NCD Policy aimed to promote the health and well-being of the population by preventing chronic NCDs associated with shared modifiable risk factors, providing acute and integrated long-term care for people living with NCDs, and maximizing their quality of life. The policy's strategic framework included nine key strategies (4):

The Nine Key Strategies of the NCD Policy's Strategic Framework

1. Support prevention of chronic NCDs by strengthening policy, regulatory and service delivery measures for reducing level of risk factors of NCDs in the population.
2. Implement a cost-effective NCD screening programme at community level with special emphasis on cardiovascular diseases.
3. Facilitate provision of optimal NCD care by strengthening the health system to provide integrated and appropriate curative, preventive, rehabilitative and palliative services at each service level.
4. Empower the community for promotion of healthy lifestyle for NCD prevention and control.
5. Enhance human resource development to facilitate NCD prevention and care.
6. Strengthen national health information system including disease and risk factor surveillance.
7. Promote research and utilisation of its findings for prevention and control of NCDs.
8. Ensure sustainable financing mechanisms that support cost-effective health interventions at both preventive and curative sectors.
9. Raise priority and integrate prevention and control of NCDs into policies across all government ministries, and private-sector organisations.

The NCD Policy's main objective and guiding principles (Table 4) were influenced by existing global frameworks as well as by Sri Lanka's existing national health policy based on government-sponsored primary healthcare.

Table 4
Policy Objective and Guiding Principles of the NCD Policy in Sri Lanka

Policy objective	Reduce premature mortality attributed to NCDs by 2% annually over 10 years through expansion of evidence-based curative services, and individual and community-wide health promotion measures for reduction of risk factors.
Guiding principles	<ol style="list-style-type: none"> 1. Protection of the right to health. 2. Equity and social justice. 3. Affordability and sustainability to individuals and community. 4. Evidence-based interventions, giving equal importance to primary and secondary preventive measures and covering the entire continuum of care. 5. Culturally sensitive strategies. 6. Community and family empowerment and participation. 7. Consideration of ethical aspects in individual and community-wide interventions. 8. Attitudes of care givers in being more responsive in providing individual care. 9. Multidisciplinary and multisectoral approaches. 10. Consistency with the National Health Policy and other existing/ relevant government policies. 11. Adoption of a life-course approach. 12. Flexibility in adopting new strategies through a phased approach. 13. Integration into the health systems strengthening.

The policy's overall target was to reduce premature mortality attributed to NCDs by 2% annually over the next decade. The essential implementation activities were expanding a health promotion and screening programme on a national scale and developing an operational plan and monitoring framework. Other priorities included securing financing and establishing multisectoral mechanisms to reduce the disease burden attributed to NCDs.

Three stakeholder meetings were held in 2009 to finalize and validate the NCD Policy (Panapitiya P.W.C. and Karunapema R.P.P., personal communication, 28 July 2020). The Cabinet of Ministers gave its final approval to the policy in May 2010.

Other milestones concerning NCDs occurred after the approval of the NCD Policy. In October 2015, the United Nations Interagency Taskforce on NCDs conducted a mission to Sri Lanka and concluded that the epidemic of NCDs had become a serious economic as well as public health issue fuelled by tobacco use, unhealthy diet, harmful use of alcohol, and physical inactivity. Non-communicable diseases were also included in Sri Lanka's national legislative platform to achieve the 2030 sustainable development goals through the adoption of the Sustainable Development Act in 2017 (18).

National Multisectoral Action Plan

The development of the 2010 NCD Policy was followed by the formulation of a four-year National Multisectoral Action Plan for the Prevention and Control of Non-Communicable Diseases 2016–2020 (NMAP 2016). Sri Lanka's NMAP 2016 was modelled on the Global Action Plan for the Prevention and Control of Noncommunicable Diseases published by WHO in 2013. Each member state of WHO was then encouraged to draft and implement a country-specific NMAP. Sri Lanka's NMAP 2016 was formulated by the NCD Unit of the Ministry of Health in consultation with relevant health-sector stakeholders, including the staff of the WHO Sri Lanka office (19).

The NMAP 2016 is organized around four strategic areas:

1. Advocacy, partnership, and leadership.
2. Health promotion and risk reduction.
3. Health system strengthening for early detection and management of NCDs and their risk factors.
4. Surveillance, monitoring, evaluation, and research.

The NMAP 2016 was developed as an operational plan and monitoring and evaluation framework with the aim of achieving 10 voluntary targets adopted by Sri Lanka. The 10 targets were based on WHO's nine global targets and the specific regional targets identified for the South-East Asia region. All targets focused on the reduction of premature mortality and NCD risk factors by 2025.

Key activities included advocacy, health promotion and education, expansion of healthcare services through the healthy lifestyles screening and referral programme, and a focus on high-risk populations.

Table 5
List of NCD Targets in Sri Lanka's NMAP 2016

Sri Lanka aims to achieve the following NCD targets by 2025:	
1	25% relative reduction in premature mortality from cardiovascular disease, cancer, diabetes, or chronic respiratory diseases.
2	10% relative reduction in the use of alcohol.
3	10% relative reduction in prevalence of insufficient physical activity.
4	30% relative reduction in mean population intake of salt/sodium.
5	30% relative reduction in prevalence of current tobacco use in persons aged over 15 years.
6	At least 25% relative reduction in prevalence of raised blood pressure and/or contain the prevalence of raised blood pressure.
7	Halt the rise in obesity and diabetes.
8	50% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes.
9	80% availability of affordable basic technologies and essential medicines, including generics to treat major non-communicable diseases in both public and private facilities.
10	50% relative reduction in proportion of households using solid fuels as the primary source of cooking

Monitoring Framework

The NMAP 2016 describes the outcomes to be achieved in reducing morbidity and mortality due to NCDs. It is organized around four strategic areas, each of which designates specific activities to be implemented, multistakeholder partnerships to be strengthened, key entities responsible for the implementation of the activities, and a time frame for achievement. Figure 6 is a monitoring framework from the NMAP 2016. It reflects the inputs, processes, and outcomes that are anticipated to meet the ultimate vision of reducing mortality and morbidity attributed to NCDs. The long-term outcome is a 25% reduction in risk of premature mortality from cardiovascular disease, cancer, diabetes, and chronic respiratory diseases by the year 2025.

Stakeholders

Key stakeholder groups were involved in the implementation of the NCD Policy and the NMAP 2016. First and foremost was Sri Lanka's Ministry of Health and the relevant divisions, units, and programmes within the ministry. The Deputy Director General (Medical Services) I Unit (DDG (MS) I) and later the Deputy Director General (NCD) Unit (hereafter DDG [NCD]) and the NCD Unit were the primary stakeholders and focal points of the implementation of the NCD Policy and the NMAP 2016. The National Cancer Control Programme was responsible for implementing activities related to the prevention and control of cancers. Other line ministry agencies had important supportive roles, such as planning logistics, providing financial support, advocating, and supplying human resources. These agencies included the Health Promotion Bureau; Organisation Development Unit; Medical Services Unit; Finance divisions; Planning Unit; Medical Research Institute; Nutrition Unit; Environmental and Occupational Health Unit; Medical Supplies Unit; and Education, Training, and Research Unit. The Mental Health Unit was responsible for the prevention and control of harmful use of alcohol. The National Authority on Tobacco and Alcohol supported the Ministry of Health in its efforts to prevent the harmful use of tobacco and alcohol.

Provincial Ministries of Health of all nine provinces in the country and institutions under these ministries, such as the Provincial Directorates of Health Services and Regional Directorates of

Figure 6
 Framework for Monitoring Progress in Implementing Sri Lanka's National Multisectoral Action Plan for the Prevention and Control of Non-Communicable Diseases 2016–2020

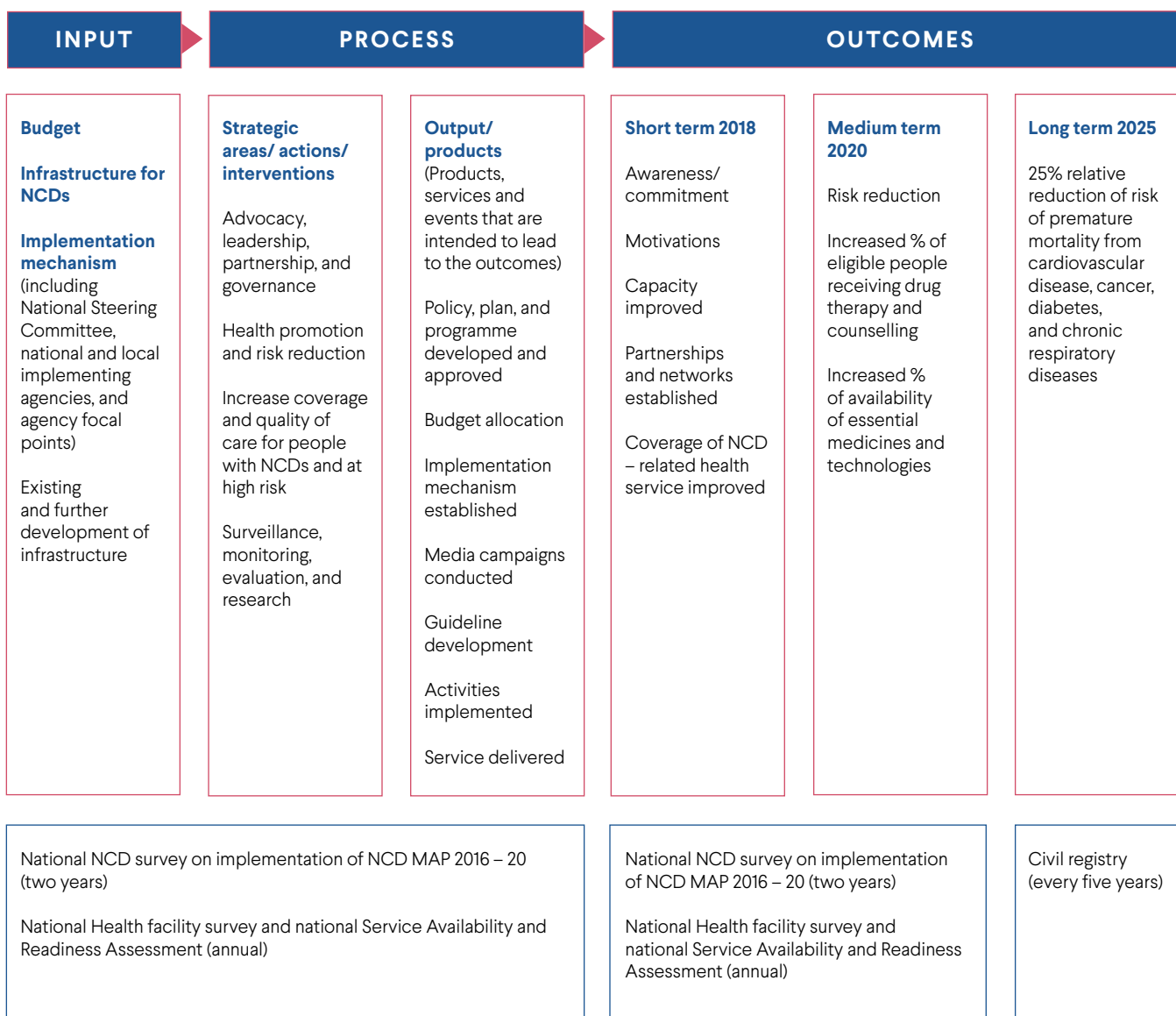


Table 6
Stakeholders of NCD Policy and NMAP 2016 in Sri Lanka

- Ministry of Health
 - Deputy Director General (NCD) Unit
 - NCD Unit
 - Health Promotion Bureau
 - Organisation Development Unit
 - Deputy Director General (Medical Services) I Unit
 - National Cancer Control Programme
 - Mental Health Unit
 - Planning Unit
 - Medical Research Institute
 - Nutrition Unit
 - Environmental and Occupational Health Unit
 - Medical Supplies Unit
 - Education, Training, and Research Unit
- Provincial Ministries of Health of all nine provinces in the country
 - Provincial Directorates of Health Services
 - Regional Directorates of Health Services
 - Offices of Medical Officer of Health
- Department of National Planning, Department of National Budget, Department of Treasury Operations functioning under the ministries of Finance and Planning
- National Salaries and Cadre Commission and Department of Management Services
- National Authority on Tobacco and Alcohol
- Professional colleges
- Ministry of Mass Media
- Ministry of Education
- National Youth Services Council
- Ministry of Trade and Commerce
- Ministry of Telecommunication and Digital Infrastructure
- Customs Department
- Telecommunications Regulatory Commission
- Ministry of External Affairs
- Import & Export Control Commission
- Department of Excise
- Department of Police
- Board of Investments
- Tourist Board
- Ministry of Child Development
- Public Administration Ministry
- Social Service Ministry
- Ministry of Women's Affairs
- District Secretariat
- Ministry of Justice
- Ministry of Agriculture
- Ministry of Sports
- Local government authorities
- Ministry of Local Governments and Provincial Councils
- Ministry of Environment
- Department of Sustainable Energy
- World Health Organization
- World Bank
- Local non-governmental organisations such as Sarvodaya and NCD Alliance Sri Lanka

Health Services, were important stakeholders. They provided support with logistics, human resources, and funding to help provincial health institutions implement the NCD Policy and NMAP 2016.

