Data Collection Survey on NCDs prevention / treatment in Sri Lanka

Final Report

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Japan International Cooperation Agency (JICA)

Deloitte Touche Tohmatsu LLC

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Countries covered by the survey

Abbreviated list

Abbreviation	Official name (English)
AI	Artificial Intelligence
ADB	Asian Development Bank
BCC	Behavior Change Communication
BtoB	Business to Business
CFR	Case Fatality Rate
CKDu	Chronic Kidney Disease by unknown etiology
COVAX	COVID-19 Vaccines Global Access
COVID-19	Coronavirus Disease 2019
CP	Counterpart
CT	Computed Tomography
CVD	Cardiovascular Disease
DALY	Disability-Adjusted Life Year
DtoD	Doctor to Doctor
DtoP	Doctor to Patient
DX	Digital Transformation
ECMO	Extracorporeal Membrane Oxygenation
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GMSAP	Global Multisectoral Action Plan for the Prevention and Control of NCDs (WHO)
GP	General Practitioner
GNP	Gross National Product
HLC	Healthy Lifestyle Center
HMIS	Health Management Information System
HSDP	Health Sector Development Project
HSEP	Health System Enhancement Project
IBRD	International Bank for Reconstruction and Development
ICT	Information and Communication Technology
ICTA	Information and Communication Technology Agency of Sri Lanka
ICU	Intensive Care Unit
IDA	International Development Association
IFC	International Finance Corporation
IHR	International Health Regulations
IMF	International Monetary Fund
IT	Information Technology
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JSG	Japanese Services Group
KOLs	Key Opinion Leaders
LIS	Laboratory Information Management System
MC	Master of Ceremony
MEJ	Medical Excellence JAPAN
MRI	Magnetic Resonance Imaging
NCDs	Non-Communicable Diseases
NCDs MSAP	National Multisectoral Action Plan for the Prevention and Control of Noncommunicable Diseases 2016-2020
NCGM	National Center for Global Health and Medicine
NGO	Non-Governmental Organization

NHI	National Health Insurance
NMRA	National Medicines Regulatory Authority
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
OOP	Out Of Pocket Expenses
OPD	Outpatient Department
PCR	Polymerase Chain Reaction
PHSRC	Private Health Services Regulatory Council
PHC	Primary Healthcare
PMCI	Primary Medical Care Institution
PMCU	Primary Medical Care Unit
PPP	Public Private Partnership
SARA	Service Availability and Readiness Assessment
SATREPS	Science and Technology Research Partnership for Sustainable Development
SDGs	Sustainable Development Goals
SLPMA	Sri Lanka Pharmaceutical Manufacturers Association
SPMC	State Pharmaceuticals Manufacturing Corporation
STEPS	STEPwise Approach to NCD Risk Factor Surveillance
STI	Science, Technology and Innovation
UHC	Universal Health Coverage
USAID	United States Agency for International Development
UNICEF	United Nations Children's Fund
WB	World Bank
WHO	World Health Organization

Data Collection Survey on NCDs prevention / treatment in Sri Lanka

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1.1 Overview of the Survey

1.1.1 Background

In Sri Lanka, the mortality rate due to non-communicable diseases (NCDs), mainly lifestyle-related diseases, has been higher than that of infectious diseases since the 1980s, and the difference has been expanding. According to the WHO Non-communicable Diseases Country Profiles 2018, 83% of deaths in Sri Lanka are caused by NCDs (Cardiovascular disease (34%), cancer (14%), diabetes (9%), and chronic respiratory disease (8%) account for 65% of all deaths in the country), which is a particularly high proportion compared to neighbouring countries (WHO, 2014). In addition, the aging of the population is progressing at a relatively rapid pace (Ministry of Health, Sri Lanka, 2017), and the proportion of the elderly (aged 60 and over) in the population is expected to increase from 12.4% in 2017 (Ministry of Health, Sri Lanka, 2019) to 18.8% in 2025 (Ministry of Health, Sri Lanka, 2016). With this rapidly aging population, the burden of disease due to NCDs is expected to increase.

The Government of Sri Lanka has been working to improve health and medical services, including measures against NCDs, based on the Health Master Plan (2007-2016) formulated through JICA's development studies and the NCDs Policy published in 2010. The National Health Policy 2016 -2025, which was revised by the Ministry of Health in 2016 for the first time in 20 years after the revision of the master plan, clearly states that efforts should be made to address NCDs such as diabetes, cardiovascular disease, and cancer, which account for the majority of causes of death, as well as to eliminate regional disparities in advanced medical services such as cardiac treatment facilities, palliative care, neurosurgery, and oral surgery, and to reduce premature mortality resulting from NCDs. In addition, the National Strategic Framework for Development of Health Services (2016 -2025) identifies health promotion and monitoring of NCDs as a strategic initiative. Similarly, the Policy on Healthcare Delivery for UHC published in 2018 has been promoting PHC reforms to alleviate burdens of NCDs and aging society. This policy led to the formulations of projects with the World Bank and Asian Development Bank. Details of the projects are explained in Chapter 3.

In addition, in 2016, the Ministry of Health formulated the National Multisectoral Action Plan for the Prevention and Control of Noncommunicable Diseases 2016 -2020 (NCDs MSAP), which aims to reduce the preventable and avoidable burden of NCDs on morbidity, mortality, and disability, thereby ensuring the highest attainable level of health and productivity for the population. MSAP also aims to eliminate barriers to well-being and socioeconomic development, and is preparing an updated version for 2021 and beyond.

From the early phase of COVID-19 pandemic, Sri Lanka has implemented measures to prevention and control of COVID-19 in the country. As a result, the number of COVID-19 infected cases is relatively lower compared to neighboring countries. However, further strengthening health and medical systems has been a priority in order to build a resilient society that can withstand emergencies in the future. Evidence shows that the patients with NCDs are at higher risk of severe COVID-19 infection, and there is a need to strengthen effective measures against NCDs.

The purpose of this study is to analyze the current situation and challenges in the field of prevention and treatment of NCDs, considering the response to the novel coronavirus in Sri Lanka, and to examine the proposed content of JICA's assistance and the possibility of utilizing private-sector technology in the field of prevention and treatment of NCDs in Sri Lanka.

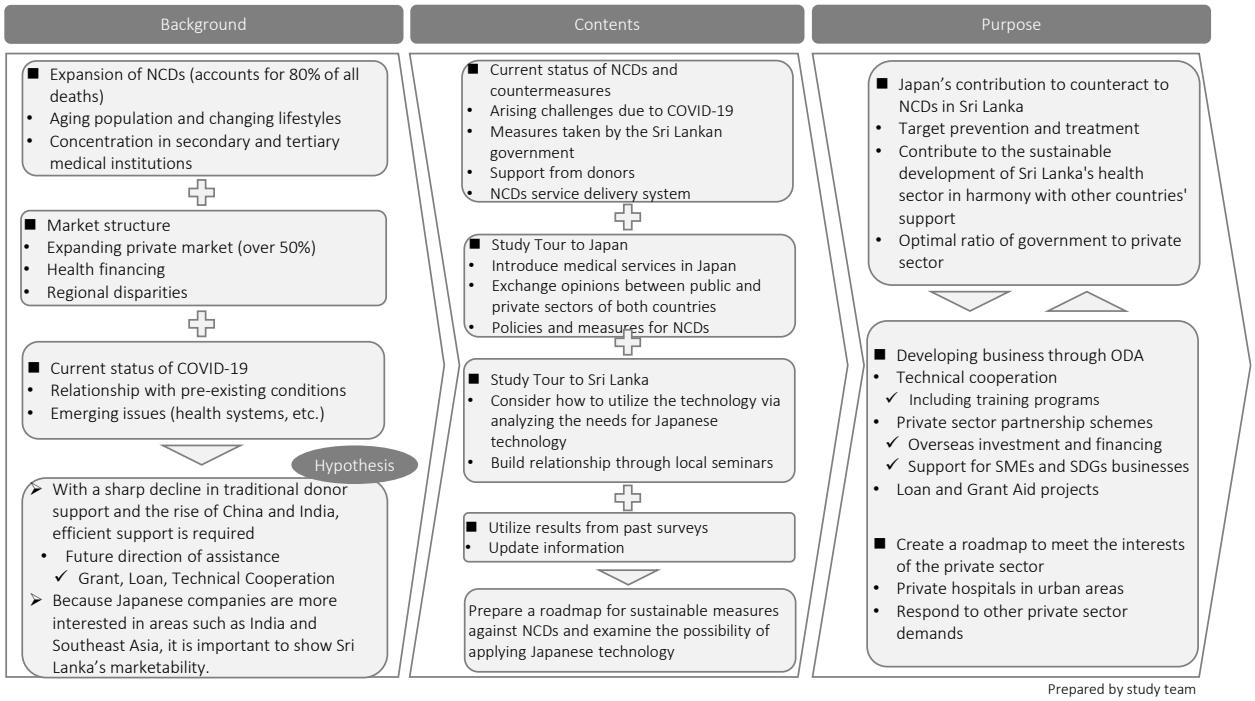


Figure 1-1 Outline of the survey

1.1.2 Purpose of the study

The purpose of this study is to determine the current situation in the field of NCDs prevention (Primary prevention: lifestyle modification such as nutrition and health promotion, secondary prevention: early detection and health checkups) and treatment (tertiary prevention: prognosis observation and rehabilitation) in light of the response to COVID-19. Various issues in relation to NCDs and COVID-19 will be sorted out, and the direction of future JICA assistance and draft assistance contents will be examined in light of the efforts of the Sri Lankan Government and other donors. In addition, the current status and issues of the NCDs prevention and treatment market will be analyzed and summarized, and the possibility of utilizing private-sector technology in this field in the future will be examined.

1.1.3 Outline of the contents of the survey

In the field of NCDs in Sri Lanka, some valuable information is available from different surveys/ studies being conducted in the past including "Data Collection Survey on Health Sector (2015)," "Preparatory Survey of Health and Medical Service Improvement Project (2017)", "Project for Enhancement of Non-Communicable Diseases Management (2018)," and "Data Collection Survey on the Aging Sector (2021)". Regarding (1) ~ (5) below, this study has updated information in terms of NCDs and COVID-19 in Sri Lanka and analyzed the data to explore possibilities of future support to Sri Lanka in the efforts of prevention and treatment of NCDs.

(1) Collecting and analyzing related materials and information

i. Literature Information Update

Organize, analyze, and review existing relevant data, information, and data, as well as review detailed survey content and processes. In carrying out the work, the efficiency shall be fully taken into consideration, and sufficient consultation shall be conducted with JICA. It should also list relevant data, information and data that need to be collected further in the field.

ii. Inception Reporting

Summarize the above results and the matters and questions to be asked to Sri Lanka-related organizations in the investigation, prepare an Inception Report and submit it to JICA. In setting the submission time, ensure that JICA has sufficient time to review the content.

iii. Discuss the Inception Report

Explanation and consultation of the Inception Report confirmed by JICA to relevant organizations in Sri Lanka and the JICA Sri Lanka Office to obtain their understanding.

(2) Current status of NCDs in Sri Lanka

The current status of NCDs and preventive measures in Sri Lanka will be summarized and analyzed with a focus on the following items. In that case, the following analyses will be conducted to compare the number of NCDs patients, types of diseases, etc. before and after the spread of COVID-19, and the impact of COVID-19 on NCDs patients, from the perspectives of regional disparities, gender, and vulnerable groups.

i. Analysis of currently available literature on NCDs

ii. NCD-related basic indicators (Number of patients and deaths by disease and sex, geographical distribution (Disease includes risk factors related to NCDs such as obesity and hypertension (Eating habits, drinking, chewing tobacco, exercise, etc.)), and nutrition-related indicators, etc.)

iii. Impact of COVID-19 on patients with NCDs (including the severity of disease and the provision of health services)

(3) Current Situation and Challenges of the Government of Sri Lanka's Policies, Plans and Institutions for NCDs

The study team will organize, analyze, and identify issues concerning policies, plans, systems, and finances related to NCDs, with a focus on the following items. Policies, plans, initiatives and issues related to the COVID-19 response will also be analyzed.

i. Legal systems, policies and plans, and initiatives

ii. Health financing (Coverage by public funds, financial burden, etc. especially for NCD-related health and medical services)

iii. Major ministries, agencies, and structures related to NCDs (including jurisdiction, organizational chart, personnel structure, and practical capabilities)

iv. Policies, plans, initiatives and issues related to measures against COVID-19

(4) Support analysis by our country and other donors

The study team will analyze the state of support by Japan and other donors in the field of NCDs prevention and treatment in Sri Lanka.

i. Projects by Japan and lessons learned (including those conducted by private companies)

ii. Support status, plans and lessons learned from other donors

(5) Analysis of services, issues and needs related to NCDs

The following information will be collected, and issues will be analyzed in the areas of prevention and treatment of NCDs, taking into account the responses of medical systems and vulnerable groups in the event of risks such as the COVID-19 infection, disasters, and terrorism, as well as regional disparities, gender,

income, and work patterns.

i. Service provision and referral systems
ii. Health facilities at each level, including geographic distribution of facilities
iii. Health and medical equipment and pharmaceuticals (including the level of equipment in place, distribution status, and related regulations (clinical trials and licensing systems))
iv. State of provision of NCDs-related services in healthcare facilities
v. Status of educational opportunities and educational activities related to NCDs in health facilities
vi. Human resources development in health and medical care (including the training status and system for medical specialists, nursing, rehabilitation, and clinical laboratory technicians related to NCDs and the allocation of health and medical personnel to each facility)
vii. Health information management (utilization of health information for understanding, planning, monitoring and evaluation)
viii. Analysis of issues and needs in items i-vii above

(6) Visit to Japan by Sri Lankan Government Officials

Conduct a visit to Japan to introduce systems, projects and services related to NCDs in Japan, which will contribute to the improvement of NCDs measures in Sri Lanka. In addition to the exchange of views at individual destinations, opportunities will be provided to introduce issues and business opportunities in the field of NCDs in Sri Lanka to a large number of Japanese stakeholders (mainly companies interested in expanding overseas, including Sri Lanka).[1]

(7) Current situation and challenges in the private market of NCDs

The study team will analyze the current situation of the private sector market in Sri Lanka in the field of NCDs prevention and treatment, focusing on the following items.

i. Current status of the market
   a) Overview, economic scale
   b) Related laws, policies, systems, and features
   c) Regulations, import/export procedures, distribution status, and stakeholders for medical devices and drugs
   d) State of entry of third country companies (country, size, industry, product, service), industry charts, etc.
ii. Issues in the market

(8) Market for NCDs and comparison with other countries

The team will conduct a comparative analysis of Sri Lanka's markets in the field of NCDs with a focus on the following items.

i. Market comparison with Southeast Asian countries and India

1 This visit shall be conducted in accordance with the "Guidelines for the Implementation of Training and Invitation for Consultant Contracts" (June 2017), and shall include all of the "Acceptance Services," "Supervision Services," and "Implementation Services" prescribed in the Guidelines (except for "Confirmation of International Agreements and Obtaining Application Documents").

ii. Sri Lanka's comparative advantages and weaknesses

(9) Support analysis of other development partners

The support provided by our country and other development partners (Sri Lankan business support actors) in the Sri Lankan market for NCDs, focusing on the following items shall be analyzed.

i. Trends, results, and lessons learned

ii. Future plans

(10) Analysis of needs of Japanese companies in the field of NCDs

Focusing on the following items, the study team will organize and analyze the situation of Japanese companies doing business in the field of NCDs and their strengths and challenges in expanding overseas.

i. Status of overseas expansion (countries, number of companies, size, industry, products, services, etc.)

ii. Products and services

iii. Challenges for overseas expansion

(11) Study the possibility of business development in Sri Lanka

The study team will examine the possibility of Japanese companies expanding their businesses in Sri Lanka, focusing on the following items.

i. Potential industries/products/services

ii. Benefits, points to keep in mind, and selling points for entering Sri Lanka (including examples of Japanese and foreign companies entering Sri Lanka)

(12) Visit to Sri Lanka by Japanese companies and support for building relationships with local companies

An on-site visit will be conducted for Japanese companies in the field of NCDs interested in entering Sri Lanka, with the aim of understanding the current situation in Sri Lanka, identifying potential local partners, and building relationships. This visit will provide an opportunity for a wide range of Sri Lankan stakeholders to deepen their understanding of Japan's measures and services for NCDs (50-person seminar, etc.).

(13) Recommendations on future JICA support policies

Based on the results of (1) to (12) above, a strategy for JICA's assistance in the field of NCDs in Sri Lanka until 2030 shall be proposed. In addition, the overall blueprint of the proposed assistance based on the strategy is classified into the short term (to be initiated within 3 years) and the medium to long term (to be initiated within 3 to 10 years), and compiled into a roadmap. The following projects are envisaged as the content of the assistance.

i. Study of a possible technical cooperation project in conjunction with the "Health Service Improvement Project" of ODA loans

ii. Study of project proposals for technical cooperation projects

iii. Study of project proposals for private-sector collaboration projects (project feasibility study/popularization, demonstration, and commercialization study)

iv. Study of projects envisaged for grant aid/loan aid

The following items should be included in the proposal of the contents of the support.

- Purpose and necessity of support
- Outline of support content
- implementation system
- Estimated Amount of Cooperation and Proposed Schedule

(14) Preparation, explanation, and discussion of draft final report

The survey results up to (13) above are summarized in the Draft Final Report. After obtaining the confirmation of JICA, the team will explain and consult with relevant organizations in Sri Lanka and obtain basic understanding.

(15) Creating Final Report

The Final Report shall be prepared and submitted to JICA, taking into account comments from relevant Sri Lankan organizations and JICA on the Draft Final Report.

1.2 Policy of the survey

1.2.1 Technical policy

The purpose of this survey is to identify issues in the measures against NCDs and to examine the long-term measures for 2030. The health indicators of Sri Lanka are relatively good in South Asia while the transition to NCDs is accelerating. This study examines the impact of the COVID-19 on measures against NCDs as well as the target for improvement of prevention and treatment of NCDs after the end of the COVID-19. The study also summarizes future JICA projects that will contribute to achieving the target. The objective of this project is to examine the potential use of Japanese technology and to develop a plan through assistance from major countries and effective role sharing with the Sri Lankan government's program.

In the analysis of the issues, as described above, differences in the area, income, gender, etc. of the NCDs countermeasure service beneficiaries and various individual NCDs risk factors were also considered.[2] To date, JICA has implemented the Health Master Plan and the Project for Improvement of Health Promotion and Preventive Medical Services, which provides technical cooperation for prevention and management of NCDs including diabetes, hypertension, and dyslipidemia. Based on the results of the project, the Government of Sri Lanka has established an intervention guideline for health promotion activities for health guidance and lifestyle modification, and is establishing a Healthy Lifestyle Center (HLC) to provide health checkups. In addition, JICA is currently working to strengthen secondary prevention (early detection and early treatment) of NCDs, the hardware and software aspects of secondary medical facilities (improving the referral system), and the management of supply of pharmaceutical products (system for providing drugs that enables improved access to diagnostic services, follow-up for treatment, and long-term treatment).

The Sri Lankan government is now requesting cooperation from JICA for assistance to the working population. In light of the current situation of measures against NCDs during the COVID-19 pandemic, the study team also examined contributions in these new areas of assistance.

2 WHO developed the "A comprehensive plan for basic NCD interventions in primary health care in resource-poor settings (PEN)" as a framework for early detection, diagnosis, and treatment of NCDs in limited resources, preferring an integrated, multifactorial approach to risk factors rather than a single approach

1.2.2 Operational policy

It is important to involve key stakeholders concerned and to reflect information in the survey contents in a timely manner. Remote facilitation is the key to the execution of this survey. In addition to building relationships and networks, it is also important to consider work speed and benefits for collaborators. Also, as travel became difficult, it was necessary to organize webinars for a wider range of stakeholders.

1.2.3 Process of this study

(1) Step 1: Initial research / Hypothesis setting (Early August to Mid-October 2021)

At first, the study team sorted out the list of research items for this study, including information to update from the studies in the past and to newly obtain. The list was agreed by the end of August. (Step 1-1)

Then, a multi-language research team worked on the literature review until the end of September while the progress was shared with JICA and advisors regularly. (Step 1-2)

At the same time, the study team researched information on Sri Lanka's marketability (trends in ODA and private sector business, etc.), candidates for interviews in Sri Lanka, and their profiles, and explored the needs of Japanese companies. (Step 1-3)

Based on such information, the study team developed a questionnaire to analyze the needs and conduct stakeholder interviews. (Step 1-4)

In addition, the NCDs challenges were sorted out and a roadmap was drafted. A hypothesis (tentative) of solutions to the challenges was formulated. (Step 1-5)

While the first field trip was postponed in view of the outbreak of COVID-19 in late September, the study team began discussions with the Ministry of Health Sri Lanka on briefing of the study and hypothesis, in order to identify the informants for the field interviews. (Step 1-6)

(2) Step 2: Hypothesis study (Mid-October to late December 2021)

The Ministry of Health Sri Lanka provided the study team with profiles and information of relevant officials from the public health institutes after the briefing on the study. (Step 2-1)

Based on the Inception Report, the literature reviews and the questionnaire, the study team member in Sri Lanka started making appointments for interviews. (Step 2-2)

In addition, due to the infection of COVID-19 in Japan and overseas at the end of December, the study tour to Japan by the Ministry of Health Sri Lanka in February 2022 was cancelled and the seminar in Sri Lanka were postponed. The study team made alternative plans, including online study tour to Japan and online business seminar in Sri Lanka. (Step 2-3)

(3) Step 3: Promote matching (early January to mid-April 2022)

(i) Preparation and implementation of field interview and study tour to Japan

Hearings with stakeholders in Sri Lanka were started. Interviewees were from national and public health institutions and private hospitals. (process 3-1)

At the same time, the online study tour to Japan, as an alternative plan to the study tour was conducted in a series of interviews with Ministry of Health, Labour and Welfare Japan, a local government, regional core hospitals, and advanced medical institutions. (Step 3-2)

Through a series of discussions with stakeholders (policy makers, managements of medical institutions and practitioners in both countries), requests and comments to the output of this study (roadmap and ideas of cooperation from Japan to Sri Lanka) were raised. Such requests were discussed in the joint meeting between JICA and Ministry of Health Sri Lanka. (Step 3-3).

(ii) field seminar

Preparations for holding a field seminar were started based on additional challenges found during the stakeholder meetings. Five Japanese companies with technologies that contribute to solving problems such challenges, as well as the Health Care Industry Division of the Ministry of Economy, Trade and Industry Japan participated in the presentation during the seminar (Step 3-5).

At the seminar in the middle of April 2022, the study team introduced the proposal of cooperation (intervention measures for the challenges) along with the revised version of the road map, while the presentations and Q&A session by the abovementioned speakers were held. The participants include the management, doctors, and medical professionals of national, public, and private medical institutions in Colombo and rural areas. Most of them are the informants for the meetings with stakeholders in Sri Lanka. (Step 3-6)

(4) **Process 4: Summary of survey contents (mainly from February to early April 2022)**

Findings from processes 1 to 3 were reflected in the final report. In the process, the role of public health services and private services was discussed in the roadmap. In addition, the intervention measures based on the exchange of opinions and the questionnaire in the field seminar, and the specific public and private services that Japan could provide were examined.

Chapter 2 Current status of NCDs

2.1 NCDs-related issues

2.1.1 Current status of NCDs

(1) Proportion of NCDs as a cause of death

NCDs account for more than 75% of all deaths in Sri Lanka, with almost one in five early deaths. According to the UN Inter-Agency Task Force on NCDs, the prevalence of NCDs in Sri Lanka is a serious economic and public health problem, with smoking, unhealthy diets, harmful alcohol consumption, and physical inactivity contributing to the prevalence of NCDs. As shown in the following figures, more than 25% of adult males in Sri Lanka are smokers, and obesity is more prevalent among females, with approximately one in ten being obese. In addition, a large proportion of men and women have high blood pressure, with approximately one in four having it.

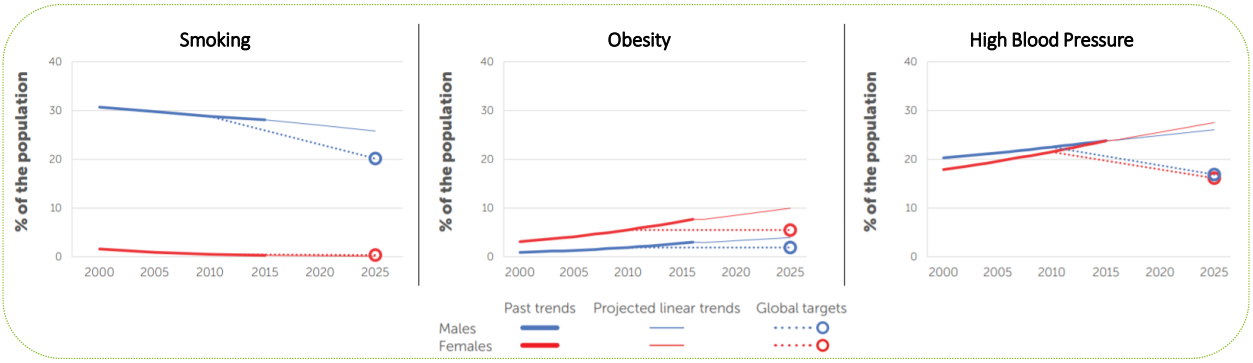


Figure 2-1 Major trends in risk factors for NCDs in Sri Lanka[3]

According to the Annual Health Statistics 2019 published by the Sri Lankan Ministry of Health. It is estimated that only 30~40% of recorded deaths occur in public hospitals. According to the following table, in Sri Lanka, ischemic heart disease has been the leading cause of hospital death since 2010, followed by tumors, zoonotic infections, and other bacterial infections.

[3] WHO（2018）"Noncommunicable Diseases (NCD) Country Profile", https://www.who.int/beat-ncds/countries/sri-lanka/en/

Table 2-1 Ranking and proportion of major NCDs among causes of death occurred in hospitals[4]

Leading Causes of Hospital Deaths (2010 – 2019)																				
Disease and ICD (10th Revision) Code		2019		2018		2017		2016		2015		2014		2013		2012		2011[2]		2010[2]	
		Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%
Ischemic heart disease	I20-I25	1	15.1	1	15.0	1	14.2	1	14.1	1	14.2	1	14.8	1	14.7	1	14.4	1	13.4	1	12.8
Zoonotic and other bacterial diseases	A20-A49	2	12.1	3	10.9	2	11.5	3	11.6	3	9.7	3	9.1	6	7.9	6	7.1	6	6.7	6	6.6
Neoplasms[1]	C00-D48	3	11.7	2	11.7	3	10.5	2	12.0	2	11.0	2	11.7	2	11.2	2	11.6	2	11.8	2	11.1
Diseases of the respiratory system excluding diseases of upper respiratory tract, pneumonia and influenza	J20-J22, J40-J98	4	10.7	4	9.9	4	9.8	5	8.3	4	9.2	6	8.0	5	7.9	5	7.2	5	6.9	5	7.0
Pneumonia	J12-J18	5	8.0	7	7.8	6	8.2	7	6.4	7	7.5	7	6.6	8	6.1	8	5.7	9	5.2	9	5.2
Pulmonary heart disease ad diseases of the pulmonary circulation	I26-I51	6	7.6	6	7.9	5	8.5	4	8.7	5	8.3	4	8.6	4	8.4	3	9.0	4	8.7	3	8.7
Cerebrovascular disease	I60-I69	7	7.6	5	8.0	7	7.7	6	8.2	6	8.2	5	8.4	3	8.6	4	8.7	3	8.7	4	8.7
Diseases of the urinary system	N00-N39	8	5.8	8	5.8	8	5.9	8	6.3	8	6.2	8	6.3	7	6.2	7	6.3	7	5.7	8	5.7
Diseases of the gastro-intestinal tract	K20-K92	9	5.0	9	5.1	9	5.1	9	5.5	9	5.3	9	5.7	9	5.7	9	5.4	8	5.4	7	6.2
Traumatic injuries	S00-T19, W54	10	3.6	10	3.9	10	3.8	10	3.9	10	3.8	10	3.5	11	3.3	11	3.7	11	3.6	11	3.7
Disease of the nervous system	G00-G98	11	1.3	13	1.4	14	1.4	14	1.4	17	1.3	16	1.4	15	1.4	16	1.5	19	1.4	18	1.6
Symptoms, signs and abnormal clinical and labo	R00-R99	12	1.3	11	1.5	12	1.5	12	1.6	11	2.3	11	3.2	10	4.8	10	4.5	10	4.1	10	5.0
Diabetes mellitus	E10-E14	13	1.3	12	1.4	11	1.7	11	1.8	13	1.6	13	1.6	13	1.6	14	1.7	14	1.9	16	1.7

*[1]Includes deaths reported from the Cancer Hospital (not analyzed by site and type of neoplasm)
*[2]Excludes Mullaitivu District

(2) Major diseases

The following table (left) shows the disability-adjusted life years (DALY)[5] ranking of the top 10 diseases in Sri Lanka as of 2009 and 2019. The diseases with high DALYs are all NCDs, such as diabetes, ischemic heart disease, and stroke, which were the top three diseases in 2019 and all had increased disease burden in the 10 years since 2009. Another table (right) shows the disease ranking by number of deaths (top 10 diseases) in Sri Lanka. Ischemic heart disease and stroke, which were the first and second leading causes of death in 2009, remained unchanged in 2019 after 10 years. It should be noted that diabetes, asthma, chronic kidney disease, and chronic obstructive pulmonary disease, which occupy positions 3 to 6, are all NCDs, and the number of deaths has increased since 2009.

Given that all diseases with high DALYs are NCDs, and that the top 10 diseases with the most deaths are all NCDs except for lower respiratory tract infections, which ranks seventh, it is no exaggeration to say that addressing NCDs is a major health agenda in Sri Lanka.

[4] Ministry of Health Medical Statistic Unit "Annual Health Statistics 2019", http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/AHB/AHS%202019.pdf

[5] Disability-adjusted life years (DALY) is a comprehensive measure of the burden of disease, meaning the number of years lost due to morbidity, disability, and premature death. The index takes into account the extent of loss of healthy life as well as premature death due to illness and disability. Specifically, it is calculated as the sum of lost life years (years of life lost due to disease) and disability survival years (years spent with disability, weighted by the degree of disability).

Table 2-2 Ranking of diseases by DALY[6]

Rank	Top Diseases in 2019	DALYs in 2019	DALYs in 2009	% change	Change in rank
1	Diabetes mellitus	492,203	365,144	34.8%	⇧
2	Ischemic heart disease	489,315	448,210	9.2%	⇧
3	Stroke	317,411	307, 676	3.2%	⇧
4	Self-harm	198,570	203,206	-2.3%	⇩
5	Low back pain	194,301	161,816	20.1%	⇩
6	Chronic kidney disease	167,230	138,216	21.0%	⇧
7	Asthma	166,925	170,001	-1.8%	⇩
8	Road injuries	156,809	158,673	-1.2%	⇩
9	Neonatal disorders	146,548	227,163	-35.5%	⇩
10	Headache disorders	145,955	134,626	8.4%	⇩

Table 2-3 Ranking of diseases by number of deaths[7]

Rank	Top Diseases in 2019	Deaths in 2019	Deaths in 2009	% change	Change in rank
1	Ischemic heart disease	23,968	20,741	15.6%	⇔
2	Stroke	14,363	14,201	1.1%	⇔
3	Diabetes mellitus	13,273	10,280	29.1%	⇧
4	Asthma	8,228	8,259	-0.4%	⇧
5	Chronic kidney disease	5,559	4,582	21.3%	⇧
6	Chronic obstructive pulmonary disease	5,027	4,432	15.8%	⇧
7	Lower respiratory infections	4,699	4,091	14.8%	⇧
8	Self-harm	4,424	4,383	0.9%	⇩
9	Cirrhosis and other chronic liver diseases	4,368	4,215	3.6%	⇔
10	Alzheimer's disease and other dementias	4,140	2,778	49.0%	⇧

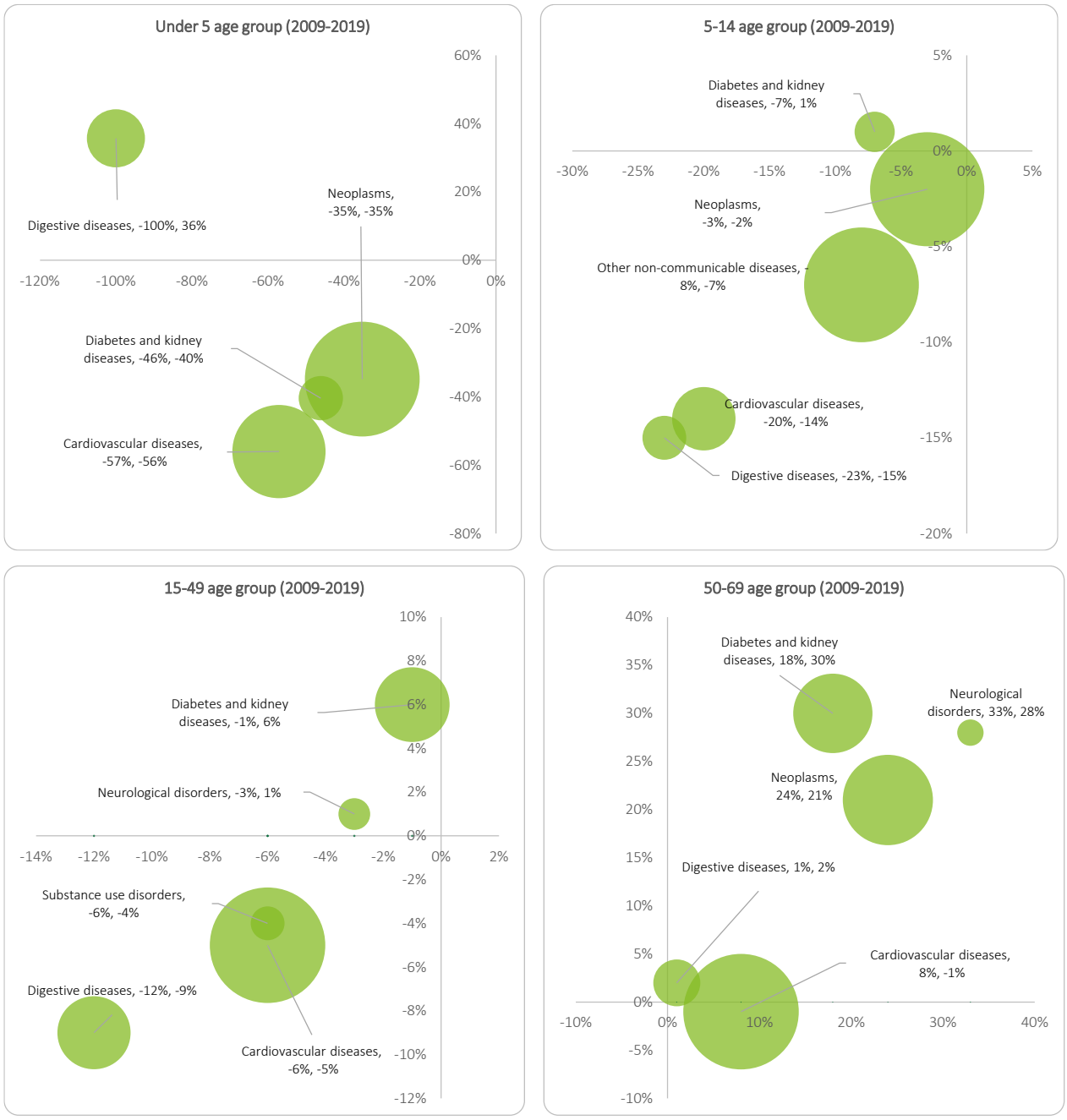
Rank Legend : ⇔ Same Level ⇩ Decrease ⇧ Increase

The following figure shows the rate of increase in the number of deaths and DALYs due to NCDs by age group for 10 years from 2009 to 2019, illustrating the trend of NCDs in each age group. The X-axis, on the right, represents an increase in deaths over the 10-year period, and the Y-axis, on the top, represents an increase in DALY over the 10-year period. The size of the circle (bubble) represents the size of the total number of deaths.

First, looking at the age group under 5 years, the NCDs with the most deaths are tumors followed by cardiovascular diseases. However, both DALYs and deaths have decreased over the past 10 years. In this age group, the number of deaths from gastrointestinal diseases is relatively small and decreasing, but DALY is increasing. In the age group of 5 to 14 years, tumors are the primary cause of death, but neither deaths nor DALYs have increased or decreased in the past 10 years, suggesting that there has been little progress in 10 years. In the age group of 15 to 49 years old, the number of deaths from cardiovascular diseases, gastrointestinal diseases, diabetes, and kidney diseases is high. Over the past 10 years, both the number of deaths and DALY for cardiovascular diseases and gastrointestinal diseases have decreased, while the number of deaths and DALY for diabetes and kidney diseases have increased. It is estimated that the issues of diabetes and kidney diseases in this age group is a factor in the increase in the number of deaths and DALY for diabetes in the whole country (See the above tables). Finally, in the 50 to 69 age group, the main causes of death are cardiovascular disease, tumor, diabetes, and kidney disease, and both the number of deaths and DALY have been increasing over the 10-year period.

[6] Created by the survey team from IHME "Global Health Data Exchange", http://ghdx.healthdata.org/

[7] Created by the survey team from IHME "Global Health Data Exchange", http://ghdx.healthdata.org/



X axis: Growth rate of number of deaths during 2009-19
Y axis: Growth rate of DALYs during 2009-19 ; Bubble size represents the total number of deaths due to the disease in 2019

Figure 2-2 Trends in major NCDs by age group (all genders) 2009-2019[8]

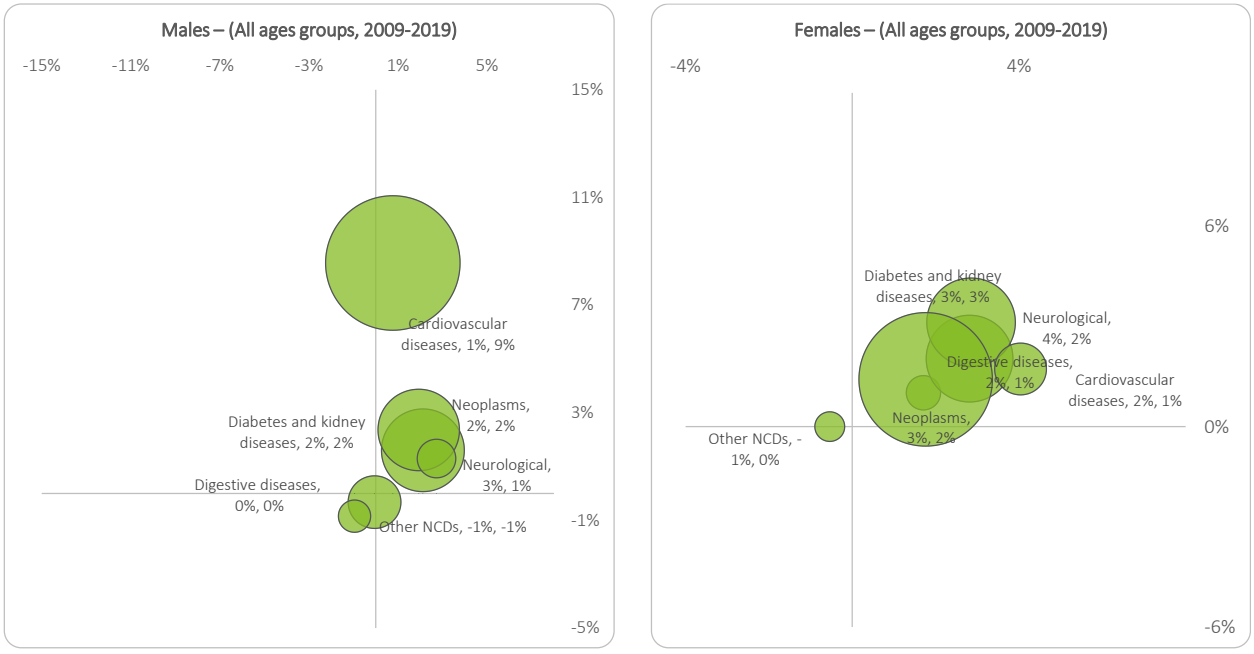
2.1.2 Disease trends by sex, age, and district

(1) Disease trends by sex

The following figures show disease trends by sex, showing the rate of increase in deaths and DALYs of diseases over a 10-year period from 2009 to 2019. The X-axis, on the right, represents an increase in deaths over the 10-year period, and the Y-axis, on the top, represents an increase in DALY over the 10-year period.

[8] Created by the survey team from the data of IHME "Global Health Data Exchange

The size of the circle (bubble) represents the size of the total number of deaths. The figure shows that cardiovascular disease is the leading cause of death in both men and women, followed by diabetes, kidney disease, and tumors. Both the number of deaths and DALY of these diseases have been increasing over the past 10 years.