The Department of National Planning, Department of National Budget, and Department of Treasury Operations functioning under the ministries of Finance and Planning offered a valuable national perspective on the NCD Policy and the NMAP 2016. The National Salaries and Cadre Commission and the Department of Management Services also played an important role by allocating the health cadres needed to implement the activities of the NCD Policy and NMAP 2016.

In addition to the aforementioned primary and secondary stakeholders, additional state- sector and private-sector organisations and international and national non-governmental organisations were identified as stakeholders for the NCD Policy and the NMAP 2016 (Table 6).

Implementation Status

Preventive and curative institutions in Sri Lanka provide direct services, including through Healthy Lifestyle Centres (HLC) which are embedded in primary healthcare services. HLCs are part of a model to screen and provide management of NCDs at the primary healthcare level. Healthy Lifestyle Centres screen catchment populations for NCDs and risk factors, manage screened clients determined to be at risk or diagnosed with an NCD, provide capacity building and mentorship to service delivery staff, and routinely record and report health data back to the NCD Unit of the Ministry of Health (20).

At the district level, there is a District NCD Coordination Team headed by a Medical Officer (Non-Communicable Diseases) (hereafter MO [NCD]), which reports to the Regional Director of Health Services (RDHS). Each District NCD Coordination Team reports to the Provincial Director of Health Services (PDHS) and the NCD Unit of the Ministry of Health, which provides technical support. At the national level, the National NCD Steering Committee is chaired by the Secretary, Ministry of Health, and oversees all Provincial Directors of Health Services, the Deputy Director General (NCD) at the Ministry of Health, and other relevant Deputy Director Generals.

To date, many key activities of the NCD Policy and NMAP 2016 have been implemented. They include:

- Establishment of a National NCD Council.
- Integration of NCD prevention and treatment into national and provincial health planning processes.
- Expansion of the NCD Unit of the Ministry of Health.
- Development of policies, guidelines, and proposed taxation schemes to reduce obesity, alcohol use, and tobacco use.
- Development of clinical guidelines for NCD screening.

Despite this progress, challenges remain, including the disproportionate prevalence of NCDs in men (who are less likely to visit clinics) and difficulties in maintaining the resources (trained staff, supply chain) to initiate NCD care at primary healthcare clinics.

Evaluation Scope

Evaluation Questions

Given that the deadline for both the NCD Policy and NMAP 2016 occurred in 2020, the time has come to conduct an evaluation to understand the successes and challenges of implementing both initiatives. This evaluation assesses the objectives of the NCD Policy and NMAP 2016 from the baseline year 2010 up to and including the endline year 2020. The evaluation plan for outcomes and impact was observational and therefore not sufficient to determine causality. The goal of the assessment was to determine if cross-sectional targets have been met or not (as per the monitoring plan), rather than to determine trajectories or build epidemiological models in order to predict such trends. If there were sufficient mortality data, it would have offered insight into mortality trends over the past decade, but this evaluation was observational and did not infer causality as a result of implementing the two initiatives.

The evaluation sought to assess the NCD Policy's overall objective to reduce mortality attributed to NCDs and the NMAP 2016's objective to reduce the risk of dying prematurely from NCDs. Accordingly, the evaluation asked the following questions:

Overall Evaluation Question

To what extent was the implementation of the NCD Policy meeting its objective to reduce premature mortality in Sri Lanka over the past decade?

Content Evaluation Question

To what extent did the NCD Policy address the identified needs of the Sri Lankan people? How well was the policy aligned with national government priorities and global agendas?

Process Evaluation Question

How appropriate were the processes of the coordination mechanisms of the implementation of the multisectoral action plan compared with quality standards?

Outcome Evaluation Question

Did the implementation of the multisectoral action plan produce or contribute to the expected intermediate and long-term outcomes?

Limitations

Scope of Evaluation

Because of limitations of time, human resources such as in-country technical support for policy analysis, and the availability of Ministry of Health staff to participate in qualitative interviews during the COVID-19 outbreak, the evaluation team had to limit primary data collection and had to rely on secondary data sources.

Although cancer and mental health are a core part of NCD frameworks at the global and national levels, these two areas were not covered in this evaluation due to limited time and resources.

It is also important to note that the fight against NCDs in Sri Lanka involves a multitude of actors at the international, national, subnational, community, public, and private levels. This evaluation focused only on the roles and responsibilities of Sri Lanka's Ministry of Health, with a particular focus on the NCD Unit.

Availability of Data

Quantitative

A major limitation of this evaluation was the unavailability of the most recent data related to NCD risk factors in Sri Lanka, primarily collected through the STEPS survey. The latest STEPS survey was supposed to be conducted in 2020 but was postponed several times due to the Easter Sunday attack in 2019 and the ongoing COVID-19 pandemic. Data collection for the survey started in April 2021 and data were not available to be used for the evaluation.

The evaluation team had to rely on the STEPS survey report from 2015 to assess NCD mortality and risk factors. The dataset of the STEPS survey 2015 was also not available for secondary analysis. This hampered the depth of the quantitative investigation. It meant that only two data points (STEPS 2006 and STEPS 2015) were available for many of the risk factors, leading to the assumption of a linear relationship between the two time points. These time points are not representative of a baseline or endline.

Disease-specific mortality and morbidity data that come from the Registrar General's Department were completed and available only up to 2014. Therefore, the evaluation team had to depend on small-scale studies and some national studies with limited objectives to obtain data for the NCD status of the country at the end of the policy period (2020).

Qualitative

The COVID-19 outbreak in Sri Lanka prevented the evaluation team from conducting face-to-face Key Informant Interviews (KIs) for the qualitative component of the evaluation. The team had to adapt distant interviewing technologies using the Zoom video-conferencing platform. Several meetings had to be postponed and rescheduled because the participants were busy with work related to COVID-19. The participants' personal views on the management of NCDs were also affected by the new situations created by the COVID-19 outbreak.

Impartiality and Reflexivity

KIs were conducted by Ministry of Health officials. The participants were also Ministry of Health officials. Interviewers were trained on reflexivity and impartiality by an experienced consultant prior to conducting interviews in an attempt to minimize bias.

Causal Inference

The evaluation was observational and focused on outcomes and impact; therefore, it is not suited to determining causality. In addition, the evaluation seeks to determine if cross-sectional targets have been met or not (as per the monitoring plan), rather than to determine trajectories or build epidemiological models in order to predict such trends. Sufficient mortality data might have offered insight into mortality trends over the past decade, but this insight would be observational.

In order to understand if the implementation of the NCD policy and NMAP 2016 resulted in a change in the trajectory of NCDs in Sri Lanka, studies that include quasi-experimental methods (e.g., regression discontinuity design and/or propensity score matching) are recommended.

Table 7
Indicators and Methodology Chosen for the Evaluation

Evaluation question	Criteria or indicator	Standards (what constitutes 'success?')	Data collection methods	Data analysis methods
Overall evaluation question: To what extent was the implementation of the NCD Policy meeting its objective to reduce premature mortality in Sri Lanka over the past decade?	% reduction in mortality attributed to NCDs	2% annual reduction since 2010	Secondary data analysis of survey and civil registration data	Statistical analysis: time trend
	% reduction in risk of dying prematurely due to NCDs	25% reduction by 2025	Secondary data analysis of survey and civil registration data	Statistical analysis: time trend
Content evaluation: To what extent did the NCD Policy address the identified needs of the Sri Lankan people? How well was the policy aligned with national government priorities and global agendas?	Strategic alignment of Sri Lanka national priorities/ context with global initiatives to combat NCDs	National policies and action plans aligned with global WHO policies and action plans. Strategic adaptation of global frameworks to Sri Lankan government priorities	Document review	Comparative content analysis: WHO's NCD Global Monitoring Framework from 2013
Process evaluation: How appropriate were the processes of the coordination mechanisms of the implementation of the multisectoral action plan compared with quality standards?	Establishment and functionality of NCD coordination mechanisms named in the policy	Established and functioning NCD coordination mechanisms named in the policy	In-depth interviews	Thematic content analysis: Saunders RP, et al. Developing a Process-Evaluation Plan for Assessing Health Promotion Program Implementation (21)
Outcome evaluation: Did the implementation of the multisectoral action plan produce or contribute to the expected intermediate and long-term outcomes?	% reduction in risk factors listed in the NMAP 2016	Targets set forth in the NMAP 2016 for % risk reduction by 2020 are met	Secondary data analysis of national/global survey data	Statistical analysis: time trend

Purpose

The Deputy Director General (NCD) of the Ministry of Health requested that this evaluation study be conducted at the end of the policy period of the existing NCD Policy of Sri Lanka in 2020.

The purpose of the evaluation was to assess to what extent the overall objective of the policy was achieved in combatting rising trends in morbidity and mortality attributed to NCDs in Sri Lanka. It assessed the stated outcomes, implementation, and overall appropriateness of the NCD Policy and NMAP 2016.

The findings will be used to guide revisions of the next NMAP and NCD Policy and are expected to provide direction on key focus areas for the next decade. Both the NCD Policy and NMAP 2016 call for periodic monitoring and review of implementation activities and assessment of their impact on reducing the burden of NCDs.

Evaluation Criteria

A combination of quantitative and qualitative methods was used to analyse data from the content, process, and outcome evaluations, respectively. Table 7 shows the indicators and corresponding methodologies chosen for the evaluation. This evaluation report is structured using the UN Evaluation Group (UNEG) checklist to ensure quality and completeness.

Evaluation Methodology

Evaluation Design

This evaluation used both qualitative and quantitative methods (Table 7). The design was selected based on the data available, resources, and contextual restraints. Qualitative or quantitative methodology was selected based on which one was best suited to address particular evaluation questions. Distinct approaches were used for each focus of the evaluation (Table 7).

Content Evaluation

Using the steps of a contextual framework analysis (22), the evaluation team compared the content of Sri Lanka's NCD Policy and NMAP 2016 with the existing global standards set forth by WHO, specifically the Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020 (1). Boudreaux, et al. (2020) have described the method for making such comparisons (23).

The vision, objectives, and indicators of the NCD Policy and NMAP 2016 were compared with those of WHO's Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020. The goal was to determine how the government of Sri Lanka framed its own priorities to tackle NCDs and how Sri Lanka's specific demographic, socioeconomic, and political context influenced that framing and the government's subsequent policy responses to address those priorities.

Process Evaluation

The evaluation team used an adapted framework for process evaluations of health promotion programmes to analyse qualitative thematic content conveying stakeholders' views about coordination, leadership, and service delivery in the implementation of the NMAP 2016 (21). Using qualitative methods allowed the team to explore the perceptions of service providers who implemented the NCD Policy and NMAP 2016. Due to time restrictions, a rapid qualitative methodological approach (24) was used.

This framework influenced the qualitative design, including the development of the interview process and KII interview guides. In addition, the framework (Table 8) was used to form the initial codebook for the qualitative content analysis. The framework was selected because it provided insights about the strength of the implementation from staff who designed the programme at the national and regional levels and from personnel involved in service delivery at the community level. These insights are crucial for understanding the appropriateness of the coordination mechanisms from the perspective of those responsible for implementing the NCD Policy.

The process evaluation included qualitative data collection using stratified purposive sampling to select key stakeholders for Key Informant Interviews (n = 16). The following participants were selected from both the national and subnational levels:

- **Policy implementers at the national level**—Five officials from the Ministry of Health who were directly involved in the implementation and coordination of the NMAP 2016 were selected. One participant was the current Deputy Director General of NCD. Three directors in the Ministry of Health were selected for the interviews, and one is the current Director (NCD). Another selected director provides guidance to the primary care institutions of the country where most of the screening and initial management of NCD patients take place. The other director has a direct impact on managing human resources, particularly the assignment of Medical Officers to hospitals across the country. He also has previous experience in training healthcare staff at the national level. Another selected key informant was the former Consultant Community Physician of the NCD Unit, who worked for more than seven years in

Table 8
Adapted Process-Evaluation Plan—Qualitative Component

Construct	Purpose	Summative use
Fidelity	Extent to which what was planned was implemented	Describe fidelity of implementation
Completeness	Amount of intended units of construct that were implemented	Describe dose of implementation supplied
Exposure	Extent to which beneficiaries actively engaged with resources	Describe dose of implementation received
Satisfaction	Stakeholder satisfaction with implementation	Describe satisfaction of stakeholders and how feedback was used
Equity in coverage	Extent to which coverage of implementation addresses need	Describe if implementation coverage is responsive to equity of need
Rollout/initiation	Procedures used to engage audience at individual and/or organisational levels	Describe initiation procedures of implementation rollout
Context	Aspects of the environment that may influence implementation	Describe and/or quantify environmental aspects that may have affected implementation or impact

the unit and is knowledgeable about how the NCD policy was implemented from the initial years to the most recent period.

- **Provincial and regional directors of health services**—Originally, the team planned to interview two Provincial Directors of Health Services (PDHS). But one PDHS was not available for the interview in three consecutive attempts, and therefore the team selected a Deputy Regional Director of Health Services instead of that PDHS. The PDHS who participated in an interview had extensive experience working in the northern part of Sri Lanka and was aware of cultural differences and regional disparities in service provision. The Deputy RDHS whom the team selected is also a Consultant Community Physician and had experience working in estate and urban sectors in addition to her current position as the Deputy RDHS in a district. The team expected to learn from her about variations in the implementation of the NCD Policy in estate and urban sectors as well as at the district level.
- **Service delivery implementers**—Three districts were selected based on the screening coverage for NCDs (high, average, and low). The following regional implementers were selected from each district:
 - Medical Officer (NCD)
 - Medical Officer (Healthy Lifestyle Centre) (they were also Medical Officers-in-Charge of Divisional Hospitals)
 - Public Health Nursing Officer (PHNO)

Two qualitative Key Informant Interview guides (Annex A) for each of these strata (national and regional) were drafted and piloted prior to data collection. Except in the case of two national-level officials, all Key Informant Interviews were conducted over Zoom in order to adhere to COVID-19 protocols.

The evaluation team obtained written informed consent prior to each interview by emailing an information sheet and consent form to each participant. Signed consent forms were scanned and emailed to the evaluation team by the participants.

Outcome Evaluation

Assessment of risk reduction and mortality was undertaken using quantitative methods. The evaluation team assessed the endline targets of indicators in the NMAP 2016 that focused on reducing the risk of particular behaviours that increase mortality and morbidity attributed to NCDs. The team compared the endline targets with the latest available data up to and including 2020.

Data Sources

Content Evaluation

Data sources for the content evaluation included WHO's Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-2020 and Sri Lanka's NMAP 2016 and NCD Policy, both developed by the Ministry of Health.

Process Evaluation

Primary data were collected from selected stakeholders through 16 semistructured Key Informant Interviews (KIIs). An interview guide was developed and piloted by the evaluation team prior to the interviews. A debriefing guide was also created by the evaluation team and used by interviewers to summarize each interview and capture key points for aggregate analysis. Interviews were recorded for future detailed analysis.

Outcome Evaluation

Appropriate quantitative data sources were chosen for each indicator. Data sources that were nationally representative were prioritised. Examples of sources included the STEPS survey, Service Availability and Readiness Assessment, data from the Sri Lankan census, data from the Registrar General, data from progress reports of the Second Health Sector Development Project, and WHO Global Health Observatory data. Table 9 shows the targeted data sources and the data sources actually used to obtain data for each of the indicators used for outcome evaluation.

Targeted surveys included quantitative NCD risk factor surveys, specifically the STEPS survey that captures the prevalence of multiple risk factors related to NCD morbidity and mortality, and global tobacco surveys that capture tobacco consumption behaviours across multiple sub-groups (youth, adults, professionals, etc.). Other surveys with important information included the Demographic Health Survey (DHS), Sri Lanka census data, and disease surveillance data obtained from Healthy Lifestyle Centres. Data from the Registrar General were identified to calculate mortality trends.

The STEPS survey data from 2006 and 2015 turned out to be the most frequently used data sources. In addition, data from the Registrar General enabled the evaluation team to identify mortality trends through 2014, after which the data were incomplete.

Data Collection Methods

Qualitative Component

Content Evaluation

A desk review of documents was done by Medical Officers of the DDG (NCD) Unit. They reviewed documents from WHO's website and the Ministry of Health website, as well as documents from the DDG (NCD) Unit.

Table 9
Targeted Data Sources for NCD Indicators in Sri Lanka

#	Indicator	Targeted data sources	Data source used
1	Premature mortality from NCD	Registrar General's data WHO Global Health estimates WHO NCD Country Profile	Registrar General's data (up to 2014) (25) WHO NCD Country Profile 2016 (5) WHO Global Health Observatory (26)
2	Physical inactivity (both sexes)	STEPS survey data Routine surveillance data from the Healthy Lifestyle Centres (HLC)	STEPS survey 2006 (14) STEPS survey 2015 (27)
3	Salt/sodium intake	Salt survey data from Medical Research Institute	Jayatissa R, Yamori Y, De Silva AH, Mori M, De Silva, PC, De Silva KH. (2020). Estimation of salt intake, potassium intake and sodium-to-potassium ratio by 24-hour urinary excretion: an urban rural study in Sri Lanka. (28) Department of Nutrition, Medical Research Institute; Ministry of Health Sri Lanka (2020). National Survey on Dietary Salt Intake Among Sri Lankan Adult Population Aged 25–64 Years. (29)
4	Tobacco use (among males)	STEPS survey data Global Adult Tobacco Survey (GATS) Global Youth Tobacco Survey (GYTS) Global School Personnel Survey Global Health Professions Student Survey Routine surveillance data from the Healthy Lifestyle Centres (HLC)	STEPS survey 2006 (14) STEPS survey 2016 (27)
5	Use of alcohol (among males)	STEPS survey data Sri Lanka National Youth Survey Department of Excise (alcohol consumption) Alcohol and Drug Information Centre (ADIC) WHO Global Status Report on Alcohol and Health	STEPS survey 2006 (14) STEPS survey 2015 (27)
6	Raised blood pressure	STEPS survey data Routine surveillance data from the Healthy Lifestyle Centres (HLC)	STEPS survey 2006 (14) STEPS survey 2015 (27)
7	Diabetes	STEPS survey data Routine surveillance data from the Healthy Lifestyle Centres (HLC)	STEPS survey 2006 (14) STEPS survey 2015 (27)
8	Obesity (both sexes) (BMI \geq 30 kg/m ²)	STEPS survey data Routine surveillance data from the Healthy Lifestyle Centres (HLC)	STEPS survey 2006 (14) STEPS survey 2015 (27)
9	Drug therapy to prevent cardiovascular disease	WHO NCD Progress Monitor	WHO NCD Country Profile 2016 (5)
10	Essential NCD medicines and basic technologies to treat major NCDs	WHO NCD Progress Monitor Service Availability and Readiness Assessment (SARA)	WHO NCD Country Profile 2016 (5) Progress report of the Second Health Sector Development Project 2017 (30)
11	Households using solid fuels as the primary source of cooking	Census data Demographic Health Survey	Census of Housing and Population 2011 (31) Demographic Health Survey 2017 (32)

Process Evaluation

Primary data were collected through Key Informant Interviews (KIIs). The list of people to be interviewed was prepared from the stakeholder list, and their respective contacts were searched through the available sources of contact numbers in the DDG (NCD) Unit. All Key Informant Interviews took place between October and December 2020.

A member of the evaluation team (a Medical Officer) contacted the participants to inform them about the study and invited them to participate. Participants were given the option of attending a face-to-face meeting or a virtual meeting via Zoom. Two participants agreed to meet face-to-face and the remaining participants agreed to meet via Zoom.

The team scheduled the date and time for the interviews based on the availability of the participant and the interviewers, according to the preference of the participant.

The information sheet and consent forms for the study were sent to the participants before the date of the interview. The participants scanned signed consent forms and sent them to the evaluation team via email.

The interviews were conducted by the Medical Officers of the DDG (NCD) Unit. To probe questions in the interview, the interviewers used one of two qualitative Key Informant Interview guides that were pretested beforehand. At least two interviewers attended any given interview. Face-to-face interviews were recorded using a voice recorder, and all the Zoom interviews were recorded using the recording facility of the Zoom platform. The evaluation team members took their own notes during interviews.

Upon completion of each interview, the interviewers met (either physically or via Zoom) and debriefed the interview and finalized notes. Thematic area details from each interview were organized in a Microsoft Excel spreadsheet.

Quantitative Component

Outcome Evaluation

A desk review of documents and existing data sources was done. The relevant documents were acquired from sources such as the websites of WHO, the Ministry of Health, and the Department of Census and Statistics; the document repository of the DDG (NCD) Unit; and the consultants and Medical Officers of the DDG (NCD) Unit.

Data were extracted from the documents for each indicator and each year for which data were available, from the closest year before 2010 (baseline) to the latest year up to and including 2020 (endline). The source of data was noted down. The target for 2020 was obtained from the NMAP 2016.

Data Analysis Methods

Content Analysis

Objectives, targets, indicators, and strategic areas were identified in the NMAP 2016 and NCD Policy. These were then compared with their global counterparts in WHO's Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020.

In addition to objectives and targets, disease conditions were categorised into three categories as shown in Table 10. The evaluation team adapted to the Sri Lankan context a list of diseases compiled by Boudreaux, et al. in an article about NCD strategic plans (23). Conditions that were referenced directly in the NMAP 2016 also counted as a reference.

Quantitative

A detailed trend analysis of the indicators listed in Table 8 was proposed, but doing this was not feasible due to insufficient data. Expected 2020 endlines set forth in the NMAP 2016 were compared with the latest available data up to and including the year 2020. Available data were collected from sources for each year, and the relative change was calculated and compared with the NMAP 2016 targets.

Qualitative

Due to time constraints, the evaluation team employed a rapid method for collecting and analysing the data from semistructured interviews. Specifically, the Rigorous and Accelerated Data Reduction (RADaR) approach was used to analyse qualitative data obtained from Key Informant Interviews (24). Two interview guides were prepared for regional- and national-level participants, and modifications were made following pretesting. Interviewers were trained by an expert consultant in reflexivity, and they developed a working definition of saturation to indicate the end of data collection activities. During the data analysis process, evaluation team members made the maximum effort to be non-judgmental and objective. Using RADaR, team members formatted all the data transcripts similarly and entered them into an all-inclusive phase 1 data table. By reducing the data of the phase 1 data table, a phase 2 data table was formed. By repeating these steps, more data tables with reduced data were produced and themes were identified with the assistance of an external consultant.

Table 10
Categorisation of NCDs

Category	Category definition
1	Conditions falling into the four major disease groups (cancer, diabetes, cardiovascular disease, and chronic respiratory disease) that are associated with the four prioritised risk factors (alcohol, tobacco, exercise, and diet)
2	Conditions falling into the four major disease groups (cancer, diabetes, cardiovascular disease, and chronic respiratory disease) that are associated with multiple causal factors and are linked to a broader set of risks including, for example, environmental, infectious, genetic, and idiopathic factors
3	Other conditions falling outside of the four major disease groups

Ethics Approval

The evaluation team gave all the study participants an information sheet that explained the details of the study. Written consent was obtained from the study participants before the interviews (participants who were at a distance scanned their signed consent forms and emailed them to the evaluation team).

The participants were given the choice of attending face-to-face meetings or virtual meetings via Zoom. The interviews were conducted on dates and times convenient for the participants, according to their preferences. The participants were informed that they were free to withdraw from participating in the study at any time, without giving any explanation.

The confidentiality of all the study participants was maintained. No personal information was collected from the study participants. The results of the study secure the anonymity of data, and none of the study participants can be personally identified.

All records and recordings were handled only by the evaluation investigators and were kept password-protected. The information obtained will be kept with the principal investigator for a five-year period from the date of completion of the evaluation. At the completion of five years, all data will be deleted from the laptop.

Ethics approval for the evaluation was obtained from the Ethics Review Committee of the National Institute of Health Sciences.

Findings

Content Evaluation

The purpose of the content evaluation was to determine the extent to which the design of Sri Lanka's NCD Policy was complementary with best practices in global frameworks. For the purposes of this evaluation, the global framework referenced was WHO's NCD Global Monitoring Framework from 2013.

Global Frameworks

The policy goals—specifically the objectives and targets—laid out in the NMAP 2016 were identical to the objectives and targets in WHO's Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020.

Disease Condition References

Conditions were identified in three categories: 1) Conditions falling into the four major disease groups (cancer, diabetes, cardiovascular disease, and chronic respiratory disease) that are associated with the four prioritised risk factors (alcohol, tobacco, exercise, and diet); 2) conditions falling into the four major disease groups that are associated with multiple causal factors and are linked to a broader set of risks including, for example, environmental, infectious, genetic, and idiopathic factors; and 3) conditions falling outside of the four major disease groups (23). See Table 11 for a breakdown by category of conditions referenced in the NMAP 2016.

Overall, six (75%) conditions associated with behavioural risk factors were included in the NMAP 2016. Three out of 11 (27%) conditions with multiple and broader sets of risk factors were referenced in the NMAP 2016 while none of the other conditions falling outside of the four major disease groups were referenced in the NMAP 2016.

Sri Lanka has separate policies that cover cancer control, mental health, chronic kidney diseases, and acute injuries. Haematological disorders, vision disorders, neurological disorders and hearing disorders are not covered in Sri Lanka's NCD Policy.

Process Evaluation

Participant Characteristics

National and Provincial/Regional Levels

National- and provincial/regional-level respondents ($n = 7$) were Ministry of Health government officials and included Deputy Director Generals (DDGs), Directors, Provincial Directors, Deputy Regional Directors, and Consultant Community Physicians (CCPs). Their main roles related to the NCD Policy were planning, coordinating, facilitating, monitoring, and evaluating NCD activities at either the national or regional levels. The national- and provincial/regional-level respondent sample was approximately gender-balanced (four females and three males).