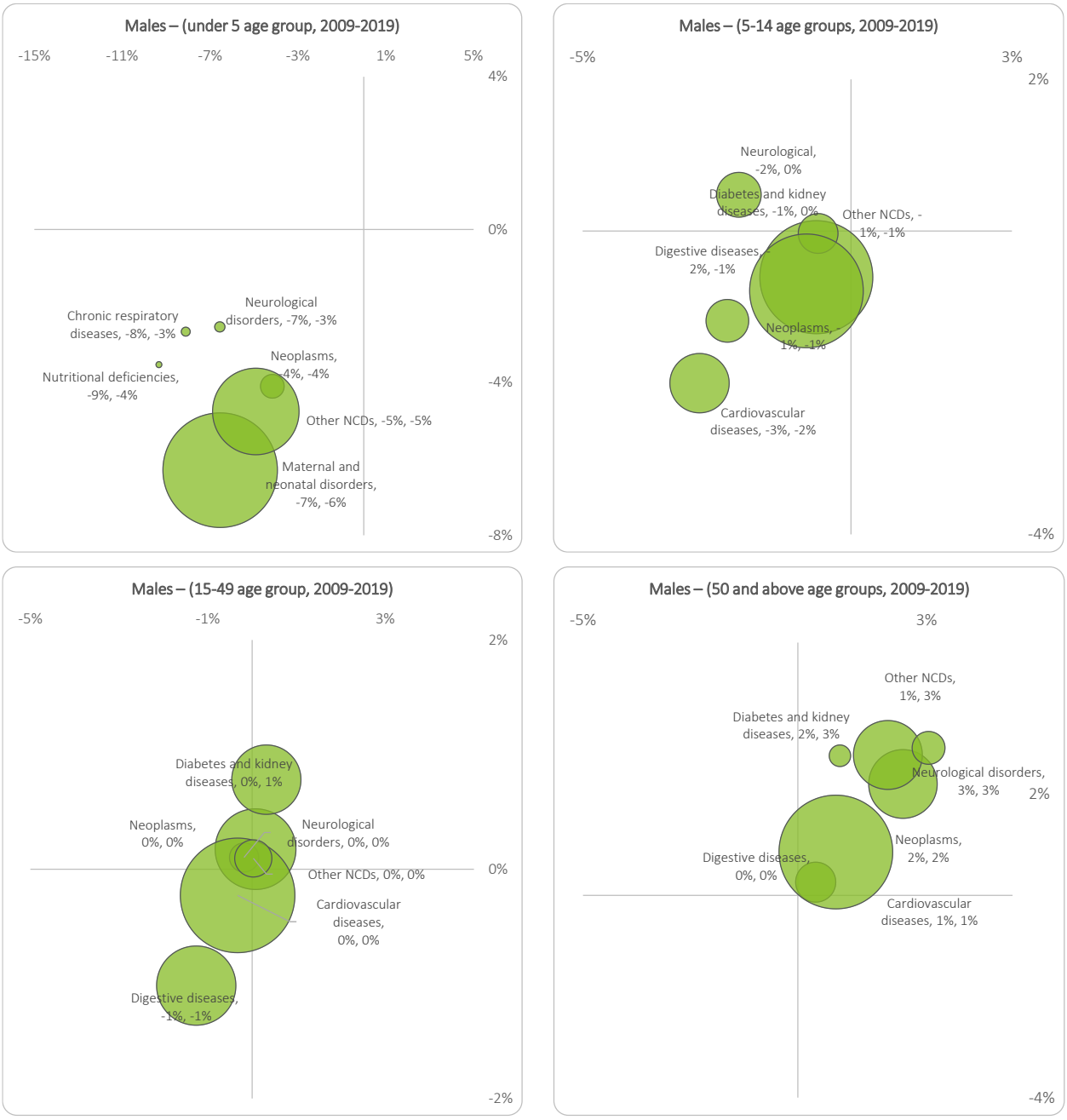
X axis: Growth rate of number of deaths during 2009-19
Y axis: Growth rate of DALYs during 2009-19 ; Bubble size represents the total number of deaths due to the disease in 2019

Figure 2-3 Disease trends by sex (2009-2019)[9]

(2) Disease trends by age

The following figures show the disease trends of males and females by age group for 10 years from 2009 to 2019. Looking at the trend in the age group of males between 0 and 14 years old, neonatal diseases and tumors are the main causes of death, but the number of deaths and DALYs of all diseases are generally decreasing. Looking at the age group of males aged 14 to 49 and those aged 50 and over, cardiovascular diseases, tumors, diabetes mellitus and kidney diseases are the main causes of death in both groups. The number of deaths and DALY of all diseases are increasing, and the increase rate of diabetes and kidney diseases is particularly noticeable. In addition, the trend in the age group from 0 to 14 for females is similar to that for males. Looking at the 14 to 49 and over 50 age groups of females, as well as males, cardiovascular disease, tumors, diabetes and kidney disease are the leading causes of death in both groups. However, it is characteristic that the number of deaths from cardiovascular diseases and DALY are decreasing in the 14-to-49-year age group of females. Furthermore, in the age group of females aged 50 years and over, the number of deaths and DALY of diseases, including cardiovascular diseases, tumors, diabetes and kidney diseases, which are major causes of death, are on an increasing trend. It should be noted that the rate of increase in the number of deaths from cardiovascular diseases is significantly higher than that of males in the same age group.

[9] Created by the survey team from IHME"Global Health Data Exchange", http://ghdx.healthdata.org/



X axis: Growth rate of number of deaths during 2009-19
Y axis: Growth rate of DALYs during 2009-19 ; Bubble size represents the total number of deaths due to the disease in 2019

Figure 2-4 Disease trends by age group: Male (2009-2019)[10]

[10] Created by survey team from IHME"Global Health Data Exchange", http://ghdx.healthdata.org/

X axis: Growth rate of number of deaths during 2009-19
Y axis: Growth rate of DALYs during 2009-19 ; Bubble size represents the total number of deaths due to the disease in 2019

Figure 2-5 Disease trends by age group: Female (2009-2019)[11]

(3) Disease trends by district

The following table[12]shows the ranking of causes of hospital deaths by district. According to this table, ischemic heart disease is the major cause of death across districts, followed by zoonotic and other bacterial diseases, respiratory diseases, and tumors. The rankings of cause of hospital deaths in the largest city,

[11] Created by survey team from IHME"Global Health Data Exchange", http://ghdx.healthdata.org/

[12] Ministry of Health Medical Statistic Unit "Annual Health Statistics 2019", http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/AHB/AHS%202019.pdf

Colombo, are almost identical to those of Sri Lanka as a whole. The high number of hospital deaths of Neoplasm and Ischemic Heart Disease in Colombo may be also attributed to the high number of referral cases from other districts. Respiratory diseases, pneumonia, and pulmonary circulatory diseases are the leading causes of death in the arid zone of northern Sri Lanka such as Jaffna, Mannar, Kilinochchi, Mulaitivu, and Anuradhapura districts.

Table 2-4 Ranking of causes of hospital deaths by district (2019)

Disease and ICD (10th Revision) Code		Sri Lanka	Colombo	Gampaha	Kalutara	Kandy	Matale	Nuwara Eliya	Galle	Matara	Hambantota	Jaffna	Vavuniya	Mannar	Kilinochchi	Mulaitivu	Batticaloa	Ampara[2]	Trincomalee	Kurunegala	Puttalam	Anuradhapura	Polonnaruwa	Badulla	Monaragala	Ratnapura	Kegalle
Ischemic heart disease	I20-I25	1	2	1	2	2	1	2	1	1	1	3	6	2	2	4	3	1	2	1	2	2	1	2	2	1	1
Zoonotic and other bacterial diseases	A20-A49	2	3	2	1	3	3	5	4	3	5	2	5	3	4	7	8	2	1	3	4	5	3	1	1	3	6
Neoplasms[1]	C00-D48	3	1	8	9	1	8	7	3	7	10	4	12	6	6	10	5	8	8	2	10	3	4	4	5	6	7
Diseases of the respiratory system excluding diseases of upper respiratory tract, pneumonia and influenza	J20-J22, J40-J98	4	4	3	5	4	2	4	2	2	4	1	4	5	8	7	4	5	6	4	1	6	2	6	3	5	3
Pneumonia	J12-J18	5	8	6	6	8	5	5	6	4	2	9	1	3	1	1	10	3	7	6	7	1	7	3	8	2	2
Pulmonary heart disease and diseases of the pulmonary circulation	I26-I51	6	5	4	3	6	6	1	10	6	3	5	2	1	1	2	2	4	3	7	3	9	9	7	7	7	5
Cerebrovascular disease	I60-I69	7	6	7	4	5	4	3	5	5	8	10	7	13	6	12	7	6	4	5	6	7	5	9	4	4	4
Diseases of the urinary system	N00-N39	8	9	9	8	7	6	7	8	8	7	8	3	6	10	3	6	9	4	9	8	4	6	5	6	8	9
Diseases of the gastro-intestinal tract	K20-K92	9	7	5	7	9	9	11	9	9	9	7	8	8	18	10	12	13	12	8	5	10	10	10	9	9	8
Traumatic injuries	S00-T19, W54	10	10	10	10	10	9	12	7	10	13	6	14	13	9	6	8	11	10	10	12	8	8	8	10	10	10
Disease of the nervous system	G00-G9811	11	14	13	17	11	23	15	13	13	17	11	11	13	14	15	13	15	11	14	19	11	11	11	11	11	11
Symptoms, signs and abnormal clinical and laboratory findings	R00-R99	12	17	11	14	17	12	9	15	17	6	15	15	10	4	7	1	7	13	18	11	20	18	16	16	13	13
Diabetes mellitus	E10-E14	13	11	14	23	14	11	14	11	16	11	14	16	11	18	12	21	25	30	12	14	14	31	14	20	19	14
Conditions originating in the perinatal period excluding disorders related to short gestation, low birth weight, slow fetal growth and fetal malnutrition [3]	P00-P04, P08-P96	14	12	18	11	15	17	13	13	18	17	18	8	8	13	15	11	10	9	17	9	16	16	11	13	21	20
Hypertensive disease	I10-I15	15	18	19	18	16	14	10	12	11	11	16	16	21	26	5	20	16	22	11	13	20	23	13	16	14	12

*[1]Deaths reported from Cancer Hospital (not analyzed by site and type of neoplasm)
*[2] Kalmunal RDHS Division

The following table[13] shows the ranking of the major causes of hospitalization by district. The major causes of hospitalization are traumatic injuries and symptoms, signs, and abnormal clinical and laboratory findings across districts. By district, Sri Lanka has seen an increase in the number of deaths from tumors but remains 11th in the list of hospitalizations. In urban areas such as Colombo and Kandy, tumors are the third and eighth most common cause of hospitalization respectively. On the other hand, tumors are very low ranked in other areas but this could be attributed to referrals of tumor patients to treatment facilities in urban areas due to the lack of the facilities in other areas. There are also many deaths due to cardiovascular disease, diabetes, and renal disease in Sri Lanka, but this is not necessarily proportional to the ranking of causes of hospitalization, suggesting that contracting these diseases does not always lead to hospitalization and treatment.

[13] Ministry of Health Medical Statistic Unit "Annual Health Statistics 2019", http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/AHB/AHS%202019.pdf

Table 2-5 Rankings of causes of hospitalization by district (2019)

Disease and ICD (10th Revision) Code		Sri Lanka	Colombo	Gampaha	Kalutara	Kandy	Matale	Nuwara Eliya	Galle	Matara	Hambantota	Jaffna	Vavuniya	Mannar	Kilinochchi	Mullaitivu	Batticaloa	Ampara[2]	Trincomalee	Kurunegala	Puttalam	Anuradhapura	Polonnaruwa	Badulla	Monaragala	Ratnapura	Kegalle
Traumatic injuries	S00-T19, W54	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	2	1	1	1	1	1	1	1	1	1	1
Symptoms, signs and abnormal clinical and laboratory findings	R00-R99	2	2	2	2	3	2	2	2	2	2	2	1	1	2	2	1	2	2	2	2	2	2	2	2	2	2
Diseases of the respiratory system excluding diseases of upper respiratory tract, pneumonia and influenza	J20-J22, J40-J98	3	7	4	3	4	5	3	3	3	3	3	3	5	3	4	4	4	3	3	4	3	3	3	4	3	3
Diseases of the urinary system	N00-N39	4	4	6	6	2	3	9	6	5	5	6	7	6	6	3	8	3	5	6	5	5	6	4	3	4	7
Diseases of the gastrointestinal tract	K20-K92	5	6	5	5	5	6	4	5	4	4	9	4	8	9	6	6	5	7	4	6	4	4	5	5	6	4
Viral diseases	A80-B34	6	5	3	4	6	8	8	4	6	6	4	8	4	7	7	5	6	6	5	7	7	7	6	7	5	5
Direct and indirect obstetric causes	O10-O46, O48-O75, O81-O99, Z35	7	9	8	8	9	7	5	9	7	7	5	6	3	4	5	3	7	8	8	3	6	5	9	6	9	10
Diseases of skin and subcutaneous tissue	L00-L99	8	8	7	7	11	9	11	8	8	9	8	9	9	8	8	9	9	4	7	8	8	8	8	8	7	6
Diseases of the musculoskeletal system and connective tissue	M00-M99	9	12	9	10	10	10	6	10	10	10	7	5	7	5	11	7	8	10	9	11	9	9	7	10	10	9
Diseases of the eye and adnexa	H00-H59	10	10	10	12	7	4	12	11	9	16	10	16	29	12	30	12	10	9	13	9	12	10	10	14	8	15
Neoplasms	C00-D48	11	3	22	24	8	30	25	7	31	31	11	29	28	23	39	11	32	22	18	28	13	28	11	27	15	26
Ischemic heart disease	I20-I25	12	11	12	9	12	11	14	12	13	12	17	13	12	25	15	18	14	18	10	10	10	11	16	15	13	12

1. Tumors include the number of deaths reported by cancer hospitals

2. Ampara contains Kalmunal RDHS.

3. Perinatal conditions shall exclude those related to reduced gestational age, low birth weight, fetal growth restriction, and fetal malnutrition.

2.1.3 Risk factors for NCDs

(1) Data on alcohol drinking and smoking

This section analyzes data on risk factors for alcohol drinking and smoking that contribute to NCDs. According to the following tables, 9.1% of the population over 15 has a habit of heavy alcohol drinking. In addition, 16.6% of males have a habit of heavy alcohol drinking, compared with 2.4% of females, indicating that the prevalence of alcohol consumption disorders and addiction is higher in males than in females. Focused only on the drinking population aged over 15 years, more than 40% of males and about 13% of females drink alcohol heavily. In addition, the prevalence of alcohol consumption disorders and alcoholism in the population aged 15 years and older was 5.9% and 4.9% for males, and 0.7% and 0.6% for females, respectively, indicating that alcohol-related problems are predominantly males.

Table 2-6 Patterns and results of alcohol consumption (2016)[14]

Prevalence of heavy episodic drinking* (%), 2016

	Population (15+ years)	Drinkers only (15+ years)	Population (15 -19 years)	Drinkers only (15 - 19 years)
Males	16.6	40.8	12.4	47.8
Females	2.4	13.2	1.6	16.4
Both sexes	9.1	31.7	7.0	39.2

*Consumed at least 60 grams or more of pure alcohol on at least one occasion in past 30 days

Prevalence of alcohol use disorders and alcohol dependence (%), 2016*

	Alcohol use disorders**	Alcohol dependence
Males	5.9	4.9
Females	0.7	0.6
Both sexes	3.1	2.6
WHO South-East Asia region	3.9	2.9

*12-month prevalence estimates (15+);
** including alcohol dependence and harmful use of alcohol

Age-standardized death rates (ASDR) and alcohol attributable fractions (AAF), 2016

	ASDR*		AAF (%)		AAD** (number)
Liver cirrhosis, males / females	57.4	9.7	56.7	28.2	2880
Road traffic injuries, males / females	35.4	9.3	21.2	11.7	675
Cancer, males / females	135.4	99.1	5.2	0.9	646

*Per 100,000 population;
**alcohol-attributable deaths, both sexes.

[14] WHO (2018) "Global alcohol Report, Sri Lanka", https://www.who.int/substance_abuse/publications/global_alcohol_report/profiles/lka.pdf

The following figures show that smoking prevalence among adults (18-69 years) and adolescents (13-15 years) is higher among males than females for both smoking and smokeless tobacco use. The smoking rate in Sri Lanka is almost the same as the world average (24.9% for all, 40.3% for males, 9.5% for females, 2015)[15].

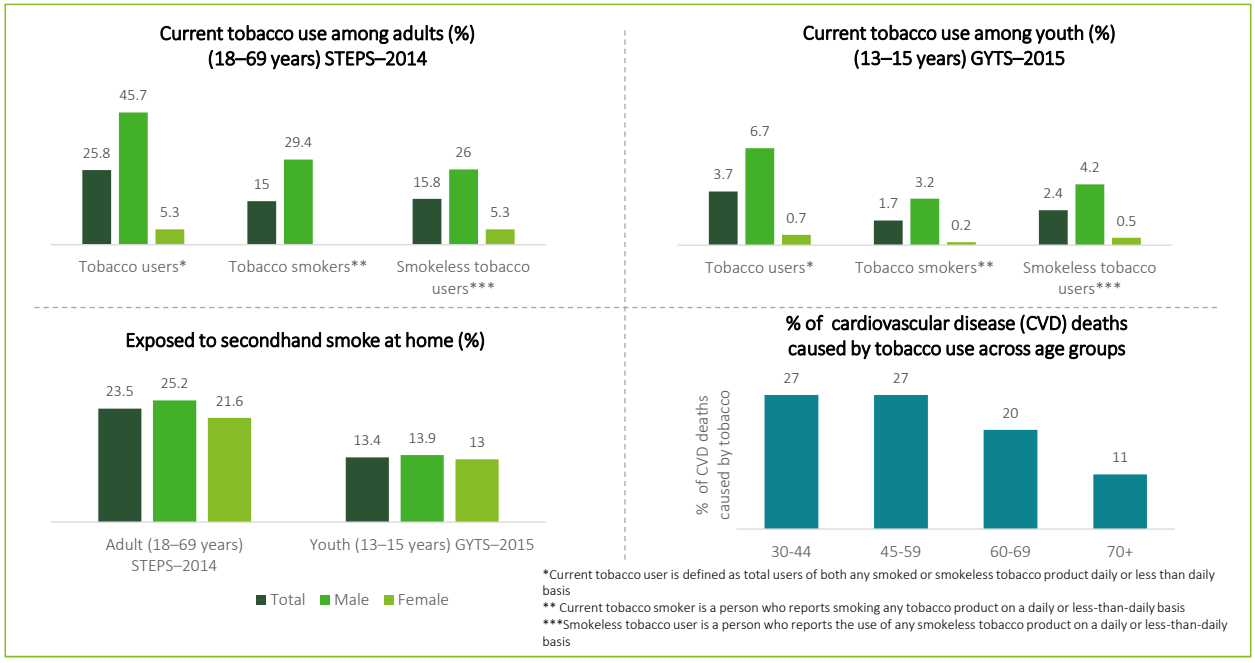


Figure 2-6 Data on smoking[16]

(2) Nutritional data

Among the SDGs, nutrition-related goals are Goal 2 " End hunger, achieve food security and improved nutrition and promote sustainable agriculture" and Goal 3 "Ensure healthy lives and promote well-being for all at all ages". This section analyzes data related to nutrition in Sri Lanka as a risk factor for NCDs.

The following figure shows Sri Lanka's progress towards the Global Nutrition Goals. Sri Lanka has made some progress towards meeting its twin goals for maternal, infant and child nutrition (Maternal, Infant, and Young Child Nutrition (MIYCN) Plan[17]). On the other hand, little progress has been made towards achieving the goal of reducing anemia in women of reproductive age, with 34.6% of women aged 15 to 49 being anemic.

There has also been some progress towards the goal of reducing the proportion of low-birth-weight infant, from 17.6% in 2005 to 15.9% in 2015. The target for exclusive breastfeeding is well under way, with 82.0% of infants aged 0 to 5 months exclusively breastfed. Although some progress has been made towards achieving the target of reducing stunting, 17.3% of children under the age of 5 years are still affected by stunting. Furthermore, no progress has been made towards the goal of reducing malnutrition, with 15.1%

[15] WHO (April 8, 2020), "THE GLOBAL HEALTH OBSERVATORY , World Health Statistics , Prevalence of current tobacco use among persons aged 15 years and older (age-standardized rate)

[16] WHO (2018), STEPS-WHO STEPwise approach to noncommunicable disease risk factor surveillance; GYTS – Global Youth Tobacco Survey, "Sri Lanka Tobacco factsheet 2018", https://apps.who.int/iris/bitstream/handle/10665/272688/wntd_2018_srilanka_fs.pdf?sequence=1

[17] The Maternal, Infant, and Young Child Nutrition (MIYCN) Plan was adopted at the 68th World Health Assembly, committing member countries to achieve six global targets in the area of MIYCN by 2025.

of children under the age of 5 years being malnourished. This is higher than the Asian average (9.1%) and among the highest in the world. The proportion of children under 5 years of age who are overweight is 2%, and progress toward the reduction of overweight children has been steady.

Progress towards achieving dietary NCD-related targets has been slow in Sri Lanka. 8.9% of adult women (over 18 years) and 3.7% of adult men in the country are obese, and progress towards the goal of reducing obesity has been slow. The rate of obesity in Sri Lanka is lower than the Asian average of 10.3% for women and 7.5% for men. At the same time, diabetes is estimated to affect 8.8% of adult women and 8.4% of adult men.

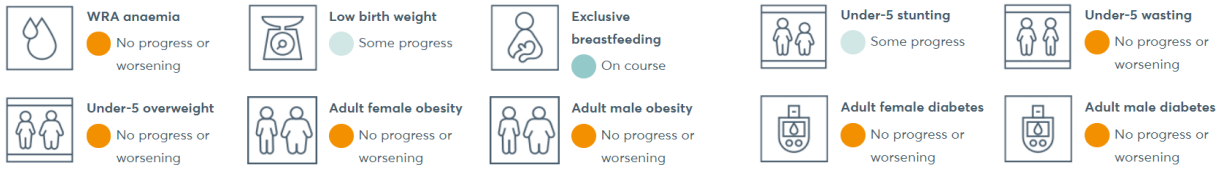


Figure 2-7 Progress towards global nutrition goals in Sri Lanka (2000-2015)[18]

2.2 Impact of COVID-19

2.2.1 Trends of COVID-19's infections and deaths

(1) Waves of infection, deaths, and causes of death

Regarding to the infection situation of COVID-19, although it was relatively well controlled until March 2021, infection spread rapidly around the Sinhala Tamil New Year in mid-April, peaking in September of the same year, and then both the number of infections and the number of deaths tended to increase. As of February 20, 2022, the country had reported 636,837 cases and 15,994 deaths. Data of February 18 showed that 76.8% of Sri Lankans had received at least one dose of vaccine and 64.2% had completed the required number of doses of vaccine[19].

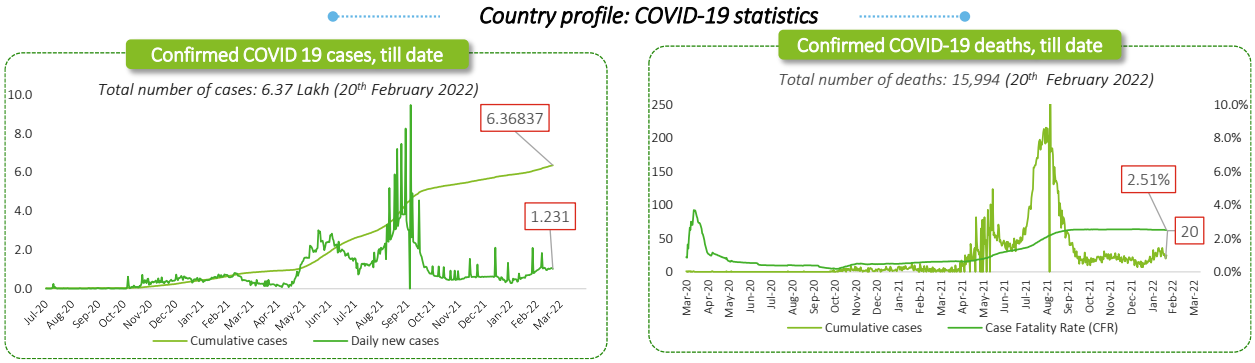


Figure 2-8 Confirmed COVID-19 cases and deaths[20]

(2) Relationship between the number of deaths and previous illnesses

In Sri Lanka, 50.4% of deaths infected with COVID-19 had comorbidities (diabetes mellitus, hypertension, ischemic heart disease, etc.) (as of February 11, 2022). The majority of deaths infected with COVID-19 are

[18] Global Nutrition Report, "Country Nutrition Profile, Sri Lanka", https://globalnutritionreport.org/resources/nutrition-profiles/asia/southern-asia/sri-lanka/

[19] Our World in Data

[20] Created by the research team based on Our World in Data

considered to have comorbidities, with 42.9% of deaths occurring under 29 years old, 48.5% at age 30～59 years old, and 94.3% over 60 years old (as of February 11, 2022). Among the comorbidities, a relatively high proportion of people in each age group have diabetes, and a relatively high proportion of people over 30 years old have hypertension or ischemic heart disease.

Table 2-7 Distribution of comorbidities among confirmed deaths by age categories[21]

Distribution of co-morbidities among confirmed deaths by age categories

Co-morbidities	Total deaths as of 01.10.2021							
	29 & below		30-59		60 & above		Total	
With	*88*	*42.9%*	*1722*	*48.5%*	*6123*	*94.3%*	*7933*	*50.4%*
Diabetes Mellitus	16	7.8%	924	26.0%	3180	26.5%	4120	26.2%
Hypertension	3	1.5%	659	18.6%	3300	27.5%	3962	25.2%
Ischemic Heart Disease	2	1.0%	220	6.2%	1418	11.8%	1640	10.4%
Chronic Kidney Disease	11	5.4%	400	11.3%	1048	8.7%	1459	9.3%
Bronchial Asthma	1	0.5%	116	3.3%	538	4.5%	655	4.2%
Cerebro Vascular Accident	0	0.0%	69	1.9%	451	3.8%	520	3.3%
Chronic Obstructive Pulmonary Disease	0	0.0%	43	1.2%	360	3.0%	403	2.6%
Chronic Liver Cell Disease	2	1.0%	81	2.3%	172	1.4%	255	1.6%
Dyslipidemia	0	0.0%	103	2.9%	514	4.3%	617	3.9%
Cancer	13	6.3%	170	4.8%	347	2.9%	530	3.4%
Tuberculosis	6	2.9%	32	0.9%	54	0.5%	92	0.6%
Others	51	24.9	371	10.5%	939	7.8%	1361	8.6%
Without/Not Known	*117*	*57.1%*	*1828*	*51.5%*	*5875*	*49.0%*	*7820*	*49.6%*
Total	*205*	*1.3%*	*3550*	*22.5%*	*11998*	*76.2%*	*15753*	*100%*

(3) Initial response[22]

As an initial response, the Directorate of NCD developed and disseminated guidelines for the management of patients with NCDs during the COVID 19 outbreak. The objective was to ensure un-interrupted service provision for NCD patients while minimising exposure risks to both patients and healthcare staff. Non-urgent clinic visits were discouraged, patients were provided drugs for a longer period than usual and instructions were provided to avoid overcrowding at clinics. In some districts, patients were given the option to send a younger and healthy person to visit the hospital with clinic records and collect medicine on behalf of the patient. In addition, government officers working at the community level were utilized to deliver drugs to those who unable to use above mechanisms.

During the period the country was under curfew, opening of pharmacies were restricted in order to avoid overcrowding. A web-based system was created to deliver medicines to patients' homes, allowing people to choose a pharmacy from the Ministry of Health's website and submit the order with the picture of their prescription attached[23]. In addition, videos on how to identify NCD-related danger signs, how to contact medical institutions if an emergency is suspected, and how to live a healthy life were created and disseminated through the mass media and social media. The Directorate of NCD also prepared a summary

[21] Ministry of Health Epidemiology Unit "COVID-19 Confirmed Death - (February 05, 2022 – February 11, 2022))

[22] Ministry of Health Epidemiology Unit "Weekly Epidemiological Report vol47 No.43", International Science Council "COVID-19 Policy Making Tracker", WHO "August 2020 Feature Countries", WHO "WHO donates insulin and glucagon to support diabetes management during COVID-19", https://www.ingsa.org/covid/policymaking-tracker/asia/sri-lanka/

[23] Ministry of Health Epidemiology Unit "Weekly Epidemiological Report vol47 No.43"

of warning signs, self-care advice on NCDs, and advice on how to live healthy while staying at home, and distributed it with the prescription drugs that are being delivered[24].

Telemedicine was introduced for consultations with successful public-private partnerships to minimize unnecessary clinic visits of high risk or immunocompromised patients[25]. The current situation of telemedicine in Sri Lanka will be introduced later at 2.2.4.

As an initial response, the **Directorate of NCD developed and disseminated guidelines** for the management of patients with NCDs during the COVID 19 outbreak.

- Non-urgent clinic visits were discouraged, patients were provided drugs for a longer period than usual, and instructions were provided to avoid overcrowding.
- Patients regularly taking treatment from government hospitals, but for whom there was no urgent need to be seen by a doctor **were delivered medicines through the Department of Postal Services** to avoid any unnecessary exposure to COVID-19.
- In some districts, patients were given the option to send a younger and healthy person to visit the hospital with clinic records and collect medicine on behalf of the patient. In addition, health and non-health government officers working at the community level such as **Public Health Nursing Officers, Public Health Midwives, Grama Niladhari, Development Officers** attached to Divisional Secretariats, village leaders and volunteers were utilized to deliver drugs to those who unable to use above mechanisms.
- **Public Health Nursing Officers** who provide NCD related care to the community were given guidelines on how to provide home-based essential palliative care to needy NCD patients in the community. District level focal points for NCD care i.e. (**Medical Officer-NCD**) were instrumental in streamlining these efforts.
- Remote healthcare was encouraged in order to prevent overcrowding and minimize exposure of vulnerable NCD patients to COVID-19. The **NCD Bureau funded the launch of My Doctor tele-medicine system** in 16 Nephrology clinics in government hospitals.

WHO donated insulin and glucagon to support diabetes management during COVID-19 in Sri Lanka

- **WHO Sri Lanka donated 18,000 vials of insulin and 100 glucagon hypokits to the Ministry of Health in Sri Lanka**, as part of the Strategic Preparedness and Response Plan (SPRP) for COVID-19 in Sri Lanka.
- In Sri Lanka, 83% of deaths are due to NCDs, and 10% are attributed to diabetes. About 8% of Sri Lankan adults are living with diabetes, and the burden of NCDs is expected to rise in the coming decades.

Figure 2-9 Countermeasures to strengthen the provision of NCDs Services in response to the COVID-19 crisis

2.2.2 Impact of COVID-19 and challenges facing the government

(1) Economic impact (including forecast)

The COVID-19 pandemic took a heavy toll of Sri Lanka's economy in 2020. Despite the devastating impact of the pandemic, Sri Lanka's economic growth was expected to recover in 2021, mainly due to foreign investments as well as normalizing tourism and other economic activities. However, the slow global recovery, coupled with continued trade restrictions, economic scarring from the slowdown, and the high debt burden may continue to affect growth[26]. Because of the fiscal and external imbalances, Sri Lanka's economic outlook is highly uncertain. According to World Bank, urgent policy measures are needed to address the high levels of debt and debt service, reduce the fiscal deficit, restore external stability, and mitigate the adverse impacts on the poor and vulnerable[27]. Turning to 2022, Sri Lanka is undergoing its worst financial crisis in over 70 years, as paper-thin reserves amid unsustainable debt levels, elevated inflationary pressures and a still-fragile tourism sector led the country to suspend its foreign debt repayments in April, 2022[28].

(2) Challenges facing the government

Currently due to the economic crisis, one of the main challenges faced by the government is to maintain

[24] Service provision for patients with Non-Communicable Diseases (NCDs) during the COVID-19 pandemic（17th– 23rd Oct 2020）

[25] MoH and WHO "REVIEW ON THE NATIONAL NCD PREVENTION AND CONTROL PROGRAMME IN SRI LANKA"

[26] https://www.worldbank.org/en/news/press-release/2021/04/09/sri-lankan-economy-recovers

[27] https://www.worldbank.org/en/news/press-release/2022/04/13/sri-lanka-faces-unsustainable-debt-and-balance-of-payment-challenges

[28] https://www.focus-economics.com/countries/sri-lanka

the supply of essential medicines and technologies for NCDs. For the private sector, the rising cost of medicines needed for the treatment of NCDs is one of the main challenging issues. Additionally, sustaining development initiatives in the face of competing priorities, and maintaining salaries and allowances of health care workers, are also considered to be the main challenges in Sri Lanka.

For the measures taken in response to the evolution and impacts of the COVID-19 pandemic, there has been some challenges at the sub-national level. For example, a lack of updated information on village population at the local level made it difficult to accurately identify beneficiaries for the provision of relief services. Furthermore, the lack of consistency in relief services related circulars issued at the national level also made the accurate listing of beneficiaries arduous[29].

Health care waste management is also considered to be one of the challenging issues in Sri Lanka. COVID-19 pandemic has created quite a strain on healthcare systems in terms of Health Care Waste Management(HCWM). At the request of the Ministry of Health in Sri Lanka, UNDP (Sri Lanka), in collaboration with WHO and UNICEF, conducted an assessment of health care waste management in Sri Lanka between August 2020 and March 2021. Although the Ministry of Health has taken many countermeasures for effective health care waste management in the aspects of: policy and regulation, resource allocation, standardization, establishing in-house treatment and disposal systems for health care waste management, several critical challenges still remain. Recommendations such as formalizing clinical waste disposal by private practitioners, strictly enforce the prohibition of open burning of clinical waste and introducing suitable arrangements for waste treatment at Health Care Facilities (HCFs), dedicated and appropriate budgeting for HCWM, introducing a Management Information System on HCWM, regularizing functions and empowerment of the Infectious Control Units to streamline healthcare waste management etc., have been made[30].

2.2.3 Countermeasures taken by the government

(1) Economic measures

In response to the COVID-19 pandemic, the Sri Lankan government increased government spending and the Central Bank of Sri Lanka actively implemented measures to mitigate the adverse impact on the economy[31]. During the initial lockdown in March 2020, the government provided an interest-free advance of LKR 10,000 (approximately 4,300 yen) to low-income and vulnerable groups. During the second wave in October 2020, LKR 5,000 per person was allocated to those who lost income due to curfews in some areas, for a total of LKR 400 million (approximately 171 million yen). The Central Bank of Sri Lanka has also started to provide assistance to mitigate the negative impact on the economy and has implemented a debt moratorium and expansionary monetary policy.

[29] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7836425/

[30] http://www.colombopage.com/archive_22A/Feb08_1644339006CH.php

[31] WHO (2019) "Status, determinants and interventions on cardiovascular disease & diabetes in Sri Lanka", KPMG (2020) "Government and institution measures in response to COVID-19"

Measures taken by the government during COVID-19

- Increased government expenditure
  - The government issued an interest free advance of LKR 10,000 to all low-income and vulnerable families, registered senior citizens, disabled persons etc. during the initial lockdown in March 2020.
  - The government also allocated LKR 400 mn to distribute LKR 5,000 each to people who lost their incomes due to curfews in some districts due to the pandemic during the second wave in October 2020.
- Central Bank of Sri Lanka policy implementation to reduce adverse economic impact
  - Debt Moratoriums: A 6-month debt moratorium on various sectors was initiated and was further extended from 1 October 2020 to 31 March 2021.
  - Relief measures with respect to existing and new loan facilities for businesses to face low level economic activity: Every Licensed Commercial Banks (LCB) and Licensed Specialized banks (LSB) was to reduce the penal interest rates charged on all loans and advances.
  - Expansionary Monetary Policy: The Standing Deposit Facility Rate (SDFR) and Standing Lending Facility Rate (SLFR) of the Central Bank were reduced. The bank rate was lowered to 8.5%.
  - Liquidity made available in the system: Liquidity worth LKR 459.4 Bn was added into the banking system between February and June 2020.
- Sri Lankan Tourism Development Authority (SLTDA) "Safe and Secure" certification to revive tourism
  - Sri Lankan Tourism Development Authority (SLTDA), with guidance from the Ministry of Health and WHO, have developed a set of guidelines which enhance cleanliness and hygiene practices at all tourism related venues and services.
  - KPMG Sri Lanka was awarded the contract to undertake all compliance audits and provide the certification to the entities.
- Import restrictions on nonessential goods
  - The government implemented import restrictions on some nonessential goods including vehicles, apparel, tiles, and cosmetic products etc. in order to stabilize the currency.

Figure 2-10 Measures taken by the government during COVID-19

(2) Health and medical measures

In response to the aforementioned challenges related to COVID-19, the government of Sri Lanka has taken various measures. Examples include the establishment of the National Operations Centre for the Prevention of the COVID-19 Pandemic (NOCPCO), the formulation of the Sri Lanka Preparedness and Response Plan COVID-19 in alignment with the guidelines provided in the Strategic Preparedness and Response plan developed by the WHO (April 2020), and the development of an island-wide risk communication and monitoring system for pandemics in COVID-19 by the Health Promotion Bureau of the Ministry of Health[32].

[32] Dilanthi Amratunga, Nishara Fernando, Richard Haigh, and Naduni Jayasinghe (2020) "Elsevier Public Health Emergency Collection", State Intelligence Service "Combatting COVID-19 Sri Lanka Approach", K. Erandi (2020) "Effectiveness of the Strategies Implemented in Sri Lanka for Controlling the Covid-19 Outbreak"

Figure 2-11 Challenges and government measures (1/3)

The government of Sri Lanka initiated COVID-19 response with special emphasis on Public Health and Social Measures (PHSM) to prevent and control the impending pandemic ahead of the first COVID-19 case detected in the country. Since the beginning of the first wave, the government has expanded PHSM including enforcement of total stringent movement restrictions to strengthen the COVID-19 response. Later, at the beginning of the second wave, the Ministry of Health increased the patient management capacity in collaboration with provincial health authorities by converting divisional and base hospitals, and certain non-health establishments such as large training institutions to patient management centers. Moreover, the Medical officer of Health (MOH), along with his team conducted the triaging and decided on the level of hospital to admit the patients after assessing the patients and adhering to the guidelines issued by the Ministry of Health[33].

[33] https://cdn.who.int/media/docs/default-source/searo/whe/coronavirus19/sear-weekly-reports/searo-weekly-situation-report-32-2021.pdf

Challenges and government measures (2/3)

Government measures to combat challenges:

- The Sri Lankan Government initiated COVID-19 response with **special emphasis on public health and social measures (PHSM)** to prevent and control the impending pandemic ahead of the first COVID-19 case detected in the country.
  - Since the beginning of the first wave, with the diagnosis of the first indigenous case on 11 March 2020, the Government has expanded PHSM including enforcement of total stringent movement restrictions to strengthen the COVID-19 response.
  - During the first wave, all the 3,396 cases reported were **managed in 10 designated hospitals** identified across the country. However, with the increase of the number of cases to 92,341 during the second wave, there was an urgent need to expand the healthcare facilities for patient management.
  - Therefore, at the beginning of the second wave, the Ministry of Health increased the patient management capacity in collaboration with provincial health authorities **by converting divisional and base hospitals, and certain non-health establishments such as large training institutions to patient management centers.**
  - The treatment centers were classified into three categories:
    - **Level I Intermediate Care Centers** (ICCs) were established to manage asymptomatic patients, while selected divisional and **base hospitals were identified as Level II centers** to treat mild to moderate symptomatic patients and asymptomatic patients with comorbidities
    - **Level III hospitals, where all specialized services** are available, were allocated to treat symptomatic COVID-19 patients with complications
  - Further, intensive care units (ICUs) and high dependency units (HDU) dedicated to COVID-19 patients were established at Level III hospitals.
  - The Medical officer of Health (MOH) i.e. the Public Health Officer in charge of health promotion and prevention in a designated population, along with his team conducted the triaging and decided on the level of hospital to admit the patients after assessing the patients and adhering to the guidelines issued by the Ministry of Health. (contd…)

Figure 2-12 Challenges and government measures (2/3)

Other measures include the development of case management centers, upgrading medical facilities to handle COVID-19 patients, strengthening the capacity of hospitals at the local level, strengthening medical infrastructure, and procuring necessary supplies[34].

In response to the rapid increase in the number of patients during the third wave of infections, Sri Lanka introduced a supervised home-based care programme. Infected individuals who were able to receive home care were enrolled in the Ministry of Health's Patient Isolation and Home Management System (PHIMS), and were able to receive home care under the monitoring of call centers and medical care teams. The Regional Director of Health Services coordinates with hospitals to arrange transportation for patients who may become seriously ill and require hospital care[35].

At the end of 2021, Sri Lanka began to promote vaccination with a third dose of the vaccine. In November of the same year, booster vaccinations were started for people aged 60 and over who had received the second dose 3 months prior, NCDs patients aged 20 and over, and frontline healthcare and health service workers. Sri Lanka also increased efforts to control the spread of COVID-19 infection in rural areas and implemented mobile vaccination services. In December of the same year, the additional vaccination was made available to all those who had received the second vaccination three months earlier. In addition, in order to prevent the spread of the disease and promote vaccination, proof of vaccination was required when entering public facilities[36].