Table 11
 Conditions Referenced in Sri Lanka's NMAP 2016 by Category

Category description	Disease condition	Whether referenced in the NMAP 2016	Number and percentage of diseases referenced in the NMAP 2016
Conditions falling into the four major disease groups (cancer, diabetes, cardiovascular disease, and chronic respiratory disease) that are associated with the four prioritised risk factors (alcohol, tobacco, exercise, and diet)	Colorectal cancers	No	6 (75%)
	Oesophageal cancers	No	
	Oral cancers	Yes	
	Hypertension	Yes	
	Stroke	Yes	
	Ischaemic heart diseases	Yes	
	Diabetes	Yes	
	Chronic obstructive pulmonary disease	Yes	
Conditions falling into the four major disease groups (cancer, diabetes, cardiovascular disease, and chronic respiratory disease) that are associated with multiple causal factors and are linked to a broader set of risks including, for example, environmental, infectious, genetic, and idiopathic factors	Breast cancers	Yes	3 (27%)
	Liver cancer	No	
	Cervical cancers	Yes	
	Prostate cancers	No	
	Bladder cancers	No	
	Ovarian cancers	No	
	Renal cancers	No	
	Skin cancers	No	
	Rheumatic heart diseases	No	
	Cardiomyopathy and myocarditis	No	
	Asthma	Yes	
Other conditions falling outside of the four major disease groups	Chronic kidney diseases	No	0 (0%)
	Injuries	No	
	Haematological disorders	No	
	Vision disorders	No	
	Epilepsy	No	
	Depression and anxiety disorders	No	
	Schizophrenia and other psychotic disorders	No	
	Alcohol use disorders	No	
	Drugs and substance use disorders	No	
Hearing disorders	No		

Table 12
Qualitative Findings by Framework Construct

Construct	Purpose	Respondent themes
Fidelity	Extent to which what was planned was implemented	Screening components implemented well, despite inequitable coverage of target populations; suboptimal implementation on remaining components of NCD Policy and action plan
		Poor human resource capacity at all levels
		Sufficient allocation of financial resources for screening programme and health promotion activities, but inability to absorb financial resources due to inefficiencies in the distribution of funds and lack of human resource capacity
Completeness	Extent to which construct was implemented	Strong focus on HLC activities, including screening and referrals
		Gap in context-specific, targeted behaviour change communication and health promotion activities at the district level
		Non-uniform advocacy efforts of health- and non-health-sector stakeholders
		Gap in nationally driven health systems strengthening
		Evidence gaps led to limited evidenced-informed decision-making at all levels
		Research efforts narrow in scope; gaps in systematic, prioritised research initiatives on NCD outcomes, risk factors, and related socioeconomic determinants
Exposure	Extent to which beneficiaries actively engaged with resources	NCD Unit (both national and districts) provides strong support to implementation, but limited interministerial and intersectoral engagement at the national level
		Regional NCD Units and other sectors (education, agriculture) collaborate well on NCD efforts
		Insufficient engagement of particular community sectors (especially young males) in NCD activities
		Political support was not systematically targeted by specific strategies; but instances of ad hoc targeting of political support at the district level led to successful engagement of key community sectors
Satisfaction	Stakeholder satisfaction with implementation	HLC and related screening activities were satisfactorily implemented
		Mixed levels of support of NCD activity implementation from the Ministry of Health at national and regional levels
		Human resource allocation for NCD activities not sufficiently prioritised; ineffective strategies employed for training of staff
		Gaps in laboratory networks limit diagnostic capacities in certain geographic areas
		Insufficient cross-sectoral engagement; but support from Divisional Secretariats
		Gaps in efforts on systematic communication for advocacy and behaviour change
Equity in coverage	Extent to which coverage of implementation addresses need	NCD screening and health promotion activities, subsequent behaviour change strategies related to risk factors (e.g., healthy eating behaviours), and cross-sectoral policy efforts inadequately address socioeconomic determinants
		Education-sector involvement in NCD activities allows for positive targeting of children in educational institutions and their families
		Gaps in appropriate mechanisms to actively enrol target population for screening, particularly young and working people, especially males
		HLC services, health promotion, and coverage limited by the distribution of human resources and logistical support; gap in the needs-driven distribution
Rollout/initiation	Procedures used to engage audience at individual and/or organisational levels	Well-designed policy and action plan were beneficial in guiding the initial implementation
		HLC served as a strong model for screening activities implementation, but the design does not sufficiently address social determinants of health
		Gap in monitoring and evaluation systems to support the implementation of the action plan
		Insufficient targeting of intersectoral collaboration for NCDs
		Strong working relationship between Medical Officers at the district level was a factor for successful implementation in some geographic areas
		Weak training strategies and gaps in skilled human resources for NCDs
Context	Aspects of the environment that may influence implementation	Strong political support is key to prioritisation of NCD issues at national and regional levels; lack of prioritisation of preventive health aspect even within the health sector
		Economic context can affect the availability of resources for NCDs at the national level; individual's economic standing determines behaviour related to risk factors and seeking healthcare
		Global support for specific action on NCDs, including the development of WHO's Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020, galvanised the development of Sri Lanka's NMAP 2016
		The influence of media and religious leaders is a key factor to consider in developing advocacy and communication strategies for NCDs

Service Delivery Level

Service delivery-level respondents (n = 9) were Ministry of Health (both line ministry and provincial ministry) government officials and included Medical Officers (NCD), Medical Officers (HLC), Medical Officers-in-Charge of Primary Medical Care Units and Divisional Hospitals, and Public Health Nursing Officers (PHNOs). The service delivery-level respondents' main role in the NCD programme was to conduct screening activities and make clinical referrals related to NCDs. Some respondents also conducted health education and promotion activities. These respondents represented three districts that were selected based on the screening performance (high, average, and low) at Healthy Lifestyle Centres (see Data Collection Methods section). Their working experience in public health and NCDs varied from two to 23 years. The service delivery-level respondent sample was approximately gender-balanced (five females and four males).

Interview Findings

Major themes for each construct emerged from rapid analysis (see Data Collection Methods section), and Table 12 presents these themes in detail for each of the constructs in the framework (as identified in Table 8).

Differences in Framework Constructs at National and Service Delivery Levels

Fidelity

Overall, there was consensus amongst respondents at the national and service delivery levels that the screening programme received adequate financial resources to function. Screenings performed at Healthy Lifestyle Centres (HLCs) were viewed as the core component of the NCD programme. But some respondents thought the HLCs did not adequately cover their catchment areas and attributed that to lack of human resources and weak health promotion and education activities.

'Most NCD-related activities are implemented well. However, the screening of NCDs should be improved more, especially among young people. Utilization of financial inputs are satisfactory in most areas'.—Public Health Nursing Officer

National-level respondents mentioned national-level health promotion campaigns conducted through the NCD Unit in collaboration with the Health Promotion Bureau.

At national, regional, and local levels, the following activities were conducted in some areas in collaboration with the education sector: establishment of parents' NCD committees, NCD programmes for school principals and teachers, establishment of school health corners where BMI is measured by students themselves, and art competitions to improve awareness of NCDs among school children.

Agriculture is one of the main sources of income in rural areas. To increase the availability of healthy food, some activities were conducted in collaboration with the agriculture sector. The regional departments of the Ministry of Agriculture provided plants and seeds free of charge to communities and provided free guidance on the use of compost for farms and households. Furthermore, the Ministry of Agriculture conducted regular inspections of home gardening projects and other plantings and distributed free fertilizer for farming. The Ministry also conducted regular meetings with local farming organizations, such as 'Govi Samithi'.

In terms of meeting the objectives of the NMAP 2016, respondents perceived a gap in meeting Objective 1 (promoting NCDs on the national agenda through strengthened multisectoral cooperation and advocacy). In their discussion of HLCs, respondents provided feedback about Objective 2 (prevention and control of NCDs), and in discussing health promotion activities they provided feedback about Objective 3 (reducing risk factors). Respondents tended not to provide feedback on Objective 4 (health system strengthening) despite specific probing in this area. They pointed to gaps related to Objective 5 (research) and Objective 6 (monitoring and evaluation).

Completeness

Responses from both national-level and service delivery-level respondents focused on HLC activities. 'Health systems strengthening' was lightly touched upon at the national level but was not mentioned by service delivery-level respondents. The need for more evidence-based research on NCD risk factors, outcomes, and socioeconomic determinants was discussed by multiple respondents at the national level; they emphasised a lack of informed decision-making and research initiatives that were too narrow in scope to inform broader priorities. These evidence gaps were discussed less by service delivery-level respondents, although they acknowledged that evidence gaps negatively impact decision-making at all levels, including service delivery. Another common theme was inconsistent advocacy and health promotion efforts, particularly a lack of context-specific strategies targeting behaviour change. Advocacy for cross-sectoral action was also mentioned as an area for improvement.

Exposure

The responses conveyed strong themes of collaboration and support between Healthy Lifestyle Centres and regional and national NCD Units. However, beyond this, national respondents spoke about limited interministerial and intersectoral collaboration. At the district level, respondents mentioned collaboration with the agriculture and education sectors. Insufficient community engagement—particularly of males and young people—was also a recurring theme at the national and service delivery levels. Although political support was not sought as a systematic strategy, some respondents gave anecdotal evidence of successful political collaborations that expanded the reach of screening and health promotion activities to the target audience.

National- and district-level respondents mentioned advertising of unhealthy foods that targeted children and adolescents. They noted in interviews that the private sector has more resources, which enables them to advertise during high-volume hours and competing with them is difficult given the cost. Some national-level respondents also pointed out loopholes in legislation regulating advertising.

Satisfaction

Respondents involved in service delivery expressed dissatisfaction with laboratory services and resources and said that these inefficiencies limited diagnostic capacity in selected areas. They also mentioned that limited personnel were available to implement NCD activities, which they felt hindered them from attending available training programmes.

'There should be an adequate number of staff and a proper lab facility within the hospital premises'.—Public Health Nursing Officer

However, the general consensus was that the core elements of the screening and referral programme were implemented satisfactorily.

Beyond this, dissatisfaction was expressed about intersectoral collaboration, collaboration within the units of the Ministry of Health, communication strategies, and behaviour change strategies. See Table 13 for a specific description of gaps mentioned in relation to the objectives of the NMAP 2016.

Equity

Respondents at national and service delivery levels discussed the misalignment of NCD activities and socioeconomic determinants affecting the health of the target beneficiaries. The need to adapt the overall strategy of the NCD programme to needs-driven coverage was mentioned at the national level. Recurring themes of gaps in reaching males, young people, and working people were mentioned.

'The premature mortality from NCDs is high among males who are the people in need of more NCD care. But very difficult to catch to provide the service'.—Medical Officer (NCD)

However, respondents also offered anecdotal evidence of important collaborations with the education sector to target young school children.

Context

National-level respondents discussed the complexities of political and economic environments that affect the prioritisation of NCD activities and successful behaviour change to reduce risk factors. Political support for NCD activities was usually good in rural areas, but depended on the location.

'If political support is there, many activities can be done successfully. But there is no uniformity of such support in relation to NCD activities'.—Medical Officer (NCD)

Global leadership from WHO was discussed as a key influence in spurring policy action on NCDs in Sri Lanka. Both national- and service delivery-level respondents also noted the importance of key community figures (religious and media) in mounting successful advocacy campaigns.

'The positive attitude of community leaders such as religious leaders plays a major role in making a change among people in the community'.—Medical Officer (HLC)

Challenges

Human Resources

A lack of human resources was mentioned at both the national and regional levels and was seen as an obstacle to implementing the NCD Policy. The respondents held the view that in general the cadre for the preventive health sector is given less priority than staffing for the curative sector. The lack of human resources at the national level affects the supervision of all NCD activities.

Human resources training, especially updating the staff with new knowledge, was a challenge. Furthermore, the shortage of staff affects the attendance for such training programmes.

'Even if some members had training in the past, they were not being updated properly'.—Medical Officer-in-Charge of Divisional Hospital

'Several training programmes are being conducted through district NCD Units. However, due to the availability of a limited number of staff members in the unit, sometimes it is difficult to attend all these training programmes'.—Female Medical Officer (HLC)

Lack of personnel, and especially of trained personnel, was thought to directly affect the programme's ability to target high-risk populations and effectively implement the NCD screening programme.

'Requirements of human resources need to be assessed and allocated according to a performance- and need-based system'.—Director, Ministry of Health

Respondents said the staff at the national and district levels lack training in areas such as procurement.

Financial Resources

Interestingly, most respondents (national and regional) noted that allocation of financial resources was adequate, but access to these funds was particularly challenging and often led to underutilisation of the funding. Difficulties in procurement were specifically cited.

‘The financial inputs we got were not used properly. Only 20–30% was utilised, maybe due to a long procurement process in this system, inefficient officials, and deficiencies in planning’.—DDG, Ministry of Health

Intersectoral Collaboration

At the national and regional levels, intersectoral collaboration varied, but there was consensus that intersectoral collaboration was vital for the successful implementation of the NCD activities, particularly advocacy. Respondents perceived a link between intersectoral collaboration and successful programme implementation in terms of more effective persuasion for behaviour change and increased access to beneficiaries. In many places, there was a good collaboration between the education and agriculture sectors in NCD activities, such as promoting awareness of a healthy diet and home gardening.

‘We used to conduct programmes with many ministries and had focal points about NCDs in them—about 35 ministries, departments, and authorities including the private sector. We contacted them and formulated a memorandum of understanding and proceeded with the programme’.—Consultant Community Physician

This sentiment was also true for political support, although most respondents at the regional level noted that political support was not actively sought. There are particular anecdotal examples of successful political collaborations that were thought to improve service delivery, but this was not systematic.

Despite variance in collaboration between sectors, collaboration and support from district and national NCD Units was robust, and respondents at the national and regional levels noted support in the areas of logistics, technical guidance, and supervision. Also, at the district level, if all the Medical Officers who work on NCDs—such as Medical Officer (NCD), Medical Officer (Chronic Kidney Disease), and Medical Officer (Health Promotion)—liaise and support each other, the success of the programme is high. However, some respondents noted that support from other cadres of the Ministry of Health was lacking and that generally the NCD programme was less prioritised than maternal and child health (MCH) or epidemiological programmes in the Ministry of Health.

‘Community engagement for NCD activities is very poor compared to activities related to MCH and epidemiology. Participation for screening activities is very poor among males and this has [been] observed across all regions in the country’.—Director, Ministry of Health

Social Determinants and Community Participation

Respondents at both national and district levels discussed socioeconomic status and community participation, namely that economic constraints in the target population limited access to clinics and NCD activities.

‘The sociocultural context definitely affects the implementation of the NCD Policy in the country. Therefore, for any activity related to NCDs, you need to think about environmental and sociocultural factors. You can’t have common options/strategies for people with different sociocultural backgrounds’.—Deputy Regional Director of Health Services

This is despite the categorization of the target population as mostly 'middle income'.

The target beneficiaries seemed less motivated to participate in NCD activities and did not appear to see an immediate benefit in participating.

'Engagement of community members is not adequate as their accountability for the programme is low'.—Director, Ministry of Health

Multiple respondents noted that the implementation of the programme needed to be more effective in targeting males and young people through increased access (night clinics) and more effective communication strategies (social media).

'Poor motivation for NCD activities with low participation among males is a major issue'.—Public Health Nursing Officer

'Currently the society is changing drastically. Especially, the younger generation is moving very fast. Thus, all our health promotion strategies should be matched to the present-day fast-moving lives and present trends'.—Deputy Regional Director of Health Services

Some respondents also discussed the types of jobs done by potential beneficiaries, noting that children whose mothers worked outside the home or worked abroad were more likely to eat highly processed foods, a critical risk factor for NCDs.

Research, Monitoring, and Evaluation

Respondents at both levels mentioned the need for increased monitoring of NCD screening activities, with specific reference to expanding the capacity of the system beyond counting numbers screened to a case-based system that can follow patients over time, linking them to referrals and monitoring their subsequent health outcomes. In addition, service delivery-level respondents pointed to the lack of monitoring of preventive activities. Many respondents pointed to the need for increased supervision, which could offer an opportunity for joint supervision and monitoring efforts.

'Monitoring and evaluation activities are conducted through a surveillance system which assesses morbidity, mortality, and risk factors. But this should be streamlined at each level covering all the districts'.—Director, Ministry of Health

National-level respondents highlighted the aforementioned gaps in monitoring systems and described gaps in evaluating health outcomes at the national and subnational levels in order to track outcomes related to NCDs. More effective evaluation could inform implementation strategies for preventive measures and behaviour change communication plans. Respondents mentioned small-scale research efforts on specific NCD-risk behaviours or on knowledge, attitudes, and practice in specific areas, but did not mention systematic national-level research on these topics. They also noted the lack of timely data on NCDs at the national and regional levels.

'Monitoring and evaluation are done through regular reviews conducted on screening data from HLCs. However, attention given to research activities is very low among health staff members'.—Provincial Director of Health Services

Successes

Healthy Lifestyle Centres (HLCs)

In 2011, HLCs were established to identify NCD risk factors and to improve access to specialized care for those with higher risk. Healthy Lifestyle Centres are usually located at primary-level

hospitals including Primary Medical Care Units (PMcUs) and Divisional Hospitals (DHs). Clients are recruited mainly through self-referral or through appointments made by public health staff and health volunteers. Depending on available resources, clinic sessions are conducted at least once a week or more. To improve coverage and to capture the working population, outreach clinics are also conducted.

A prominent service offered by HLCs is assessment of risk factors for NCDs. Based on a client's clinical history, behavioural risk factors such as smoking, alcohol use, physical activity, and unhealthy diet are assessed. Additionally, a physical assessment (body mass index, waist circumference, waist-to-height ratio, blood pressure, oral and breast examination) and a biochemical assessment (blood sugar, total cholesterol, and serum creatinine when available) are performed to assess biological risk factors. Using this information, staff assess the client's 10-year risk for cardiovascular disease and refer the client to an appropriate clinic/institution as needed.

'HLC is a good platform to identify people at risk for NCDs. In some areas they are functioning well, while low male participation is seen in most areas'.—Director, Ministry of Health

Recruitment of Public Health Nursing Officers (PHNOs)

In order to strengthen the field of public health, the recruitment and attachment of PHNOs for HLCs is done by the government. Some respondents viewed the recruitment of PHNOs for HLCs as a major success.

'The performances of HLCs that have PHNOs are better, compared to HLCs without PHNOs. Hence, it is advisable to allocate PHNOs for each HLC in the district'.—Female Medical Officer (NCD)

Support From Health Education Officers (HEOs)

In some areas, health promotion activities related to NCDs are conducted with the help of a Health Education Officer (HEO) who is attached to the district office of the Regional Director of Health Services (RDHS).

'More attention needs to be paid to health education activities related to NCDs. Sometimes there is only one HEO for the whole district. It's better to employ an HEO in every Medical Officer of Health area rather than have the HEO attached to the RDHS office'. —Female Medical Officer (HLC)

Support From Regional and National NCD Units

Despite the challenges, there were notable successes in some aspects of implementing the programme. There was a resounding consensus about the supportive role played by the national and regional NCD Units. Respondents consistently cited the reliable support they received from both of these units in the implementation of NCD programmes.

'We are getting adequate support from the NCD Unit whenever necessary. Regular reviews are conducted by the NCD Unit, and the participation of the district Consultant Community Physician (CCP) is essential for such reviews. Technical input from the district CCP is very helpful when implementing NCD

activities in the district. This coordination is essential'.—Deputy Regional Director of Health Services

'Even though we do not directly deal with the Ministry of Health, the support given by the district NCD Unit is very good in terms of training and other technical advice'.

—Female Public Health Nursing Officer (HLC)

While gaps remain in enrolling males and youth, integration of the Healthy Lifestyle Centres into primary healthcare increased female clients' exposure to NCD activities because women sought maternal and child health services at clinics. Additionally, the thorough design of the NMAP 2016 as an operational plan was seen as important guidance in the initial rollout of the programme at the district level.

Fiscal Allocations

Respondents at both regional and national levels reported sufficient financial resources. This was more pronounced at the regional level. Some national-level respondents noted that the allocation of financial resources was appropriate, but utilisation was low. Respondents at the regional level had concerns about the accessibility of funds allocated to NCD programmes that were integrated into other funding streams. Some respondents noted the availability of private funding streams as well.

'When considering funds, we conduct some activities through funds from banks and other non-governmental organisations'.—Female Public Health Nursing Officer (HLC)

Guidelines and Policies

Respondents at the national and regional levels noted the availability of well-written policies and guidelines, such as the NMAP 2016, that were useful in the initial phase of programming immediately after the rollout.

'At the initial stage, the availability of a well-designed policy with strategies and substrategies helped a lot'.—Director, Ministry of Health

While many respondents mentioned the need for improved collaboration across sectors, there were fewer mentions of the specific need for policy and regulatory action targeting NCD risk factors, such as alcohol and tobacco regulations. However, some respondents mentioned the need for additional policies related to healthy eating, especially policies to promote the availability of affordable healthy eating options.

Table 13
Qualitative Findings on Completeness by NMAP 2016 Objective

NMAP 2016 objective	Findings on completeness
1.1.1 NCD recognised as a national priority in national agenda	Several respondents mentioned the need to develop advocacy packages (1.1.1.b) to address NCD as a national priority. However, no specific proposed actions were mentioned as completed (1.1.1.a-1.1.1.b).
1.1.2 NCD recognised as a priority in ministries, authorities and departments outside the Ministry of Health	No respondents mentioned specific proposed actions as completed (1.1.2.a).
1.1.3 NCD prioritised in national health action plan	No respondents mentioned specific proposed actions as completed (1.1.3.a).
1.2.1 National and subnational mechanisms for multisectoral actions established and functioning	No respondents mentioned specific proposed actions as completed (1.1.2.a-1.1.2.b).
1.2.2 Place NCDs on broader health and development agenda	Respondents called for strengthening coordination of NCD activities, which could relate to the proposed integration of NCDs into national planning processes (1.2.2.a). However, no respondents mentioned specific proposed actions as completed (1.1.2.a-1.1.2.b).
1.3.1 Ministry of Health effectively leading and coordinating the national NCD prevention and control programme	Trainings were mentioned by several respondents (1.3.1.d). While no respondents mentioned completing advocacy meetings with the Ministry of Finance and UN agencies (1.3.1.c), financial support was described by many respondents as sufficient, which may explain this finding. However, no respondents mentioned additional proposed actions as completed (1.3.1.a-1.3.1.c).
2.1.1 Prevalence of tobacco use reduced	One national-level and one service delivery-level respondent mentioned that attempts to set up tobacco cessation services (2.1.1.d) and full implementation of the Framework Convention on Tobacco Control (FCTC) (2.1.1.a) were thwarted by a lack of political support. Other proposed actions were not mentioned as completed (2.1.1.b-2.1.1.c; 2.1.1.e-2.1.1.k).
2.2.1 Prevalence of alcohol use and its harmful effects reduced	No specific completion of proposed actions (2.2.1.a-2.2.1.f) was mentioned by respondents. However, one service delivery-level respondent highlighted that alcohol consumption was an issue that should have been addressed (desired outcome 2.2.1).
2.3.1 Increased intake of healthy foods	Several respondents mentioned the need to develop policies to increase the availability and affordability of healthy food options (2.3.1.a) but did not mention any efforts towards this end. A service delivery-level respondent mentioned a home gardening promotion programme to increase the availability of fruits and vegetables in collaboration with the Ministry of Agriculture (2.3.1.a).
2.3.2 Reduced consumption of saturated fats/trans fat, sugar, and salt	No proposed actions were mentioned by respondents (2.3.1.b-2.3.2.i)
2.3.3 Reduced cardiometabolic risk of consuming unhealthy foods	One national-level respondent mentioned that child nutrition (2.3.3.b) was an area of deficiency, but did not mention efforts towards this end. No other proposed actions were mentioned by respondents (2.3.3.a-2.3.3.g).
2.4.1 Physical inactivity reduced	As above, one service delivery-level respondent mentioned organizing community physical activity campaigns (2.4.1.f); however, no other proposed actions (2.4.1.a-2.4.1.e) were mentioned as completed.
2.5.1 Reduced risk of NCDs among school children/ university students/students in vocational institutions and among people in the workforce	National-level respondents mentioned health promotion campaigns initiated at the national level (2.5.1.a) but reflected on weaknesses in media management. In relation to establishing health promotion settings (2.5.1.b), the Happy Village Programme conducted by Health Promotion Officers affiliated with the Health Promotion Bureau was described as being implemented, but only in certain areas.
2.6.1 Household air pollution due to solid fuel use for cooking is reduced	No specific completion of proposed actions (2.6.1.a-2.6.1.d) was mentioned by respondents.
2.6.2 Passive smoking is reduced	No specific completion of proposed actions (2.6.2.a) was mentioned by respondents.