[34] World Bank "Sri Lanka COVID-19 Emergency Response and Health Systems Preparedness Project",
Implementation Status & Results Report OCHA "Sri Lanka's COVID-19 Response: Saving Lives Today, Preparing for Tomorrow"

[35] WHO, Rajapaksa (January 2022) "COVID-19 Health System Response Monitor Sri Lanka"

[36] Ministry of Health, Epidemiology Unit (2022) "Coronavirus disease 2019 (COVID-19)-Situation Report-23.02.2022-10a.m."
Presidential Secretariat (2021.12) "Mobile Vaccination Service to administer booster dose"
Presidential Secretariat (2021.11) "Administer booster dose before festive season – President instructs"

Challenges and government measures (3/3)

Government measures to combat challenges:

- The Ministry of Health has also proposed the **development of nine provincial case management centers and 25 suspected case management centers**
  - Initial work to identify facilities to be converted into case management centers and site assessments has started
  - Laboratory guidelines, and guidelines in establishing quarantine centers and intermediate treatment centers in private health facilities have also been issued
  - **70 intermediate care centers with isolation facilities are being refurbished or modified to handle COVID patients**. Work on 56 of the centers has been completed and work on the remaining centers is ongoing
  - Work is in progress to strengthen four hospitals **to function as Infectious Disease Hospitals (IDH) at the provincial level (Kilinochchi, Hambanthota, Ampara, and the National Institute of Infectious Diseases)**
  - Work is in progress to **build/expand intensive-care units/facilities (ICU) in six hospitals (Rathnapura, Anuradhapura, Eheliyagoda, Warakapola, Marawila, and Balangoda)** and to build/expand high-dependency units/facilities (HDU) in two hospitals (Pimbura and NIMH)
  - **87 ICU/HDU beds** have been supplied to **increase** the total national capacity of **ICU/HDU beds to 650**
  - **120 high-low nasal oxygen therapy units, 25 ICU ventilators, seven neonatal ventilators 20 transport ventilators, 2,100 Oxygen concentrators** were procured through the United Nations Office of Project Services (UNOPS) and procurement of seven oxygen-generating plants is in progress

Figure 2-13 Challenges and government measures (3/3)

2.2.4 Current status of telemedicine in Sri Lanka

When the first case of COVID-19 was reported in the country in early 2020, the Ministry of Health implemented a response plan that included the use of digital health tools. A hotline was recommended for telemedicine and appointment scheduling, and several apps were launched.

One example is the MyDoctor telemedicine system. MyDoctor is a pioneering Colombo-based digital health solution provider. The company partnered with the Ministry of Health and Indigenous Medical Services (MOH) to enable the Government's eHealth system[37]to offer free telemedicine services via the MyDoctor app[38]. The NCD Bureau funded the launch of MyDoctor tele-medicine system in 16 Nephrology clinics in government hospitals.

The app, which allows patients to interact with their doctors via voice, video or e-chat, was used to communicate between patients with high-risk immunocompromised NCDs, such as those who have undergone kidney transplant or on dialysis and their treating physicians. A Ministry of Health report (2021)

[37] In 2016, the government published eHealth guidelines in an effort to digitize health service data in accordance with international standards. The government aims at the following six points.

- E health Architecture – This gives a holistic view of the eHealth architecture in accordance with the National ICT Architecture and Infrastructure.
- ICT Governance – This section handles the procurement, deployment, development, maintenance and decommissioning of ICT systems including Hardware and Software.
- Network and Connectivity – This emphasize the importance in having a proper network plan for the individual healthcare institutions and maintaining them.
- Communication Interface – The emphasis on having proper websites standards, Domain name structure and official email nomenclature is mentioned in this section. This also emphasis on the proper use of emails as this could be used as an office mode of communication.
- Security, Confidentiality and Privacy – Unlike in many other sectors the practice of proper ethical standards and patient privacy bears the highest importance in the field of healthcare. The importance of this being ensured even during the adoption of ICT in the health sector is mentioned under this section.
- Data Communication Standards – This is a set of technical standards (Semantic and Syntactic) to be adopted in the eHealth solutions to ensure seamless data exchange between eHealth solutions.

（http://www.health.gov.lk/moh_final/sinhala/public/elfinder/files/publications/list_publi/NeGS_v_1.pdf）

[38] http://www.ha-asia.com/sri-lanka-riding-the-telemedicine-wave/

found it to be very useful for patients[39]. In November 2021, MyDoctor was integrated with Doc 990, a telemedicine service provided by Dialog Axiata, Sri Lanka's largest telecommunications company. As a result of the integration, more than 5,000 doctors have registered, and the number of medical institutions registered is more than 140[40].

Another example is MyHealth Sri Lanka, an app launched by the Information and Communication Technology Board (Information and Communication Technology Agency of Sri Lanka: ICTA) and the Ministry of Health to share verified information about the situation in COVID-19 in Sri Lanka[41]. The "Stay Safe" digital devise, which based on a QR code, was designed under the guidance of the Information and Communication Technology Agency of Sri Lanka (ICTA) with the aim of containing the spread of COVID-19 pandemic[42].

As an example of other initiatives, in March 2020, shortly after the government announced the lockdown to prevent the spread of infection in COVID-19, members of the Sri Lankan Association of Community Ophthalmologists (SLACO) set up a Facebook page to offer remote diagnosis services. Start-ups that have succeeded in connecting patients and doctors virtually by using cutting-edge technology have also increased their presence, and private services such as home diagnosis and delivery of medicines have been launched as well as remote consultations. In addition to My Doctor and Doc 990, Sri Lanka's leading telemedicine service provider oDoc and Bangladesh-based digital healthcare startup Maya are two examples of startups working on telemedicine services[43].

Healthcare facilities were also encouraged by the government to establish telemedicine services (mobile hotlines[44]/video consultations using WhatsApp) with patients during the pandemic to advise them and respond to questions related to their symptoms. For example, in the Primary Medical Care Units (PMCUs), patients were encouraged to utilize telephone consultation for non-emergent concerns. On the phone, Primary Care Physicians (PCPs) are able to get the patient's histories, and assess the need to seek in-person consultation or coordinate referrals to a tertiary facility. After the consultation, if needed, the PCP can send the patient an SMS prescription that they could show to the pharmacy. The necessary medicines will then be delivered to patients' homes through a hospital partnership with the national postal service. This new process was able to replace the home visits temporarily paused during COVID-19[45].

Another example of a public-private partnership initiative is the implementation of the COVID-19 Integrated Home-based Care Solution, which is designed to provide a home care support solution for COVID-19 patients. This initiative was supported by the World Health Organization, the Government Medical Officers' Association (GMOA) and powered by Dialog Axiata PLC, Bank of Ceylon, and Wavenet International (Pvt) Ltd. The service operated a toll-free hotline in three languages and a patient management system for COVID-19 residents who were recuperating at home, and more than 600 doctors were assigned under the guidance of the Ministry of Health and under the coordination of the GMOA to provide personalized care. As of November 2021, more than 100,000 people who tested positive for COVID-19 had used the service, which has helped reduce the burden on hospitals and health care workers[46].

Other examples helping to develop telemedicine in Sri Lanka include the Global Digital Health Platform (DigiHealth), an initiative of the International Finance Corporation (IFC). This initiative will be conducted in Sri Lanka, in partnership with Hemas, one of the largest private sector healthcare providers in Sri Lanka,

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[39] Ministry of Health and WHO (2021) "Review on the National NCD Prevention and Control Programme in Sri Lanka"

[40] https://island.lk/doc990-merges-with-mydoctor-to-facilitate-integrated-digital-healthcare-on-one-platform/

[41] https://www.who.int/bulletin/volumes/98/11/20-021120.pdf

[42] https://covid19.gov.lk/news/general/stay-safe-digital-programme-designed-to-contain-covid-19-introduced-to-president.html

[43] http://www.ha-asia.com/sri-lanka-riding-the-telemedicine-wave/

[44] NCD Bureau has also established several hotlines to respond to patient queries and functioned in all three main languages, English, Sinhala and Tamil. The hotlines provided information to patients on NCD related issues, on-line purchase of medicines, contact numbers of government hospital clinics and drug distribution from the government hospitals. (http://www.epid.gov.lk/web/images/pdf/wer/2020/vol_47_no_43-english.pdf)

[45] https://improvingphc.org/sites/default/files/COVID-19%20Promising%20Practice%20Sri%20Lanka.pdf

[46] https://island.lk/1390-covid-19-integrated-home-based-care-solution-successfully-administers-care-to-over-100000-patients/

with the aim to create a platform to partner with healthcare organizations to develop, implement and finance their digital transformation strategies to increase access to quality, affordable healthcare. In addition to telemedicine, DigiHealth will also offer range of digital healthcare solutions including medical care, health education, and health information services via telehealth, specialist healthcare via telemedicine and the means for health-care providers to transform their processes through automation, digitization and advanced analytics. In particular, it is expected to help private healthcare organizations with limited reach of digital healthcare services[47].

2.2.5 Support from development partners[48]

From May 2020, with support from the World Bank's COVID-19 Emergency Response and Health Systems Preparedness Project (ERHSP), the Sri Lankan government respond to emergency needs by providing essential medical supplies. The project is working to strengthen the country's pandemic preparedness and response by establishing isolation and treatment facilities, increasing testing and diagnostic capacity, and strengthening the infection control and surveillance systems. The World Bank provided $217.56 million (LKR 4.34 billion) for the project, including a loan of $35 million from the International Bank for Reconstruction and Development (IBRD), $180.84 million in concessional and non-concessional funds from the International Development Association (IDA), and a grant of $1.72 million from the Pandemic Emergency Financing Facility (PEFF).

In addition to the World Bank projects mentioned above, the Government of Sri Lanka also received support from other international organizations such as WHO and UNICEF. For example, in September 2021, WHO Sri Lanka collaborated with Ministry of Health to provide an integrated home-based care for asymptomatic and mild COVID-19 cases. With the outbreak of COVID-19, UNICEF helped to procure and deliver critical hygiene and infection-prevention supplies to high-risk communities and treatment centers as well as support for rural health care facilities (HCFs).

The Government of Japan has provided medical supplies to assist in preventing the spread of COVID-19 infection in Sri Lanka. For example, the necessary equipment for Sri Lanka's vaccination and strengthening of cold chain management was provided through grant aid. In April and August 2021, 500 vaccine carriers were delivered to the Ministry of Health as the first batch of cold chain equipment procured by UNICEF with funding from the Government of Japan, and 750 vaccine carriers, 300 cold boxes, 100 ice line refrigerators, 145 refrigerator temperature monitors, and 60 Android tablets were delivered to Sri Lanka as the second batch to strengthen Sri Lanka's vaccination programme[49]. Furthermore, the Government of Japan has decided to provide approximately 1.5 million doses of COVID-19 vaccines manufactured in Japan, through the COVAX facility, to Sri Lanka, as part of assistance by Japan to contribute to the prevention of the spread of COVID-19 in Sri Lanka (July 30, 2021)[50].

The Government of Japan also actively provided medical equipment to Sri Lanka to strengthen its response to COVID-19. A total of LKR 300 million (approximately 128 million yen) worth of ventilators, ICU beds, blood gas analyzers, real-time PCR equipment, automatic RNA/DNA extractors, ultra-cold freezers, etc. were provided through the JICA technical cooperation project "Strengthening Response to COVID-19". These equipment will be provided to the base hospitals in Terdeniya, Warakapora, Walikanda, Pimbra, Nawalapitiya, Hinglakoda, Karawanella, and Avisavela, and the Hambantota District General Hospital

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[47] https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=26586

[48] https://www.who.int/srilanka/news/detail/17-09-2021-who-sri-lanka-collaborates-with-ministry-of-health-to-provide-an-integrated-home-based-care-for-asymptomatic-and-mild-covid-19-cases

https://www.worldbank.org/en/results/2021/08/25/sri-lanka-s-covid-19-response-saving-lives-today-preparing-for-tomorrow

https://www.unicef.org/rosa/media/12996/file

https://www.who.int/southeastasia/news/feature-stories/detail/sri-lanka-using-technology-to-train-and-mentor-staff-on-the-ncd-frontline

[49] https://www.lk.emb-japan.go.jp/itpr_ja/00_000969_00021.html

[50] https://www.mofa.go.jp/mofaj/press/release/press3_000542.html

(January 19, 2022)[51].

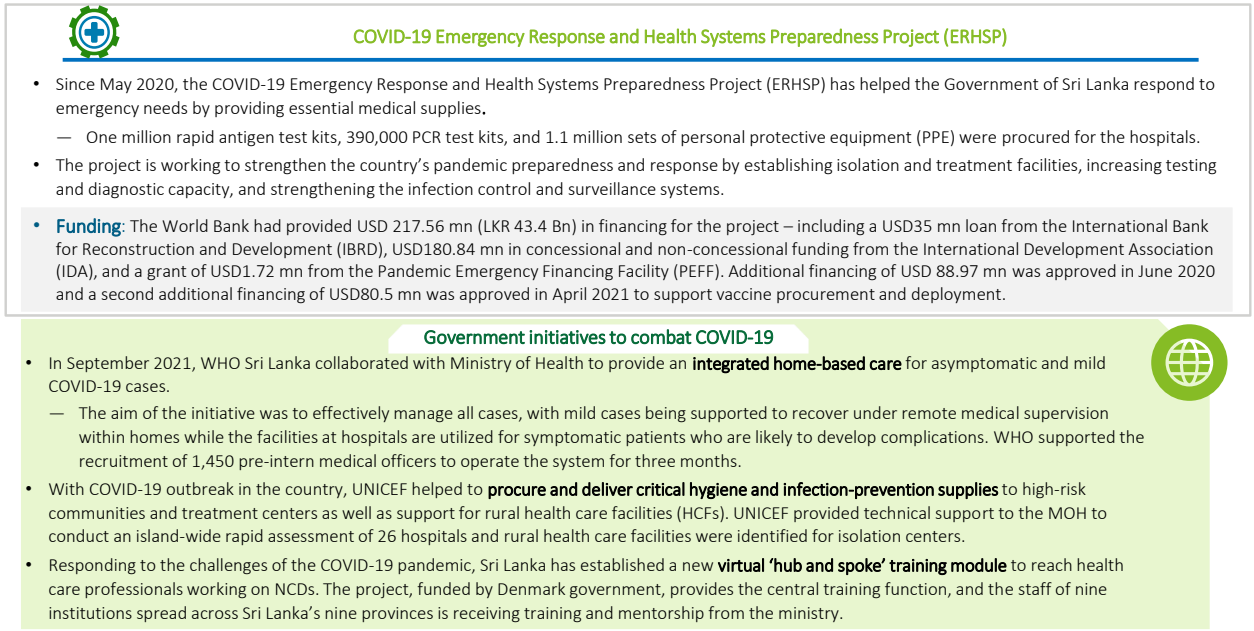


Figure 2-14 Support from development partners for COVID-19 countermeasures

Sri Lanka's COVID-19 Emergency Response and Health Systems Preparedness Project has helped the government to respond to the national emergency, allowing for swift preparation, while ensuring coordinated financing support by multiple partners. The initial rapid response and effective implementation of the 'test, track, isolate and treat' strategy have helped in reducing the COVID-19 morbidity and mortality number of the country. In addition, improvements in the medical infrastructure were achieved, procurement of necessary medical equipment was facilitated, and hospital functions and capacity were improved. Overall, emergency response capabilities have been enhanced to effectively address some of the social impacts of the pandemic[52].

[51] https://www.lk.emb-japan.go.jp/itprtop_en/11_000001_00028.html

[52] World Bank (2021) "Test, Trace, Treat – Putting Sri Lanka's Pandemic Management Mantra into Practice", World Bank (2021) "Sri Lanka's COVID-19 Response: Saving Lives Today, Preparing for Tomorrow", DT Next (2021) "Sri Lanka records 57,555 Covid cases in June"

Effectiveness of COVID-19 response in Sri Lanka

Sri Lanka's COVID-19 Emergency Response and Health Systems Preparedness Project has helped the government to respond to the national emergency, allowing for swift preparation, while ensuring coordinated financing support by multiple partners.

- **COVID-19 cases**
  - The initial rapid response and effective implementation of the 'test, track, isolate and treat' strategy have helped in reducing the COVID-19 morbidity and mortality number of the country. As of October 1, 2020, there were a total of 3,380 confirmed COVID-19 cases in Sri Lanka, with 3,233 fully recovered and 13 deaths. However, the country witnessed an increase of positive cases and deaths since April 2021, with 57,555 cases and 2,704 deaths, as of June 2021.
- **Improved healthcare infrastructure**
  - 120 high-low nasal oxygen therapy units, 25 ICU ventilators, seven neonatal ventilators 20 transport ventilators, 2,100 Oxygen concentrators were procured through the United Nations Office of Project Services (UNOPS) and procurement of seven oxygen-generating plants is in progress.
  - Sri Lanka is strengthening its four hospitals to function as Infectious Disease Hospitals (IDH) at the provincial level (Kilinochchi, Hambanthota, Ampara, and the National Institute of Infectious Diseases). Additionally, work is in progress to build/expand intensive-care units/facilities (ICU) in six hospitals (Rathnapura, Anuradhapura, Eheliyagoda, Warakapola, Marawila, and Balangoda) and to build/expand high-dependency units/facilities (HDU) in two hospitals (Pimbura and NIMH).
  - 87 ICU/HDU beds has been supplied to increase the total national capacity of ICU/HDU beds to 650.
- **Strengthening emergency response capacity**
  - Activities are focused on strengthening the National Emergency Operations Unit and its island wide network, strengthening the national epidemiological diseases surveillance system, developing selected hospitals as pandemic response centers, and improving the local laboratory network.
  - The project is also addressing some of the social consequences of the pandemic by providing financial assistance to vulnerable population, by strengthening mental health services and by providing services to victims of gender-based violence.

Figure 2-15 Effectiveness of COVID-19 response in Sri Lanka

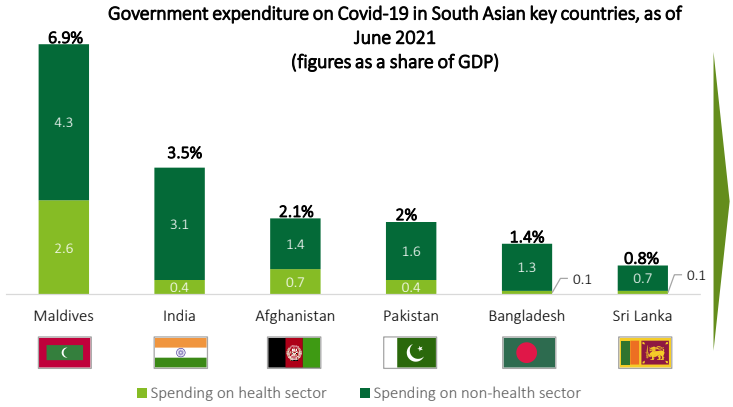
2.2.6 COVID-19 budget and spending in South Asian key countries[53]

According to the data in June 2021, Sri Lanka has incurred a total of LKR 170.5 billion as expenses on the country's COVID-19 response, which is equivalent to 0.8% of GDP (0.1 percent of GDP on health sector expenditure and 0.7 percent of GDP on non-health sector expenditure). The Sri Lankan government has allocated up to 0.1 percent of GDP for containment measures, as well as USD 5 million (0.01 percent of GDP) to the SAARC COVID-19 Emergency Fund. Cash transfers to vulnerable groups amounted to around 0.6 percent of GDP in 2020 and around 0.1 percent of GDP as of June 2021.

According to data from the IMF Policy tracker, Sri Lanka's expenditure on COVID-19 response is much lower than its South Asian peers. Other South Asian countries such as Maldives, India, Afghanistan, Pakistan, and Bangladesh have spent 6.9%、3.5%、2%、1.4% of their GDP respectively on COVID-19 response as of June 2021. The Maldivian government increased funds allocated to the health sector, subsidized electricity and water bills for civilians, and provided special allowances to those who lost their jobs due to COVID-19. In the case of India, the government provided support, including in-kind provision of food and other goods, cash handouts to low-income households (1.2% of GDP), wage support and employment provision for low-wage workers (0.5% of GDP), and insurance coverage for workers in the health sector and health infrastructure (0.1% of GDP). In Pakistan, the government supported day laborers, low-income households, small and medium enterprises, and the agricultural sector through loans, subsidies, and tax incentives. The Bangladeshi government provided assistance, including housing allowances for the homeless, financial support for the poor facing unemployment due to the pandemic, health insurance for public officials, and bonuses for public health workers treating COVID-19 patients. It also increased funding for the COVID-19 Emergency Response and Pandemic Preparedness Project, most of which was spent on vaccine procurement, storage, and distribution.

[53] Ministry of Finance Sri Lanka (n.d.) "Budget highlights", Public Finance.lk (n.d.) "Sri Lanka's expenditure on COVID-19 response is much lower than its regional peers"

Covid-19 budget and spending



- As per the Ministry of Finance, Sri Lanka has spent a total of **LKR 170.5bn** on Covid-19 **as of June 2021** since the beginning of the pandemic
- Sri Lanka has spent **0.8% of its GDP** on Covid related measures which is much lower than its South Asian peers
  - Only **0.1% of the GDP** has been attributed to the **health sector** while the remaining has been allocated to non-health sector expenditure
- However, the **Covid death rate** for Sri Lanka has been **similar** or more compared to other South Asian nations
  - As of June 2021, **Sri Lanka** recorded a death rate of **1.19%**. At the same time Bangladesh, India and Maldives reported a death rate of 1.59%, 1.31% and 0.28% respectively

Covid-19 budget and Challenges

- The Sri Lankan government has allocated LKR **235 bn** for **health expenditure** as a part of the **2022** budget
  - Out of this, LKR **12.5bn** was set aside for **Covid-19 pandemic related preventive measures**
  - Amid the surge of COVID-19 cases globally in January 2022, **Sri Lanka is in the grip of a rising financial crisis/ Bankruptcy**
  - Credit rating agencies including Standard and Poor's, Moody's and Fitch **downgraded Sri Lanka's credit rating to B from C**
  - The country received various grants and loans to overcome Covid-19 situation. ADB has approved a loan of USD 150mn for Sri Lanka to purchase Covid-19 vaccines (July21)

	Year/ Date	Grant Amount
The Asian Development Bank	June 2020	USD 3 Mn
USA / Unicef	May 2020	USD 0.6 Mn
India	January 2021	USD 7.6 Mn
USA	October 2021	USD 2.5 Mn
Canada / WHO	November 2021	USD 1.3 Mn

Figure 2-16 COVID-19 budget and spending

Chapter 3 Policy and service delivery

3.1 NCDs policy

3.1.1 Policy framework

(1) Implementation structure of NCDs policy in the central government

The Sri Lankan Ministry of Health, Nutrition, and Traditional Medicine (hereinafter referred to as the "Ministry of Health" or "MoH") established the Directorate of Non-Communicable Diseases under the Director General of Health Services in 1998 to plan, implement, monitor, and evaluate a national program for the prevention and control of NCDs. In 2003, the Office of the Medical Officers of Non-Communicable Disease (MO NCDs), a regional focal point, was established to coordinate the implementation of NCDs programs in rural areas. In 2017, MoH created the position of Deputy Director General of Non-Communicable Diseases (DDG/NCD) and established the NCD Bureau to further strengthen national programmes for the prevention and control of NCDs in the country.[54] The organizational structure of the Bureau is as follows.[55]

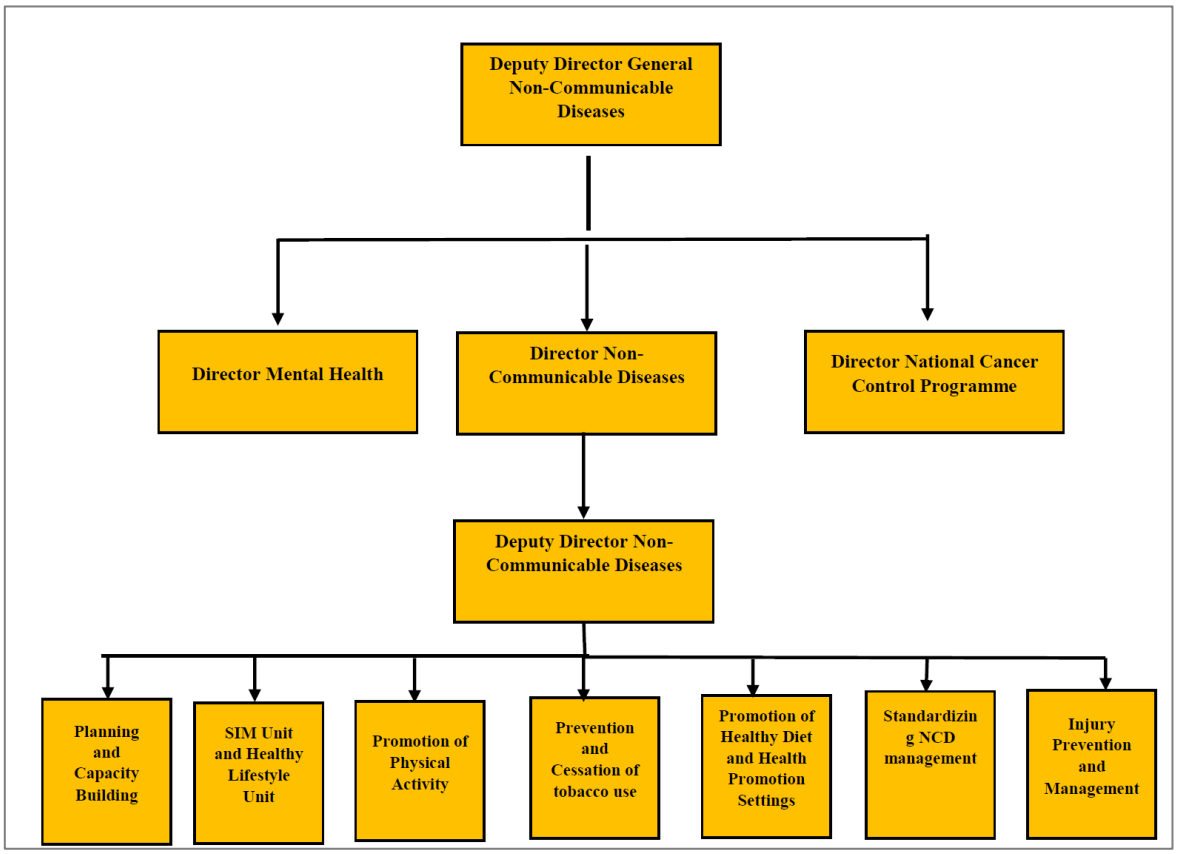


Figure 3-1 Organizational structure of NCD Bureau, Ministry of Health

The Directorate of NCD works under four main strategies:

- Advocacy, partnership, and leadership
- Health promotion and risk reduction

54 https://ncd.health.gov.lk/index.php

55 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

- Strengthening the healthcare system for early detection and management of NCDs
- Surveillance, monitoring, evaluation, and research

The Directorate of NCD also develops chapters and guidelines, develops human capacity for NCDs, and acts as a coordinating body for implementing NCDs policies at the national, state, and local levels.

(2) Consultation and management organization for NCDs

The central government level committees to guide and monitor the coordination of NCDs prevention and control services in Sri Lanka are as follows:[56]

- NCD Council

The NCD Council, chaired by the Minister of Health, is the highest decision-making body for inter-ministerial and inter-sector cooperation and coordination for the prevention and control of NCDs. The Council also oversees the progress of the implementation of the National NCDs Policy and the Multi-Sectoral Action Plan, described below.

- National Health Development Committee (NHDC)

The National Health Development Committee is a meeting for cooperation between the national health departments and the provincial health authorities. The committee is chaired by the Minister of Health and will meet monthly. The meeting is attended by the heads of all health agencies managed by the Ministry of Health and state health officials, with discussions focusing on the implementation of health services and the operation of policies. High-level discussions on executive personnel, medical personnel, and finance (budget allocation) are also held in this committee.

- National NCD steering committee

The National NCD Steering Committee is the watchdog in the implementation of the National NCD Policy. It is chaired by the Minister of Health and consists of senior representatives of development partners, including relevant ministries and national and international NGOs. The committee meets every four months to approve and support sectoral activities necessary for the prevention and control of NCDs, to secure financial resources for the implementation of the national NCDs policy, to monitor the implementation of the NCDs policy across sectors, to provide annual reports to parliaments and state legislatures, to evaluate the policy, and to advise on amendments to the NCDs policy.

- National Advisory Board for Non-Communicable Diseases (NABNCD)

NABNCD is an advisory body for the implementation of national NCDs policy. It is chaired by the Director-General of the Health Services and includes expert representatives from various departments of the Ministry of Health and relevant specialized agencies. Its primary function is to provide technical guidance and assess the implementation of NCDs policies.

(3) System of NCD-related policies

NCD-related policies in Sri Lanka are based on the National Health Policy (2016 -2025) published by the Ministry of Health in 2016. This document sets out the vision, mission and strategic direction. The National Health Service Strategic Framework (2016 -2025) identifies strategic objectives, and the National Health Strategy Master Plan (2016 -2025) identifies programmes to be implemented in the health sector. In addition, the National NCDs Policy (2010) and the National Multisectoral Action Plan for the Prevention and Control of NCDs (2016 -2020) provide specific policies and action plans for NCDs. The following is an overview of each policy.

56 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

- **National Health Policy (2016 -2025)**

The Sri Lankan government formulated the first comprehensive national health policy in 1992. The MoH started revising the plan in 2013, and after 3 years of deliberation, the revised version was formulated in 2016. The policy's mission is to contribute to Sri Lanka's economic and social development by providing quality prevention, treatment, rehabilitation, and services to the people and creating the highest level of health conditions and it sets forth strategic directions in the following seven areas.[57] The policy also calls for greater attention to addressing NCDs.[58]

- Strengthening preventive care
- Provision of appropriate and accessible quality treatment services to the entire population
- Promotion of quality and equitable rehabilitation services
- Provision of continuing care
- Reduction in personal spending on health
- Improving health systems, including reallocation of human resources
- Strategic alignment of all health service providers

- **National Health Strategic Master Plan (2016 -2025)**

The National Health Strategy Master Plan, developed in 2016, focuses on ensuring universal access to quality health care, education and other social services for people. It consists of the National Framework for Health Service Development, the Preventive Services Master Plan, the Therapeutic Services Master Plan, the Rehabilitation Services Master Plan, and the Health Administration and Human Resources Master Plan. Under the master plan, programs on the prevention and control of NCDs and the National Policy and Strategic Framework for Cancer Prevention and Control were planned and implemented. The objectives, background and objectives are as follows in Figure 3-2.[59]

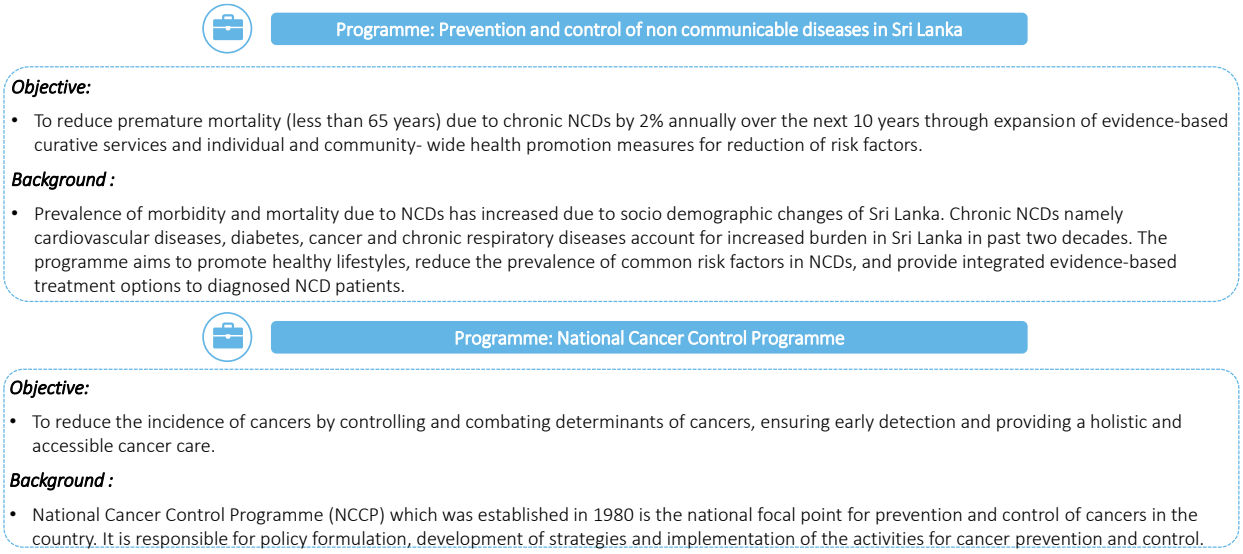


Figure 3-2 Key programmes under the National Health Strategy Master Plan

57 http://open_jicareport.jica.go.jp/pdf/12292959.pdf

58 http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/policiesUpto2016/policiesForPublicOpinion/NHP2016-2025draft.pdf

59 Ministry of Health "National Health Strategic Master Plan 2016-2025", Ministry of Health "National Policy & Strategic Framework on cancer prevention & control"

- **National Strategic Framework For Development of Health Services 2016-2025**

The Strategic Framework, developed in 2016, presents a total of 24 strategic issues to address in 5 strategic areas: public health, therapeutic services, rehabilitation services, health administration and human resources, and health finance. The table below describes the strategies.[60]

Table 3-1 NCDs strategy in the National Health Service Strategic Framework

Challenges	Strategy/Policy
➢ **Increased burden and risk factors for chronic NCDs** ➢ **Lack of disease burden databases, performance management indicators and surveillance systems** ➢ **Lack of intra-departmental and inter-departmental coordination** ➢ **Lack of knowledge about NCDs among the public**	➢ Establishment of NCD Bureau by appointment of DDG with facilities for research screening and monitoring of NCDs ➢ Strengthening individual health promotion ➢ Establishing and maintaining a healthy environment (Healthy villages, healthy markets, healthy workplaces, healthy cafeterias, etc.) and strengthening the legal framework ➢ Implementation of accident and emergency medical care policies with special emphasis on prehospital care and posttraumatic care/rehabilitation ➢ Establishment of a national mechanism for "chronic kidney disease of unknown origin (CKDu)" and implementation of a strategic plan for prevention and control ➢ Subunits under the DDG (NCDs) to conduct research on CKDu, hepatitis E, hepatitis A, eye disease, as well as cardiovascular disease, diabetes, chronic obstructive pulmonary disease, disease burden monitoring, and national planning ➢ Promoting home health care approaches through primary-level therapeutic care institutions responsible for a certain population ➢ Establishment of a sustainable referral system ➢ Promoting behavioral changes to healthy lifestyles

- The National Policy and the Strategic Framework for Prevention and Control of Non-communicable diseases (2010)[61]

The Government of Sri Lanka established the National Policy and Strategic Framework for the Prevention and Control of NCDs (commonly referred to as the National NCD Policy) in 2010. The policy aims to reduce the burden of chronic NCDs by promoting healthy lifestyles, reducing the prevalence of risk factors, and providing integrated treatment options for patients with NCDs.

[60] https://ncd.health.gov.lk/images/pdf/publication/National_Strategic_Framework.pdf

61 http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/publishpolicy/13_NCD.pdf

- National Multisectoral Action Plan for the Prevention and Control of Noncommunicable Diseases, 2016 – 2020 (NCDs MSAP)

In 2016, the Ministry of Health formulated the National Multisectoral Action Plan for Prevention and Control of NCDs (2016 – 2020) in conjunction with the National Health Strategy Master Plan, based on the National NCDs Policy. In collaboration with other ministries, agencies and stakeholders, the Ministry set the following national targets for NCDs to be achieved by 2025[62].

The plan is in line with the WHO Global Multisectoral Action Plan for the Prevention and Control of NCDs (GMSAP) (2013) and identifies 9 targets for Sri Lanka to achieve by 2030. All four key strategic action areas proposed in the GMSAP have been included in the plan, and the complete monitoring and evaluation framework makes them compliant with global standards. While the overall goal is to reduce the overall mortality rate of NCDs, all of these goals include numerical targets for reducing the risk factors for NCDs, such as alcohol consumption, physical inactivity, salt overdose, and smoking; reducing hypertension, diabetes, and obesity; and disseminating treatment services.

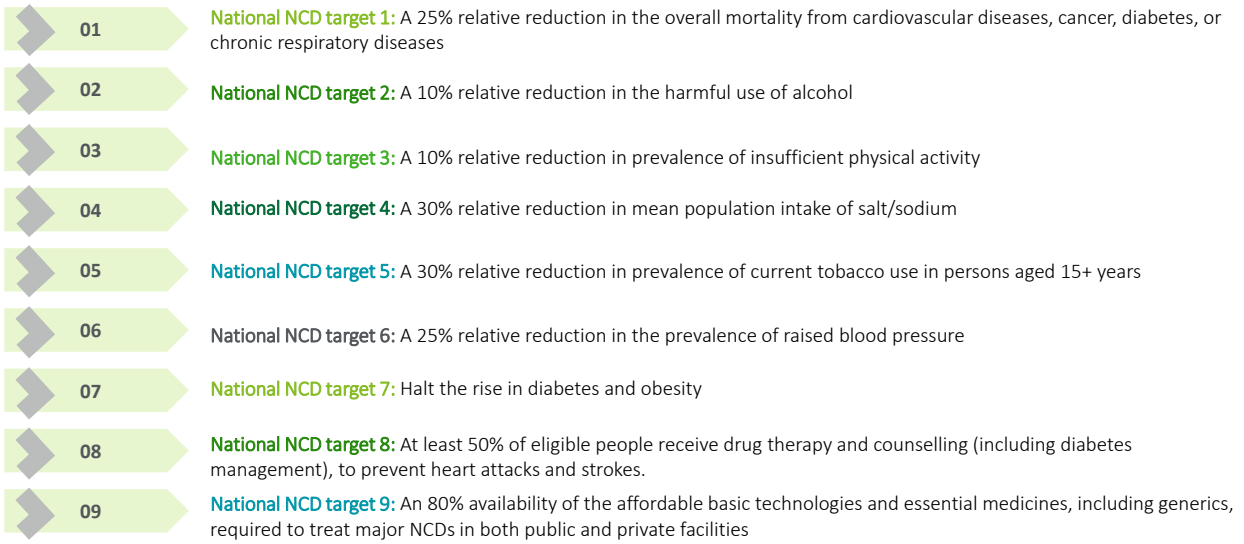


Figure 3-3 National NCDs targets

The plan also identified 4 strategic areas and set forth the main implementation items for each as shown in Figure 3-4. It also formulated a program to address major NCDs[63].

[62] WHO "National NCD Targets for Sri Lanka"
Ministry of Health "National Policy and Strategic Framework for Prevention and Control of Chronic Non-Communicable Diseases"

[63] Ministry of Health, Nutrition and Indigenous Medicine Sri Lanka "National Multisectoral Action Plan for Prevention and Control of NCDs 2016-2020"

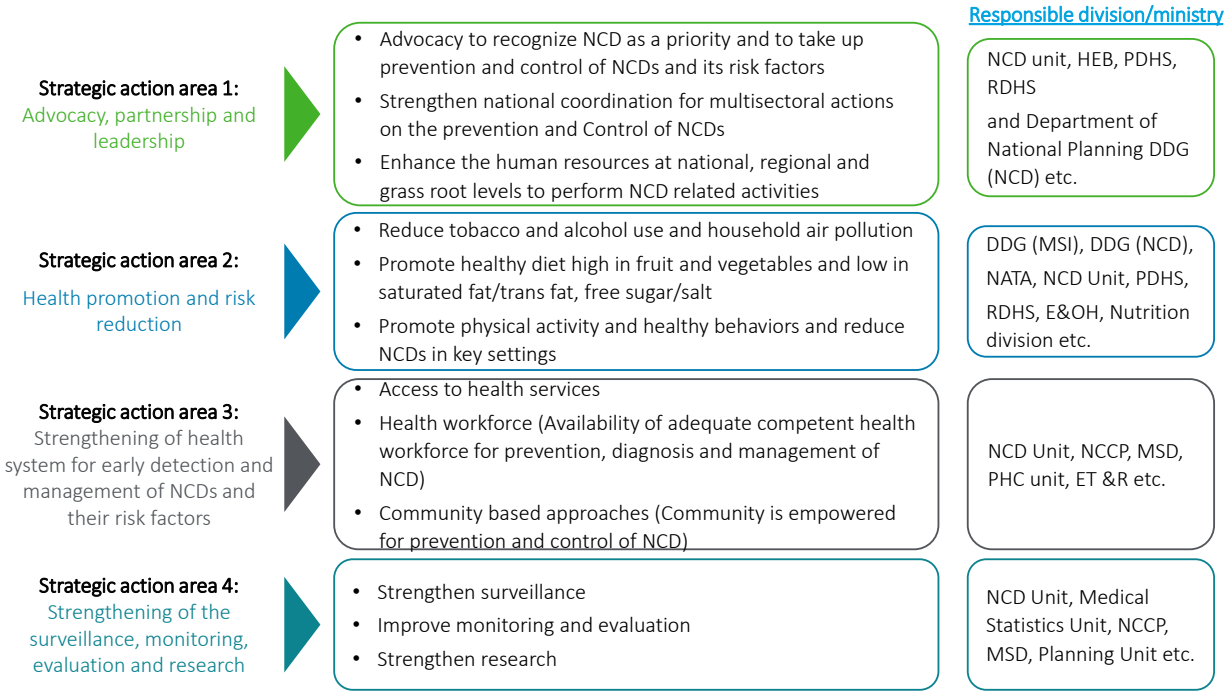


Figure 3-4 Main implementation items in the NCDs MSAP

The Ministry of Health of Sri Lanka has prepared a progress report on the completion of the implementation period of the plan. The list of non-implementation items and the percentage of completion by item indicated in the report are as follows. Of the total of 338 implementation items, 251 items have been implemented or mentioned specific progress, and the simple implementation rate is 74.8%. In this report, the causes of unimplemented items are not described, and quantitative and qualitative analyses and summaries are not described. Therefore, the causes of unimplemented items are unknown, but the following discussion can be made in general.