NMAP 2016 objective	Findings on completeness
3.1.1 Improved access to services for early detection and management of NCDs and their risk factors	<p>Respondents mentioned the completeness of several proposed actions to improve access to services for NCDs and their risk factors. To increase availability of and access to screening services (3.1.1.a), efforts mentioned by service delivery-level respondents included: changing service hours of HLCs, including establishing weekend, night, male-only, and mobile clinics. While respondents mentioned that the introduction of health records in workplaces and schools was achieved, one service delivery-level respondent said that a gap existed in introducing health records for everyone aged 20 and older. Additional strategies (3.1.1.a) were not mentioned.</p> <p>For proposed actions to improve availability and access to NCD medicines and technologies (3.1.1.b), respondents mentioned that drugs and diagnostic tools (serum cholesterol strips and glucose strips) were available, but this varied over time at the service delivery level due to financial and supply chain constraints. The availability of laboratory services at the district level was mentioned as a gap by service delivery-level respondents.</p> <p>For proposed actions to improve the management of NCDs at the primary healthcare level (3.1.1.c), several respondents mentioned the need to establish a referral system. While some respondents at the service delivery level mentioned monthly, quarterly, and annual reviews and regular supervision, they also said that this requires strengthening. While respondents noted training for healthcare workers, including Medical Officers, they also mentioned the need to strengthen such efforts. Respondents mentioned the fact that tools and guidelines for self-care for major NCDs are available.</p> <p>Only one national-level respondent mentioned palliative care (3.1.1.d) and discussed it in terms of a gap. No proposed actions were described as having been completed.</p> <p>Many respondents said that efforts were begun to build the capacity of healthcare workers (3.1.1.e) but they discussed major gaps in these efforts.</p> <p>Respondents viewed the development of policies for sustainable health financing for NCDs (3.1.1.f) as an achievement. Mass media campaigns (3.1.1.g) were described similarly by respondents. Regarding the proposed establishment of a council to produce clinical guidelines on NCDs (3.1.1.h), there was no mention of a council. But a national-level respondent did describe the production of clinical guidelines as an early achievement. Assessment of 10-year risk for cardiovascular disease (3.1.1.i) at HLCs and management of diabetes (3.1.1.j) at medical clinics were mentioned by national- as well as service delivery-level respondents. The development of guidelines on diabetes mellitus was mentioned. No respondents specifically mentioned actions to improve access to screening for or management of chronic respiratory diseases (3.1.1.k–3.1.1.l) or cancers (3.1.1.p). The remaining proposed actions were not mentioned by respondents (3.1.1.m–3.1.1.o; 3.1.1.q–3.1.1.t).</p>
3.2.1 Availability of adequate competent health workforce for prevention, diagnosis, and management of NCD	<p>Many respondents at both levels mentioned capacity building for health workers (3.2.1.b) and they identified the need to strengthen this area. Respondents pointed to a gap in the availability of human resources (3.2.1.a). Facilities for training (3.2.1.c) were not mentioned by respondents.</p>
3.3.1 Community is empowered for prevention and control of NCD	<p>A service delivery-level respondent mentioned the formation of volunteer groups, including mothers' groups and groups for elderly people; therefore, the establishment of community groups can be inferred as being partially implemented in some areas (3.3.1.a). Other proposed actions were not mentioned (3.3.1.b–3.3.1.f).</p>
4.1.1 Availability of data on relationship of one risk factor and economical burden/year	<p>Respondents spoke generally about the need to improve monitoring and evaluation of NCD efforts but did not mention the completion of specific proposed actions (4.1.1.a).</p>
4.2.1 Timely reporting of information and timely review of the NCD programmes	<p>Regional respondents mentioned that district review meetings took place (4.2.1.e) but did not discuss other specific proposed actions (4.2.1.a–4.2.1.d; 4.2.1.f–4.2.1.h). They did mention the need to integrate information generated by HLCs into the health management information systems (4.2.1.c), as well as the fact that overall monitoring and evaluation of NCD efforts should be strengthened (4.2.1.a).</p>
4.3.1 Evidence generated and used for national policy and programme development	<p>No specific completion of proposed actions (4.3.1.a–4.3.3.g) was mentioned by respondents.</p>

Outcome Evaluation

NCD Risk Factors

Data estimates from national surveys related to NCDs were obtained and tabled by the year of reporting from the baseline to the endline target for 2020 and compared with each target listed in the NMAP 2016. Table 14 provides an overall summary of NCD indicators listed in the NMAP 2016 and their corresponding data points extracted from national surveys.

Prevalence of alcohol use, insufficient physical activity, current tobacco use, and raised blood pressure increased between 2006 and 2015 according to STEPS survey data. Average dietary salt use increased between 2012 and 2019 according to the data reported by studies conducted by the Medical Research Institute. With these indicators showing an increase in prevalence, both the relative and absolute percent changes were positive, diverging from the desired aim of reducing prevalence over time. Although 2020 data were not available, trajectories based on the available data points did not indicate that the targets in the NMAP 2016 for each indicator would be met. Data were unavailable to assess trends in raised blood glucose among adults.

Data were insufficient to assess the indicator about access to treatment (eligible persons receiving care). However, estimates from 2016 indicate that 56% of eligible persons receiving NCD care is slightly above the target of 50%.

The NMAP 2016 used the progress report of the Second Health Sector Development Project (SHSDP) to assume the baseline for the indicator about availability of drugs (essential NCD medicines). The SHSDP progress report provided the number of primary healthcare institutions with a three-month buffer stock of 17 essential NCD drugs. The SHSDP reported the same data for the consecutive years from 2014 to 2017 (until the end of the project). The percentage of hospitals with a three-month buffer stock of 17 essential medicines increased over the years and in 2017 was 81%, just above the NMAP 2016 target of 80% by 2020.

The proportion of households using solid fuels as the primary source of cooking was reduced from 78% in 2012 to 66% in 2016, as reported by the Census of Population and Housing in Sri Lanka 2012 and the Demographic and Health Survey 2016. The relative reduction was 15% by 2016. The target in 2020 was a 25% reduction.

Table 14
Progress of Indicators from NMAP 2016 in Relation to Targets for 2020

NMAP 2016 target for 2020	Indicator (from NMAP 2016/ WHO Global Action Plan 2013–2020)	2020 NMAP target of the indicator	2006	2012	2014	2015	2016	2017	2019	Data source	Relative % change	Absolute % change
A 5% relative reduction in the use of alcohol	Prevalence (%) of current alcohol use among adults (males)	24.70%	26%	N/A	N/A	35%	N/A	N/A	N/A	STEPS (14, 27)	+35%	+9%
A 5% relative reduction in prevalence of insufficient physical activity	Prevalence (%) of insufficiently physically active among adults	23.70%	25%	N/A	N/A	30%	N/A	N/A	N/A	STEPS (14, 27)	+20%	+5%

NMAP 2016 target for 2020	Indicator (from NMAP 2016/ WHO Global Action Plan 2013–2020)	2020 NMAP target of the indicator	2006	2012	2014	2015	2016	2017	2019	Data source	Relative % change	Absolute % change
A 10% relative reduction in mean population intake of salt/ sodium	Mean population intake of salt in persons aged 18+ years	7.6g	N/A	8.4g	N/A	N/A	N/A	N/A	13.3g	MRI (28, 29)	+58%	+4.9g
A 15% relative reduction in prevalence of current tobacco use in persons aged over 15 years	Prevalence (%) of current tobacco use among adults	19.50%	23%	N/A	N/A	29%	N/A	N/A	N/A	STEPS (14, 27)	+26%	+6%
A 12.5% relative reduction in prevalence of raised blood pressure and or contain the prevalence of raised blood pressure	Prevalence (%) of raised blood pressure among adults (defined as systolic blood pressure \geq 140 mmHg and/or diastolic blood pressure \geq 90 mmHg)	14%	16%	N/A	N/A	26%	N/A	N/A	N/A	STEPS (14, 27)	+62%	+10%
Halt the rise in obesity and diabetes	Prevalence (%) of raised blood glucose/ diabetes among adults	7%	N/A	N/A	N/A	7%	N/A	N/A	N/A	STEPS (14, 27)	N/A	N/A
Halt the rise in obesity and diabetes	Percentage (%) who are obese (BMI \geq 30 kg/m ²)	6%	5%	N/A	N/A	6%	N/A	N/A	N/A	STEPS (14, 27)	+20%	+1%
At least 25% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes	Proportion of eligible persons receiving NCD care	50%	N/A	N/A	N/A	N/A	56%	N/A	N/A	WHO NCD Country Profile (5)	N/A	N/A
80% availability of essential NCD medicines and basic technologies to treat major NCDs	Availability of essential NCD medicines (percentage of primary healthcare institutions having one month's buffer stock for 16 selected NCD drugs)	80%	N/A	N/A	43%	62%	73%	81%	N/A	SHSDP progress report 2017 (30)	+88%	+38%
25% relative reduction of households using solid fuels as the primary source of cooking	Proportion of households using solid fuels as the primary source of cooking	58%	N/A	78%	N/A	N/A	66%	N/A	N/A	Department of Census and Statistics (31, 32)	-15%	-12%

Table 15
Sri Lanka NCD Mortality Estimates 2010–2019

NMAP 2016 target for 2020	Indicators	Year										Relative risk reduction	Data source
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
A 10% relative reduction in premature mortality from cardiovascular disease, cancer, diabetes, or chronic respiratory diseases	Premature deaths due to non-communicable diseases as a proportion of all NCD deaths (%)	44.57% [36.51–52.24]	43.24% [34.56–41.58]	42.52% [33.7–50.9]	41.54% [33.02–49.64]	41.24% [31.75–50.31]	40.3% [29.77–50.46]	38.68% [27.61–49.52]	37.06% [25.67–48.31]	35.6% [24.04–47.11]	34.32% [23.03–45.88]	-23.00%	WHO Global Health Observatory (26)
	Probability (%) of dying between age 30 and age 70 from cardiovascular disease, cancer, diabetes, or chronic respiratory diseases	17.04% [13.29–21.17]	15.73% [11.85–20.08]	15.24% [11.36–19.64]	15.21% [11.42–19.43]	14.92% [10.69–19.85]	14.61% [9.91–20.36]	14.26% [9.29–20.49]	13.90% [8.79–20.39]	13.55% [8.35–20.20]	13.21% [8.13–19.83]	-22.48%	WHO Global Health Observatory (26)

While more data are needed to fully understand these trends, our evaluation does suggest that NCD policies and programmes may need to be adapted to better address the rising risk profile of the country's population. Decreases in premature mortality and risk of premature mortality were promising and potentially speak to the effectiveness of screening and management of NCDs to halt or delay disease progression, thereby allowing people to live longer with NCDs.

NCD Mortality

Table 15 summarises annual NCD-attributed mortality rates in Sri Lanka from 2010 to 2019. NCD mortality rates were extracted from WHO's Global Health Observatory database for 2010 to 2019. The overall relative reduction was calculated between 2010 (the year when implementation of the NCD Policy began) and 2019 (the year that has the latest data up to 2020, when the NCD Policy and NMAP 2016 expire) for premature deaths attributed to NCDs and the probability of dying between age 30 and age 70 due to cardiovascular disease, cancer, diabetes, or chronic respiratory diseases. The relative reduction was 23% in premature deaths and 22.5% in the probability of dying prematurely from NCDs. Confidence intervals for each annual estimate were wide and overlapped for both the 2010 and 2019 estimates, indicating a larger margin of error. The NMAP 2016 target for each of these indicators is a 10% relative reduction by the year 2020. Our evaluation cannot confirm that this target has been met due to the wide margin of error in the mortality data. Despite this wide margin of error, it is notable that the prevalence of risk factors for NCDs is likely increasing, whereas NCD-attributed mortality is decreasing. This could be explained by access to drug therapy and improved clinical management of NCD care. Additional explanations are offered in the Conclusion of this evaluation.

Limitations

Non availability of data was a severe limitation for estimating indicator progress and mortality trends. Data from the STEPS surveys were limited to at most two data points for each indicator, meaning that projections were based on the assumption of a linear trend. Ideal sources for mortality data would be data from death registration in Sri Lanka. However, these data were not available for the time period requested. Trends and projections based on complete death registration data would lead to smaller margins of error and more confidence in the direction and magnitude of the trend.

Discussion

The contents of Sri Lanka's NCD Policy and NMAP 2016 were influenced by the World Health Organization's Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020. Therefore, Sri Lanka adopted the best global practices for managing NCDs. The Sri Lankan NCD Policy and NMAP 2016 mainly focused on the disease conditions in four major disease groups (cancer, diabetes, cardiovascular disease, and chronic respiratory disease) that are associated with four prioritised risk factors (alcohol, tobacco, exercise, and diet) and multiple other risk factors. Neither the NCD Policy nor the NMAP 2016 address important NCDs that are outside the four major disease groups, namely eye disorders, neurological disorders, hearing disorders, and haematological disorders.

While the NCD Policy and NMAP 2016 were considered well-designed documents, their implementation, in particular the operational plan of the NMAP 2016, fell short of the goals and targets. Responses from the interviews appear to point to a lack of resources—specifically human resources—to carry out NCD activities. Competing economic priorities on an individual, community, and national scale (e.g., revenue from alcohol and tobacco sales) also put the implementation of NCD programmes at a disadvantage. Despite the availability of financial resources, access to the resources was often an insurmountable obstacle and led to the underutilisation of funds and poorly resourced programmes. All of these factors contributed to the limited reach of the programme.

Overall, the respondents—especially those from the service delivery level who directly implemented the programme—focused their discussion on screening for NCDs. They focused less on prevention of NCDs. However, national-level participants provided ideas about NCD prevention. This response indicates a need to strengthen attitudes about the importance of prevention.

Notably, only one respondent talked about issues related to alcohol, although due priority is given to alcohol prevention in the NMAP 2016. The reason may be that since most of the work on alcohol prevention is done by the Mental Health Unit and National Authority on Tobacco and Alcohol, the respondents would not have perceived it as an activity under the purview of the NCD Unit.

The available data on outcomes show that the implementation of the NCD Policy and NMAP 2016 was not successful enough to halt or reverse the trend of rising NCD risk factors among Sri Lankans. The country's parallel improvements in its economy and living conditions may have played a role in reducing indoor air pollution. The increased availability of NCD drugs over the years reflects improvements in the country's health system and may be a reason for the decrease in NCD-attributed mortality that can be seen in Table 15 despite the increasing prevalence of risk factors.