- Overall, 251 of the 338 action plan items, or about 74.8%, had been implemented or had some degree of progress. Of the implementation items, the percentage of those for which the Ministry of Health (or its departments and divisions) has implemented or made some progress (287 items) was about 78%, while the percentage for those for which other ministries and agencies have implemented (51 items) was about 68%. The implementation rate for those for which the Ministry of Health is the main authority was about 10% higher. In addition to the possibility that the Ministry of Health was more active in promoting and implementing the plan under its authority, it is also possible that appropriate coordination was not achieved at the time of preparation of the progress report because there were many blanks in the progress entry columns for items under the control of other ministries and agencies.
- As for the implementation rate at the middle item level, there is a variation in the level of each item, and there is also a variation in the number of each middle item (Example: 1.2 Partnerships has only 4 items, but 3.1 Access to Health Services has 97 items), it is considered that simple comparison of numbers is not significant. On the other hand, as a general trend, the implementation rate is relatively low for items that require cross-ministerial efforts and high-level political efforts ("1.1 Advocacy," "2.2 Reducing drinking," etc.), while the implementation rate is relatively high for items that are mostly completed within the Ministry of Health ("1.2 Partnerships" (mainly for coordination between central ministries of health and state and local governments), "4.2 Improvements in monitoring and evaluation," etc.).

- The lack of enforcement of regulations on the sale and advertising of cigarettes may also be influenced by the strong opposition of industry groups and the resulting litigation, and similar causes are suspected for the slow progress on alcohol and unhealthy foods.[64]
- There are many unimplemented items regarding the investment of human and material resources that require funds, such as the increase of staff and the addition of facilities and equipment, which may have an impact on the budget.
- With regard to public relations activities for the prevention of NCDs, there is a high rate of social media campaigns that can be carried out at a relatively low cost, but the high rate of non-implementation of print and TV advertisements is considered to be due to the impact of budget.
- The plan stipulates that NCD STEPWise surveillance (STEPS) should be conducted once every four to five years and used to measure progress toward national NCD targets. However, in this progress report, STEPS is described as "postponed due to COVID-19's calamity," and the degree of achievement of the improvement target could not be confirmed. The MoH confirmed that the said surveillance took place from 2021, and they are compiling the results at the time of writing this report (April 2022).

Based on these findings, the MoH is currently in a process of revising the National Policy and Strategic Framework for Prevention and Control of Chronic Non-Communicable Diseases (2010) and the NCDs MSAP.

64 https://journals.sagepub.com/doi/pdf/10.1177/1010539515612969

Table 3-2 List of unimplemented items of the NCDs MSAP

major item	middle item	unachieved items	achievement rate
1.Advocacy, leadership and partnership	1.1 Advocacy	・Conduct advocacy meetings for senior managers of state-level agencies ・Conduct national advocacy meetings to raise the priority of NCDs in the National Health Action Plan ・Conduct local level advocacy meetings to raise the priority of NCDs in the National Health Action Plan	62.5%
	1.2. Partnership		100.0%
	1.3 Leadership	・Provision of facilities and staff to NCD stations to facilitate monitoring mechanisms for NCD action plans	85.7%
2.Health promotion and risk reduction	2.1 Reducing Smoking	・Developing a national policy on tobacco prevention and control ・total ban on advertising ・No smoking outdoors or in public places ・enactment of a law on tobacco sales ・Introduction of smokeless tobacco policies ・Mandatory labeling of smoking cessation hotline numbers on cigarette packs ・Mandatory display of smoking cessation hotline numbers at tobacco shops	82.1%
	2.2 Reducing alcohol consumption	・Development of a mechanism to monitor the promotion of alcohol on social media ・Introduction of a system to take the NATA Act into account when reviewing international treaties ・Restrictions on Duty Free Alcohol Sales ・Review of the distribution control licensing system for alcohol products ・Establishment of a system for obtaining information on the availability of illicit alcohol products ・Strengthening legal measures against alcohol, violence and accidents ・empower the community to act ・Establishing surveillance systems to report alcohol-related violence, accidents, and injuries ・Establishing a mechanism to link government, NGO, and private sector alcohol-related services to treatment and rehabilitation ・Establishment of mechanisms for implementing, monitoring and assessing alcohol policies at national and local levels ・Establishment of a subcommittee within the National Mental Health Commission to review the implementation of alcohol policy ・Developing strategic plans and guidelines for alcohol policy ・Documentation for periodic reporting of progress to the Presidential Task Force on the Prevention of Illicit Drug Use	53.6%
	2.3 Promoting Healthy Eating	・Free and low-cost provision of plants and seeds ・Establishment of a system to provide seasonal vegetables at low prices ・Evaluation of community-based interventions implemented to reduce salt consumption ・Strengthened MRI facilities to check salt, dietary fat content, and urine sodium levels ・MRI and laboratory development in selected hospitals ・Strengthening MRI MLT Schools ・Implementation of award programs for companies that provide healthy foods ・Holding competitions to cook healthy dishes	86.0%
	2.4 PROMOTION	・Formulation of guidelines for promoting workplace exercise ・Policy decisions on permission to exercise during working hours ・Setting up exercise areas in hospitals (pilot) ・Introducing regulations to ensure exercise space for new office buildings ・Reward payments to government employees who become members of sports facilities ・increase the number of places for people to exercise (Pools, stadiums, complex facilities, gym facilities) ・Introduction of the Act on Securing Sidewalks, etc. for Exercising in Housing Development ・introduce a law to ensure that each town has at least one playground ・Establish playgrounds in each town (1 to 3 people per 50,000 people) ・Media and TV commercials promoting the movement	64.3%
	2.5 Promoting Healthy Behaviors	・Revise NCD communication strategy ・Conduct campaigns through electronic, print and online media ・Holding experience-sharing events, health food exhibitions, and athletic competitions	66.7%
	2.6 Improving the Air Environment in Households	・Introduction of cleaner technology, introduction of ovens with reduced smoke emissions, and improvement of cooking stoves ・Formulation of guidelines on indoor air pollution ・Conducting research on measures to reduce indoor air pollution ・Implementation of mass campaigns on passive smoking	66.7%

major item	middle item	unachieved items	achievement rate
3.Early detection and management of NCD and its risk factors	3.1 Access to Health Services	・Free App To Assess Cardiac Risk ・Revision of the NCDs screening base package ・Establishment of facilities for OGT (oral glucose tolerance test) ・Advocacy to provide basic technology and essential drugs for NCDs to the private sector ・a television commercial to promote the screening of a movie ・Telecast commercials to promote the use of HLC ・Paper advertising on HLC ・Conduct social media campaigns on screening ・Provision of equipment and human resources to strengthen PCI centers in national hospitals ・Ensuring sufficient human and technical resources to make the cardiac catheterization laboratory in the national hospital function 24 hours a day ・Construction of cardiac operating rooms, procurement of equipment, and development and delivery of equipment to cardiac ICUs in selected hospitals ・development of HbA1C standards ・Statin Administration System for All Diabetic Patients	73.2%
		・Screening for CRD in schools ・Screening for CRD in the workplace ・Introduction of a self-management plan for patients with CRD ・preparation of the pulse oximeter ・Improving Services for Awareness and Management of Asthma in Schools ・Standardization of documentation procedures for patients with CRD ・Development of a Data Collection System for CRD Patients ・Preparation of educational materials on CRD ・CRD TV commercial ・CRD paper ads ・Awareness Raising Campaign ・Programs on CRD in communities, schools, and workplaces ・Conducting surveys to identify the epidemiology of CRD and occupational injuries	
	3.2. MEDICAL WORKING GROUP	・Implementation of NCD service training programs in all health categories ・Training of emergency personnel ・construction of a new state training center	66.7%
	3.3 Community-Based Approach	・Formation of local/patient populations ・Capacity building for patient groups	66.7%
4.Monitoring, monitoring, evaluation, and investigation	4.1 Enhanced Monitoring	・Training sessions to strengthen death registration systems ・Improving the quality of death data at registered offices ・Conducting workshops to improve cause of death reporting ・STEP surveys are conducted every four to five years. (Postponed by COVID-19)	76.5%
	4.2 Improved Monitoring and Evaluation	・Assessing health impacts of policies in the non-health sector	90.0%
	4.3 Strengthening Research	・Forums/Committees to translate research into policy action ・Specific examples of country-specific thresholds: overweight, total cholesterol	71.4%

3.1.2 **Health finance**

(1) **Government expenditure on health**

In the central government's 2022 budget, the health budget was LKR234.7 billion (approximately 99.8 billion yen), a decrease of approximately 22% from LKR301.3 billion (approximately 128.1 billion yen) in 2021. Public hospital staff salaries and administrative expenses account for the largest share of the health budget, amounting to about LKR123 billion (about 52.9 billion yen).

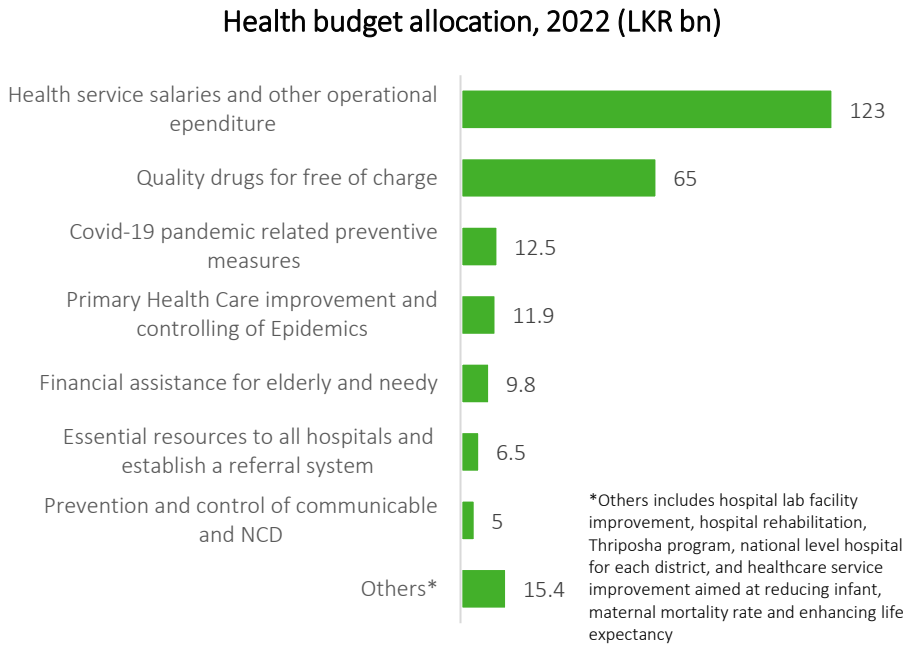


Figure 3-5 Major items in the 2022 health budget

The 2022 budget allocates approximately LKR5 billion (approximately 2.1 billion yen) for the prevention and control of infectious diseases and NCDs[65] [66]. Of the LKR5 billion, the budget for direct measures against NCDs ("Prevention and control of non-communicable diseases) is approximately LKR405 million (approximately 173 million yen), comprising approximately LKR402 million (approximately 170 million yen) for the prevention and management of cardiovascular diseases, stroke, cancer, kidney disease, and mental health, and approximately LKR3 million (approximately 1.26 million yen) for the investigation of risk factors and early diagnosis of NCDs. The transition of the budget for measures against NCDs since 2020 (Estimates for 2022, estimates for 2023 and 2024) is as follows[67].

65 https://www.treasury.gov.lk/web/budget-highlights/section/health
https://www.treasury.gov.lk/api/file/77a35a55-3f66-4ba5-8548-294df07a4e32

66 Of the approximately LKR5 billion, approximately 3.2 billion are for the Ministry of Health and the remainder for the Primary Health Care, Epidemics, and COVID Disease Control Agency. Labor costs are not included.

67 https://www.treasury.gov.lk/api/file/77a35a55-3f66-4ba5-8548-294df07a4e32

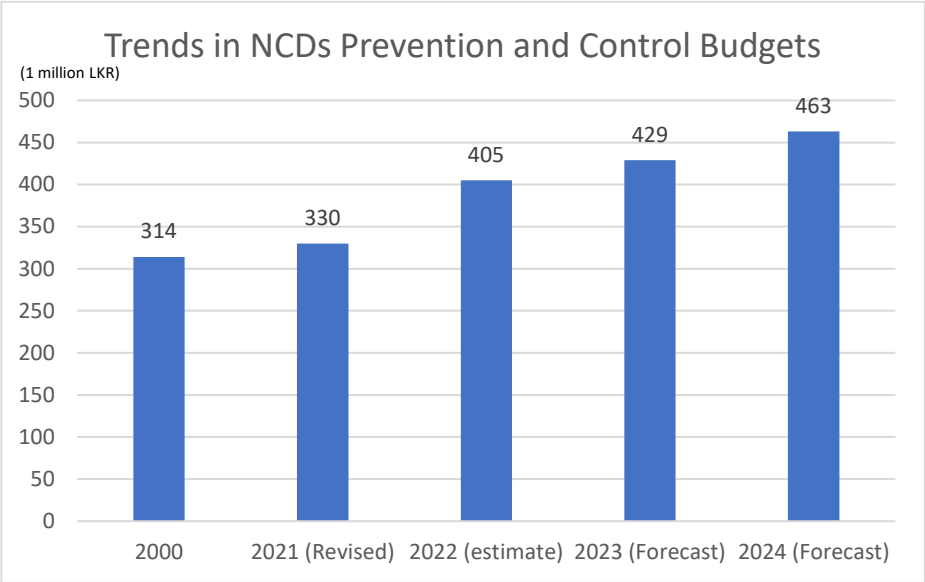


Figure 3-6 NCDs Prevention and control budget trends

As shown in Figure 3-7, the current ratio of health expenditure to GDP has been decreasing or leveling off since 2008 but has been on an increasing trend in 2018 and 2019, and was 4.1% in 2019[68]. The figure is relatively high among other South Asian countries except the Maldives, but is low compared with Japan (10.7% in 2019) and the average of OECD countries (12.5%).

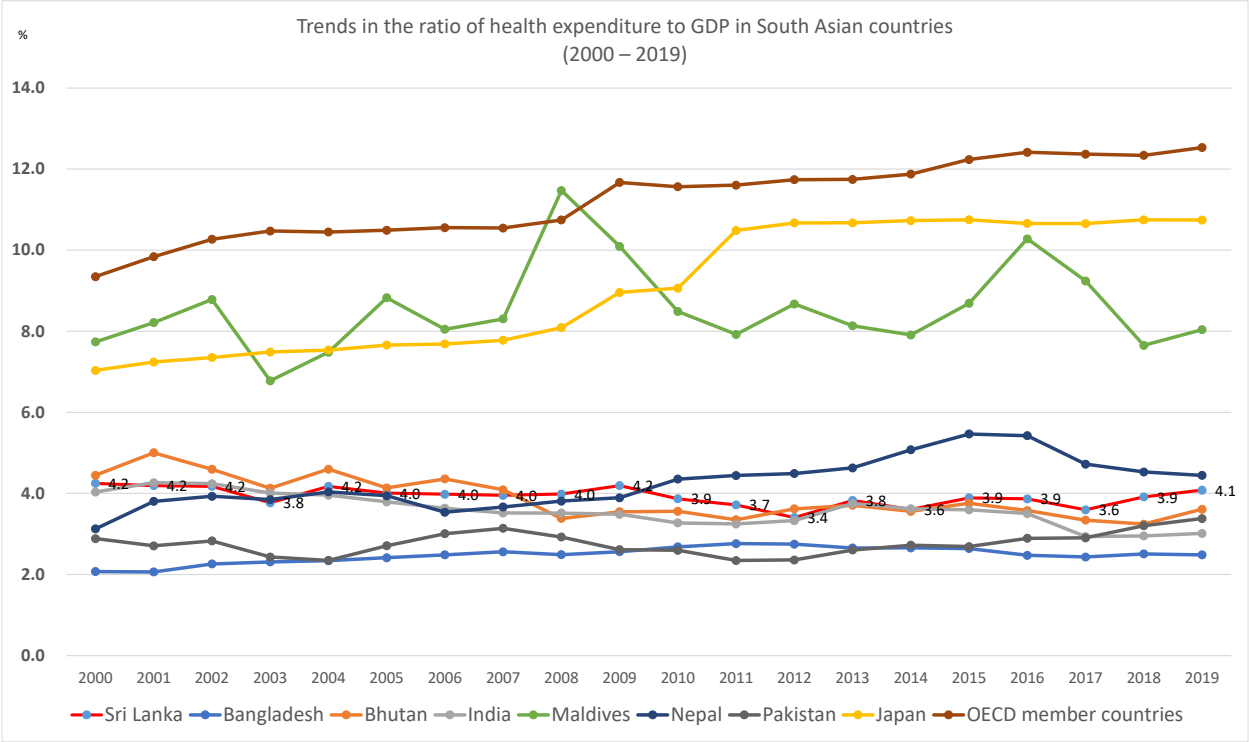


Figure 3-7 Trends in the ratio of health expenditure to GDP

[68] https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS

The ratio of government and private expenditures in health expenditure in Sri Lanka is shown below in Figure 3-8[69]. Private expenditure now exceeds public expenditure. In Sri Lanka, all medical care and medication costs for public hospitals are borne by the public, while the costs for private hospitals and clinics are paid entirely by the private sector (out-of-pocket expenses or private insurance).

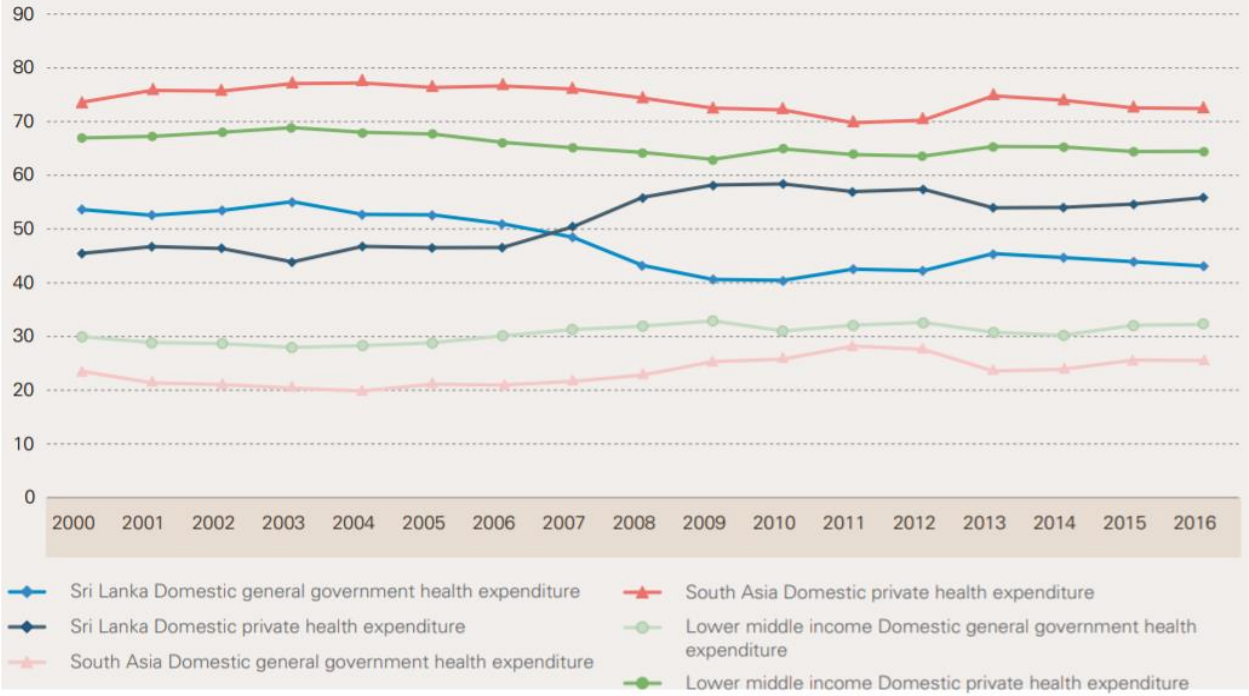


Figure 3-8 Share of government and private expenditure on health expenditure in Sri Lanka

The percentage of medical expenses by disease group in 2016 is shown in Figure 3-9. Over 1/3 of healthcare spending is on NCDs, followed by infectious diseases and reproductive health. As shown in Figure 3-10, respiratory diseases such as asthma account for the largest share (33%) of medical expenses for NCDs, while cardiovascular diseases including ischemic heart disease and gastrointestinal diseases each account for 10% of NCD-related expenditures[70].

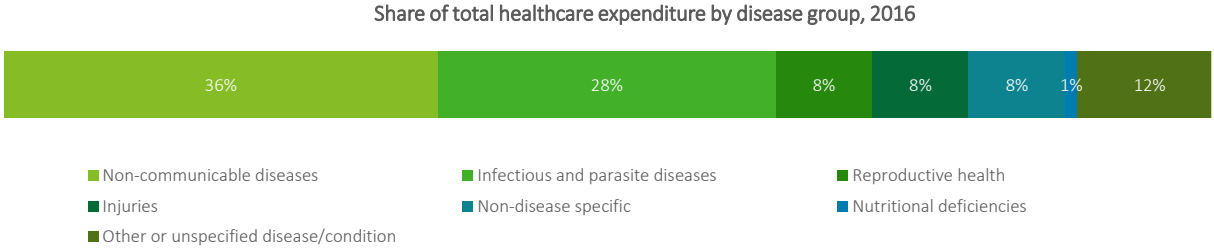


Figure 3-9 Percentage of total medical expenses by disease (2016)

[69] UNICEF (2019) "Budget Brief: Health Sector"

[70] http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/2019/National%20Health%20Accounts%202014-15-16%20-D8-%20Justified.pdf

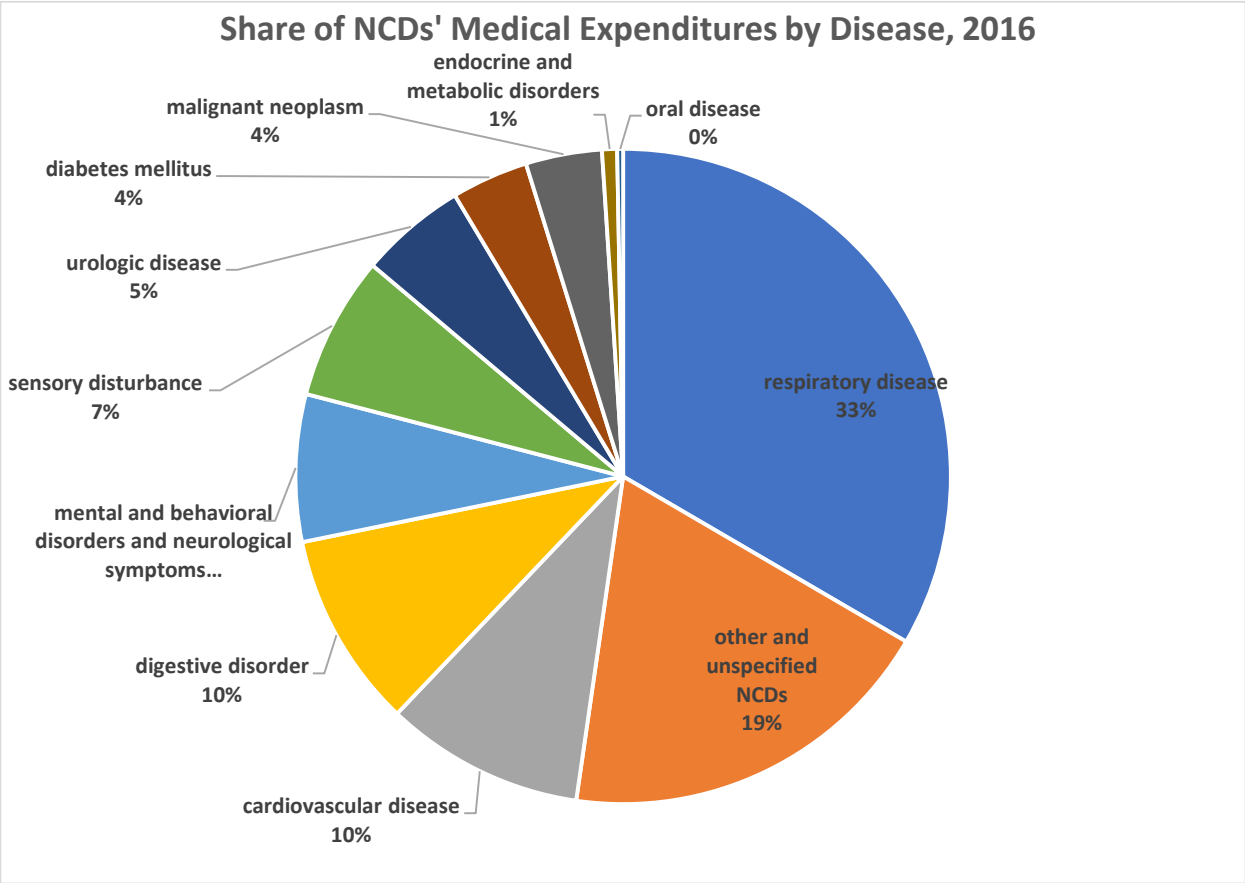


Figure 3-10 Proportion of medical costs for NCDs by disease (2016)

(2) Medical funding sources

As shown in Figure 3-11, of the financial resources for medical expenses, out-of-pocket expenses account for 50.2% and the government budget for 42.8%, followed by employer expenses at 3.7%, private insurance at 2.0%, and foreign donors at 0.9% (2016)[71]. In addition, as shown in Figure 3-12, the total medical expenditure increased more than 7 times from 2000 to 2016, but the government expenditure did not keep up with the increase, and the proportion of out-of-pocket expenses increased from 45% in 2000 to 56% in 2016[72]. This is because basic public medical services are free, but there is a certain amount of out-of-pocket costs for diagnosis and medicine, and that the use of private hospitals is increasing[73]. The percentage of recipients of out-of-pocket payments was 33% for physicians, 27% for pharmacies, 17% for private hospitals, 9% for laboratories, and 15% for others (2013)[74].

Annual revenues from health-specific official development assistance (ODA) fell significantly from US$773.6 million in 2012 to US$85.1 million in 2018[75]。

[71] Institute of Health Policy “Sri Lanka Health Accounts National Health Expenditure 1990-2016” (http://www.ihp.lk/publications/docs/HES1805.pdf)

[72] UNICEF “Budget Brief: Health Sector” (https://www.unicef.org/srilanka/media/1706/file/BUDGET%20BRIEF:%20HEALTH%20SECTOR.pdf)

[73] https://documents1.worldbank.org/curated/en/138941516179080537/pdf/Sri-Lanka-Achieving-pro-poor-universal-health-coverage-without-health-financing-reforms.pdf

[74] https://documents1.worldbank.org/curated/en/138941516179080537/pdf/Sri-Lanka-Achieving-pro-poor-universal-health-coverage-without-health-financing-reforms.pdf

75 https://www.unicef.org/srilanka/media/1706/file/BUDGET%20BRIEF:%20HEALTH%20SECTOR.pdf

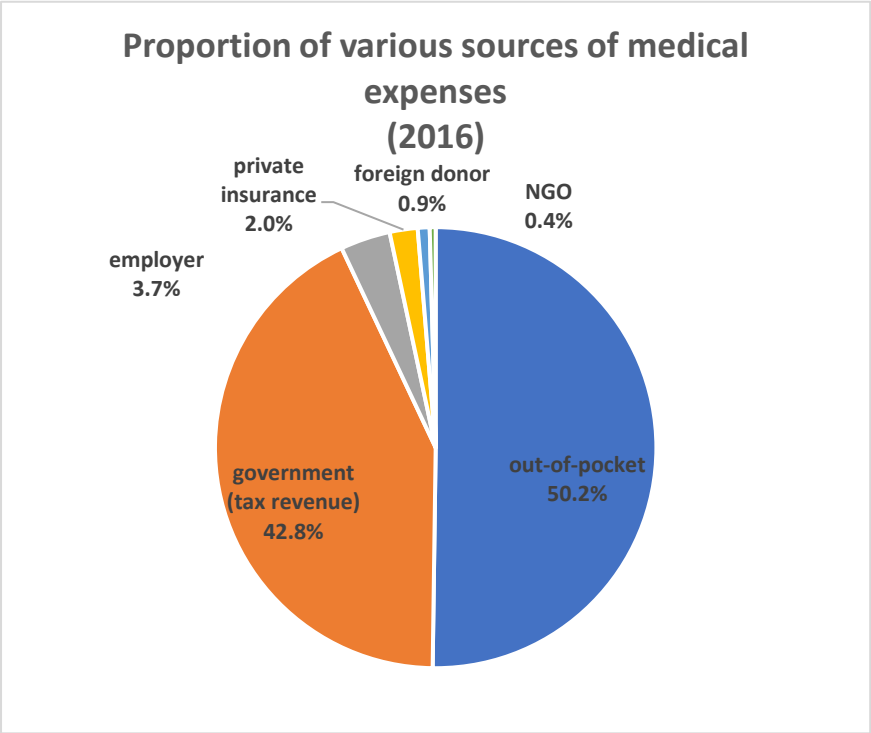


Figure 3-11 Breakdown of medical expenditures by funding source (2016)

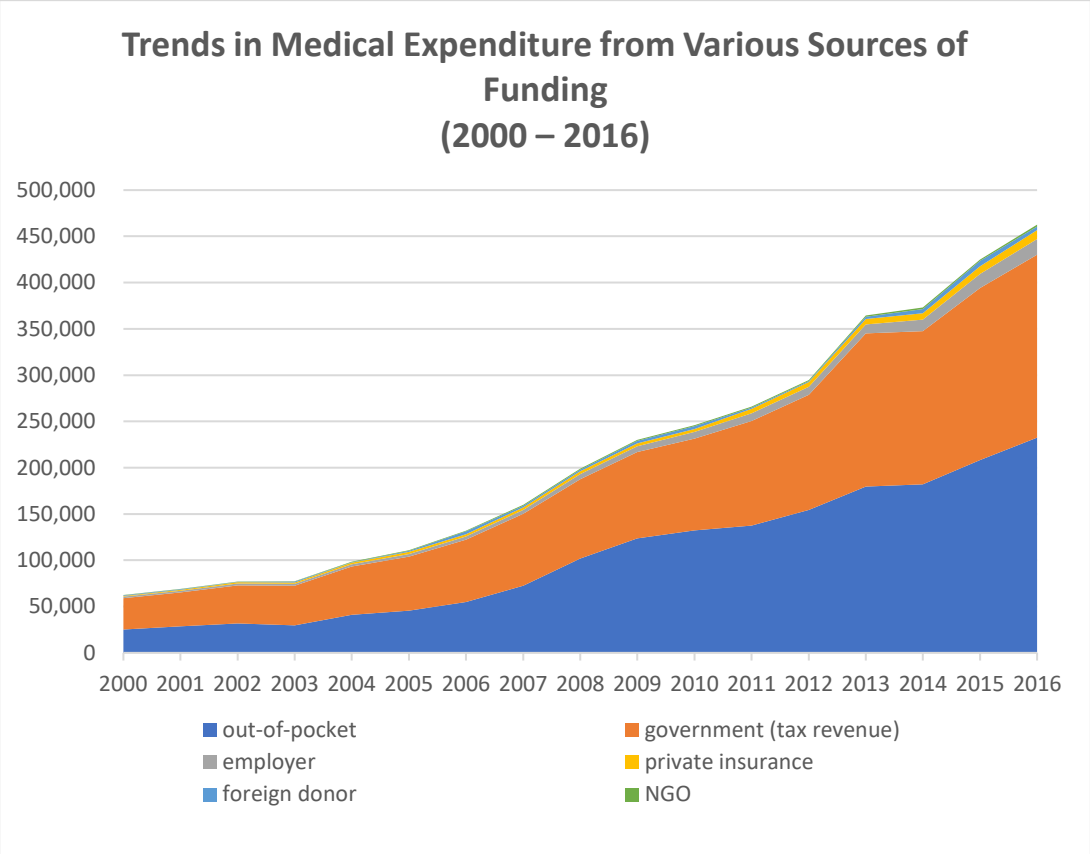


Figure 3-12 Trends in medical funding from various financial sources

Since the burden of medical expenditure increases, curbing public medical expenditure has been an important issue for the Sri Lankan government, and efforts are being made to control costs by raising public awareness of health promotion, lowering procurement prices of pharmaceutical products through international competitive bidding, and adopting product-specific budgeting.

(3) Regional budget

The following table shows the amount of central government medical expenditure by province and prefecture from 2014 to 2016 and the overall percentage.[76] Over the period, Colombo district, which has the largest city of Colombo and the capital of Sri Jayawardenepura, had the largest medical expenditure. This figure is about twice as high as the population ratio of Colombo district (approximately 10.5% of the national population) and is considered to be due to the relatively large number of specialized hospitals and tertiary care facilities located in the district, as well as high amount of line budget payments, including HR in line ministry institutions, medicines, etc.

Table 3-3 Distribution of central medical expenditures by state and province

Distribution of Central health expenditure (CHE) by provinces and Districts (2014-2016) (Rs in million)

Sub national Level	2014		2015		2016	
	#	%	#	%	#	%
Northern province	18,643	5%	21,172	5%	26,745	6%
Jaffna	11,916	3%	13,670	3%	15,115	3%
Kilinochchi	1,680	0.4%	1,867	0.4%	2,952	1%
Mulaitivu	1,375	0.4%1	1,525	0.4%	2,570	1%
Vavunia	2,552	1%	2,854	1%	3,821	1%
Mannar	1,120	0.3%	1,256	0.3%	2,287	0.5%
Eastern	25,605	7%	29,708	7%	37,530	8%
Trincomalee	5,065	1%	5,742	1%	9,760	2%
Batticaloa	9,317	2%	10,806	3%	12,148	3%
Ampara district	11,222	3%	13,160	3%	15,622	3%
North-central	20,724	6%	23,462	6%	29,868	6%
Anuradhapura	13,853	4%	15,668	4%	19,400	4%
Polonnaruwa	6,871	2%	7,794	2%	10,468	2%
North-western	35,397	9%	40,325	9%	46,914	10%
Kurunegala	23,303	6%	26,563	6%	32,568	7%
Puttalam	12,094	3%	32,568	3%	14,346	3%
Central province	40,115	11%	45,720	11%	56,251	12%
Nuwara Eliya	6,972	2%	7,903	2%	12,315	3%

Sub national Level	2014		2015		2016	
	#	%	#	%	#	%
Kandy	27,068	7%	31,013	7%	35,074	8%
Matale	6,075	2%	6,804	2%	8,863	2%
Western province	153,698	41%	174,405	41%	153,223	33%
Colombo	80,610	22%	91,060	21%	85,770	19%
Kalutara	19,524	5%	22,238	5%	22,402	5%
Gampaha	53,564	14%	61,107	14%	45,052	10%
Sabaragamuwa province	25,817	7%	30,061	7%	35,354	8%
Rathnapura	12,605	3%	14,884	3%	18,339	4%
Kegalle	13,212	4%	15,177	4%	17,015	4%
Uva	15,191	4%	16,939	4%	26,215	6%
Badulla	9,766	3%	11,049	3%	17,287	4%
Moneragala	5,425	1%	5,891	1%	8,927	2%
Southern province	38,484	10%	44,177	10%	51,458	11%
Galle	18,287	5%	20,978	5%	24,010	5%
Matara	11,701	3%	13,501	3%	16,249	4%
Hambantota	8,496	2%	9,698	2%	11,200	2%
Total	***373,673***	***100%***	***425,970***	***100%***	***463,559***	***100%***

The allocation of the government health budget is based mainly on infrastructure and staffing. Given the distribution among different regions, the health budget is fairly distributed in most districts, but the Western Province is the notable exception, as shown in Figure 3-13.[77] The fact that the Western Province has the largest city and capital as mentioned above, with nearly 1/4 of the total population and the majority of national referral hospitals and training facilities, may contribute to this result.

76 Ministry of Health "National Health Accounts 2014,2015, 2016"

77 https://apo.who.int/publications/i/item/sri-lanka-health-system-review

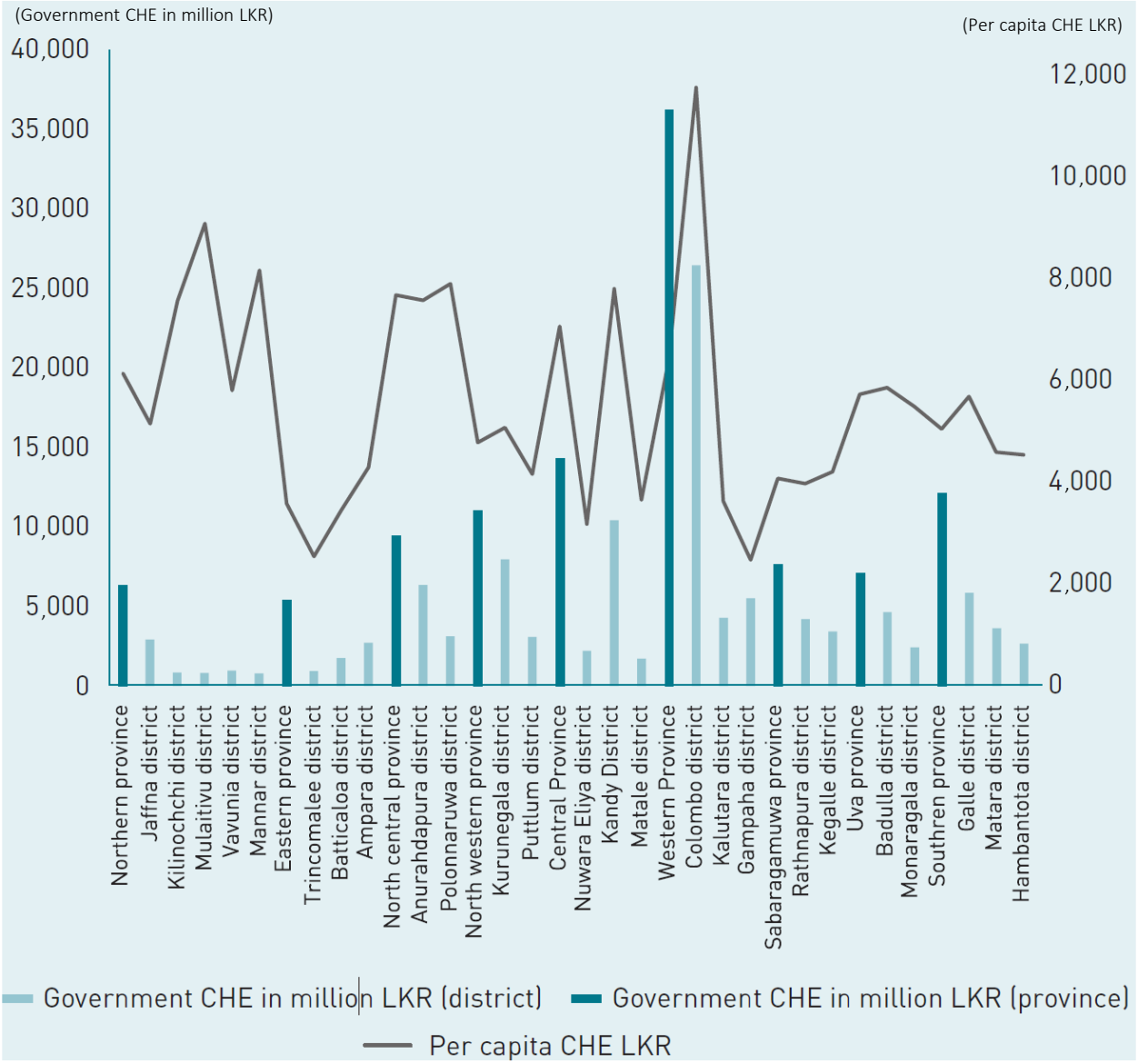


Figure 3-13 Government health budget by province and state

The allocation of funds from the central government to each state's health department is calculated using socioeconomic indicators such as population, state GDP, poverty rate, state median per capita income, population per health worker, and the number of candidates qualified by the state to enter a science university. While this is said to ensure fairness, it is also pointed out that since the previous year's budget and the number of senior officials are included in the calculation formula, it is not necessarily based on the principle of meeting the health and medical needs of residents.[78] Thus, in some cases, disproportionate allocations to specific districts/provinces are observed, such as lower allocations per capita in the East and North of the country. On the other hand, it should be noted that per capita fiscal allocation is not the only criterion for determining fairness, and other factors such as geographical conditions, size, and road network conditions also play a role in determining the fairness of fiscal allocation.[79]

78 https://apo.who.int/publications/i/item/sri-lanka-health-system-review

79 https://apo.who.int/publications/i/item/sri-lanka-health-system-review

3.1.3 Assistance by donors in the field of health and NCDs

(1) Japan

In Sri Lanka, since the 1970s, the Japanese government and JICA have supported the development of basic medical facilities, human resource development, and health and medical systems in the field of health and medical care as one of the priority areas of assistance.[80] The Country Development Cooperation Policy for Sri Lanka formulated in 2018 sets forth a policy to support the development of health and medical-related facilities and capacity building, etc., as the priority goal (3), and the Deployment Plan formulated in 2020 stipulates that "in the health sector, assistance will be provided to improve facilities, equipment, and human resource development at medical institutions in order to improve early detection, diagnosis, and treatment services for NCDs[81] [82]."