Gaps and Limitations

The scope of this evaluation was limited to activities under the purview of the NCD Unit. Chronic kidney diseases and diseases covered by the National Cancer Control Programme and the Mental Health Unit were not included in the evaluation because separate policies governed their management. Since the NCD Policy focused on prevention, the treatment of NCDs was also not part of the evaluation.

The methodology of this evaluation was modified because of limitations in resources and time imposed by the challenges of the COVID-19 outbreak. Therefore, this study may not be generalisable to a wider population.

Many respondents were hindered in their ability to comment on the NCD Policy and its implementation by the limited availability of recent quantitative data and national-level evidence on NCDs and risk factors.

Both the interviewers and respondents were government officials, which could affect the way questions were asked and the type of responses given. Reflexivity of the interview team needs to be taken into consideration in the interpretation of the results, because interviewers were members of the Office of the Deputy Director General (NCD) Unit in the Ministry of Health and they may have felt they had a stake in the outcome of the evaluation.

Table 16
Qualitative Respondent Recommendations by Thematic Area

Thematic area	Respondent recommendations
Health promotion for NCDs	<ul style="list-style-type: none"> • Conduct additional health promotion activities to educate the community about NCD activities and support behaviour change concerning risk factors and prevention. • Customise NCD strategies according to the sociocultural differences of the population. • Adopt commercial strategies for health promotion related to NCDs.
Screening for NCDs and risk factors	<ul style="list-style-type: none"> • Enforce mandatory screening for all people. • Design and implement evidence-informed interventions to increase male and young persons' participation in screening at HLCs, including offering clinics after work hours. • Implement strategies to prevent complications related to NCDs. • Establish a mechanism to monitor the quality of HLCs' performance, including referrals and client outcomes. • Implement technology solutions at HLCs to send appointment reminders, especially to elderly people.
Advocacy and public communication	<ul style="list-style-type: none"> • Develop a communication strategy for NCD activities, including stakeholder mapping, advocacy, and promotion of behaviour change. • Implement sustained advocacy efforts concerning NCDs to galvanise political support and gain cross-sectoral support. • Use all possible media, including social media, to promote NCD activities. Consider compulsory airtime to deliver health messages. • Brand locally available food items with names of famous cartoon characters in order to promote healthy foods to children.
Health systems-strengthening (HSS) block: health finance	<ul style="list-style-type: none"> • Implement performance-based financial allocation for NCD activities.
Health systems-strengthening (HSS) block: human resources	<ul style="list-style-type: none"> • Address lack of human resources for NCDs by increasing the number and distribution of cadres of Public Health Nursing Officers and Health Education Officers at the service delivery level and dedicated Medical Officers at the national level. • Increase supervision of NCD activities at the national level. • Increase training for control and management of NCDs, including training on how to conduct outreach clinics. • Clarify independent job roles and interdependent job roles related to NCD control and management within the Ministry of Health.
Health systems-strengthening (HSS) block: monitoring and evaluation	<ul style="list-style-type: none"> • Conduct risk assessments at HLCs. • Ensure that monitoring of NCD activities is conducted at the national level. • Implement research activities as part of monitoring and evaluation, including knowledge, attitudes, and practices (KAP) studies.

Respondent Recommendations

Policies and Interventions

There is growing evidence that qualitative methods are a useful tool to generate valuable information that can influence decision-making in health interventions. Although the results from this evaluation may not be entirely generalisable, the information collected can inform important recommendations for key stakeholders to consider.

Health Promotion

Respondents recommended that a range of health promotion activities be better planned, designed, implemented, and scaled. They focused on activities associated with the work of HLCs.

Screening for NCDs and Risk Factors

Respondents recommended a number of actions to improve screening for NCDs and risk factors. Many respondents made specific recommendations to improve the performance of HLCs.

Advocacy/Public Communication

Respondents mentioned several components of a community strategy concerning NCDs, which would take into account all service delivery levels and personnel, clients, and other stakeholders. In some communities, they observed that intersectoral and political support were key factors in effective advocacy strategies to promote behaviour change and reduce risk factors. Consequently, they highlighted opportunities to garner political support and identified the media as a crucial mechanism for health communications.

Health Systems Strengthening

Respondents made several recommendations for strengthening the health system to better support NCD control and management. In the health-financing building block, respondents pointed to the need to allocate financial resources for NCD activities based on the progress of recent activities to reduce the risk and incidence of NCDs.

Regarding human resources for health systems, respondents had ample feedback on improvements required in this area. A lack of necessary human resources was highlighted by many, particularly the need for a designated cadre to support NCD activities at the service delivery level, as well as the need to increase the number and distribution of Public Health Nursing Officers and Health Education Officers. Supervision and on-the-job monitoring were also identified as areas for strengthening.

When asked about monitoring and evaluation, respondents called for an integrated, case-based management system to monitor NCD efforts. In addition, they recommended that HLCs undertake risk assessments and knowledge, attitudes, and practices (KAP) studies to better understand risk behaviours and uptake of screening.

Summary of Respondents' Recommendations

1. NCD activities conducted by different departments should be integrated and coordinated at the national level.
2. Aside from the units and HLCs that directly deal with NCDs, other health and non-health sectors need to increase their support for NCD activities.
3. Laboratory networks should be expanded in order to serve smaller hospitals, especially in rural areas.
4. Supervision of NCD activities requires that more attention be paid by the national level to the regional level.
5. Greater consideration should be given to rehabilitation and multidisciplinary care and their coordination with other NCD services.
6. NCD strategies should be updated based on current trends and requirements.

Conclusions

Content Evaluation

The objectives and targets of the NMAP 2016 were in tight alignment with WHO's Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020. Furthermore, the NMAP 2016 focused largely on conditions in the four major disease groups associated with four behavioural risk factors. This echoes the NCD Policy which established the screening programme and the availability of NCD drugs and counselling as a national policy response.

Sri Lanka's NCD Policy and the country's policies concerning cancer control, mental health, chronic kidney diseases, and acute injuries do not cover haematological disorders, neurological disorders, eye disorders, and hearing problems.

Process Evaluation

Findings from the process evaluation noted the thorough and comprehensive design of the NCD Policy and NMAP 2016. The functioning of the NCD Units at the national and regional levels was also consistent and was a huge support to service delivery personnel. The main activity referred to was the screening programme. It was viewed as having been implemented satisfactorily while falling short of effectively targeting high-risk groups (males, youth, working people) due to limitations in human resources and intersectoral collaborations in health promotion activities. A lack of evidence-based decision-making to inform policy and service delivery was also reported, pointing to the need for more research and the incorporation of research findings into decisions to drive needs-based coverage and cost-effective interventions. Reference was made to the need to understand the socioeconomic contexts of beneficiaries—particularly how those contexts will vary by the community—and to apply that understanding to service delivery. On a national and global scale, competing economic priorities were also mentioned as a challenge to behaviour change, particularly when stakeholders tried to advocate for health-promoting regulations in revenue-driven sectors such as alcohol and tobacco.

Outcome Evaluation

The rising prevalence of risk factors (use of alcohol, insufficient physical activity, intake of salt, tobacco use, raised blood pressure, and obesity) ran contrary to the desired targets to reduce risk over time. Nonetheless, progress was made in certain areas. The availability of essential NCD medicines has improved over the years, and in 2017 the target for 2020 (80%) was reached. The proportion of households using solid fuels as the primary source of cooking has decreased. There was also a decrease in premature deaths due to non-communicable diseases as a proportion of all NCD deaths and in the probability of dying between ages 30 and 70 from cardiovascular disease, cancer, diabetes, or chronic respiratory disease. The relative reduction was 23% and 22.5%, respectively, exceeding the target for 2020 of a 10% relative reduction.

Summary

Despite a well-designed plan and success in scaling an NCD risk factor screening programme in Sri Lanka, the prevalence of the main behavioural risk factors associated with the major NCD disease groups has increased over the past decade. While the government of Sri Lanka has created and implemented a policy that is well-aligned with global frameworks, it is critical that Sri Lankan health experts also use the country's own unique socioeconomic and political landscapes to frame and implement an updated policy and action plan to reduce the burden of NCDs. Although NCD-attributed deaths appear to be decreasing—perhaps due to successful targeting of effective drug therapy, counselling, and other improvements in clinical management—more data are needed to understand these disease patterns. Consequently, it is essential that research, monitoring, and evaluation are well-financed and resourced in order to generate timely evidence needed to steer decision-making and policy response at the national and service delivery levels.

Recommendations

Inclusion of More NCDs in the Next NCD Policy

Future NCD policies of Sri Lanka should include evidence-based policy statements and relevant action plans for the prevention, diagnosis, and management of more NCDs such as haematological disorders, neurological disorders, eye disorders, and hearing disorders.

Prevention of NCD Risk Factors

The prevention of risk factors for NCDs should be given more priority in the next NCD Policy and NMAP. Evidence-based strategies for the prevention of each risk factor for NCDs should be identified through a thorough literature review. The proposed strategies should be adapted for the sociocultural differences of the population and then implemented.

Health Promotion

The new health promotion activities to prevent NCDs should be piloted on a small scale and, depending on the results, scaled up to the national level.

Innovative technologies and approaches, including social media, should be considered in conducting health education and promotion activities. This could include promoting healthy lifestyles on prime-time television and radio to reach a wider audience. The involvement of other stakeholders such as the Ministry of Mass Media can help with obtaining free or compulsory airtime for health messages, including messages about NCDs.

Furthermore, investments should be made to hire communication experts to design health education and promotion activities in the short term and medium term. Long-term plans should be made to build the capacity of the existing staff of the Health Promotion Bureau and NCD Unit to develop expertise in health communication. Communication experts should help develop strategies for NCD activities, including stakeholder mapping, advocacy, and behaviour change.

Screening for NCDs and Risk Factors

The screening programme for NCDs and risk factors should be further strengthened to capture more participants, especially males, the working population, and youth.

The number of days and hours per week that HLCs operate should be increased. By opening on Saturdays, HLCs can serve more of the working population, who may not be able to go during the week. And opening HLCs after routine working hours will cater to both the working population and males.

The package of services provided at HLCs should be improved to increase their value and attract participants. For example, the supply chain of blood glucose, cholesterol test strips, and other resources should be uninterrupted. Within highly populated areas covered by Divisional Hospitals, new laboratories should be established and facilities at existing laboratories should be enhanced so they can conduct more tests. Laboratory networks should be established to collect samples from Divisional Hospitals and Primary Medical Care Units, transport them to laboratories at Base Hospitals or higher-level hospitals, and send the results online to the facility that requested the original test or the referring institution. A mix of these methods can be adopted as appropriate for local settings.

Annual mandatory screening of the working population for NCDs should be considered. Officials at the national level should recommend such screening to relevant stakeholders,

including the Ministry of Public Administration, the Ministry of Labour, and the private sector. At the local level, the MO (NCD) or PHNO should urge public- and private-sector organisations to conduct voluntary/mandatory screening of the workforce.

Mobile screening programmes linked to proper follow-up should be organised at the local level by the MO (NCD) and PHNO. Staff, vehicles, and other resources for the use of such programmes should be found among available resources if possible and supplemented if necessary.

Widespread health education efforts should inform the public about the importance of NCD screening, other services available at the HLCs, and the centres' operating hours. Local health-care workers, such as Public Health Inspectors and Public Health Midwives, or other government officials can transmit this information. It can also be conveyed by displaying posters and billboards at public places including healthcare institutions, posting messages on local social media networks, and using social media and mass media at the national level for further messaging.

Follow-Up of Screened Persons

All persons who have undergone screening should be referred as needed and followed up as appropriate for their identified risk factors. Proper implementation and scale-up of the existing Personal Health Number system can be used to track clients. Follow-up could include healthcare institutions sending texts via Short Message Service (SMS) and/or making voice calls to clients as reminders. Another option is for the PHNO to conduct home visits, particularly for clients who are not responsive to SMS or voice calls.

Improvement of Human Resources for NCD Care

Human resources for the prevention, diagnosis, and management of NCDs should be increased at the national, district, and institutional levels.

The cadre of PHNOs should be increased. At least one PHNO should initially be assigned within the catchment area of a Divisional Hospital or Primary Medical Care Unit, and the cadre of PHNOs should be increased subsequently after proper assessment of the workload and the population receiving care. These PHNOs should have access to necessary facilities and equipment, including a safe mode of transportation for follow-up with NCD patients in the field to implement health promotion activities and provide home care for needy patients. At recruitment, PHNOs should undergo comprehensive training and then receive in-service training at regular intervals to gain new knowledge.

The cadre of Health Education Officers (HEOs) should be increased, with at least one HEO per Medical Officer of Health area. At recruitment, HEOs should be trained on the development, organisation, and implementation of sustainable health education and promotion programmes, and they should receive in-service training at regular intervals.

Upon their appointment, MO (NCD) should undergo comprehensive training covering their scope of work and current best practices for prevention, screening, diagnosis, and management of NCDs. All MO (NCD) should receive regular in-service training about new knowledge concerning NCDs.