Specific support projects for measures against NCDs implemented in recent years include the following (in order of project initiation).

- Loan aid "Improvement of national blood transfusion services project" (2001): Assistance was provided for the construction of a central blood center and the establishment of equipment for state blood banks in 8 states and 48 regional blood banks nationwide[83].
- Development studies "Health Care System Improvement Plan" (2002 – 2003) and "Health System Management Enhancement Plan" (2005 – 2007): Policy recommendations for health sector reform, including strengthening measures against NCDs, were studied. In response to this survey, the Ministry of Health put together a 10-year plan, the Health and Medical Master Plan 2007 -16, which set (1) the provision of integrated health and medical services to reduce the burden of disease and promote health, and (2) the empowerment of communities to maintain health as key strategies[84].
- Grant aid: "The Project for Improvement of Anuradhapura Teaching Hospital" (2008-2011) supported the construction of an outpatient unit (obstetrics and gynecology surgery departments, pediatric and neonatal ICUs) of the Anuradhapura Teaching Hospital, the only tertiary care facility in the state, and the improvement of related medical equipment[85].
- Technical cooperation, "Project on health promotion & preventive care measures of Chronic NCDs" (2008 – 2013), supported health checkup activities to identify high-risk groups by measuring blood pressure and blood glucose levels, health guidance, and the formulation of health promotion implementation plans. In addition, support was provided for the formulation of the implementation plan for medical examinations, health guidance, and health promotion for the nationwide development of cardiovascular disease prevention[86].
- Grant Aid "The Project for the Improvement of Central Functions of Jaffna Teaching Hospital" (2009 – 2011): Assistance was provided for the construction of the Central Function Building of the Jaffna Teaching Hospital, the only top-level formal hospital in the Northern Province, and the procurement of medical equipment for operations, sterilization, intensive care, examinations, and diagnostic imaging[87].
- Technical cooperation project "Improving Healthcare Services Planning through 5S-TQM" (2009 – 2012) was implemented to enhance capacity at the national level to improve the quality and safety

80 https://www2.jica.go.jp/ja/evaluation/pdf/2011_SL-P105_1_s.pdf

81 https://www.mofa.go.jp/mofaj/gaiko/oda/files/000072264.pdf

82 https://www.mofa.go.jp/mofaj/gaiko/oda/files/000072264.pdf

83 https://www.jica.go.jp/oda/project/SL-P69/index.html

84 https://www2.jica.go.jp/ja/evaluation/pdf/2011_SL-P105_1_s.pdf

85 https://www.jica.go.jp/oda/project/0800200/index.html

86 https://www.jica.go.jp/oda/project/0701475/index.html

87 https://www.jica.go.jp/oda/project/0961810/index.html

of healthcare facilities in Sri Lanka[88].

- Loan aid "Project for Improvement of Basic Social Services" (2012) improved the health care system and strengthened the manufacturing capacity of essential drugs through the improvement of secondary medical facilities for prevention, early detection, and treatment, and the equipment improvement of the State Pharmaceuticals Manufacturing Corporation (SPMC) and contributed to the strengthening of measures against NCDs.[89]
- Technical cooperation "Project for Strengthening Measures against Non-Communicable Diseases" (2014 – 2017): Targeting diabetes, hypertension, and dyslipidemia, the project strengthened the management of NCDs in Colombo and in the core hospitals of the four provinces for the following three outcomes: (1) strengthening patient monitoring in primary health facilities and four core hospitals, (2) improving access to testing services for NCDs examinees and patients, and (3) strengthening drug supply management[90].
- Loan aid "Health and Medical Service Improvement Project" (2018 -) is improving medical services for the diagnosis and treatment of NCDs through the improvement of facilities and equipment for tertiary care institutions in the Western Province, North-Western Province, Central Province, North-Central Province, Eastern Province, and Uva Province, the improvement of equipment for health personnel training institutions, and the strengthening of the maintenance and management system for medical equipment at the Ministry of Health and medical institutions[91].
- Technical Cooperation "Project for Strengthening the Operational Capacity of Services for the Elderly in the Community" (2020-): By developing a model for the provision of medical and social services for the elderly in the community at the pilot site. The objective is to expand the model to other regions and thereby contribute to strengthening the health and social service delivery system in Sri Lankan communities[92].

In 2017 and 2018, the Japan External Trade Organization (JETRO) implemented the "Introduction of Health Management Techniques Using Data Health" project in Sri Lanka as a support project to solve social issues, and conducted awareness-raising and dissemination activities on how the health of employees can enhance corporate productivity.[93]

(2) **World Bank**

The World Bank is currently in discussions with the Ministry of Health for the third phase of the Health Sector Development Project, a two-phase project that began in 2004 and continued through 2010 with a budget of US$72.6 million. The goal was to improve the quality and efficiency of health services at the central level. Four pillars of activities were defined: (1) support for local health administration, (2) support for key national policies and hospitals, (3) support for policy formulation, financing, and monitoring and evaluation, and (4) project management. Specifically, capacity building at the regional and central levels, renovation of medical and health administration facilities, provision of medicines/medical equipment, promotion of national family planning (e.g., immunization and quality improvement of hospital services), improvement of budget framework, strengthening evaluation and monitoring capacity, support for statistical surveys, review of pharmaceutical approval process etc. were implemented.

The second phase, implemented from 2013-2018, had a budget of US$5,170 million. The two main pillars of activities are (1) support for priority areas of the National Health Development Plan, and (2) reform,

88 https://openjicareport.jica.go.jp/980/980/980_120_12124798.html

89 https://www.jica.go.jp/oda/project/SL-P105/index.html

90 https://www.jica.go.jp/project/srilanka/003/outline/index.html

91 https://www.jica.go.jp/oda/project/SL-P118/index.html

92 https://fujita-plan.com/?p=1108

93 https://www.jetro.go.jp/jetro/activities/support/rulemaking.html

monitoring, and capacity building in the framework of the National Health Development Plan. The three priority areas are maternal and child health and nutrition, prevention and control of NCDs, and health system support. Major efforts include community support to improve the nutritional status of mothers and children, educational support for medical staff, provision of medicines, medical equipment, and digital tools, electronic data maintenance and dispatch of experts in hospitals, and implementation of pilot projects. Particularly in the area of NCDs, the expansion of Healthy Lifestyle Centers (HLCs), the establishment of emergency care units in hospitals at the central and state levels, and units for rehabilitation services in state hospitals were implemented[94].

Starting in 2019, the World Bank is implementing a project to strengthen Primary Health Care in collaboration with the Ministry of Health to promote NCDs-related services in PHCs. The project is described below in 3.2.3.

(3) World Health Organization (WHO)

WHO provides a wide range of assistance in the fields of infectious diseases and NCDs, including health system development, procurement of essential medicines, formulation of medical human resources plans, mental health, provision of medicines and equipment, support for maternal, child, adolescent and reproductive health, and emergency humanitarian assistance. In particular, it has contributed to policy development at the central level in the field of NCDs, and has mainly supported the Ministry of Health in developing an NCDs MSAP to guide measures against NCDs.

WHO is also supporting the formulation of the "The Food (Colour Coding for Sugar, Salt and Fat) Regulations" issued in 2019, which stipulates that food labels should be marked with a red flag when high levels of sugar, salt or fat are contained in food, and regulations on tobacco "National Strategy for Tobacco Control (2020 – 2025)" and "Strategy for Tobacco Cessation (2020 – 2025)." In addition, WHO has been conducting monitoring and evaluation of the SDGs in collaboration with the United Nations, and in particular, with regard to SDGs Goal 3 "National Action Plan for the achievement of SDG 3," with the Ministry of Health.

At the stakeholder meeting held in 2019, the formulation of an action plan was announced, including clarifying the departments responsible for SDG3 at each ministry and state level, strengthening cooperation across organizations, the need to secure financial resources, development of monitoring and evaluation tools, and participation of citizens[95].

(4) Asian Development Bank (ADB)

ADB's assistance in Sri Lanka was primarily in the economic and poverty areas and in 2018, ADB commenced NCDs-related projects. The "Health System Enhancement Project (HSEP)," which is under implementation until 2023, has a budget of US$60 million (US$12.5 million for grants, US$3,750 million for loans, and US$1,000 million for contributions related to the Government of Sri Lanka) and aims to strengthen the primary healthcare system. In particular, 9 districts in 4 states (Central, North Central, Sabaragamuwa, Uva) have been selected as priority targets[96]. The project is described later.

(5) Other bilateral aid agencies

In recent years, countries such as China, Australia, the Netherlands, the Republic of Korea, Germany, and India have provided assistance to Sri Lanka's health sector. The main areas of assistance include maternal and child health (China, the Netherlands, and South Korea), hospital rehabilitation and construction (China,

94 https://www.worldbank.org/en/country/srilanka/

95 https://www.who.int/srilanka/our-work

96 https://www.hsep.lk/

Netherlands, India, South Korea, Germany), provision of medical equipment (China, India), and improvement of pharmaceutical facilities by China. In particular, under the Belt and Road Initiative, China has provided a lot of support, including medical infrastructure renovation, construction, and equipment supply. Between 2018 and 2021, China constructed outpatient and inpatient facilities, maternal and child pediatric facilities, research institutes, surgical facilities, blood transfusion centers, and emergency medical facilities in 13 hospitals in Sri Lanka.

Table 3-4 Summary of major donor assistance

	Project	Term	Amount	Type of support	Description
World Bank	Health Sector Development 1 & 2	2010-2015 2013-2018	$72.6M $5,170M	Policy/guideline development, Capacity building, Various projects	• Phase 1: Support for improving health administration services at the county level, family planning at the central level, and capacity building of the Ministry of Health. • Phase 2: The priority is placed on "Maternal and child health and nutrition, NCDs, and health system": prevention awareness campaigns, development of emergency guidelines, as well as construction and monitoring of emergency and rehabilitation facilities in the area of NCDs.
WHO	Creating NCDs MAP etc.	2008-	–	Policy formulation support, Providing equipment, financial support, etc.	• Support the Ministry of Health to develop "Cross-Sectoral Action Plan for NCDs Prevention and Control (NCDs MAP)". • Other activities including providing medical supplies/equipment, financial support, and human resource development.
ADB	Health System Enhancement Project	2018-2023	$60M (including $37.5M loan)	Policy formulation, Constructing facilities, Providing equipment, Developing human resources	To strengthen PHC, support is being provided for policy formulation, construction and strengthening of facilities, provision of medicines/equipment/vehicles, human resource training, and strengthening of disease monitoring capacity (introduction of systems).
Netherlands	Strengthening health delivery service in the northern province (loan)	Signed in July 2019	$54.9M	Financial support	Provide loans to improve medical and health facilities and strengthen human resource capacity in the Northern Province, where infrastructure reconstruction has been a challenge since the conclusion of the conflict.
Australia	Assistance in the installation of MetaMizers	2018	-	Providing equipment	Provide 20 units of MetaMizers (equipment for detoxifying infectious waste) and 5 units of small incinerators to Provincial General Hospital Badulla, District General Hospital Trincomalee, Polonnaruwa General Hospital, etc.
India	Establishment of emergency transport system	2016-2019	$22.5M	Financial support, Technical support, Capacity building	• Provide $7.5M in 2016 to two states for purchasing vehicles, initial-year operating costs, and setting up response centers, for establishing emergency transport services. • Additional $15M grant in 2017 to expand the service to all states.
	Hospital construction	2011-2015	$95万	Constructing facilities, Providing equipment	Construct a 150-bed military hospital in the central town of Dickoya and a 200-bed hospital in the northern city of Babuniya, also providing medical equipment and related facilities.
	Providing medical equipment	2005-2011	$59万	Providing equipment	Provide 28 types of advanced equipment to general hospitals in northern areas such as Kilinochchi and Mullaitivu.
China	The Sri Lankan hospital facility upgrading project	Construction started in June 2018 (planned period: 3-years)	$85M for construction, $30M for equipment	Constructing facilities, Providing equipment	In addition to setting up outpatient clinics, inpatient facilities, laboratories, operating rooms, emergency departments, etc. in a total of 13 hospitals, provide approximately 3,000 items of medical equipment, including X-ray machines, MRI scanners, CT scanners, and train human resources.
	Construction of hospital specializing in kidney diseases (Polonnaruwa region)	2018-2021	$61.5M	Constructing facilities, Providing equipment, Developing human resources	Built the "Sri Lanka-China friendship National Nephrology Hospital" in February 2021, the largest hospital specializing in kidney diseases in South Asia.

3.2 Service provision

3.2.1 Overview

In principle, anyone can receive outpatient and inpatient services without restrictions at public medical institutions in Sri Lanka. Its infant mortality rate (8 per 1,000 live births), maternal mortality rate (29 per 100,000 live births), and life expectancy (75 years at birth) are among the very high levels for a country with a per capita GDP of US $3,800[97]. The World Bank (2018) pointed out that public medical institutions do not have a clear benefit package (insurance or payment), but comprehensive systems that provide all services (including expensive oncology drugs). On the other hand, investment decisions for high-tech equipment are not made based on accurate medical technology assessments (cost-effectiveness analysis, etc.), and the availability of necessary specialist personnel, equipment, and drugs is limited. As a result, for example, more than 5,000 people wait for heart surgery, and regional disparities in medical services occur.

This limited supply of public services has been met by a range of private healthcare services, from state-of-the-art healthcare for the affluent in urban areas to informal private care provided by rural public sector doctors during off-hours. As noted above, private healthcare services now account for 56% of total healthcare spending, of which, according to the World Bank (2018), 85% is out-of-pocket, 5 ~ 8% is employer benefits, 5% is health insurance, and 2 ~ 3% is from the nonprofit sector[98]. In response to the fact

97 London School of Hygiene & Tropical Medicine Health Policy and Planning, Volume 32 (https://academic.oup.com/heapol/article/32/9/1267/3977797)

98 Institute of Health Policy "Sri Lanka Health Accounts National Health Expenditure 1990-2016" (http://www.ihp.lk/publications/docs/HES1805.pdf)

that the main barrier to accessing private medical care is out-of-pocket medical expenses, the "Presidential Fund" established in 1991 provides funding for cardiac surgery, kidney surgery, cancer treatment, etc. However, this fund does not cover outpatient care and has a ceiling for inpatient care, so access to advanced medical care for low-income persons remains limited[99]. In addition, more than 80% of doctors in private medical institutions work part-time outside of full-time hours at public medical institutions, and diagnostic imaging services (X-ray, ultrasound scan, CT scan, MRI, etc.) are often installed only in large private hospitals. This indicates a shortage of medical personnel, facilities, and equipment.[100]

The private health insurance industry is small but growing, mostly for private sector employees, whose premium spending accounts for about 5% of private health care spending. The penetration rate of private health insurance is at a rather low level, and the ratio of premium income to GDP increased slightly from 1.12% in 2015 to 1.31% at the end of 2019[101]. In general, the expansion of private health insurance leads to the control of government expenditure on healthcare and the reduction of out-of-pocket expenses for citizens. However, the Ministry of Health of Sri Lanka stated in its report on primary healthcare published in 2017 that the expansion of healthcare coverage does not help healthcare resources for the following three reasons: (1) the expansion of healthcare benefits only a small number of wealthy households with regular employment; (2) medical practitioners may concentrate in urban areas with a large number of wealthy households; and (3) the increasing access of wealthy households to private healthcare facilities provokes a backlash from taxpayers and makes it difficult to increase public expenditure on healthcare[102].

3.2.2 Medical institutions and medical personnel

(1) Local medical administration

Health administration is partially decentralized and is led by the Ministry of Health along with nine provincial governments. At the Provincial level, there are 9 Provincial Director of Health Services (PDHS) and 26 Regional Director of Health Services (RDHS).[103]

Primary health care (PHC) services provided by the Sri Lankan Ministry of Health can be broadly divided into preventive services and therapeutic services. Preventive PHC services are provided through the Medical Officer for Health system established in 1926. The country is divided into 355 Medical Officer for Health areas (the population in charge is about 50,000) which roughly correspond to the administrative divisions. The Medical Officer for Health areas are further subdivided into the Public Health Inspectors (PHI) areas (approximately 10,000 persons) and the Public Health Midwives (PHM) areas (approximately 3,000 ~ 5,000 persons)[104]. The Medical Officer for Health is responsible for providing preventive PHC services to the population through grassroots health workers such as PHIs and PHMs.

The structure of the provision of NCDs services at the local level, mainly by state governments, is as follows[105]. The health departments of the nine Provinces are responsible for the effective implementation of their respective Province services, particularly in the areas of primary care, secondary care, and preventive services. Local health administrators meet regularly with the Ministry of Health authorities to discuss issues. At the Provincial level, the top health official is the Provincial Health Minister, and below him, the PDHS is the technical director of the Provincial Health Office. Each health district in the Province has a RDHS who is responsible for the PDHS and the Ministry of Health administrators.

99 BioMed Central "The future of "Free Health" in Sri Lanka" (https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-019-0522-6)

100 London School of Hygiene & Tropical Medicine Health Policy and Planning, Volume 32 (https://academic.oup.com/heapol/article/32/9/1267/3977797)

101 https://ircsl.gov.lk/wp-content/uploads/2020/09/Statistical-Review-2019.pdf

102 http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/2018/ReorgPrimaryHealthCare.pdf

103 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

104 https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-019-0522-6

105 Created by the investigation team from https://apo.who.int/publications/i/item/sri-lanka-health-system-review

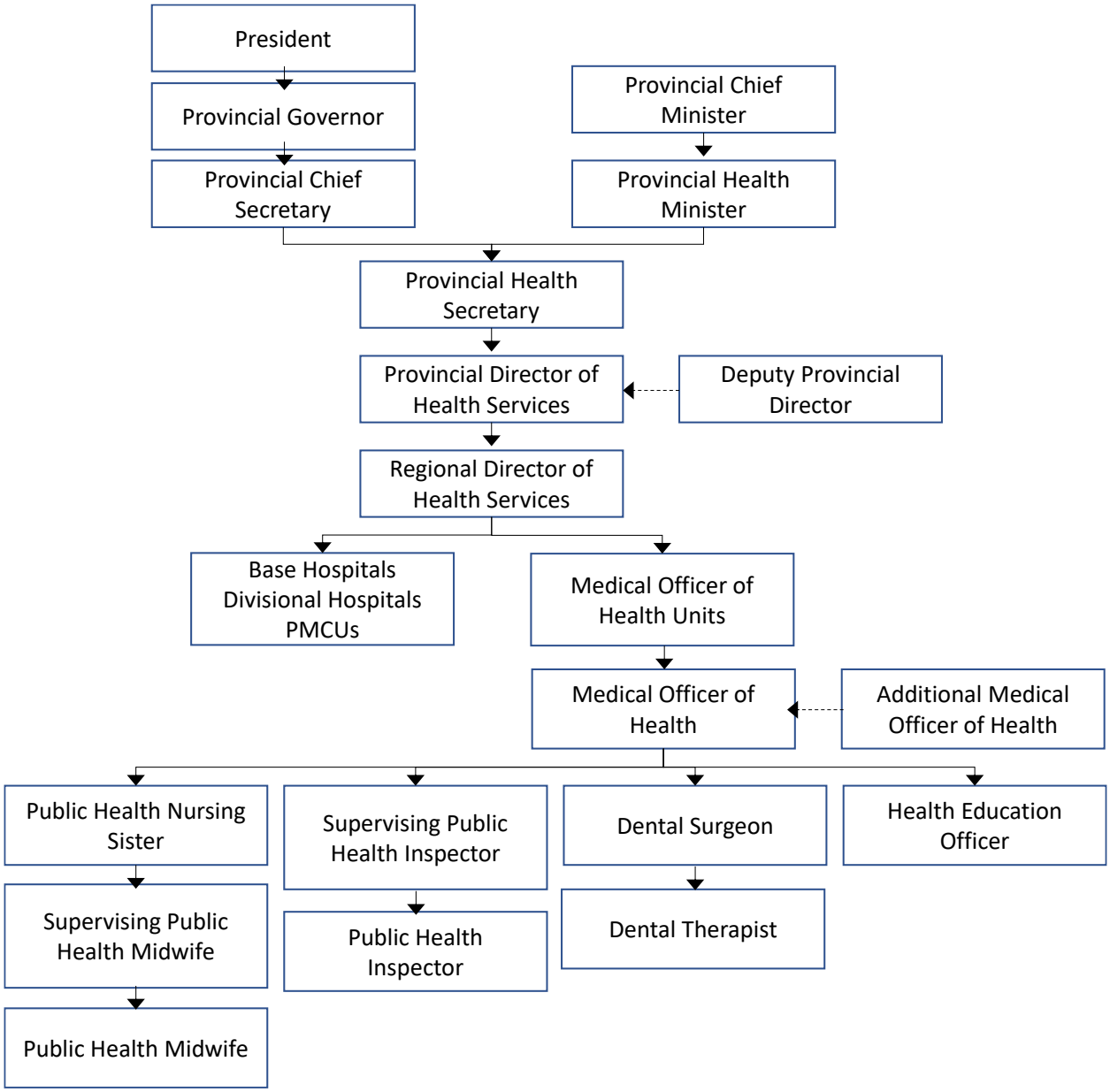


Figure 3-14 Organization chart in Province/State levels

Therapeutic PHC services are provided through Primary Medical Care Units (PMCUs), Divisional Hospitals, and Outpatient Departments (OPD) of secondary and tertiary care institutions. Under PHC reform, each institution is responsible for the first contact care of its catchment population, and to ensure subsequent continuity of care. However, there is no gatekeeping function, and users can visit their preferred medical institutions, from PMCU to secondary or tertiary care. Tertiary institutions are under the control of the central Ministry of Health, while some secondary level hospitals and PHC institutions are under the control of Provincial governments.

Secondary medical institutions include Base Hospitals and District General Hospitals. However, in the absence of an adequate referral system, patients may be referred directly from both prevention and treatment PHC services to tertiary care providers.

(2) Overview and placement of public hospitals

The PMCU is equipped with basic outpatient facilities and is operated by a licensed medical officer, a dispenser, and a staff of 1 ~ 2 assistants. It usually serves from 8:00 AM to 4:00 PM and has no inpatient facilities[106].

Divisional hospitals provide outpatient and inpatient care and are classified into types A, B, and C according to the number of beds (A: 100 beds or more, B: 50 ~ 100 beds, C: 50 beds or less). District hospitals have more medical and nursing staff and Supplementary Medical Professionals (PSM) (E.G., pharmacists, laboratory technicians). It also provides diagnostic services at various levels of facilities. Unlike primary care centers, district hospitals provide 24 hour services.

Base hospitals and district general hospitals, which are secondary medical institutions, provide outpatient treatment, primary medical institution follow-up, emergency treatment, and inpatient treatment to patients with NCDs. Other secondary care providers offer the services of cardiologists, endocrinologists, and pulmonologists outside their primary specialties. The majority of secondary healthcare facilities are under the control of the Provincial/State government.

Tertiary institutions, which consist of provincial general hospitals, specialized hospitals, teaching hospitals, and national hospitals, provide all the services of secondary institutions, as well as more comprehensive and advanced screening, surveillance, diagnostic, and therapeutic services, and specialized services such as neurology and cardiology. The national hospitals are located in Colombo and Kandy, and the National Hospital of Colombo has a cardiology ward and a stroke ward with sophisticated intervention facilities. There are also specialized hospitals, such as the Chest Hospital in Wellisala and the Rehabilitation Hospital in Ragama, which provide services for patients with NCDs.

The number of public hospitals and beds in Sri Lanka is shown in the table below.[107] Larger and specialized hospitals are mainly operated by the central government (Ministry of Health), and smaller hospitals are mainly operated by state governments[108].

Table 3-5 Summary of the number of public hospitals

#	Hospital Type	No. of Hospitals			No. of Beds		
		Line Ministry	Province	Total	Line Ministry	Province	Total
1	National Hospital	2	-	2	5,273	-	5723
2	Teaching Hospital	9	-	9	11,663	-	11,663
3	Specialized Teaching Hospital	6	-	6	2,545	-	2,545
4	Other Specialized Hospital	9	1	10	3,342	46	3,388
5	Provincial General Hospital	2	-	2	3,970	-	3,970
6	District General Hospital	11	9	20	7,952	4,872	12,824
7	Base Hospital Type – A	4	24	28	1,339	7,256	8,595
8	Base Hospital Type – B	3	50	53	718	7,675	8,393
9	Divisional Hospital Type – A	1	75	76	228	6,108	6,336
10	Divisional Hospital Type – B	1	138	139	54	7,535	7,589
11	Divisional Hospital Type – C	1	258	259	59	6,032	6,091
12	Primary Medical Care Unit	-	499	499	-	198	198
	Total	**49**	**1.054**	**1,103**	**37,593**	**39,722**	**77,315**

106 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

107 Private healthcare systems are described in Section 3.3, and only public healthcare systems are described in this section.

108 http://www.health.gov.lk/moh_final/english/others.php?pid=92

http://www.health.gov.lk/moh_final/english/staff.php?pid=22

The number of hospital beds per 1,000 population by region (2019) is shown in the following figure[109]. There is more than a threefold difference between Mullaitivu, which has the highest number, and Kalutara, which has the lowest.

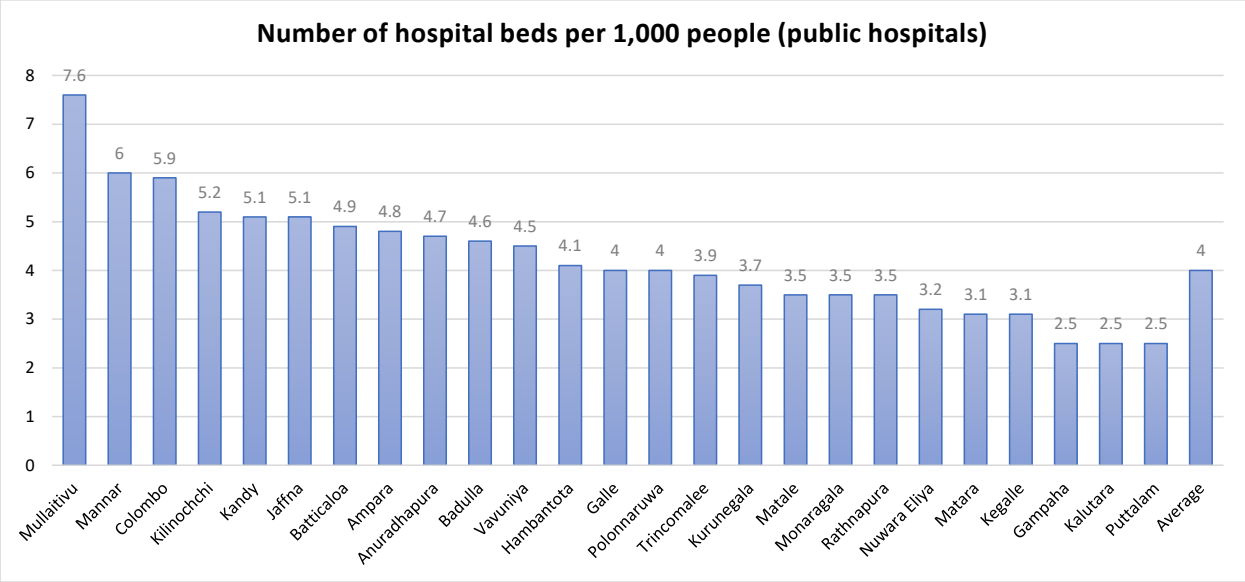


Figure 3-15 Number of public hospital beds per 1,000 population (2019)

The number of primary, secondary, and tertiary medical institutions per 100,000 population by region is as follows[110]. The number of medical institutions varies from region to region. The Ministry of Health makes a Master Procurement Plan[111] every few years to plan the expansion of hospitals and equipment, but the difference between regions has not been resolved.

109 http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/AHB/AHS%202019.pdf

110 http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/AHB/AHS%202019.pdf

111 http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/2019/MPP2019-2021-non-pharmaceuticals.pdf

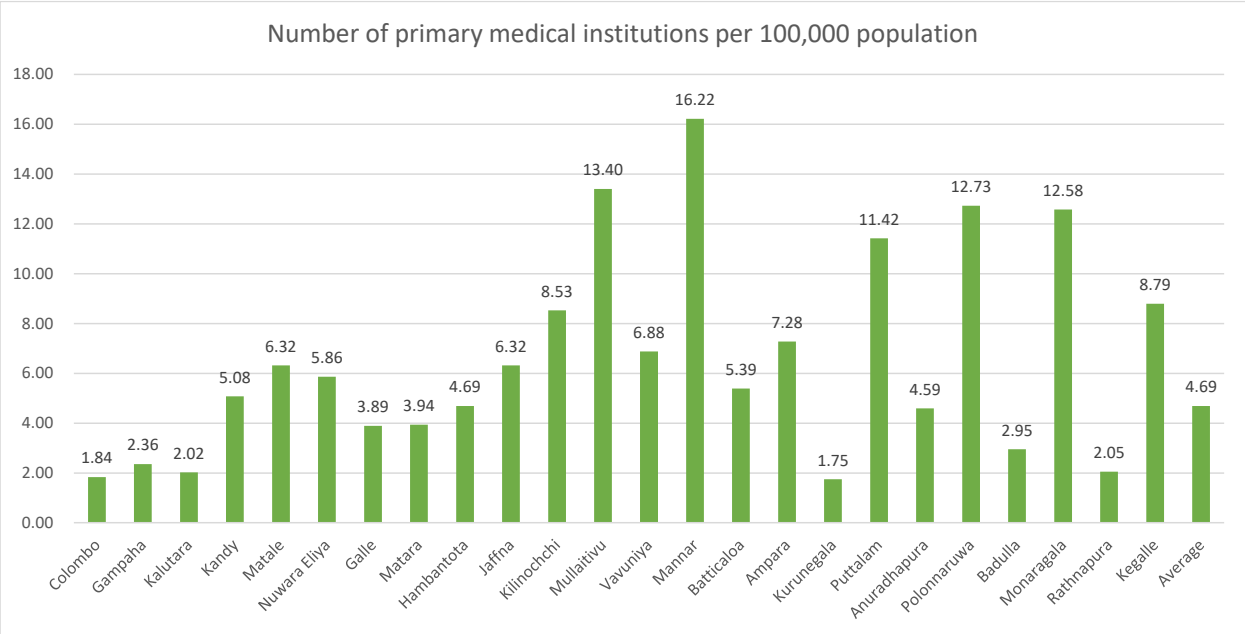


Figure 3-16 Number of primary medical institutions per 100,000 population (2019)

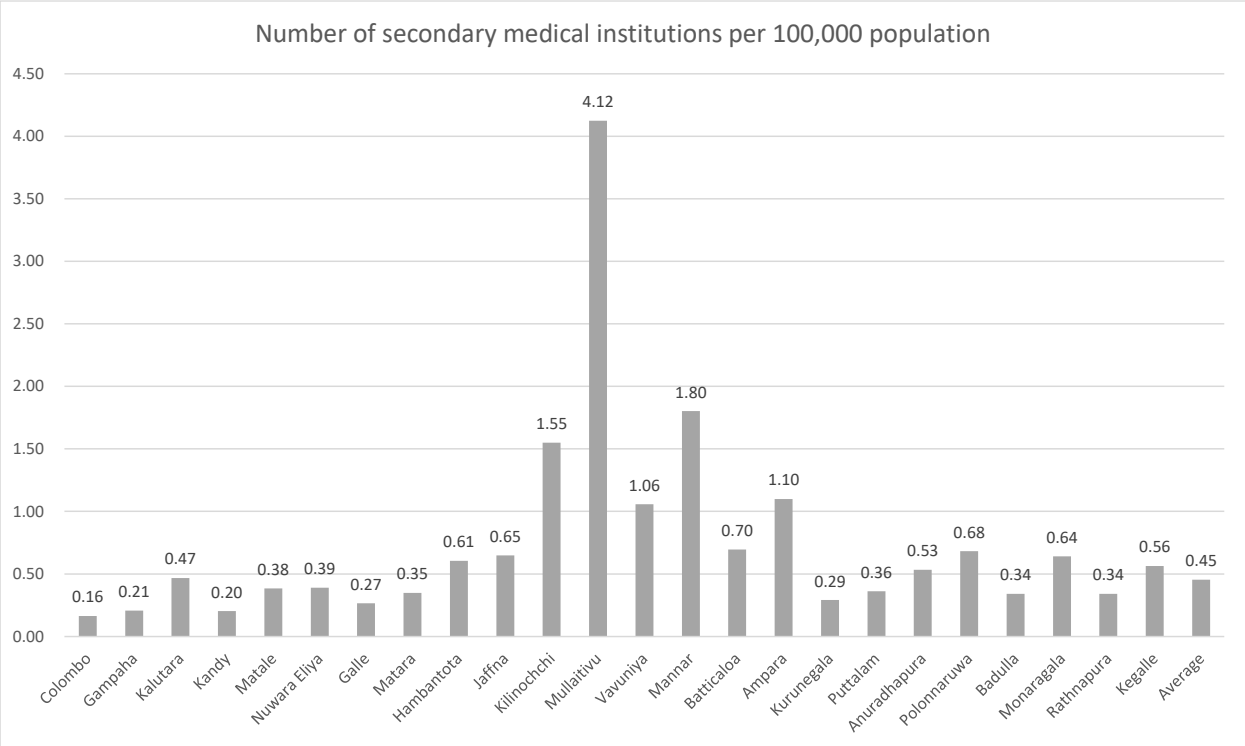


Figure 3-17 Number of secondary medical institutions per 100,000 population (2019)

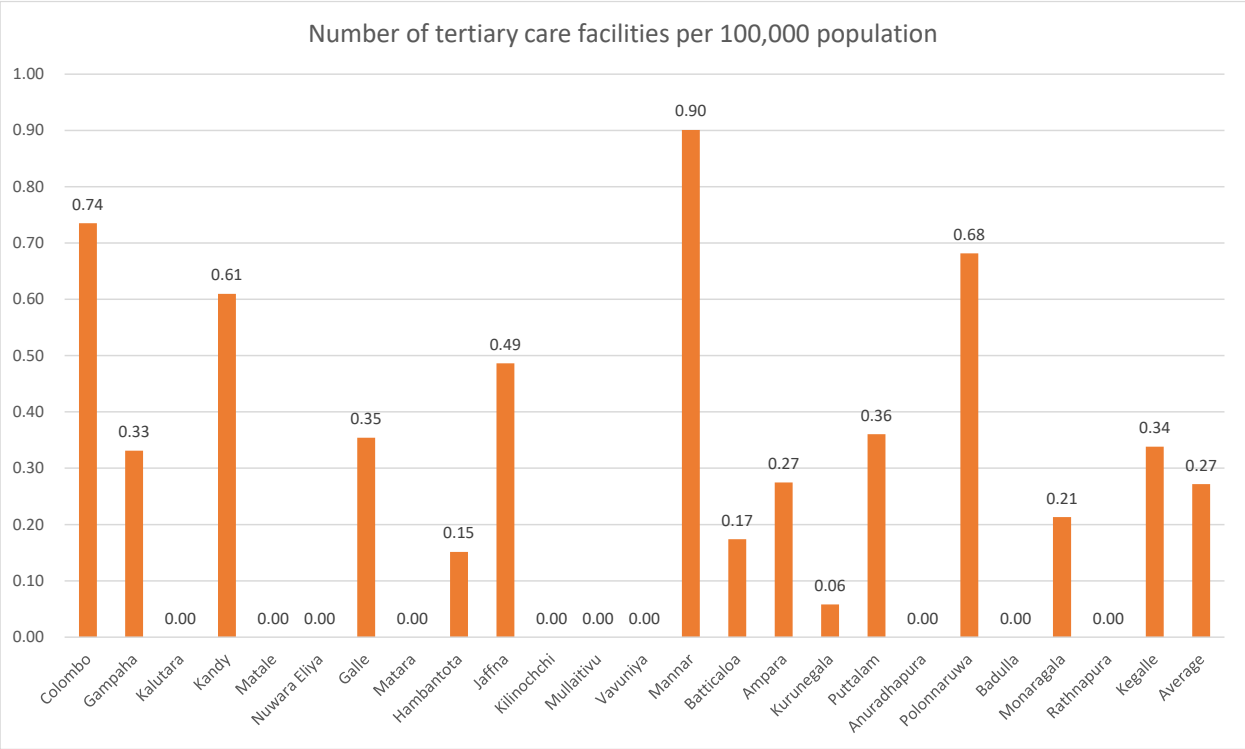


Figure 3-18 Number of tertiary medical institutions per 100,000 population (2019)

(3) Healthcare worker

Human resource development in the field of healthcare is an important issue in the National Policy on Healthcare Quality and Safety (2015) and the National Health Master Plan (2016 -2025). The most recent policy directive on health and medical human resources is the 2018 Policy on Healthcare Delivery for Universal Health Coverage (Ministry of Health), which emphasizes the need to strengthen human resources to respond to NCDs[112]. In addition, since the Sri Lankan government allows medical professionals (Physicians, nurses, radiologists, laboratory technicians, physical therapists, speech therapists, and occupational therapists) to have part-time jobs, there are many cases in which they are employed in the government sector full-time but work part-time at private medical institutions outside of working hours, and it was confirmed from the hearings of this survey that part-time jobs are common.

The total number of employees in the Ministry of Health is a little over 120,000, of which the number of employees in central ministries and hospitals is about 65000, and the number of employees in local ministries and hospitals is less than 60,000. The recruitment of staff in all public health institutions is done by the Ministry of Health. The Ministry of Health decides the transfer of doctors and staff working in hospitals under the direct control of the Ministry of Health[113].

The distribution of medical professionals in public medical institutions by region and occupation is shown below in the following table (2019)[114]. At the national level, the number of doctors (medical officers) per 100,000 population was 60.6 and the number of nurses was 214.8. By comparison, the number of doctors

112 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

113 http://www.health.gov.lk/moh_final/english/others.php?pid=92
http://www.health.gov.lk/moh_final/english/staff.php?pid=22

114 http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/AHB/AHS%202019.pdf

per 100,000 population in Japan was 246.7 (2018) and the number of nurses was 1,050 (2020)[115,116].

Table 3-6 Medical professionals by region (public medical institutions) (2019)

Area	Doctor (Medical Officer)	Nurse	Pharmacist	Laboratory technician	Radiographer	Physical therapist	Speech therapist	Occupational therapist
Colombo	3,064	9,944	416	558	218	199	30	46
Gampaha	1,310	3,840	135	119	35	62	10	23
Kalutara	588	2,223	67	77	19	16	2	3
Kandy	1,225	4,716	174	151	64	72	11	17
Matale	247	659	34	30	7	5	1	1
Nuwara Eliya	203	556	27	25	9	10	-	1
Galle	705	3,027	86	98	36	30	8	9
Matara	470	2,354	57	52	15	15	3	6
Hambantota	259	1,466	53	38	14	12	3	4
Jaffna	389	1,067	58	49	23	23	1	3
Kilinochchi	89	132	9	5	2	4	1	1
Mannar	61	166	8	8	3	3	1	-
Vavuniya	138	508	15	14	6	4	1	-
Mullaitivu	52	138	9	6	2	4	-	-
Batticaloa	288	1,257	48	43	15	17	2	5
Ampara	496	1,309	34	34	12	11	1	2
Trincomalee	237	587	31	32	15	13	1	2
Kalmunai	279	800	38	48	13	11	2	-
Kurunegala	811	2,386	104	94	32	27	4	6
Puttalam	364	758	46	48	9	9	2	1
Anuradhapura	477	2,020	71	69	19	23	2	4
Polonnaruwa	247	766	49	34	12	14	2	2
Badulla	408	1,892	81	72	20	21	2	5
Monaragala	206	661	32	36	10	8	1	2
Rathnapura	495	2,264	73	74	24	25	4	4
Kegalle	392	1,345	47	50	15	14	2	1
Total	13,221	46,841	1,802	1,864	649	652	97	148

The number of doctors working at public medical institutions per 1,000 population by region (2019) is shown in the following figure.[117] As with the number of hospital beds and hospitals, there is a significant regional disparity, with a maximum difference of nearly five times[118]. The geographic disparity of health and medical personnel will be discussed later as an issue.

115 https://www.jmari.med.or.jp/download/RE077.pdf

116 https://www.nurse.or.jp/home/statistics/pdf/toukei10.pdf Values in Japan include doctors and nurses at private hospitals.

117 http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/AHB/AHS%202019.pdf

118 Should be noted that districts with the highest – Colombo, Kandy, Galle, etc have teaching hospitals and referral centres.

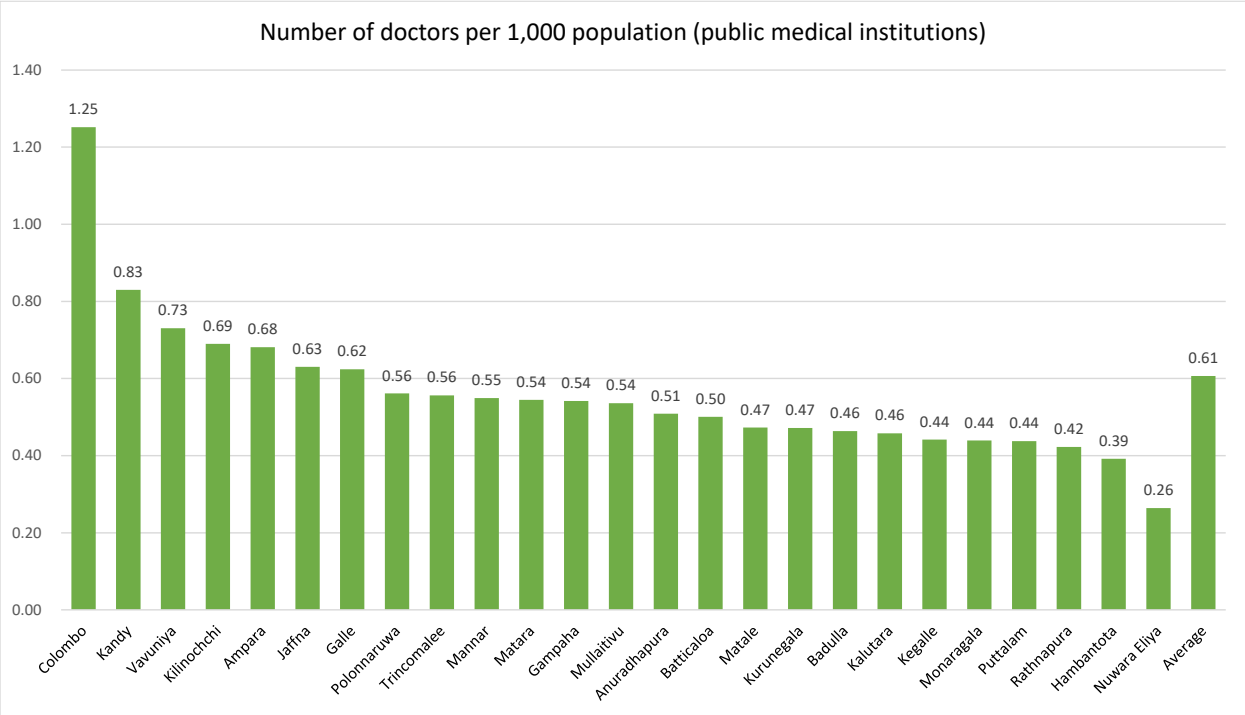


Figure 3-19 Physicians per population by region (2019)

3.2.3 Measures against NCDs

The following is a description of the main initiatives by the Sri Lankan government to improve services related to NCDs.

(1) Primary Health Care System Strengthening Project

In 2019, the Ministry of Health launched the Primary Health Care System Strengthening Project (PSSP) to strengthen NCD-related services in PHCs and began to reorganize the country's primary health care services. The project, funded and technically supported by the World Bank, focuses primarily on addressing disparities in PHC services. The program also plans to increase NCDs visits and strengthen referral systems by enrolling people in the nearest primary care provider and encouraging follow-up NCDs care. As of January 2021, 124 primary-care institutions had been partially improved, with a goal of strengthening 550 primary-care institutions by 2023.[119],[120]

(2) Health Sector Enhancement Project

The Health System Enhancement Project (HSEP), implemented between 2019 and 2023, is intended to strengthen selected primary health care institutions in the Central, North Central, Sabaragamuwa, and Uva Provinces, with special emphasis on the socially, economically, and geographically disadvantaged. The project is financed by the Asian Development Bank and comprises a concessional loan of US$37.5 million, a grant of US$12.5 million, and a counterpart contribution of US$10 million from the Government of Sri Lanka.[121]

119 https://www.worldbank.org/en/country/srilanka/

120 Ministry of Health Sri Lanka (2018) “Annual Health Bulletin”

121 https://www.hsep.lk/

The three pillars of the activities are: (1) disseminating and implementing government PHC reforms; (2) enhancing community access to PHCs; and (3) clarifying the capacity gap of public healthcare institutions in comparison with the International Health Regulations (IHR). Specific efforts include upgrading PHC facilities in target areas (including district level hospitals and primary health care centers), providing drugs and medical equipment, providing vehicles, various educational and educational activities, introducing IT-based disease surveillance, upgrading reproductive health and gender guidelines, building health administration capacity at the central and district levels, and project management and monitoring.[122]

(3) Activities of NCDs Medical Officers in Districts

Newly established in 2003, MO NCDs (Medical Officers for NCDs) are responsible for the prevention and control of NCDs in the area of the RDHS. The responsibilities of MO NCDs include planning and implementation of NCDs activities in the district, monitoring and evaluation, development of multi-sectoral partnerships, and training of health staff responsible for NCDs prevention activities in the field. As of 2021, there were 26 MO NCDs working in each district of the country. The Directorate of NCD of the Ministry of Health provides MO NCDs with regular on-the-job training based on an annual plan developed based on needs surveys.

MO NCDs are expected to develop a multi-sectoral action plan for NCDs (District NCDs MSAP) in each district and support the RDHS in prioritizing, mobilizing, and allocating funds for its implementation. Under the control of the RDHS, a District Multi-Sector Committee for the Prevention and Control of NCDs is expected to be established and serve as the secretariat. In addition, MO NCDs are expected to ensure the proper functioning of all established HLCs in accordance with national guidelines.[123]

(4) Healthy Lifestyle Center (HLC)

In response to the lack of NCDs screening services in primary care institutions, the Ministry of Health introduced Healthy Lifestyle Centres (HLCs) in 2011. The goal of the center is to identify risk factors early, provide specialized care for people at high risk for cardiovascular disease (CVD), and reduce the risk of NCDs for 40 ~ 65-year-olds. HLCs are usually located in primary health care institutions throughout the country, as well as in some secondary and tertiary care institutions. As of January 2021, there were approximately 1,000 HLCs nationwide.

In designing the HLC, MoH received evidence from two pilot projects: the WHO Package of Essential NCD Interventions (WHO-PEN) and the JICA pilot NCDs Prevention Project (NPP-JICA).[124]

The HLC is required by the Ministry of Health to conduct at least one clinic session per week, with 20 clients per session. Some HLCs have extended screening hours or even open public holidays as measures to serve the male workforce in particular. Other HLCs offer outreach clinics in their communities and workplaces.

In 2020, the Ministry of Health revised its guidance on people eligible for HLC services, and people aged 35 years or older without underlying health conditions and people aged 20 ~ 24 years with moderate risk factors became eligible for HLC screening. Participants are invited to participate in the HLC service through notification, publicity, and government field personnel at the hospital's outpatient contact.

The HLC offers a standard comprehensive package that screens for anthropometric measurements such as blood pressure, blood glucose, cholesterol, weight, height, waist circumference, and behavioral risk factors such as unhealthy eating, lack of physical activity, and tobacco and alcohol consumption. Patients screened with HLC are assessed for 10 year CVD risk using the WHO/International Society of Hypertension risk

122 https://www.hsep.lk/

123 Ministry of Health of Sri Lanka and World Health Organization “Review on the National NCD Prevention and Control Programme in Sri Lanka” (2021)

124 Ministry of Health of Sri Lanka and World Health Organization “Review on the National NCD Prevention and Control Programme in Sri Lanka” (2021)

prediction chart. Citizens diagnosed with NCDs are referred to medical centers for further evaluation and treatment, and citizens with a CVD risk greater than 30% within 10 years are also referred to specialized medical centers. Other citizens are managed by lifestyle level and are asked to visit HLCs regularly for rescreening based on the status of CVD risk and intermediate risk factors.[125] HLC also provides screening for breast and oral cancer. They also provide advice on lifestyle changes and counseling on quitting smoking. In addition, a Personal Medical Record (PMR) is issued to all medical examinees to document findings and provide further follow-up.

At HLC, medical officers run the facility with the help of nurses and health assistants. The staff is trained by MO NCDs to provide services based on the Ministry of Health guidelines. The MO NCD also oversees and coordinates the activities of regional HLCs.

The HLC has a web-based information management system that allows monitoring and evaluation of the NCDs screening program in the HLC. Currently, the monitoring and evaluation of HLC functions is conducted by the Ministry of Health at the quarterly and annual review meetings at the national and provincial levels.

(5) Workplace health checkup/screening

Workplace health checkup or screening was introduced by the Ministry of Health in 2020 to increase the participation of male in screening. As a first step, the screening was conducted for staff members of all medical institutions. Heads of medical institutions have been instructed to conduct annual NCDs screening of all staff. Staff members determined to require further evaluation and follow-up at screening are referred to the nearest HLC or medical institution.[126] The Ministry of Health and WHO have identified the lack of trained full-time staff to conduct workplace examinations as a problem in improving the scope and quality of the service.[127]

(6) Medical education

There are now 10 medical schools throughout Sri Lanka, and both undergraduate and postgraduate courses are provided free of charge. The Colombo Medical School, the most prestigious of these, was established in 1870 and became the medical school of the University of Ceylon when it was established in 1972. By 1978, the University of Ceylon became the University of Colombo. The Postgraduate Institute of Medicine (PGIM) at the University of Colombo currently offers postgraduate diploma, master's degree and MD programs.[128]

In order to be employed as a medical officer of a public medical institution, a person who has obtained a medical license is required to register with the Sri Lanka Medical Council after obtaining the license. To be certified as a specialist, a person must have a postgraduate degree (MD or MS) in a specific field and undergo overseas training.[129]

(7) Assess service availability and responsiveness

The Ministry of Health, in collaboration with WHO and the Global Fund, conducted a Service Availability and Readiness Assessment (SARA) in 2017 to assess the availability and readiness of services for general health services and key health sectors, including key NCDs. The study sampled 755 medical centers from

125 D Mallawaarachchi (2016) "Healthy Lifestyle Centers: a service for screening noncommunicable diseases through primary health-care institutions in Sri Lanka" Ministry of Health Sri Lanka (2018) "Annual Health Bulletin"

126 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

127 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

128 GMFR "Medical schools"

129 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

all medical centers in Sri Lanka (including primary, secondary, tertiary, HLC, and private hospitals). SARA's findings were published in a report that is used to inform policy and strategy planning for health service delivery.

NCDs-specific services were evaluated for diabetes, cardiovascular disease, chronic obstructive pulmonary disease, and chronic kidney disease in four areas: (1) guideline development and staff training; (2) equipment; (3) diagnostics; and (4) medicines/consumables. The study found that service availability was higher in tertiary, secondary, and primary care settings in that order.[130] The results of the evaluation of NCDs-related services in primary, secondary, and tertiary medical institutions and HLCs are summarized below.

- HLC

The study covered 189 HLCs in different regions of the country. The results showed that diabetes screening and diagnosis services were available for 97% of HLCs and that 92% of HLCs provided cardiovascular screening and/or diagnosis services. 71% provided blood pressure monitoring, 71% provided nutritional counseling, and 70% provided advice and support for quitting smoking. Based on the findings, it was recommended that HLC screening and the ability to manage risk factors for NCDs should be further enhanced through facility development and health staff training.

- Primary medical institution

A survey of a sample of 252 primary care institutions found that capillary blood glucose testing was available in 91% of the institutions, whereas venous blood glucose testing, which provides more reliable and accurate measurements, was available only in 39% of district hospitals. Screening for diabetic nephropathy, neuropathy, and retinopathy was feasible in 45%, 41%, and 29% of the primary medical institutions, respectively. The preparation situation of guideline and training on the diabetes mellitus management was low with 60 points out of 100 points. Services for screening and diagnosis of cardiovascular disease were available in 86% of primary care settings, whereas facilities for management of cardiovascular disease were available in only 56%. Overall preparedness for the management of high CVD risk was 75 out of 100 in primary care settings.

- Secondary and tertiary medical institutions

The sample survey was carried out for 50 secondary medical institutions and 41 tertiary medical institutions. With regard to the availability of services for diabetes screening or diagnosis, all secondary and tertiary institutions were found to have facilities for screening capillary specimens, and all tertiary (100%) and the majority of seconary (96%) institutions had facilities for venous blood glucose testing. Dyslipidemia testing services were available in the majority (86%) of tertiary care providers and in only 46% of secondary care providers. The availability of screening services for complications such as diabetic retinopathy, nephropathy, and peripheral neuropathy was very high (94 - 97%) in tertiary institutions, compared with 80 - 86% in secondary institutions.

The readiness scores for NCDs-related services by institution type in the survey are as follows.[131]

130 http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/2019/SARASriLanka2017REPORT.pdf

131 http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/2019/SARASriLanka2017REPORT.pdf

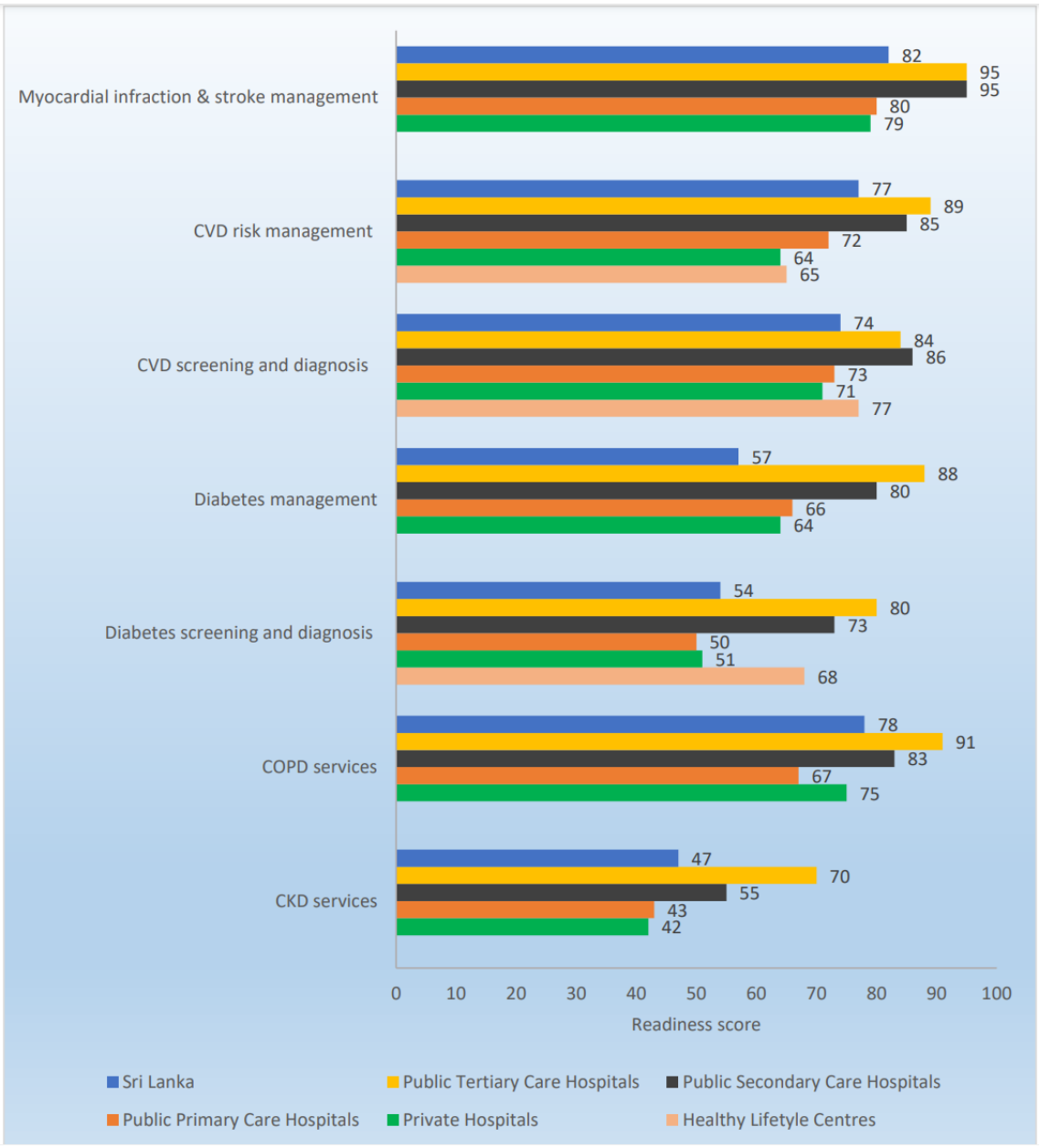


Figure 3-20 Results of Service Availability and Readiness Assessment for NCDs

3.2.4 Certification and procurement of pharmaceuticals and medical devices

The Ministry of Finance issues guidelines for the procurement of pharmaceuticals and medical devices by public medical institutions, while private medical institutions procure authorised medical devices at their discretion.[132] Public institutions supply 52% of drug sales, but private medical institutions supply 76% of the amount due to differences in unit prices. The U.S. Department of Commerce's International Trade Administration, as a reference for U.S. companies to promote exports, states that it is important to note that private hospitals in Colombo have the latest equipment (diagnostic equipment, operating room equipment, intensive care equipment, laboratory equipment, and blood testing equipment) and prefer international

132 Guidelines for Procurement of Pharmaceuticals & Medical Devices (https://www.msd.gov.lk/files/publications/CDDA%20act.pdf)

brands, and that medical equipment suppliers employ local agents with medical experience and maintain good relationships with both public and private medical institutions.[133]

For certification and registration, an authorized domestic importer applies for new drugs or medical devices to the National Medicines Regulatory Authority of the Ministry of Health (NMRA). After a paper-based pharmacological evaluation, the determinants of quality (Starting materials, formulations, manufacturing processes, control of intermediate and final products, packaging, stability, and bioequivalence data) should be determined by a pharmaceutical evaluation. Medical devices are reviewed for providing and updating product information, addressing potential end-user adverse effects, quality control and packaging, and the agent (Market Authorization Holder) is responsible for quality, safety and price competitiveness.[134]

The organization of the NMRA is outlined below.[135]

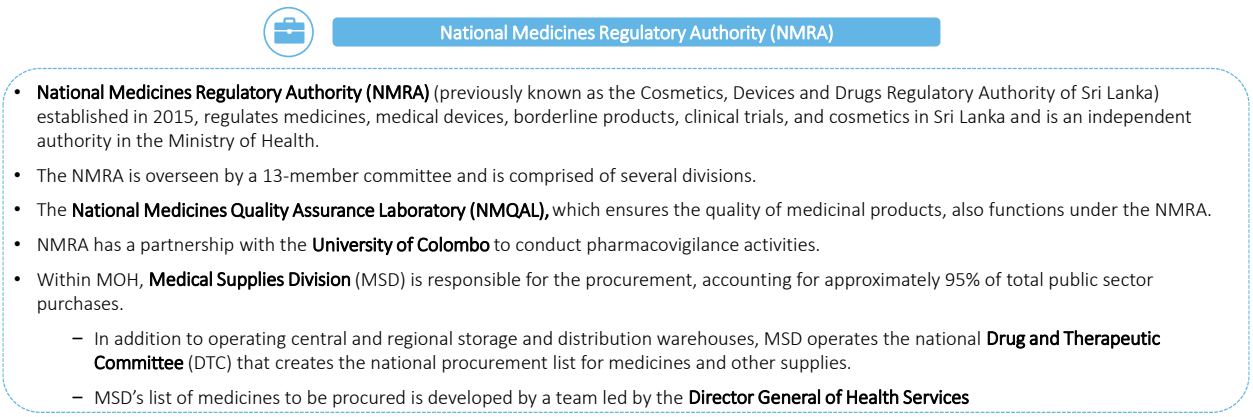


Figure 3-21 Overview of NMRA

The main organizations involved in drug procurement for the public madical institutions are as follows:

133 International Trade Administration "Sri Lanka Pharmaceuticals" (https://www.export.gov/apex/article2?id=Sri-Lanka-Pharmaceuticals-Medical-Equipment)

134 https://nmra.gov.lk/index.php?option=com_content&view=article&id=350:register-your-product&catid=35&Itemid=302&lang=en

135 Rangi Wilewardana (2013) "Applicability of Lean healthcare in Sri Lanka Healthcare Supply Chains"
NMRA "About NMRA" https://nmra.gov.lk/index.php?option=com_content&view=article&id=90&Itemid=168&lang=en
Anya Guyer (2021) "Procurement of Medicines in Sri Lanka: A Case Study

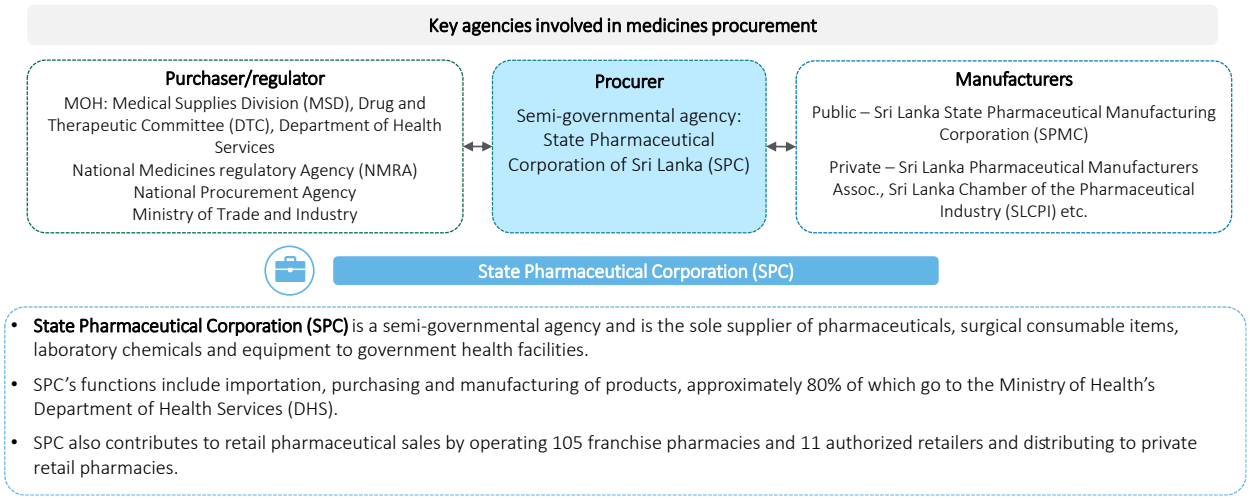


Figure 3-22 Key organizations involved in drug procurement

3.2.5 Issues related to policy implementation and service delivery

Despite the government's efforts to prevent and control NCDs in Sri Lanka, resource constraints and a shortage of skilled medical personnel are challenges in improving the situation regarding NCDs. Specific issues related to policy implementation and service delivery identified through desktop surveys and interviews with local healthcare professionals include the following:

(1) Uneven distribution of medical personnel

In Sri Lanka, disparities in the geographic distribution of healthcare resources are a problem for all categories of staff. The annual statistics of the Ministry of Health (2018) show a large unequal distribution of medical officers in the country, even taking into account the residential population and distribution of teaching/specialized institutions.[136] In response, the government has instituted a policy of student recruitment through district allocation with special consideration for rural areas[137], the establishment of a national medical school, the recruitment of nurse and paramedical staff categories covering almost all states, increase of the number of medical faculties and the compulsory appointment of medical officers for interns and post-interns in relatively underserved areas.[138]

In addition, although the number of doctors and nurses has been increasing in recent years, there has been a serious shortage of pharmacists, physiotherapists, medical laboratory technicians, and specialists (heart disease, tumors, and geriatric diseases), and in 8 states other than the Western Province, the number of specialists (excluding general surgery, obstetrics and gynecology, pediatrics, and anesthesiology) is less than 10 for a population of 1 million ~ 2.5 million. The uneven distribution of specialists may reflect the concentration of budgets in secondary and tertiary medical institutions.[139] WHO also pointed out that the lack of professional and personal support and opportunities for appropriate technical improvement in rural areas, as well as the shortage of nurses (an estimated shortage of 15,000 in 2019) were caused by the lack of facilities in nursing schools, poor working conditions, low wages, and insufficient career development.[140] The Ministry of Health has established a dedicated Human Resources Coordination Unit

136 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

137 They are not bound to serve in the district from which they are allocated

138 https://apo.who.int/publications/i/item/sri-lanka-health-system-review

139 https://documents1.worldbank.org/curated/en/306851530329751047/pdf/Project-Appraisal-Document-PAD-Sri-Lanka-Primary-Health-Care-System-Strengthening-Project-P163721-002-06082018.pdf

140 WHO "Sri Lanka Case Study on Health Workforce Rural Retention" (https://apps.who.int/iris/rest/bitstreams/1302417/retrieve)

(HRCU) to streamline human resources coordination and has formulated plans for staffing, but this has not resolved the uneven distribution of medical personnel.[141]

(2) Undeveloped referral system

Sri Lanka has many public health facilities ranging from state-of-the-art tertiary care facilities to specialized hospitals. However, the treatment department does not have an adequate referral system in place and patients are free to visit any facility. Primary care providers may refer patients to secondary care providers, but there is little follow-up or data sharing.[142]

It is also common for patients who consider their symptoms to be serious or who think that they can receive better services from secondary or tertiary medical institutions than primary medical institutions, resulting in overcrowding of secondary or tertiary medical institutions and underutilization of primary medical institutions.[143] Although Shared Care Cluster System[144] have been introduced among public medical institutions in Sri Lanka, the Ministry of Health and WHO point out that inadequate operation of referral and reverse referral systems and the lack of a formal system obligated to patients are the main causes of overcrowding in secondary and tertiary care institutions and their service degradation. In JICA's past technical cooperation project reports, the shortage of tertiary medical institutions and the lack of referral functions have been pointed out.[145]

In addition, according to a survey conducted by the Sri Lanka Institute of Policy Studies, the reasons for going directly to the secondary or tertiary medical institutions are explained as follows: the primary medical institutions are crowded, the referral from the primary medical institutions does not give priority to the treatment at the secondary medical institutions, and the secondary and tertiary medical institutions are actually better equipped with facilities and equipment.[146]

(3) Financial restriction

In Sri Lanka, as explained above, the total medical expenditure has increased more than 7 times in 20 years. However, the government budget has not kept up with the increase, and the burden on the people has become heavier with the out-of-pocket financial burden being more than 50% of the total expenditure. Currently, Sri Lanka's OOP share in health expenditure is higher than the average for Southeast Asian countries and lower-middle income countries. As the need for medical care for NCDs increases, the need for sophisticated intervention is also increasing. In Sri Lanka, the number of people aged 60 and over is expected to nearly double between 2011 and 2041, and funding for NCDs is expected to continue to increase.[147]

It has been pointed out that the increasing burden of diseases related to NCDs has led to disparities in healthcare financing.[148] The Ministry of Health and WHO have analyzed the causes of situations in which government health budgets are not commensurate with needs as follows.[149]

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[141]Ministry of Health of Sri Lanka and World Health Organization “Review on the National NCD Prevention and Control Programme in Sri Lanka” (2021)

142 Ministry of Health of Sri Lanka and World Health Organization “Review on the National NCD Prevention and Control Programme in Sri Lanka” (2021)

143 Ministry of Health, Nutrition and Indigenous Medicine Sri Lanka (2019) “Sri Lanka Essential Health Services Package

144 In Sri Lanka, the Cabinet approved the "Policy on healthcare delivery for universal health coverage" in 2018. Based on this policy, the "Shared Care Cluster System" was introduced. Under this system, apex specialized hospitals, geographically surrounding primary care curative divisional hospitals and primary medical care units (both are called PMCI) are clustered. In the cluster referral system between different -level medical institutions to enable to ensure continuum of care between primary and specialist services.

145 https://libopac.jica.go.jp/images/report/12303772.pdf

146 https://www.ips.lk/wp-content/uploads/2018/07/Health-Care-Financing-in-Sri-Lanka.pdf

147 https://www.ips.lk/wp-content/uploads/2018/07/Health-Care-Financing-in-Sri-Lanka.pdf

148 Senaratne, R., & Mendis, S. (2019). Prevention and control of noncommunicable diseases: Think globally, act locally; lessons from Sri Lanka.

149 Ministry of Health of Sri Lanka and World Health Organization “Review on the National NCD Prevention and Control Programme in Sri Lanka” (2021)

- Growing medical needs

The increasing need for health care due to the accelerating aging of the population, the increasing burden of NCDs, and the increasing demand for expensive, high-quality health care services have increased the demand for health care financing.

- Inadequate government revenue

The WHO study suggests that relatively low health budget is mainly due to inadequate government revenues. A 2021 recommendation by the President's Finance Committee also emphasized that government revenues are very low compared to current expenditures. In the wake of the COVID-19 crisis, there are concerns about the impact of a further decline in government revenues.

- Budget allocation inefficiency

Only 3% of the health budget goes to preventive services (including non-NCDs), while 73% goes to treatment services (ibid) (2016).[150] Given the increasing burden of chronic NCDs coupled with an aging population, a greater focus on preventive health services may be appropriate, but no fundamental changes have been made.

- Delay or lack of flexibility in spending allocated budgets

At both national and local levels, delays in disbursement of allocated budgets are recognized as a major problem with health care financing. These delays prevent activities from being carried out as planned and in a timely manner, making it difficult to utilize funds at the end of the fiscal year. As a result, it has affected the fiscal forecast for the next fiscal year, leading to a vicious cycle. In addition to the many cumbersome processes involved in the procurement process, there are delays in approvals and processing, which hinder the timely use of budgets. In addition, even when budgets are available, there is a lack of flexibility to mobilize allocated funds for various activities under strict financial regulations, making it difficult to effectively use funds for priority activities that are most needed.[151]

(4) Issues of HLC and its screening

The following issues related to the operation of HLCs and the implementation of their activities have been identified in studies by the Ministry of Health and WHO.[152]

- Gaps in the geographic distribution of HLCs

HLC is underserved in urban (Municipal Council areas) and estate (plantation) areas. In particular, the use of HLCs in Colombo was particularly low, as the number of primary healthcare facilities per population was among the lowest in the country.

- Low coverage of HLC services

A review of the literature on the evaluation of HLC function and an analysis of data from the HLC service indicate that the coverage of HLC screening for NCDs continues to be lower than expected. According to the survey conducted in 2020, the annual screening rate was only about 7~10% among the target population[153] (people aged 35 or older with no underlying health conditions and people aged 20 ~ 24 with moderate risk factors). Among the target population, the participation rate of men in particular was low, with about 25% of all participants being men, mainly because HLC's working days and hours are inconvenient for the men who work during the day.

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150 https://apps.who.int/iris/rest/bitstreams/1354526/retrieve The remaining 14% goes to medical equipment, 6% to ancillary services, and 0.1% to rehabilitation services.

151 Ministry of Health of Sri Lanka and World Health Organization “Review on the National NCD Prevention and Control Programme in Sri Lanka” (2021)

152 Ministry of Health of Sri Lanka and World Health Organization “Review on the National NCD Prevention and Control Programme in Sri Lanka” (2021)

153 However, the emphasis remains on quality, not quantity.

In addition, HLC service package has been defined, and some guidelines on the service package have been introduced, and NCDs screening manual has been introduced. However, some pointed out that the service should be expanded to examination of diseases such as gestational diabetes and pregnancy-induced hypertension which have high demand but are not currently included.[154]

- Method of approaching target population

HLCs primarily conduct screening by approaching patients who visit outpatient clinics for treatment of other illnesses, etc., and systematic approach has not been conducted, which is pointed out by many stakeholders as a major challenge It is hoped that the ongoing registration of residents at primary health care facilities will lead to improved approach to those eligible for screening in the future. In addition, the Primary Healthcare System Strengthening Project (PSSP), implemented by the Ministry of Health with support from the World Bank, has set a goal of 25% of the population over 35 years of age to be screened for CVD risk annually at HLCs, and the project's efforts will help to increase the uptake of HLC services, especially for men.

- Problems in coordinating follow-up and referral sources

Patients with negative NCDs screening but with a moderate-to-high CVD risk following screening should be followed up regularly in accordance with management procedures at the HLC. However, there is no systematic way or mechanism to contact these patients.

- Lack of public awareness of HLC

Qualitative data collected in a Ministry of Health survey revealed that the general public does not have adequate knowledge of HLC and the services provided. This was cited as a major reason for the low screening rate and underscored the need for a well-planned and robust public relations campaign.

- Absence of HLC professional staff

The absence of Medical Officer dedicated to run the HLC is a major challenge in the continuous provision of quality services. Primary medical institutions have limited human resources (medical officer, nurse, assistant), and the majority of PMCUs are operated without a nurse per medical officer. HLC staff are also trained for screening services through training programs, but lack of staff often forces untrained staff to respond, affecting the quality of NCDs screening and lifestyle improvement services.

- Inadequate monitoring and evaluation of HLC services

The HLC implementation rules require the MO NCDs to oversee six HLCs per month, but there are gaps in implementation. The main barriers to supervision is lack of transport, according to the Ministry of Health.

(5) **Shortage of skilled medical personnel**

In Sri Lanka, the number of healthcare workers (HCWs) has been increasing relatively steadily. In 2005, there were 2.2 HCWs (including doctors, nurses, and other licensed professions) per 1,000 population. In 2015, there were 3.7 HCWs per 1,000 population. The ratio of HCWs to the population has increased by about 70% in 10 years. In addition, Sri Lanka has 33 skilled health workers (doctors, nurses and midwives) per 10,000 population, which is close to the WHO minimum of 34.5 in the context of universal health coverage.[155]

On the other hand, the National Health Strategy Master Plan 2016 -2025 states that in order to improve the prevention and management of NCDs programs, training needs to be particularly strengthened as there is still a shortage of skilled medical personnel for advanced technical treatment of NCDs and trained staff for

[154] Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

155 https://apps.who.int/iris/rest/bitstreams/1354526/retrieve

rehabilitation care.[156] An investigation by the Ministry of Health and WHO in 2021 also found that there was a shortage of staff in primary health institutions and that medical officers were overburdened to provide quality NCDs services and that the shortage of staff made it difficult for busy institutions to adhere to treatment protocols.[157]

(6) Lack of patient information systems

In Sri Lanka, only a few hospitals are using digital patient record systems and many still maintain paper-based patient records. As a result, records are not complete, unavailable for patient follow-up or for evaluation of services provided by hospitals. Furthermore, it has been pointed out that the transport of paper records to each service point is often left to the patient and the risk of loss is high.[158]
In addition, although there are data on inpatient illness and death reports (IMMR: Indoor Morbidity and Mortality Record) that classify and report the main diagnoses of hospital deaths that occurred in public health facilities, the usefulness of the available data is limited because outpatients in public hospitals and both outpatients and inpatients in private hospitals are not covered, and there are cases in which the quality of reports is high due to insufficient medical records and statistical staff.[159]

(7) Vulnerability in the diagnostic and therapeutic service

A study conducted by the Ministry of Health in 2017 revealed that 20% of secondary and tertiary care hospitals do not have diagnostic facilities to assess chronic complications of diabetes, and tertiary care facilities have limited facilities to perform essential tests, with only about 25% having facilities to perform HbA1c testing, for example. This is because a list of NCDs diagnostic equipment that should be available at each institution is not available for secondary and tertiary institutions.[160]

Due to the shortage of these diagnostic facilities, the diagnostic service, which is a prerequisite for measures against NCDs, is vulnerable. In addition, not all services are readily available in public healthcare facilities due to waiting lists and limited access to the necessary expertise, equipment, and medications. In recent years, for example, more than 5,000 people have been reported to be waiting to undergo cardiac surgery.[161]
In addition, because higher-level medical facilities are concentrated in areas with large populations, and some treatments cannot be provided at public primary and secondary hospitals, patients in areas with few higher-level medical facilities have limited access to services. For example, insufficient number of stroke care units and limited opportunities for neurorehabilitation are major challenges in stroke care.
Interventions such as cardiac catheterization are performed only at some tertiary care centers, and it has been noted that patients may be delayed in arriving at these centers within an hour of onset to receive standard care.[162]

3.3 Private market

3.3.1 Private health care delivery system

(1) Number of medical institutions

According to the Medical Statistics Division of the Ministry of Health, there were 181 private hospitals

156 http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/HMP2016-2025/Health%20%20Admin%20-%20%20HRH.pdf

157 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

158 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

159 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

160 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

161 https://www.ips.lk/talkingeconomics/2013/04/08/why-public-private-partnerships-might-be-the-answer-to-sri-lankas-struggling-health-care-sector/

162 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

(including unregistered institutions) in Sri Lanka as of 2017. These private hospitals have a total of 4,686 beds, which is about 5.3% of all hospital beds available in Sri Lanka. Demand for private healthcare is expected to increase, driven by Sri Lanka's aging population, rising wealth, and rising NCDs.

As shown in the figure below, in terms of the geographical distribution of medical institutions, Colombo-Gampaha Province accounted for 45% of the total number of private medical institutions in 2017.[163] There are no private medical institutions in the provinces of Kilinochchi, Mullaittivu, Mannar and Nuwara Eliya.

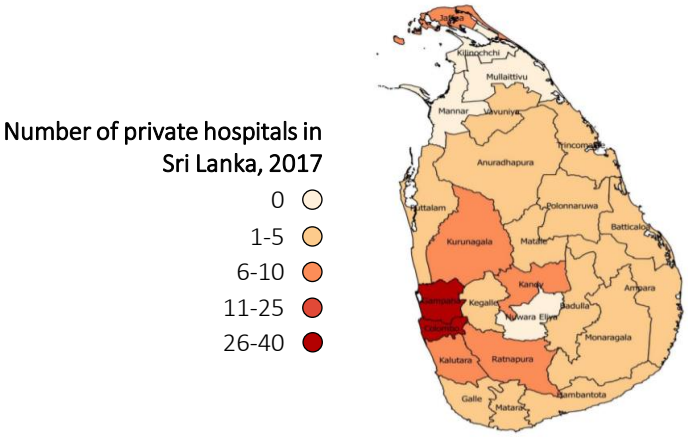

Figure 3-23 Number of private hospitals in Sri Lanka (2017)

(2) Distribution of medical institutions

The tables below show the number of medical institutions in Sri Lanka.[164],[165] Private healthcare is concentrated in areas with high disposable income for health care, such as the Western Province, Colombo District, and other major urban areas.