The NCD Unit within the Ministry of Health should have a sufficient cadre of Consultant Community Physicians (CCPs) and Medical Officers to implement the national NCD programme. Cadre revisions should be done periodically to address the current needs of the programme. The CCPs and Medical Officers of the NCD Unit within the Ministry of Health should prepare and update the national guidelines on NCDs, and coordinate with the district MO (NCD) about implementing the district NCD action plans and monitoring and evaluating the district NCD programmes. There should be a responsible Consultant Community Physician and/or a Medical Officer at the NCD Unit for each activity in the NMAP 2016.

Supervision of NCD Activities

The supervision of NCD activities should be done at three levels: institutional, district, and national. The Medical Officers-in-Charge of Divisional Hospitals, Primary Medical Care Units, and Healthy Lifestyle Centres should monitor the activities of the HLCs and NCD clinics and the work of PHNOs at their institutional level.

The district MO (NCD) should supervise the activities of the HLCs, NCD clinics, and PHNOs at the district level. The MO (NCD) and the RDHS should liaise with the Deputy Director Generals and Directors of the tertiary care hospitals situated in their respective districts that belong to the line Ministry of Health and assist them in supervising the work of the NCD clinics at the tertiary care hospitals. The Consultant Community Physicians in the districts should also supervise NCD activities in their districts.

The performance of the PHNOs should be monitored at the district level on a monthly basis by the MO (NCD), who should provide feedback for improvement. The performance of the HEOs in conducting NCD activities should also be monitored monthly by the MO (NCD) liaising with the Health Promotion Bureau. The performance of the MO (NCD) should be supervised monthly by the NCD Unit within the Ministry of Health.

To properly monitor and evaluate the NCD programme at each level (institutional, district, and national), the NCD Unit should develop a standard set of indicators, and targets for each indicator should be specified at each level. The progress of these indicators can then be monitored on a monthly basis.

Periodic national surveys about NCDs should be undertaken to identify the prevalence of risk factors and to monitor the impact of the NCD Policy and programme. The STEPS survey, the Service Availability and Readiness Assessment, and the Global School-Based Student Health Survey should be conducted at regular intervals. Furthermore, these national surveys should include modules or questionnaires about NCDs that were not covered by previous national surveys, such as haematological disorders, eye disorders, hearing disorders, and neurological disorders. If that is not possible, additional national surveys about these NCDs should be designed and conducted to monitor the disease burden.

Strengthening of the Health Information Management System for NCDs

A stronger mechanism should be developed to generate data on risk factors and NCDs from the grassroots level to shed light on risk behaviours and NCD trends. These data are needed to understand the complexities of Sri Lanka's changing NCD burden. The same mechanism can be used to monitor the progress of indicators that track implementation of the NCD programme at the institutional, district, and national levels. The collected data should be collated at the district and national levels and used to monitor the outputs and outcomes of the NCD programme.

Promotion of NCD Research

Research on possible NCD interventions should be conducted. Funds should be allocated at the district and national levels each year for research activities.

An annual symposium on NCDs should be established to disseminate the research findings and discuss possible mechanisms to apply findings to the NCD programme. The NCD Unit within the Ministry of Health should conduct annual literature reviews of both small- and large-scale studies about NCDs that are not presented in the symposium. Important findings should be disseminated to relevant stakeholders.

Allocation of Finances for NCDs

Finances for district NCD activities are allocated from various sources. The district NCD action plans should align with the national NCD Policy and the NMAP 2016 to achieve the overall

intended results. Therefore, the annual NCD action plans of the districts should be reviewed by the NCD Unit before implementation. For activities that do not receive financing from the provincial sources but are important to fund, the national programme should allocate funds. Criteria for allocating funding can include the districts' performance in previous years, the current capacity of the district NCD Units, and the importance of the proposed activities for achieving national targets.

Advocacy for NCD Activities at All Levels

The NCD Unit within the Ministry of Health, the Director (NCD), and the DDG (NCD) should implement sustained advocacy efforts concerning NCDs to galvanise political support and gain cross-sectoral support. The NCD Unit should seek opportunities to engage with other programmes that have an interest in or impact on NCDs and work with them to optimise their programmes, for maximum benefit in the prevention and control of NCDs. Other programmes within and outside of the Ministry of Health should contact the NCD Unit to get its input about programmatic activities that affect NCDs in the country.

The MO (NCD) at the district level and the PHNOs at the grassroots level should cultivate contacts with stakeholders within and outside of the health sector so they can gain access to bring information about NCDs to other programmes.

Summary of Recommendations

- Include haematological disorders, neurological disorders, eye disorders, and hearing disorders in the next NCD policy.
- Prioritise the prevention of risk factors for NCDs.
- Increase the involvement of communication experts in designing health promotion and education interventions.
- Use more mass media and social media for health promotion activities.
- Improve participation by the working population, males, and youth in NCD screening through:
 - Increased HLC hours, including Saturdays
 - Increased availability of laboratory investigations
 - Annual mandatory screening of the working population
 - Improved mobile screening
 - Increased publicity about NCD screening
- Improve follow-up of screened persons.
- Increase the cadre of Public Health Nursing Officers and Health Education Officers at the service delivery level and Medical Officers and Consultant Community Physicians at the national level.
- Strengthen the supervision of NCD activities at the institutional, district, and national levels.
- Conduct periodic national surveys to determine the prevalence of NCD risk factors and the impact of the NCD Policy and programme.
- Develop a stronger mechanism to improve the health information management system for NCDs.
- Allocate adequate funds to NCD research and establish mechanisms to apply research findings to the NCD programme.
- Review all district NCD action plans at the national level before implementation.
- Secure adequate funds to execute the national NCD priorities.
- Staff of the NCD programme at the national, district, and institutional levels should seek opportunities to engage in sustained advocacy efforts concerning NCDs.

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Annex A.

Key Informant Interview Guide

Key Informant Interview Guide—National Level

*[*start with discussion guide after following all informed consent procedures *]*

Let's start by telling me a little about yourself. Please tell me your name and a bit about your work.

Preamble: OK, let's talk a bit about people with non-communicable diseases and their access to health services. I want to talk about what people do when they have these types of healthcare needs. When I say 'healthcare needs', I mean when someone needs a treatment for an illness or injury. I also mean when someone needs medicine to prevent disease or pregnancy.

What do people do in this community when they have healthcare needs?

Probe: Same/different for: male/female adolescents; younger/older adolescents; richer/poorer; un/educated; different tribe

Probe on alternative to public facilities: private clinics, pharmacies, traditional

What is your take on how well the NCD Policy was implemented? Would you say the program was implemented as intended? Why or why not?

Probe on public facilities: staff, medication availability, equipment

Probe on other resources available: financial, personnel, logistics, training, etc.

OK, I want to ask you about your experience when you were just starting to implement the NCD Policy (or the action plan). What was it like when you were just beginning to implement the policy?

Probe on What was difficult? What was easy? What do you think should be done differently if it had to be done again?

We would like to understand more about the strategies listed in the action plan and their implementation. I am now going to ask some questions about different strategies listed in the action plan.

What **advocacy activities** related to the action plan/policy are you aware of? What is your opinion of those activities?

What **health promotion/risk reduction activities** related to the action plan are you aware of? What is your opinion of those activities?

What **health systems strengthening activities** related to the action plan are you aware of? What is your opinion of those activities?

What **M&E/research activities** related to the action plan/policy are you aware of? What is your opinion of those activities?

OK, let's talk about the NCD Unit and their leadership and coordination. What was the NCD Unit's role in the national rollout of the NCD Policy and action plan? Who were the people actively engaged in the NCD Policy implementation?

How do you think communities perceive the NCD program? Why so?

Probe: Same/different for: male/female adolescents; younger/older adolescents; richer/poorer; un/educated; different tribe

Now let's talk about your organisation and your challenges and successes in implementing the NCD Policy and/or action plan.

How did your organisation manage the NCD Policy implementation?

Probe on What were some difficult things that your organisation faced? What turned out to be relatively easy? What needs to improve?

Which stakeholders have been supportive and which have not? Why do you think they have been supportive or non-supportive?

Probe: [if brought up by participant] What do you understand/mean when you say 'supportive'?

OK, I want to talk about socioeconomic profiles in Sri Lanka and what that means for the NCD Policy/action plan implementation across the nation.

How does the socioeconomic context in Sri Lanka affect the implementation of the policy?

Probe on equity; does everyone who needs care get it? Why or why not?

Probe on male/female adolescents; younger/older adolescents; richer/poorer; un/educated; different tribe

So now I want to ask about collaborations with other sectors to implement strategies in the NCD Policy/action plan. How did you work with other sectors (education, tourism, agriculture, trade) to implement the policy in your region?

Probe on: NCD Unit role at national/regional level

Probe on: General politics, economics that factor into collaboration

What other factors contributed to the implementation of the policy? Successes of the policy? Failures or challenges of the policy?

How did you work with your regional/national counterparts to implement the policy?

OK, we have talked about many things, including non-communicable diseases, the 2010 NCD Policy, and the 2016 action plan [mention other things that were probed as examples]. We spoke about the implementation of the policy and action plan at the national and regional levels. What do you think could be changed to reduce the negative effects of NCDs?

In your opinion, what single change would make the biggest difference?

If you were to give advice on improvements to the NCD Policy and NCD action plan for the next versions, what would you improve upon?

CLOSING: Are there any other things that are important about the NCD Policy and NCD action plan I haven't asked you about? Please feel free to tell us about additional thoughts or ideas you have.

Are there any other questions you would like to ask me?

Thank you so much for taking the time to speak with us today.

Key Informant Interview Guide—Regional Level

*[*start with discussion guide after following all informed consent procedures *]*

Let's start by telling me a little about yourself. Please tell me your name and a bit about your work.

Preamble: OK, let's talk a bit about people with non-communicable diseases and their access to health services. I want to talk about what people do when they have these types of healthcare needs. When I say 'healthcare needs', I mean when someone needs a treatment for an illness or injury. I also mean when someone needs medicine to prevent disease or pregnancy.

What do people do in this community when they have healthcare needs?

Probe: Same/different for: male/female adolescents; younger/older adolescents; richer/poorer; un/educated; different tribe

Probe on alternative to public facilities: private clinics, pharmacies, traditional

What is your take on how well the NCD activities were implemented? Would you say the program was implemented as intended? Why or why not?

Probe on public facilities: staff, medication availability, equipment

Probe on other resources available: financial, personnel, logistics, training, etc.

OK, I want to ask you about your experience when you were just starting to implement the NCD Policy (or the action plan). What was it like when you were just beginning to implement the policy?

Probe on What was difficult? What was easy? What do you think should be done differently if it had to be done again?

We would like to understand more about the strategies listed in the action plan and their implementation. I am now going to ask some questions about different strategies listed in the action plan.

What advocacy activities related to the action plan/policy are you aware of? What is your opinion of those activities?

What health promotion/risk reduction activities related to the action plan are you aware of? What is your opinion of those activities?

What health systems strengthening activities related to the action plan are you aware of? What is your opinion of those activities?

What M&E/research activities related to the action plan/policy are you aware of? What is your opinion of those activities?

OK, let's talk about the NCD Unit and their leadership and coordination. How involved was the NCD Unit at the national level in implementing the policy in your region? Who were the people actively engaged in the NCD Policy implementation in this region?

Probe on community members' engagement/participation

How do you think communities in your catchment area perceive the NCD program? Why so?

Probe Same/different for: male/female adolescents; younger/older adolescents; richer/poorer; un/educated; different tribe

Now let's talk about your organisation and your challenges and successes in implementing the NCD Policy and/or action plan.

How did your organisation manage the NCD Policy implementation?

Probe on What were some difficult things that your organisation faced? What turned out to be relatively easy? What needs to improve?

Which stakeholders have been supportive and which have not? Why do you think they have been supportive or non-supportive?

Probe: [if brought up by participant] What do you understand/mean when you say 'supportive'?

OK, I want to talk about the socioeconomic profile of this region and what that means for the NCD Policy/ action plan implementation in this region. Can you describe the socioeconomic context of this region?

How do you see the socioeconomic context affecting the implementation of the NCD activities in this region?

Probe on equity; does everyone who needs care in this community get it? Why or why not?

Probe on male/female adolescents; younger/older adolescents; richer/poorer; un/educated; different tribe

So now I want to ask about collaborations with other sectors to implement strategies in the NCD Policy/ action plan. How did you work with other sectors (education, tourism, agriculture, trade) to implement the policy in your region?

Probe on: NCD Unit role at national/regional level

Probe on: General politics, economics that factor into collaboration

What other factors contributed to the implementation of the policy? Successes of the policy? Failures or challenges of the policy?

How did you work with your regional/national counterparts to implement the policy?

OK, we have talked about many things, including non-communicable diseases in your community, the 2010 NCD Policy and the 2016 action plan [mention other things that were probed as examples]. We spoke about the implementation of the policy and action plan at the national and regional levels. What do you think could be changed to reduce the negative effects of NCDs?

In your opinion, what single change would make the biggest difference?

If you were to give advice on improvements to the NCD Policy and NCD action plan for the next versions, what would you improve upon?

CLOSING: Are there any other things that are important about the NCD Policy and NCD action plan I haven't asked you about? Please feel free to tell us about additional thoughts or ideas you have.

Are there any other questions you would like to ask me?

Thank you so much for taking the time to speak with us today.