163 Oxford Business Group "Demographic and disease trends drive demand for private health care in Sri Lanka (https://oxfordbusinessgroup.com/overview/fitter-equilibrium-demographic-and-disease-shifts-drive-demand-private-care) "
Ministry of Health (2019) "Basement Report of the Institution Frame of Private Sector of Western Medicine and State Indigenous Medicine Sector"(http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/2019/Private%20and%20indigenous%20medicine%20report%202017.pdf)

164 Ministry of Health (2019) "Basement Report of the Institution Frame of Private Sector of Western Medicine and State Indigenous Medicine Sector" (http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/2019/Private%20and%20indigenous%20medicine%20report%202017.pdf)

165 Ministry of Health (2019) "Basement Report of the Institution Frame of Private Sector of Western Medicine and State Indigenous Medicine Sector" (http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/2019/Private%20and%20indigenous%20medicine%20report%202017.pdf)
City Population "Sri Lanka: Administrative Division"(https://www.citypopulation.de/en/srilanka/prov/admin/)

Table 3-7 Geographic distribution of the number of private medical institutions

District	Private hospitals	Clinics	Out-patient service	Blood bank	Ambulance service	Laboratories	Hospital beds
Colombo	37	20	34	9	23	27	2314
Gampaha	26	12	26	2	16	20	672
Jaffna	10	8	10	0	8	8	241
Kalutara	9	2	9	0	5	7	211
Kandy	9	1	9	0	5	8	331
Kurunegala	7	2	7	0	5	7	167
Ratnapura	6	1	6	0	4	5	137
Galle	5	2	5	0	4	5	120
Puttalam	5	2	5	0	5	4	99
Matara	4	0	4	0	3	3	95
Kegalle	4	1	4	0	2	4	46
Batticaloa	3	0	3	0	2	3	43
Kalmunai	3	0	2	0	0	2	19
Matatle	2	0	2	0	0	1	29
Hambantota	2	0	2	0	1	2	33
Trincomalee	2	1	2	0	1	2	24
Anuradhapura	2	1	2	0	1	0	21
Vavuniya	1	0	1	0	0	1	15
Ampara	1	0	1	0	1	1	25
Polonnaruwa	1	1	1	0	1	1	7
Badulla	1	0	1	0	0	1	13
Monaragala	1	0	1	0	1	1	24

Table 3-8 Health resources in Sri Lanka (per 100,000)

District	Private hospitals per 100,000 people	Clinics per 100,000 people	Ambulance services per 100,000 people	Laboratories per 100,000 people	Hospital beds per 100,000 people	Specialists per 100,000 people	Medical officers per 100,000 people	Nurses per 100,000 people
Colombo	1.5	0.8	1.0	1.1	96.4	2.1	12.8	127.6
Gampaha	1.1	0.5	0.7	0.8	28.4	0.3	2.0	39.8
Jaffna	1.6	1.3	1.3	1.3	39.7	0.0	1.2	35.9
Kalutara	0.7	0.2	0.4	0.6	16.8	0.7	0.6	14.5
Kandy	0.6	0.1	0.3	0.6	22.8	0.1	0.2	23.1
Kurunegala	0.4	0.1	0.3	0.4	9.9	0.5	0.7	10.1
Ratnapura	0.5	0.1	0.3	0.4	11.9	0.0	0.0	10.2
Galle	0.5	0.2	0.4	0.5	10.8	0.0	0.8	36.4
Puttalam	0.6	0.2	0.6	0.5	12.1	0.0	0.5	12.2
Matara	0.5	0.0	0.4	0.4	11.2	0.0	3.9	15.8
Kegalle	0.5	0.1	0.2	0.5	5.3	0.0	0.5	4.7
Batticaloa	0.5	0.0	0.4	0.5	7.6	0.4	0.2	3.7
Kalmunai	2.7	0.0	0.0	1.8	17.2	0.0	0.9	4.5
Matatle	0.4	0.0	0.0	0.2	5.7	0.0	0.4	2.7
Hambantota	0.3	0.0	0.2	0.3	5.1	0.0	0.5	7.8
Trincomalee	0.5	0.2	0.2	0.5	5.7	0.2	0.2	1.7
Anuradhapura	0.2	0.1	0.1	0.0	2.3	0.0	0.0	1.5
Vavuniya	0.5	0.0	0.0	0.5	8.0	0.0	1.1	2.7
Ampara	0.1	0.0	0.1	0.1	3.5	0.0	0.1	2.1
Polonnaruwa	0.2	0.2	0.2	0.2	1.6	0.0	0.2	3.0
Badulla	0.1	0.0	0.0	0.1	1.5	0.0	0.0	2.1
Monaragala	0.2	0.0	0.2	0.2	4.9	0.0	0.2	3.1

(3) Classification of health care workers by industry

As shown in the table below, Sri Lanka has a higher level of per capita medical resources than private medical institutions, because the budget for public medical institutions is provided by the government every year.[166] The WHO criteria for medical resources per population are "310 hospital beds per 100,000 people"

166 Ministry of Health (2019) "Basement Report of the Institution Frame of Private Sector of Western Medicine and State Indigenous Medicine Sector"

and "170 doctors per 100,000 people". Sri Lanka meets the criteria for the number of hospital beds, however, the number of doctors per population is not ideal.

Table 3-9 Comparison of medical facilities and personnel per population

Per 100,000 population	Public healthcare sector	Private healthcare sector	Overall healthcare sector
Hospitals	2.9	0.65	3.6
Patient beds	389.1	21.9	415
Specialist and Medical officers	85.2	2.5	92.8
Nurses	198.2	27.5	218

(4) Geographic classification of health care workers

In 2017, there were a total of 19,848 health care workers in the private sector, classified as specialists, medical officers (MOs), dentists, nurses, emergency medical staff, attendants, and other health care personnel, as shown in the following figure.[167] The private health sector accounts for 14.2% of the health workforce in Sri Lanka.

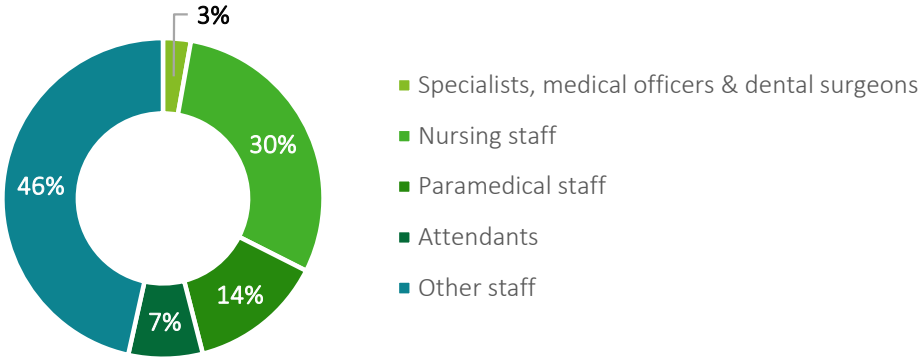

Figure 3-24 Breakdown of private sector health workers in Sri Lanka (2017)

According to data from 2017, more than 80% of physicians in private medical institutions work part-time, while more than 90% of nursing staff and health care workers (other than physicians and nurses) work full-

(http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/2019/Private%20and%20indigenous%20medicine%20report%202017.pdf)

Statistic Data "Distribution of government medical institutions and beds by regional director of health services division

(https://data.worldbank.org/indicator/SH.MED.BEDS.ZS?locations=LK)

The World Bank "Hospital beds (per 1,000 people) – Sri Lanka

(http://sis.statistics.gov.lk/statHtml/statHtml.do?orgId=144&tblId=DT_HEA_ANN_117&conn_path=I2)

167 Ministry of Health (2019) "Basement Report of the Institution Frame of Private Sector of Western Medicine and State Indigenous Medicine Sector"

(http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/2019/Private%20and%20indigenous%20medicine%20report%202017.pdf)

time. Major private hospitals conduct training at its own training institute before starting work.[168] Another major category of health personnel in the private sector is general practitioners who provide outpatient services to the community and are believed to be responsible for the majority of private primary outpatient care.[169] The majority of medical practitioners are those working part-time at public medical institutions. About 600 full-time practitioners are registered with the Private Health Services Regulatory Council (PHSRC). Although small in number, the growing need for at-home palliative care services has led to private providers offering at-home care for a fee.[170]

The Private Health Services Regulatory Council (PHSRC), established under Section 21 of the Private Medical Institutions Registration Act of 2006, is expected to develop standards to ensure the quality of services, including minimum qualifications for the recruitment of medical staff and minimum standards for training, and to monitor registered private medical institutions, but has been criticized for not fulfilling this function.[171]

3.3.2 Private health care market

(1) Size and characteristics of the private health care market

Regarding private sector health care expenditure, the private sector expenditure in 2019 was 247.23 billion LKRs (51% of total health care costs and 1.6% of the national GDP), which was approximately 107.8 billion yen. In addition, the majority of private health care expenditures are out of pocket, followed by private insurance and employers' expenditures for employee health care. The figure below shows private medical expenses by revenue source.[172]

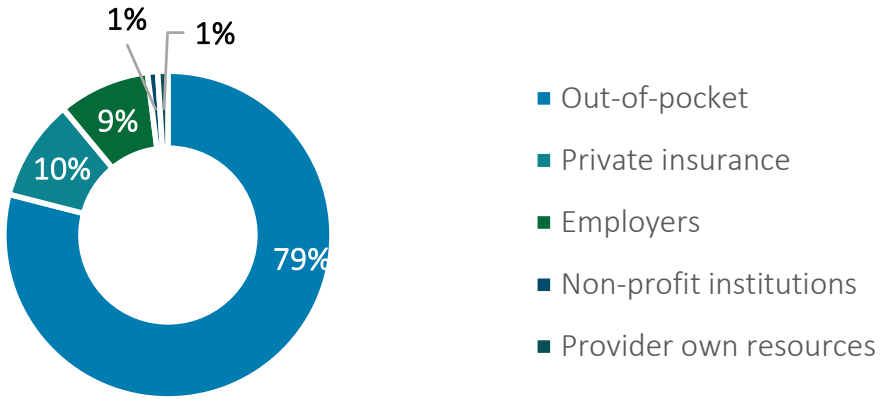

Figure 3-25 Private healthcare expenditure by source (2019)

Trends in out-of-pocket expenses and private medical insurance premiums of private medical institutions are shown in the following figure.[173] Two-thirds of patients' out-of-pocket spendings (OOPS) were payments to private hospitals and pharmacies, including consultation fees. Enrolling in health insurance has helped reduce out-of-pocket expenses. Looking at the trend of private health insurance premiums, Sri Lankans have started to subscribe to private health insurance plans to avoid the financial burden of Catastrophic Health Expenditure (CHE). In order to improve the living standards of public servants and their families throughout the country, the National Insurance Trust Fund introduced the Agrahara Insurance

168 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

169 https://apo.who.int/publications/i/item/sri-lanka-health-system-review

170 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

171 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

172 Institute for Health Policy (2021) "Sri Lanka Health Accounts: National Health Expenditure 1990 -2019 " (http://www.ihp.lk/publications/docs/HES2106.pdf)

173 Institute for Health Policy (2021) "Sri Lanka Health Accounts: National Health Expenditure 1990 -2019 " (http://www.ihp.lk/publications/docs/HES2106.pdf)

Scheme in January 2006, with the aim of improving the living standards of public servants and their families.[174] However, this insurance system has not been able to reduce the economic burden of disease treatment, and the utilization rate of the insurance system is at a low rate of 38%.

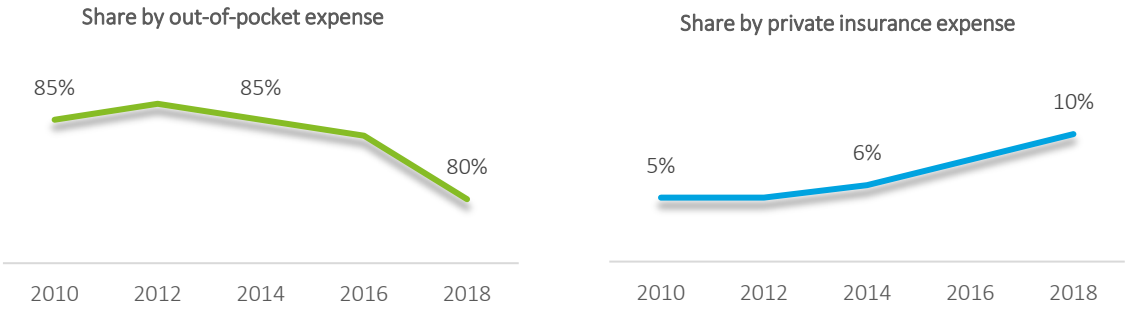

Figure 3-26 Out-of-pocket costs for private medical institutions and private medical insurance premiums

(2) Private health services and the health insurance industry

Private medical institutions in Sri Lanka provide a wide range of advanced medical support and services. Large private hospitals provide essentially all of the services listed in the table below and small and medium-sized medical centers provide their own specialty services.[175]

Table 3-10 Major services provided by private health care providers in Sri Lanka

Out-patient department (OPD)	Emergency services	Radiology services	Health screening packages
General medicine	Nuclear medicine center	Dermatology	Ambulatory services
Neurology center	Blood bank	Cancer center	Heart care center
Physiotherapy	Dental, Eye and ENT clinic	Cosmetic center	Fertility center
Channeled consultancy	Kidney care center	Urology care center	Gastroenterology

Sri Lanka has six private hospitals with cardiac catheterization facilities with independent cardiology departments. In a 2017 Ministry of Health survey of 68 private hospitals, myocardial infarction and stroke management services were available in 39% of private hospitals and diabetes screening and diagnosis services were available in 89% private hospitals.[176]

(3) Medical insurance

The medical insurance business in Sri Lanka is the second largest business segment in the general insurance business, accounting for 17.8% of the total general insurance business. The major health insurance companies are listed in the following table. Although Sri Lanka has a very low level of health insurance

174 https://nitf.lk/en/insurance.html

175 Ministry of Health (2018) "Prevention and Control of Noncommunicable Diseases" (http://192.248.16.117:8080/research/bitstream/70130/4572/1/Private%20or%20Public%20Inpatient%20Care.pdf), Lanka Hospitals "Medical & Surgical Services " (https://www.lankahospitals.com/en/medical-surgical-services/)

176 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

penetration compared to other countries in the South Asian region, the total cost of health insurance in 2020 was 18.7 billion LKRs, an increase of about 12% compared to 2019. Also, due to the aging population, there are more opportunities for insurance companies to provide medical care to the elderly by introducing attractive insurance plans. There were 29,019 health insurance policies in 2020, an increase of about 25% from the previous year. In addition, the impact of the COVID-19 crisis on the economic situation of the middle class tends to increase the demand for long-term health insurance.

Consumers' knowledge of insurance and their understanding of its value are still developing. However, in recent years, as a result of enlightenment activities and improvements in service and product development, consumer confidence in insurance and their intention to purchase insurance products have been gradually increasing. In addition, "insurance density," which is the ratio of insurance premiums to the total population of a country, has increased in the last five years, and is a positive indicator of insurance development in Sri Lanka.[177]

Table 3-11 Profile of major health insurance companies in Sri Lanka

Company	Insurance plans	Coverage	Profitability – General Insurance (Million LKRs, 2020)
Sri Lanka Insurance	Annual medical plan	Hospital expenses, surgery expenses, donor expense	4,346
Allianz	Allianz Healthcare		2,296
Ceylinco General Insurance	Suwa Sampatha	Hospitalization and surgical expenses	1,862
People's Insurance	People's Health Care Insurance	Hospital bills, medical bills, surgeries and medicines	1,670
Continental Insurance	Customized Health insurance plan	Outpatient benefits, hospital bills, emergency medical travel, dental coverage	1,084

(4) Costs and fees for private medical services

By service, outpatient clinics, related medical supplies, and dispensing services accounted for more than two-thirds of total private health spending in 2019. The growth in private health spending is due to improved quality of private sector services, enhanced channel consultation, rapid disease identification, detection, and diagnosis, and an increase in the number of affluent urban populations. Hospitalized medical services account for 21% of all private medical expenditures. In addition, medical ancillary services such as laboratory tests, radiological tests, and genetic tests account for a high percentage of 9% of all private medical expenditures. Private sector health expenditures by function or service are shown in the following table[178].

177 https://ircsl.gov.lk/wp-content/uploads/2020/09/Statistical-Review-2019.pdf

178 Institute for Health Policy (2021) "Sri Lanka Health Accounts: National Health Expenditure 1990 -2019 " (http://www.ihp.lk/publications/docs/HES2106.pdf)

Table 3-12 Private health care expenditures by service

Function/service	Total expenditure (Million LKRs) 2019	Share by private sector
Inpatient care	207,258	26%
Outpatient care	89,242	64%
Medical goods dispensed to out-patients	118,554	84%
Ancillary services to health care	32,720	69%
Preventive care	23,491	11%
Governance, heath system and administration	17,250	69%
Rehabilitative care	249	69%
Long-term care	155	69%

(5) Government subsidies

Private hospitals in Sri Lanka do not have a uniform fee system, and fees can be collected according to the demand, size, quality and location of the hospital. However, in response to public complaints about the extremely high prices set by some private hospitals, the Ministry of Health announced the following new regulations. The new regulations require private hospitals to spend 100 to 500 LKRs for routine care and 250 to 2,000 LKRs for specialist consultation. In addition, all private hospitals are required to post general medical expenses in a place where patients can easily see them.

Government subsidies and out-of-pocket subsidies for private medical services are summarized in the following figure.[179] Regarding government subsidies for private healthcare projects, in 2016, the government decided to exempt private hospitals from the 15% value-added tax. Regarding out-of-pocket subsidies, in 2017, the Ministry of Education launched "Suraksha", a free medical insurance program to provide medical benefits to students. Through "Suraksha", the government responds to students' claims for out-of-pocket medical expenses by paying premiums from the state-run Insurance Corporation of Sri Lanka. Students between the ages of 5 and 21 enrolled in all public schools, government-subsidized private schools, semi-public schools, and international schools in Sri Lanka are eligible.[180]

Government subsidy for private healthcare businesses:

- In 2016, the government's decided to exempt private hospitals from the 15% value-added tax implemented – with the notable exception of room charges – which is expected to positively affect the private health care industry

Government subsidy to aid out-of-pocket expenses:

- In 2017 the Ministry of Education launched Suraksha, a new health insurance program to provide health care benefits to students
  - Through Suraksha, the government purchases premiums from the state-owned Sri Lanka Insurance Corporation, which then reimburses parents for claims on students' out-of-pocket expenses and other benefits

Figure 3-27 Government subsidies and co-payment subsidies for private health care

(6) Government management of private medical institutions

The Private Health Services Regulatory Council (PHSRC), established pursuant to the Private Health Services (Registration) Act No. 21 of 2006 and headed by the Director of Health Services, governs private

179 Ministry of Education ""Suraksha " Student Insurance Scheme – 2018/2019" (http://moe.gov.lk/wp-content/uploads/2020/07/Circular-for-Suraksha.docx), Daily News (2019) "Regulating private sector health service charges" (https://www.dailynews.lk/2019/02/11/features/177101/regulating-private-sector-health-service-charges)

180 Ministry of Education "Suraksha Student Insurance Scheme " https://moe.gov.lk/ministry/special-projects/suraksha/?lang=si

health services. The Council was established to regulate, register, monitor and screen Sri Lanka's private medical institutions and health workers. All private hospitals, laboratories, emergency services, nursing homes and other medical institutions, regardless of their form, are required to register with the PHSRC and operate legally. In 2018, 80% of private hospitals were registered with the PHSRC.

In addition to the PHSRC, the Sri Lanka Medical Council (SLMC) monitors the level of service and discipline of medical institutions. In order to protect patients by maintaining the standard of medical institutions as a whole, the monitoring targets include medical professional organizations as well as medical schools of public universities.

The main regulatory bodies for pharmaceuticals and other dangerous substances and medical devices are the National Agency on Tobacco and Alcohol and the National Medicines Regulatory Authority (NMRA). NMRA is responsible for registration, licensing, manufacture, importation and other regulations and controls related to medical devices in accordance with the National Pharmaceutical Policy.

(7) Pharmaceutical and medical device markets

The Sri Lankan pharmaceutical market is about 642 million US dollars, of which the patent drug market is estimated to be 15 to 18%, the rest consisting of generic drugs and over-the-counter drugs.[181] The pharmaceutical industry in Sri Lanka has a short history and relies on imports for approximately 85% of the medicines used in the country, according to the Pharmaceutical Manufacturers Association of Sri Lanka (SLPMA).

With COVID-19's expansion, the Sri Lankan government aims to achieve 50% domestic production of all medicines used in the country by 2025182. The utilization rate of domestically manufactured drugs in public medical institutions is expected to increase to 24%, and the growth potential of the market is expected to continue.[183],[184],[185] The promotion of local production is generally expected to attract foreign investment in the medium to long term. However, since the domestic market in Sri Lanka is small, there is limited incentive for foreign pharmaceutical companies to invest in Sri Lanka and develop large-scale manufacturing bases. Currently, the number of foreign pharmaceutical manufacturers that manufacture these products is limited to GlaxoSmithKline plc.[186] In addition, the State Pharmaceuticals Manufacturing Corporation of Sri Lanka (SPMC), for which JICA has provided support since its establishment in 1987, jointly developed a special medical manufacturing zone in 2018 with the Malaysian investment company Pharmazone, and Indian pharmaceutical companies are planning to enter the zone.[187],[188]

In addition, as shown in the figure below, the Sri Lankan government regards self-sufficiency in pharmaceuticals as one of its priority areas, and has constructed 3 pharmaceutical zones in Anuradhapura, Hambantota, and Horana to attract investment.[189]

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181 Pharmaceuticals Export Promotion Council of India “Regulatory Market Profile of Sri Lanka” (https://pharmexcil.com/uploads/countryreports/Sri_Lanka.pdf)

182 JETRO (2021) Regional and Analysis Report (https://www.jetro.go.jp/biz/areareports/special/2021/0302/4a358ddde5fcddd2.html)

183 Buyback scheme with SLPMA, exemption from import of raw materials and production equipment for pharmaceutical production, reduction of corporate tax for pharmaceutical companies, development of special pharmaceutical zones, setting of upper retail price for pharmaceutical products, etc.

184 SLPMA (https://slpma.lk/membership)

185 International Trade Administration “Sri Lanka Pharmaceuticals” (https://www.export.gov/apex/article2?id=Sri-Lanka-Pharmaceuticals-Medical-Equipment)

186 Established Japan's first foreign-owned production base in 2012 and invested an additional $11.2 million in 2014

187 https://www.spmclanka.lk/index.php?option=com_content&view=article&id=80&Itemid=56&lang=en

188 Oxford Business (https://oxfordbusinessgroup.com/news/sri-lanka-targets-pharmaceuticals-self-sufficiency-new-production-facility)

189 Sen, A. (2021) “Sri Lanka beckons Indian pharma companies to Hambantota”

Ministry of External Affairs Government of India (2021) “Sri Lanka's Hambantota project keen on Indian pharma nvestors”(https://www.thehindubusinessline.com/news/national/sri-lanka-beckons-indian-pharma-companies-to-hambantota/article35669428.ece)

Daily Mirror Online (2021) “65-acre plot allocated to SPMC to initiate Horana pharma investment zone”(https://www.dailymirror.lk/business-news/65-acre-plot-allocated-to-SPMC-to-initiate-Horana-pharma-investment-zone/273-217499)

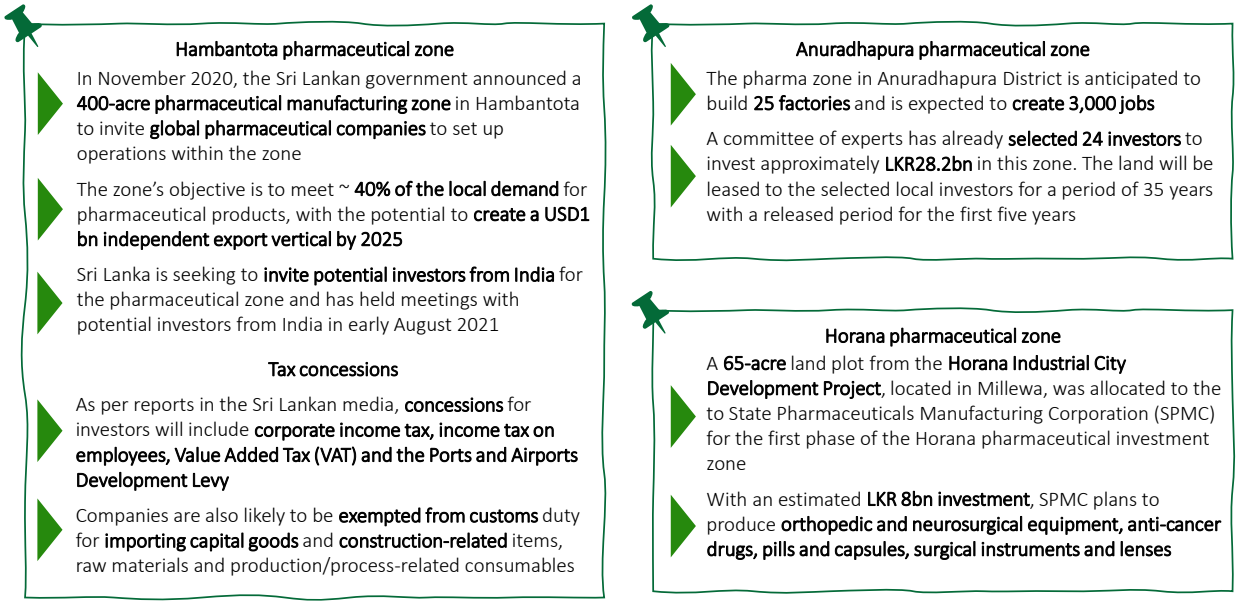

Figure 3-28 Overview of the 3 drug zones

Despite the government's efforts to promote domestic pharmaceutical manufacturing, pharmaceutical imports are projected to rise from 445 million US dollars to 545 million US dollars in 2022 due to the growing domestic medical needs. Importers include India (60%), China (10%), Pakistan, Britain, the United States and France.[190,191]

The Government of Sri Lanka is promoting the use of generic drugs and plans to significantly reduce the number of imported drugs from about 10,000 to 500 to reduce medical costs. In light of this, the National Medicines Regulatory Authority Act, which was revised in 2015, emphasizes the importance of keeping the price of pharmaceuticals low. Article 116 of the Act allows the government to restrict imports of pharmaceuticals, etc. to protect domestic manufacturers.[192] In addition, the government has set retail price limits for common pharmaceutical preparations since 2016, which are revised regularly.[193]

About 75% of medical devices are imported, and the main domestic products are medical rubber gloves. The government has been attracting foreign medical equipment manufacturers with new technologies and promoting the industry. In 2019, Flexicare Limited in the United Kingdom established the first domestic manufacturing facility for medical equipment and consumables in Bandaragama.[194] In order to promote the domestic manufacturing of pharmaceuticals and medical devices, the government is developing several special medical manufacturing zones with the support of Malaysia.[195]

The Morning (2021) "Rs. 30 b pharma zone in Anuradhapura by this year"(https://www.themorning.lk/rs-30-b-pharma-zone-in-anuradhapura-by-this-year/)

John Keells (2021) "Government okays another pharma manufacturing zone"(https://economynext.com/government-okays-another-pharma-manufacturing-zone-80070/)

190 JICA (2017) "Survey on Collection and Confirmation of Information on Development of Investment Environment in Sri Lanka " (https://openjicareport.jica.go.jp/pdf/12291910.pdf)

191 Source: Pharmaceuticals Export Promotion Council of India "Regulatory Market Profile of Sri Lanka " (https://pharmexcil.com/uploads/countryreports/Sri_Lanka.pdf)

192 https://nmra.gov.lk/images/PDF/Legislation/5e_nmdra_07.pdf

193 https://www.nmra.gov.lk/index.php?option=com_content&view=article&id=74&Itemid=184&lang=en

194 Colombo Page (http :// www.colombopage.com/archive _ 20 B/Sep 24 _ 1600969871 CH.php)

195 The Morning (https://www.themorning.lk/rs-30-b-pharma-zone-in-anuradhapura-by-this-year)

(8) Self-care

In Sri Lanka, NMRA classifies drugs into four categories (I, IIA, IIB, and III). Of these, only I and IIA are considered to be over-the-counter (OTC) drugs, while others are prescription-only medicines (POM). However, because the market size for each drug category is not disclosed, and it is common to purchase POM without a prescription or to sell POM with an expired prescription (In a survey conducted in 2017, of the 1,728 POM sales observed, 1,037 had prescriptions, and the remaining 691 (40.0%) sold POM without a prescription), it is difficult to determine the specific amount of the self-care market.[196,197] On the other hand, in the survey cited below, 78% to 99% of the respondents answered that they use OTC, which suggests that there is a certain level of self-care market.

While the promotion of self-care is considered to have a curbing effect on increasing medical costs, its use without sufficient knowledge may bring about health hazards. Therefore, in the NCDs MSAP, "3.1.1 Improve access to services for early identification and management of NCDs and their risk factors", it is stipulated that the Ministry of Health of Sri Lanka will "develop tools and guidelines for self-care for key NCDs."[198,199]

According to a survey of 700 university students conducted in 2019 on the Sri Lankan self-care market, over-the-counter drugs are widely used because of their ease of handling and administration, quick response, and availability. According to the survey, common symptoms such as colds (68.2%), sore throats (52.7%), and fever (31.0%) are often treated with over-the-counter drugs (the percentage of respondents who said they use over-the-counter drugs is in parentheses), and the most commonly used over-the-counter drugs are antipyretics, cough/runny nose medicine, analgesics, and allergy drugs, respectively.[200] According to a survey conducted in 2013 on 400 urban and rural residents, a certain number of people prefer to use traditional medicines with fewer side effects. In particular, as shown in the following table, the use of traditional medicines was higher in rural areas than in urban areas due to the availability of medicinal herbs in nearby forests or in the courtyards of homes, and the fact that family members have been using traditional medicines for generations.

Table 3-13 Utilization of OTC and traditional medicines by area of residence

	Use only OTC drugs	Use only traditional medicines	Use both
Rural area	18 (9.0%)	54 (27.0%)	128 (64.0%)
Urban area	47 (23.7%)	45 (22.7%)	106 (53.5%)

*Percentage represents each residential group (200 in the rural group and 198 in the urban group).

In addition, the frequency of self-care use by self-care type also varies according to income. As shown in the table below, low-income earners do not buy over-the-counter medicines compared to high-income earners, and they cope with traditional medicines that are often inexpensive. The fact that more than 20% of all groups, regardless of whether they are from rural areas, urban areas, or high or low income areas, answered that they "only use traditional medicines" shows the extent to which traditional medicines are

196 https://www.researchgate.net/publication/338341382_Purchasing_medications_without_prescriptions_using_erroneous_and_expired_prescriptions_in_two_selected_community_pharmacies_in_Sri_Lanka

197 https://pharmexcil.com/uploads/countryreports/Sri_Lanka.pdf

198 Ministry of Health, Nutrition and Indigenous Medicine (https://www.iccp-portal.org/system/files/plans/national_ncd_action_plan_sri_lanka.pdf)

199 According to the progress report of this plan obtained by the investigation team from the Ministry of Health, regarding the progress of this item, it is stated that (The English version was not available in the desktop survey.).

200 BMC Public Health (https://bmcpublichealth.biomedcentral.com/track/pdf/10.1186/s12889-020-08622-8.pdf)

widely used.

Table 3-14 Utilization of OTC and traditional medicines by income

	Use only OTC drugs	Use only traditional medicines	Use both
Monthly income less than LKR30,000	19 (10.3%)	52 (28.1%)	114 (61.6%)
Monthly income more than LKR30,000 or more	46 (21.6%)	47 (22.1%)	120 (56.3%)

*Percentage represents each income group (185 in low-income groups and 213 in high-income groups).

A challenge in the self-care market is a lack of understanding of over-the-counter drugs. In the aforementioned survey of college students, 62.3% of the respondents were not aware of and did not fully understand the classification of drugs (prescription versus over-the-counter). In the same survey, there were many answers that misunderstood antibiotics, such as "the higher the antibiotic dose, the faster the recovery," "the lower the dose, the fewer the side effects," and "the dose can be stopped immediately if the symptoms are relieved." Given that prescription drugs can be purchased without a prescription, designing effective tools and regulations to monitor drug sales and improve medical education are considered a challenge.[201]

(9) Procurement structure of public and private medical institutions

Domestic procuring entities procure products for use in national and local healthcare institutions in accordance with the Guidelines for Procurement of Pharmaceuticals and Medical Devices 2006, developed by the Procurement Committee. The procurement department of the Ministry of Health is responsible for all types of medical-related procurement, including facility construction, consulting services, pharmaceuticals, surgical consumables, and medical equipment. A competitive bidding process must be followed to procure items under normal conditions and can only be procured under direct contract if it is urgent and necessary. The procurement bidding process has five stages: product selection, need assessment and demande forecasting, procurement, contract management, and payment.

Private hospitals do not have to follow these procurement guidelines and can purchase medical equipment and equipment directly from suppliers. On the other hand, the National Medicines Regulatory Authority (NMRA) requires medical devices to be registered before they are manufactured, supplied, distributed, or sold, and all medical devices are evaluated for quality, safety, effectiveness, and durability before a manufacturing or marketing license is issued.

The registration and import of medical devices in Sri Lanka is carried out in the following three steps.

① Issue a Sample Import License (SIL): Conduct a quality test to obtain sample results for quality evaluation.

② Medical device registration: Submit all certification and technical manuals and quality test reports for NMRA approval.

③ Issue import license: Obtain import license for commercial shipments of equipment for sale in Sri Lanka.

201 BMC Public Health (https://bmcpublichealth.biomedcentral.com/track/pdf/10.1186/s12889-020-08622-8.pdf)

(10) Major companies

Private companies in the health sector in Sri Lanka are listed in the following table.[202]

Table 3-15 Private companies in the health sector in Sri Lanka

Company Name	Industry	Location	Revenue (USD million, 2020)
George Steuart Health	Pharmaceutical	Western, Colombo	159.4
Asiri Hospital Holdings	Hospitals, clinics, emergency medical transportation services	Western, Colombo	78.0
Lanka Hospitals Diagnostics	Hospitals & Clinics	Western, Colombo	60.9
Morison	Drug manufacturing and research	Western, Kelaniya	60.6
Nawaloka Hospitals	Hospitals, clinics, emergency medical transportation services	Western, Peliyagoda	51.6
Technomedics Internationals	Medical equipment and devices	Western, Battaramulla South	22.7
Ceyoka	Drug manufacturing and research	Western, Peliyagoda	18.4
Cinnamon Care	Hospitals & clinics	Western, Bandaragama	18.3
Navesta	Drug manufacturing and research	Western, Nawala	14.7
Gamma Pharmaceuticals	Drug manufacturing and research	Western, Colombo	14.1
TCIS Inspection	Medical testing and clinical laboratories	Western, Colombo	12.4

(11) Examples of foreign companies entering the market

In November 2021, the United Kingdom's Flexicare Limited invested approximately 15 million US dollars in Sri Lanka's first large state-of-the-art medical device manufacturing plant.[203]

202 https://www.zoominfo.com/companies-search/location-sri-lanka-industry-healthcare

203 Sunday Times (2021) "SL to resolve deearth in manufacturing, says Health Minister" (https://www.sundaytimes.lk/211121/business-times/sl-to-resolve-dearth-in-manufacturing-says-health-minister-462192.html)

Lanka Business Online (2021) "Flexicare unveils export-oriented medical devices manufacturing facility at Bandaragama"(https://www.lankabusinessonline.com/flexicare-unveils-export-oriented-medical-devices-manufacturing-facility-at-bandaragama/)

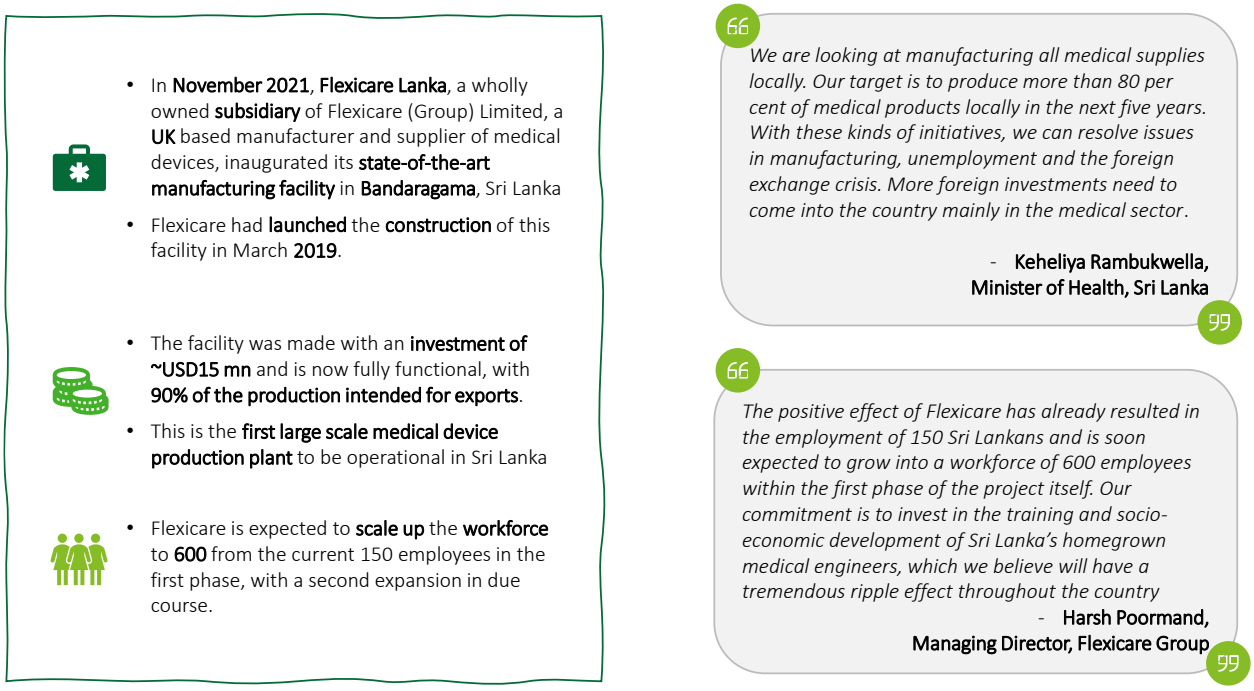

Figure 3-29 Overview of Flexicare Lanka

3.3.3 Challenges of private health care

(1) Medical fee structure

In 2019, the Ministry of Health stipulated a fee structure for private hospitals for the absence of a specific fee system, but private hospitals have filed lawsuits against the regulation claiming it could affect operating costs and profitability.[204]

In interviews with private hospital officials in this survey, it was notified that the above medical fee structure is not thoroughly implemented and is rarely used.

Lack of concrete system of medical fee system defined by the Ministry of Health:

- The Goverrnment has attempted to regulate the fee system of private hospitals to provide a better health service to the public, however, private hospitals filed a case against the imposed regulation as it was affecting their operating cost and profitability.
  - In 2018, the National Medicines Regulatory Authority (NMRA) passed a policy to regulate the charges for certain tests, treatments and surgeries performed by private hospitals, nursing homes, clinics, medical practitioners and specialists, to make it affordable for masses. However, the implementation of this policy was not announced until early 2019.
  - In 2019, the Health Ministry issued rules and regulation which limited the consultation charges levied by private medical institutions. Under the regulations, charges for a consultant or a specialist doctor were limited between 250 LKRs and 2,000 LKRs and medical officer charges between 100 LKRs and 500 LKRs.
- Despite regulating consultation charges, the private medical institutions fees continued to remain high for other services such as testing, surgeries, special care, etc. to maintain the profitability of the hospitals with limited number of resources.

Figure 3-30 Lack of a concrete system for medical fees

204 Daily News (2019) "Regulating private sector health service charges"(https://www.dailynews.lk/2019/02/11/features/177101/regulating-private-sector-health-service-charges)
Oxford Business Group "Demographic and disease trends drive demand for private health care in Sri Lanka"(https://oxfordbusinessgroup.com/overview/fitter-equilibrium-demographic-and-disease-shifts-drive-demand-private-care)

(2) Lack of a referral system

Generally, medical institutions have referral systems that refer patients to other medical institutions. However, there is currently no official referral system between public and private medical institutions in Sri Lanka, because referral from public to private medical institutions increases the cost of treating patients, and there is concern that the reputation of one's own hospital may deteriorate if a private medical institution recommends a public medical institution.

On the other hand, in public primary medical institutions, due to the lack of testing equipment, patients are frequently referred to private hospitals or private diagnostic institutions for specific tests. It is also not uncommon for small private clinics to recommend that low-income people receive long-term care, precision surgery, and regular professional screening at public hospitals, which are less expensive than private hospitals.

(3) Regional disparities

As mentioned above, unequal distribution of medical institutions and medical personnel and regional disparities are issues in Sri Lanka, especially in private medical institutions. As shown in the figure below, the three main reasons include population concentration, concentration of infrastructure resources, and connectivity.[205]

Regional disparity in advanced diagnosis and treatment services:

Under private health sector, hospitals and other medical institutions are majorly based in developed urban areas of the island such as Colombo district, Gampaha district and other Western province. This regional disparity in distribution of private advanced healthcare centers is mainly due to following reasons:

- **Population concentration-** Sri Lanka's majority of upper and middle-income population, who can afford private health facilities, are concentrated in the urban areas. Due to unhealthily urban lifestyle, the people of urban areas are susceptible to health conditions and diseases that require advanced diagnosis and quick treatments which are prominently available at private centers. The urban areas also consist of maximum number of private insurance policy holders who can avail health services at private hospitals
- **Resource availability-** The urban areas provide all the resources required to maintain the service quality offered by private medical institutions. Continuous power supply, water supply, road transportation facilities, and availability of skilled and unskilled human resource have resulted in establishment of private medical institutions in urban areas.
- **Connectivity-** At national level, the Western urban area is well-connected to facilitate the transport of patients from every region of the island. These areas form import-export hub and facilitates procurement of advanced medical equipment and devices, and pharmaceuticals. Due to international connectivity of Colombo district, top private hospitals can provide medical tourism services to foreign patients or host foreign medical professionals for specialized treatment services.

Figure 3-31 Regional disparities in advanced medical care and treatment services

(4) Shortage of human resources

Health care workers in the private sector are composed of doctors and medical staff who work both in the public and private sectors, a small number of general practitioners, retired health care workers from public health institutions, nurses, and nursing assistants. According to the Health Statistics Division of the Ministry of Health, in 2017, the number of doctors per 100,000 people and nurses per 100,000 people in private medical institutions was 2 and 27, respectively, which is considerably low compared to the public health sector. In addition, the majority of all health care workers (75%) want to work in the public sector for reasons given in the figure below, leading to a shortage of health care workers in the private

205 World Bank Group (2021) "Poverty & Equity Brief South Asia Sri Lanka April 2021" (https://databank.worldbank.org/data/download/poverty/987B9C90-CB9F-4D93-AE8C-750588BF00QA/AM2020/Global_POVEQ_LKA.pdf), City Population "Sri Lanka: Administrative Division " (https://www.citypopulation.de/en/srilanka/prov/admin/)

sector.[206]

Lack of healthcare workers in private sector:

- The health workforce in the private sector is mainly composed of medical officers (who are engaged in dual practice- both at public as well as private sector), a few full-time general practitioners, retired medical officers and nurses, and nurse assistants. According to Medical Statistic Unit of Ministry of Health, in 2017, the private health sector had 2 medical officer for every 100,000 people and 27 nurse for every 100,000 people, which was very low as compared to public sector.
- Majority (75%) of the total healthcare staff in Sri Lanka prefers to work with public sector due to the following reasons, and hence, they are associated with the public heath sector resulting in shortage of medical staff in the private health sector.
  - The Government dominates healthcare sector in Sri Lanka due to its free of cost services. As a result, the private sector is uncertain about its utilization capacity at any given time, which creates uncertainty for the requirement of healthcare workforce. Therefore, the private sector institutions avoid hiring additional workforce to keep operational costs under control and maximize profitability.
  - The public sector offers salary security to the medical staff along with additional benefits such as tax-free income, flexible working shifts, weekly-offs, mandatory social health insurance scheme and provision of re-location for female workforce. Hence, young and newly skilled medical professional prefers to serve in public health sector over private sector.
  - The private sector offers better quality of service and care to the patients and therefore, it demands highly skilled and talented medical professionals. Lack of talented health workforce due to lack of organized technical training programs have forced reputed private hospitals to hire foreign professionals to deliver its quality standards.

Figure 3-32 Shortage of health care workers in the private health care sector

In addition, the Ministry of Health and WHO emphasize that the provision that the Ministry of Health should train the staff of private medical institutions on their roles in preventive health services has not been fully utilized.[207] It has also been pointed out that basic training for nurses and paramedical staff is lacking, and that large private hospitals have their own training schools for nurses and practical nurses, but their training curricula have not been evaluated by the Ministry of Health to see whether NCDs care is included.[208]

The practice of allowing doctors in public medical institutions to practice in the private sector is expected to continue by many medical professionals. However, it has become clear that many doctors who work outside of working hours at private medical institutions do not have a legally valid contract with the hospital. In the absence of a legally valid contract, accountability of physicians to hospitals and patients is a challenge.[209]

(5) Lack of governance and coordination with the government

Lack of governance by the private health sector is often identified. Although all private health care providers are required to register with the Private Health Services Regulatory Council (PHSRC), 20% of private health care providers did not register with the PHSRC in 2018 and were practicing medicine illegally. In addition, it has been pointed out that although medical personnel of public medical institutions are allowed to have concurrent jobs at private medical institutions, their busyness affects the medical care capacity of

206 World Bank Group (2021) "Poverty & Equity Brief South Asia Sri Lanka April 2021" (https://databank.worldbank.org/data/download/poverty/987B9C90-CB9F-4D93-AE8C-750588BF00QA/AM2020/Global_POVEQ_LKA.pdf), WHO "Health Labour Market Analysis in Sri Lanka: A Call to Action" (https://www.who.int/docs/default-source/health-workforce/health-labour-market-analysis-in-sri-lanka.pdf)

207 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

208 Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

209 https://openknowledge.worldbank.org/handle/10986/20018

public medical institutions.

Another challenge is the lack of a health data reporting system to the government. The Health Statistics Division of the Ministry of Health and the PHSRC are responsible for the collection, analysis, and publication of health data from private healthcare providers. There are no strict regulations that require private healthcare providers to report health data on a regular basis, and private healthcare providers fear further regulation of the private healthcare sector and are reluctant to provide health data to the government. The lack of such a data reporting system makes it difficult for governments to analyze the differences between public and private health care and hinders potential improvements in health services across the country.[210] It has also been pointed out that private healthcare organizations do not participate in the National NCD Steering Committee, NCD Council, or other coordinating bodies for NCDs as an organization, and that mechanisms to ensure compliance with the latest circulars, clinical guidelines, and protocols issued by the government are not fully utilized.[211]

(6) Disparities in access to health care

There are barriers to access to private health services from rural areas in terms of access to health services. In severe cases, the lack of a referral system between the public and private sectors is an access barrier, especially for patients in rural areas with few medical institutions. Patients also tend to avoid private sector treatment for fear of high medical costs. Rural populations are composed of low and middle-income groups and often lack mobility. Because the number of private outpatient services connecting rural to urban areas is very low, patient transport to private hospitals in urban areas is very expensive. The majority of low and middle-income populations do not have private health insurance, and the medical costs required to access private health services can have a significant impact on households. There is also very limited access to private health services for low and middle-income earners, with no government programs or subsidies for expensive care at private providers. As a result, low and middle-income populations rely on public health care, and as a result, the private health sector loses opportunities to scale up services.

3.3.4 Issues related to the business expansion of Japanese companies

(1) Current status

Mebiopharm Co., Ltd has established a joint venture with a Sri Lankan company to enter the clinical trial and drug discovery business.[212] Similarly, Takeda Pharmaceutical Company Limited will conduct a Sri Lankan clinical trial of its dengue vaccine and will apply for regulatory approval in 2021.[213] In addition, Eisai Co., Ltd., which provided a treatment for filaria that is produced at its plant in India, joined the first major pharmaceutical partnerships for NCDs from its inception and is working to roll out anticancer agents and implement tiered pricing in Asia, including Sri Lanka, to reduce the number of premature deaths from NCDs by one-third in low and lower-middle-income countries.[214] The company has also acquired the Sri Lankan development and marketing rights of Japanese companies such as Ajinomoto Co., Inc.[215]

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210 http://ijmsph.com/fulltext/67-1611843412.pdf

211 Ministry of Health of Sri Lanka and World Health Organization “Review on the National NCD Prevention and Control Programme in Sri Lanka” (2021)

212 The company's website (http://www.mebiopharm.com/irnews/120220%20PR.pdf) and JETRO's "Introduction of Health Management Methods Using Data Health" analyze employee health using data (https://www.jetro.go.jp/ext_images/jetro/activities/support/rulemaking/2018lk.pdf).

213 Press Release (https://www.takeda.com/jp/newsroom/newsreleases/2021/20210326-8251/)

214 Several Japanese companies are members of the Access Accelerated partnership (https://www.eisai.co.jp/news/news201704.html).

215 "Livacto Granules," a branched-chain amino acid preparation developed by Ajinomoto, "Urief," a drug developed by Kissei Pharmaceutical Co., Ltd., for the improvement of dysuria associated with benign prostatic hyperplasia, and "Uritos Tablets," a drug developed by Kyorin Pharmaceutical Co., Ltd., for the treatment of overactive bladder

(2) Issues related to the business expansion of Japanese companies

Seven companies (1 pharmaceutical company, 4 medical equipment companies, 1 telemedicine company, 1 university hospital company) were interviewed in advance regarding their business development and interest in the Sri Lankan market. Medical devices and university hospitals all had a certain level of interest, but they had no clear interest in the market because they did not have information on the characteristics of the market. As for one of the medical equipment manufacturers, the head office is not aware of JICA's past initiatives or the relatively favorable health indicators and market environment mentioned above, and only Japanese representatives in Southeast and South Asia and agents in Sri Lanka are gathering information.[216]

Among the management issues faced by Japanese companies in Sri Lanka, difficulties in local procurement of raw materials and parts, difficulty in recruiting human resources, increase in wage, difficulty in quality control, and cost reduction are cited as top issues.[217] While labor costs are on the same level as Bangladesh, which is one of the lowest in Asia, its level of English proficiency and education are high.[218]

(3) Other points

Hemas Holdings PLC, Sri Lanka's largest distributor and hospital operator of pharmaceuticals and medical devices, plans to start manufacturing pharmaceuticals in Sri Lanka in 2021, and is looking to cooperate with foreign companies, which could provide business opportunities for Japanese companies.[219]

3.3.5 Comparison of public and private medical institutions

(1) Overview

1) Geographical distribution

As described in 3.2.2, the location of public medical institutions varies from region to region by primary, secondary and tertiary institutions. The number of primary medical institutions in the Western Province, including Colombo, tend to be small. In contrast, private medical institutions vary, but are largely concentrated in urban areas, especially in western provinces. This is attributed primarily to the state's high per capita income and high population density (Nearly 25% of the country's population lives in the Western Province and nearly 40% of the country's GDP is generated in this area.).[220]

2) Quality of medical care

A 2014 study sponsored by the World Bank concluded that the quality of care in Sri Lanka's public and private health care systems is "about equal". The quality of inpatient care was evaluated in large public hospitals (teaching hospitals) and medium hospitals (core hospitals), large private hospitals (50 beds or more), and other private hospitals (less than 50 beds) for management and treatment of asthma, acute myocardial infarction, and childbirth. As a result, public hospitals are slightly more likely to administer steroids for asthma treatment, and private hospitals are slightly better at monitoring patients, but there is no clear pattern. In addition, there is no clear pattern in the quality of treatment for acute myocardial infarction;

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216 Fujifilm does not consider the market to be a company-wide market (corporate planning and product development divisions); instead, the Healthcare Business Promotion Office reviews the market, Terumo's Thai subsidiary and its distributor in Sri Lanka promote various businesses, and Sysmex collects information on its Singapore subsidiary and its distributor in Sri Lanka.

217 JETRO "Survey of Japanese Companies Expanding Overseas in FY 2020 (Asia and Oceania)" (https://www.jetro.go.jp/world/reports/2020/01/b5dea9948c30e474.html).

218 JICA (2017) “Survey on Collection and Confirmation of Information on Improvement of the Investment Environment in Sri Lanka ” (https://openjicareport.jica.go.jp/pdf/12291910.pdf)

219 In addition to a production scale of 5 billion tablets of drugs for hypertension, lipids and diabetes mellitus (https://economynext.com/hemas-holdings-start-sri-lanka-pharma-plant-to-make-five-billion-pills-74358), JETRO ’ s “Introduction of Health Management Methods Using Data Health ” introduces the company's efforts.

220 https://openknowledge.worldbank.org/handle/10986/20018

private hospitals are better in some aspects while public hospitals are better in others. In addition, both medical institutions showed good results in monitoring fetal health.[221]

Regarding differences in the quality of outpatient care, the proportion of patients who received both medical examinations and preventive and educational services was small in both sectors. However, the percentage of patients whose blood pressure and weight were measured was higher in public hospitals than in private hospitals, while the percentage of patients who received advice about their health was higher in private hospitals than in public hospitals. The average number of drugs prescribed was similar in both sectors.[222]

3) Difference in services

The aforementioned World Bank study concluded that private hospitals, on average, are cleaner, more patient friendly, offer more choice and privacy, and have shorter wait times. More specifically, the percentage of patients who need to see a doctor for less than five minutes is much higher in public hospitals than in private hospitals. This indicates that the outpatient counters of public hospitals are crowded, which is one of the factors that make patients choose private hospitals. Patients' perceptions of the technical quality of physicians were similar in both public and private hospitals. When asked whether doctors provided the correct treatment or procedure, the percentage of patients who answered that they were satisfied or very satisfied was higher in public hospitals (95%) than in private hospitals (92%). However, on the interpersonal quality index, private hospitals performed better overall than public hospitals, with a higher percentage of patients reporting that their doctors answered all of their questions (50% versus 81%), and a higher percentage of patients feeling that their doctors explained their treatment better (81% versus 88%). In addition, it was confirmed that, overall, public hospitals had longer wait times while spending less time with doctors.[223]

Despite these differences, the proportion of patients who were overall satisfied or very satisfied with their care was similar in both public and private hospitals (97%), although it was generally concluded that private hospitals had better quality indicators for technology-intensive and expensive care, whereas public hospitals had better quality indicators for less expensive and routine care.[224]

(2) Challenges

According to the survey conducted with the support of the World Bank mentioned above, advantages of private medical institutions compared with public medical institutions include convenience of less waiting time, comfort that patients can choose their specialist, and continuity with the same physician.[225]

1) Burden of medical expenses

Medical costs charged by private hospitals are a serious concern for the public, and the out-of-pocket costs of medicines and tests are high for those without private insurance. There are also cases in which the costs are not known in advance, and there are opinions to increase transparency. As noted in 3.3.3 (1), in 2018 the government set a cap on private hospital fees, but this has not been thoroughly enforced and many private hospitals still use their own fee structure.[226] On the other hand, public medical institutions are essentially free of charge.

2) Government standards and reporting requirements

In the case of public medical institutions, facilities and equipment to be established are basically determined according to the size of the institution, while private medical institutions have facilities of various sizes and

221 https://openknowledge.worldbank.org/handle/10986/20018

222 https://openknowledge.worldbank.org/handle/10986/20018

223 https://openknowledge.worldbank.org/handle/10986/20018

224 https://openknowledge.worldbank.org/handle/10986/20018

225 https://openknowledge.worldbank.org/handle/10986/20018

226 https://openknowledge.worldbank.org/handle/10986/20018

functions. Some private hospitals have developed their own monitoring and reporting systems, but smaller facilities may not fully comply with government quality standards and reporting requirements.[227] A report prepared by the Ministry of Health and WHO in 2021 noted that although the Private Medical Institutions (Registration) Act (2006) was in place, it was not fully implemented, and cited the lack of a mechanism to evaluate and "rate" the performance of private hospitals, the lack of appropriate measures to regulate billing charges that lead to high private costs for patients, and the large number of unregistered and unqualified private service providers as related challenges.[228]

3) Cooperation with public medical institutions

In Sri Lanka, there is no formal coordination or referral mechanism between public and private medical institutions. In this regard, a 2014 World Bank-supported study highlighted the views of private healthcare providers that they are important participants in the provision of health care services to the population as a whole, and that the private sector can be a valuable ally of the government in expanding the scope and coverage of health care services provided to the population, particularly in the areas of diagnosis (radiological testing etc.), management of NCDs, and diagnosis and treatment of some communicable diseases (tuberculosis etc.), where cooperation is most likely. It is also proposed that the government provide funding and incentives to private healthcare providers and create a forum to maintain regular interactions between the private sector and the government.[229]

3.4 Comparison with neighboring countries

In order to compare the market in the field of NCDs between India, which is a neighboring country of Sri Lanka, and Southeast Asian countries (Vietnam, Indonesia, Philippines, Myanmar, Malaysia and Singapore), each index was compiled and analyzed.

3.4.1 Market comparison with neighboring countries

As shown in the following figure, the indicators related to the economic situation of neighboring countries and Japan's assistance situation are summarized. In terms of economic conditions, Sri Lanka has a lower level of inward FDI (average value between 2015 and 2019) and economic growth (annual GDP growth rate) than India and Southeast Asian countries. In addition, according to the World Bank's ranking of business environments, Sri Lanka ranked 99th in 2020, which was the lowest level behind Myanmar (165th).

227 https://openknowledge.worldbank.org/handle/10986/20018

228 Ministry of Health of Sri Lanka and World Health Organization “Review on the National NCD Prevention and Control Programme in Sri Lanka” (2021)

229 https://openknowledge.worldbank.org/handle/10986/20018

Table 3-16 Economic indicators for comparison countries[230]

Target Country	Overall (Local Economic Conditions,etc.)			
	5 Year Average Inward FDI (USD, Million)	Economic Growth (%, 2019)	Population (Million,2019)	Business Environment Ranking
Sri Lanka	3,303	2.3	21.80	99
India	103,827	4.2	1,366.42	63
Vietnam	29,367	7.0	96.46	70
Indonesia	35,069	5.0	270.63	73
Philippines	14,694	6.0	108.12	95
Myanmar	2,557	6.8	54.04	165
Malaysia	34,393	4.3	31.95	12
Singapore	102,371	1.3	5.70	2
Japan	163,563	0.3	126.26	30

Source: Created by survey team based on various data

Next, the study team compared the health infrastructure situation per population from the following table, Sri Lanka has the highest number of doctors per 1000 population after Malaysia and Singapore, which are middle and high income countries in Southeast Asia. The number of nurses is the third largest after Singapore, Malaysia, the Philippines and Indonesia. However, it does not meet the WHO recommendation of 4.45 doctors and nurses per 1000 population. In terms of hospital beds, Sri Lanka had 4.2 beds per 1000 population (excluding Japan), which was higher than all comparable countries.

230 https://yoff.jp/wb1/
https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG
https://data.worldbank.org/indicator/SP.POP.TOTL
https://unctad.org/webflyer/world-investment-report-2020
https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD

Table 3-17 Situation of health infrastructure in surrounding countries[231]

	number of doctors per1,000	number of nurses per 1,000	number of hospital beds per 1,000
Sri Lanka	1.23(2020)	2.50(2020)	4.2(2017)
India	0.74(2020)	1.75(2020)	0.5(2017)
Vietnam	0.83(2016)	1.45(2016)	2.6(2014)
Indonesia	0.62(2020)	3.95(2020)	1.0(2017)
Philippines	0.77(2020)	5.44(2019)	1.0(2014)
Myanmar	0.74(2019)	1.08(2019)	1.0(2017)
Malaysia	2.23(2020)	3.48(2019)	1.9(2017)
Singapore	2.46(2019)	6.24(2017)	2.5(2017)
Japan	2.48(2018)	11.95(2018)	13.0(2018)
whole world	**1.6(2017)**	**3.95(2020)**	**2.9(2017)**

4.45 doctors and nurses recommended by WHO

3.5 or higher is desirable

Source: Created by survey team based on various data

Finally, the status of health burden is summarized in the following table. In terms of health expenditure, the ratio of health expenditure to GDP per capita is the second highest in the comparison countries (excluding Japan) after Vietnam. This shows that public medical institutions in Sri Lanka are basically free of charge, but they are a direct burden on the people. Regarding to the burden of diseases, the average life expectancy and infant mortality rate are at the second highest level after Singapore, which is a developed country. On the other hand, the obesity rate and the high blood pressure rate among adults, which are considered to be one of the causes of NCDs, are relatively low, ranking sixth and seventh overall, while the diabetes rate is at the second highest level (10.7%) following Malaysia's 16.7%.

231 https://apps.who.int/iris/bitstream/handle/10665/250330/9789241511407-eng.pdf
https://theworldict.com/rankings/urban-population-rate/
https://www.who.int/data/gho/data/indicators/indicator-details/GHO/hospital-beds-(per-10-000-population)
https://www.who.int/data/gho/data/indicators/indicator-details/GHO/medical-doctors-(per-10-000-population)

Table 3-18 Health burden in surrounding countries

	GDP per capita (USD) (2020)	Health expenditure as GDP ratio (2019)	Medical expenditure per person (USD) (2019)	Health expenditure as GDP ratio per capita	Life expectancy (2019)	Infant mortality rate (per 1000)	Adult obesity rate (BMI≧30)	Hypertensive percentage (SBP≧140 or DBP≧90)	Diabetic percentage (20~79 years)
Sri Lanka	3,680.7	4.08%	160.7	4.4%	76.9	5.92	5.2	22.4	10.7
India	1,927.7	3.01%	63.75	3.3%	70.8	27.01	3.9	25.8	10.4
Vietnam	2,785.7	5.25%	180.7	6.5%	73.7	16.7	2.1	23.4	6.0
Indonesia	3,869.6	2.9%	120.1	3.1%	71.3	19.55	6.9	23.8	6.3
Philippines	3,298.8	4.08%	142.1	4.3%	70.4	20.95	6.4	22.6	7.1
Myanmar	1,467.6	4.68%	60.02	4.1%	69. 1	45.04	5.8	30.1	6.6
Malaysia	10,412.3	3.83%	436.6	4.2%	74.7	7.38	15.6	22.9	16.7
Singapore	59,797.8	4.08%	1,633	2.7%	83.2	1.85	6.1	14.6	9.1
Japan	**40,193.3**	**10.74%**	**4,360**	**10.8%**	**84.3**	**1.82**	**4.3**	**17.6**	**5.6**
whole world	**10,918.7**	**N/A**	**N/A**	**N/A**	**73.0**	**27.42**	**N/A**	**N/A**	**8.8**

Source: Created by survey team based on various data[232]

3.4.2 Future trends

Affected by COVID-19, neighboring countries are changing their NCD-related policies. In particular, the following table summarizes trends in India, Malaysia, Singapore, and Thailand, where progress is expected in the medical field and market. In India, the focus is on health data analytics and improving public health infrastructure. Malaysia and Thailand are working to promote medical tourism (medical tourism) in addition to providing cheap and high-quality medical services to their citizens. Singapore focuses on biological research and innovation in healthcare.

232 https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?name_desc=false
https://www.who.int/
https://childmortality.org/data/World

Table 3-19 Compared countries' priorities and growth areas

Country	Priority sector	Emerging NCD markets post pandemic	Growth potential in pharmaceutical and medical device markets
India 	• India has started to focus on tracking and maintaining healthcare data during the COVID-19 pandemic. Hence, healthcare data needs to become a policy focus for India. • After the pandemic experience, it has become important to create and monitor certain thresholds for public health infrastructure based on population of a region.	• Due to effects of COVID-19, people have increased awareness about health insurance products and have invested in it. Most of the health insurance covers common NCDs and its treatments. • Online consultations and technology platforms are in high demand as people prefer to keep doctors updated about their vitals to prevent or control NCD.	• With development of technology and healthcare analytics to treat diseases, healthcare professionals have begun to acquire skills to harness data and interpret it to provide decision-making support to medical practitioners. Hence, growing demand for latest medical devices and technology is expected.
Malaysia 	• The universal healthcare plan provide access to medical services at subsidized rates in Malaysia. The nation focuses on increasing its foreign investment in healthcare sector to make its services cost-free to the citizens at public healthcare centers.	• The Government's five-year health plan from 2021 to 2025 focuses on expanding awareness programs and regular screening services for detecting NCDs such as cancer, cardiovascular diseases, chronic respiratory diseases, psychological and mental diseases, and nutritional deficiencies.	• The medical tourism market in Singapore have gained traction due to high-quality service at competitive cost as compared to other developed nations such as US and UK. This will rise the demand for high-quality of medical equipment and pharmaceutical products.
Singapore 	• Singapore has majorly invested in biomedical science and clinical research to develop an expertise in infectious diseases domain. • Singapore also encourages research and development, and innovation in medical technology to develop and manufacture high-value medical products.	• Following their Sustainable Development Goals, Singapore has planned to reduce one third premature mortality from non-communicable diseases by 2030, preventive measures such as promoting mental health and well-being in the academics and policies.	• People are shifting from treatment to preventive care and health management. This provides opportunities for numerous health screening and disease prevention and management medical devices, products and software.
Thailand 	• Through several incentive schemes, the Thailand government wants to capitalize on the market development of medical tourism. • It also focuses on developing educational plans to produce medical professionals and fill the human resource shortage gap.	• Thailand has showcased significant progress towards its universal health coverage (UHC). It has now extended the coverage to high-cost services, such as renal replacement therapy, cancer therapy and stem-cell transplants and other NCD related line of treatments.	• The country's domestic health spending is increased due to rising prevalence of NCDs among rapidly aging population, which drives the medical devices in the healthcare facilities. • Thailand aims to form hub for medical tourism and hence provides emerging opportunities for digital innovations such as robotic surgeries, AI diagnosis, 3D printing, etc.

Source: Created by the research team from various sources[233]

3.4.3 Sri Lanka's comparative advantages and weaknesses

This section compares (1) economic conditions, (2) health infrastructure conditions, and (3) health burden conditions in Sri Lanka, Southeast Asian countries, and India. Economically, Sri Lanka has a low level of FDI, economic growth, and business environment, as well as high per capita health expenditure. Sri Lanka also has a relatively low burden of NCDs in the surrounding countries but a relatively high need for diabetes. On the other hand, the number of doctors and nurses is lower than that of the WHO, but higher than that of the countries around the number of hospital beds. Therefore, it is concluded that these countries have more infrastructure and human resources than the comparison countries. With regard to the medical-related market, Sri Lanka has a handicap in that domestic demand for pharmaceutical and medical device manufacturing is not very large due to the country's relatively small population. However, considering the

233 S. Ramadorai (2020) "Post COVID19: Health and technology opportunity for India," Suchi Kedia (2021) "How India can improve urban public health with lessons from COVID-19"

relatively high average life expectancy, the level of medical infrastructure, and the image of folk remedies such as herbs and Ayurveda, there is room for examination of medical tourism being promoted in Thailand and Malaysia, as well as research and development utilizing advanced medical technology being promoted in Singapore, and the development of a medical startup ecosystem.[234,235]

234 https://www.researchgate.net/publication/340871062_ayuruveda_medical_tourism_in_sri_lanka_service_quality_tourists%27_satisfaction

235 The Government of Sri Lanka has identified medical tourism as a developing industry, and according to the Sri Lanka National Export Strategy 2018 ~ 2022, a new strategy is to strategically focus on the development of the health tourism sector in Sri Lanka.

Chapter 4 Interviews, visits and seminars

4.1 Field survey

The initial plan was for the mission to travel to the site in Sri Lanka to collect information, but in light of the COVID-19 situation, after consultation with JICA, it was decided to conduct online interviews with local officials instead of on-site information collection. From January to April 2022, the study team interviewed 12 institutions in Sri Lanka.

4.1.1 Interviewee

The following 12 institutions, including public primary, secondary, and tertiary medical institutions, private hospitals, and training institutions, were interviewed online regarding their response systems and issues regarding NCDs.

Table 4-1 Interviewees (in order of interview)

#	Interviewee	Classification	Notes	Job/Qualification
1	NCDs Medical Officer, Gampaha Region (Western Province)	Local government		Doctor
2	Kamburupitiya Base Hospital	Public hospital	・Secondary medical institution	Doctor
3	NCD Medical Officer, Kurunegala Province	Local government		Doctor
4	Badulla NCD Medical Officer	Local government		Doctor
5	Badulla Provincial General Hospital	Public hospital	・Tertiary medical institution ・Screening clinics for NCDs and diabetes have been established.	Director
6	Thalalla Divisional Hospital	Public hospital	・Primary medical institution	Doctor
7	The National Hospital of Sri Lanka	Public hospital	・Tertiary medical institution ・Sri Lanka's largest public hospital ・It functions as the final referral center in Sri Lanka, and as a teaching hospital, it also trains human resources for health.	Deputy Director
8	National Institute of Health Sciences	Public organization	・National public health training organization	Director
9	Kandy Teaching Hospital	Public hospital	・Tertiary medical institution ・Public basic hospital ・Patients are transported from nearby public hospitals for specialized treatment. A heart transplant was also performed.	Deputy Director General
10	Trincomalee District General Hospital	Public hospital	・Secondary medical institution	Director
11	Ruhunu Hospitals	Private hospital	・One of the largest private hospitals in southern Sri Lanka	CEO
12	Durdans Hospital	Private hospital	・Private hospital in Colombo with patients from all over the world	Director

4.1.2 **Interview results**

Through the interviews, a number of issues were identified in common. The followings are described in order: 1) the impact of COVID-19, 2) changes in lifestyle, 3) lack of prevention and enlightenment, 4) shortage of doctors and support staff, 5) inefficient data management, 6) concentration of patients in higher level public hospitals, and 7) lack of collaborations between public and private hospitals.

(1) **Impact of COVID-19**

The impact of COVID-19 on the situation of NCDs in Sri Lanka was mentioned in almost every interview. Some people during the COVID-19 pandemic were hesitant to be tested and treated in hospitals for fear of infection, and the lockdown made it difficult for both patients and doctors to visit hospitals. This had a negative impact on the detection and treatment of patients with NCDs, leading to higher mortality rates among the patients with NCDs. Others pointed out that the people including the ones with NCDs also suffered mental health problems during the COVID-19 pandemic. The followings are some of the key statements shared by the participants during the interviews.

- Many patients used to come for treatment of NCDs such as myocardial infarction, hypertension and diabetes, but people have been reluctant to come in the past two years since the COVID-19 expansion began. (#2)
- In rural areas in particular, many people do not receive proper treatment for their diabetes due to the COVID-19 crisis. (#2)
- COVID-19 has had a severe negative impact on both the detection and treatment of patients with NCDs, leading to increased mortality. (#2)
- People don't come to the hospital because they are afraid of infection. (#2)
- Since COVID-19 has expanded, surgeries have become less common and cancer detection rates have declined. (#2)
- The lockdown during the COVID-19 crisis made it difficult for patients to get to hospital. (#3)
- The lockdown also prevented doctors from coming to the hospital. (#4)
- The report predicts that mental health issues will increase as a result of various economic and social constraints imposed by COVID-19. (#5)
- I feel that the COVID-19 crisis has caused an increase in mental health patients. (#6)
- Online education has become more common and childhood obesity is on the rise. (#6)
- Public health nurses were also afraid of contacting patients and could not manage patients with NCDs. In addition, a number of factors, including the financial impact on households and increased parental responsibility for their children's education during lockdowns, have led to a decrease in patient commitment to care. Postmortem examinations in hospitals to determine the cause of death from Covid-19 revealed that most of them also had NCDs. (#8)
- COVID-19 reduced the financial burden of health care and access to hospitals (transportation/drug availability) for most patients. This led to an increase in the number of NCD-related illnesses and deaths during the COVID-19 crisis. (#10)
- During the COVID-19 crisis, patients avoided coming to the hospital because of travel restrictions. They've run out of drugs because they can't get prescriptions because of the government's lockdown. These conditions may lead to increased morbidity and mortality from diseases associated with NCDs and increased risk of developing hypertension and diabetes. (#10)

(2) **Lifestyle change**

Changes in lifestyle, such as unhealthy eating habits and lack of recommended physical activity, smoking, and alcohol consumption etc., have led to an overall increase in the number of patients with NCDs. The current data shows that the younger population have also started developing NCDs including the ones living in rural areas. Earlier, the NCDs burden was relatively high in the urban areas, but now the rural populations also have been affected with NCDs. Some of the key comments shared by informants during the interviews are as follows.

- Alcohol consumption is increasing. Consumption of instant and processed foods has increased, and consumption of oil, sugar, and salt has increased. Not only in urban areas, but also in rural areas, people are starting to eat like fast food. (#2)
- Alcohol consumption is a major contributor to NCDs in Sri Lanka. (#12)
- Krunegala also has McDonald's and KFC and people's eating habits are changing. (#3)
- Previously, the number of NCDs was high among people in their 70s, but the number of NCDs patients in their 40s is increasing now. Myocardial infarction is increasing in men in their late 30s. (#2)
- Strengthening of education is necessary for early detection of NCDs. It is also important to educate children. High blood pressure and diabetes are increasing in children and young people. Lifestyle changes and the lack of school due to the coronavirus have also played a role. (#2)
- A large proportion of NCDs in Sri Lanka come from a perceived unhealthy diet rather than smoking. They eat more fast food than cooked meals. Children often go to fast-food restaurants. (#6)
- In recent years, there have been many cases of people changing their lifestyles rapidly, eating too much and not exercising enough. (#9)
- The number of obese and overweight children is rapidly increasing. This problem is particularly common in urban areas. Most of them are caused by overeating and lack of exercise. (#9)
- We believe that lifestyle changes have influenced the development of NCDs. Previously, cases of NCDs were on the rise in urban communities. But there are a lot of NCDs in rural communities these days. We attribute this mainly to technology, changes in diet, and lack of exercise. In rural communities, NCDs have also increased morbidity and mortality. (#10)
- Overall, we believe that the development of NCDs is a combination of traditional factors (Alcohol, smoking, etc.) and new factors such as stress, unhealthy foods, and lifestyle. (#10)
- With respect to the younger generation, many of them are suffering from diabetes due to the change in lifestyle. (#11)

(3) **Lack of prevention and enlightenment**

Some interviewees pointed out the need for raising awareness about NCDs at the community level so that information about NCDs can be spread beyond the people coming to the hospital. In addition, some interviewees highlighted the need for conducting screening camps to detect potential people with diabetes. They also emphasized the need for lifestyle changes through health education and counseling in order to prevent the development of diseases. The interviewees also indicated the importance of proper management of diabetes for those who have already developed the conditions, so the complications due to diabetes could be prevented or minimized. The interviewees further shared that men were less willing than women to participate in community based NCD screening services. The followings are some key statements shared by the interviewees.

- They provide information about NCDs to people who come to the hospital, but it is important for the community to disseminate information and try to detect diseases to people who do not come to the hospital. (#2)
- Nearby private clinics concentrate on treatment, and do not prevent or enlighten the community. (#2)
- For diabetes, it is important to detect potential diabetics through advance screening. Counseling for lifestyle changes can be provided and the onset of disease can be reduced. (#3)
- Coping with complications of diabetes is an issue. Because people do not visit the hospital regularly, complications are not diagnosed in a timely manner, and severe disease often leads to death. (#3)
- More men than women are reluctant to participate in NCDs screening services. Therefore, it is difficult to understand the prevalence of NCDs in men. We offer NCDs screening services in the evenings, but men are less likely to participate, to make it easier for people who work to participate. (#3)
- Men are less willing to come to the hospital than women. It is assumed that the men do not want to come to the hospital because many of them work as merchants or retailers and they cannot take time off from work. (#6)
- Medical Checkups will benefit many people who live in remote and rural areas and have limited access to health care services. We would like to communicate the importance of a healthy lifestyle (diet, etc.) to them and promote the philosophy of a healthy lifestyle. Companies are also beneficiaries, and maintenance of the mental health of their employees is an important issue. (#11)
- With regard to NCDs, we feel that education, such as lifestyle management, is a major factor. We feel that the general public is not yet aware of NCDs. (#12)

(4) **Shortage of doctors and support staff**

Lack of medical support staff, professional and trained personnel in the private sector, and unequal distribution of doctors in urban areas were noted through the interviews.

- Some doctors work in both private and public hospitals, limiting their availability during the day. (#1, #8)
- There are enough medical staff, but not enough support staff. This is a problem not only in our hospital but across the country. (#2)
- There is a shortage of medical personnel. (#6)
- Another problem is the lack of specialized and trained personnel in the private sector. (#9)
- Regarding the shortage of human resources, for example, there were 175 doctors in my hospital, but now there are 110 doctors and the vacancy rate is high. The reason for this is that there are fewer facilities in rural areas (Accommodation facilities, housing and other socio-economic facilities, and high-quality children's schools, etc.) and more human resources move to areas with more facilities and the Tokyo metropolitan area. (#10)
- There are two factors that affect the retention of human resources. First, training staff based on talent needs is long term and requires identifying the people needed. Second, government agencies are reluctant to secure human resources due to financial difficulties. This is clearly a contradiction in a system that has reduced the employment of medical staff. (#10)
- In Sri Lanka, there are approximately 70-80 private hospitals and 200 nursing facilities and medical centers that also provide diagnostic services, OPD services, etc. However, the problem of a shortage of medical personnel has not yet been resolved. In order to solve this problem, it is necessary to collaborate with JVs and public-private partnerships, and to proceed with hospital construction, etc.,

while mobilizing and utilizing various resources. (#11)

(5) Inefficient data management

At present, many hospitals manage patient information on a paper basis, and it was pointed out that it is necessary to construct an electronic database system for improving efficiency and sharing data with other hospitals in order to improve services delivery. It was also pointed out that local medical facilities need to be equipped with the Internet. At the same time, it was found that patient information is being put online under a World Bank project, and some regions and hospitals are developing online appointment and referral systems. However, these are at the early phase of development and there is a need for massive works in order to develop efficient and interoperable electronic health data recording and reporting systems in Sri Lanka. The specific comments at the interviews were as follows.

- Especially, the service using the communication technology is not carried out. (#2)
- Patient data are basically managed on paper. The NCDs medical officer has put information into the system but is not aware of the details. There is no database system that can be used for follow-up and it needs improvement. There is no real-time update either. (#2)
- Medical history and treatment history are recorded in the paper Medical Record Booklet (Under the name "Personal Medical Record," see page 51.) of each person. (#3)
- In some rural areas, Internet access is not available. (#3)
- There is a shortage of personal computers and other equipment, and the Internet environment is not good in some areas, so I feel it is a problem. (#6)
- Some hospitals have basic information systems, but data cannot be shared with other hospitals. (#4)
- Patient information systems are installed but not properly connected. OPD (ambulatory care department) is connected to the clinic in some hospitals, but not in others. Most hospitals manage it on paper. (#8)
- In most hospitals, the X-ray system is not connected to the department. Some hospitals use digital x-ray systems, but only a small percentage still use x-ray film. There is no well-interconnected recording system. (#8)
- He feels that the lack of focused data collection is a challenge. Relevant Ministries and Agencies should select the data they wish to collect when ordering data collection. (#9)
- Another problem is that we don't have enough people to handle the data stuff. (#9)
- There are systems for data recording, but unfortunately, they are not well used and are often paper based. In a few limited areas, data is recorded for statistical purposes, but there are still many service areas where data is not properly recorded. Medical records are systematically kept for 10 years, but files are piled up in record rooms, and digitization has not progressed very far. In addition, there was talk five years ago of establishing a central recording system, but it was never implemented. Data acquisition has always been a challenge. (#11)
- The lack of a common database between the public and private sectors also makes it difficult to follow up on patients in a coordinated manner. (#12)
- In order for different sectors to increase the efficiency of collaboration, the use of technology and the collection of data through it would be effective. (#12)
- Monitoring and evaluation is also important and, for this purpose, sharing of medical data with related stakeholders is also necessary. (#9)
- Currently, with support from the World Bank, we are building a health management information system (HMIS) that brings patient information and medical records online. (#1)

- District Health Information System (DHIS) for online reporting (# 3)
- Online reservation and referral systems have also been developed. The assumption is that the referral system will refer patients to the appropriate hospital if they do not receive appropriate medical care in their primary care. Such a system can reduce patient wait times and costs in hospitals. (#4)
- In this institution, data is stored and managed by NIC card number. This is a public hospital, but not all hospitals have such facilities. (#8)
- The Ministry of Health has launched an e-Health policy. Also, local hospitals and clinics receive the necessary records and e-health measures but are not interconnected. Some hospitals have ambulatory (OPD) recording systems, but do not have the equipment to interconnect the OPD recording systems with laboratories and X-ray departments within the same hospital or ward. At a minimum, we need a more structured e-Health system that interconnects departments such as laboratories and X-ray units within the same hospital. Most hospitals in Sri Lanka still rely on hard copies and paper-based records. (#10)

(6) Concentration of patients in public higher-level hospitals

In public hospitals, it was confirmed that patients are concentrated in higher (tertiary-level) hospitals due to lack of appropriate referral systems and insufficient allocation of resources to local hospitals and primary healthcare institutions. Some interviewees shared the following key points:

- The main problem is that many patients avoid designated hospitals in rural areas. Most primary care providers are underutilized, and secondary and tertiary care providers are crowded, leaving doctors less time to perform tests and provide appropriate care to those who need it. As a result, physicians are unable to provide appropriate treatment to the patients they need, and an unnecessary number of patients may be admitted to tertiary hospitals. (#8)
- Patients do not know the capacity or facilities of their local hospital and may be better served by going to a tertiary hospital. We need to build networks, provide facilities from the nearest hospital, create chains of referrals, and build good clinical information systems. (#8)
- Tertiary institutions are too crowded to provide the services they need. Primary and rural hospitals are understaffed and underutilized by patients. (#10)
- The main reasons why patients bypass primary hospitals to tertiary hospitals are insufficient distribution of resources to local hospitals, shortage of drugs, etc. As a result, large hospitals are inundated with patients, resulting in an imbalance between patients and services and overcrowding. Dealing with overcrowding requires reallocating equipment available in regional hospitals and strengthening staff and facilities to gain patient confidence. (#10)
- There are some tests that cannot be done at public primary and secondary hospitals. For example, in this hospital (a secondary hospital), We can do basic tests for diabetes, but we can only do HbA1c tests once a week because of the limited supply of drugs. (#2)
- MRIs are only available at hospitals more than 30 km away, making appointments difficult and sometimes waiting for 2 years. (#2)

(7) Lack of coordination between public and private hospitals

Private hospitals are expensive and are accessible only to people with high incomes. On the other hand, public hospitals alone have limited resources, so there was a need for utilizing services from the private hospitals. On the other hand, informal networks have been established between public and private hospitals where general practitioners (GPs or private practitioners) have been contributing to finding patients with NCDs and referring them to public hospitals for further investigation and management.

- Nearby private hospitals are too expensive for ordinary citizens. Public hospitals, on the other hand, are free of charge, but in some cases, there are limited resources for examinations, etc., and in such cases, it is necessary to ask the outside or private sector to conduct examinations. In such cases, patient follow-up may return to a private clinic if the patient can afford it, but often remains in a public hospital. (#2)
- While public hospitals provide free medical care, private hospitals pay 100% of the cost. If you go to a private hospital, you have no choice but to rely on private medical insurance. (#3)
- The challenge is how to pay the private sector in public-private partnerships. For example, when a public hospital orders a patient to take a private test, the problem is how to pay for the test. The introduction of the payment mechanism such as the cost of the inspection is the most important problem. (#7)
- We recognize that collaboration with the private sector is important in resolving the NCDs issue. However, the cost of treating some NCDs is too high, placing a heavy burden on patients. An insurance system response is required. (#9)
- The public and private sectors are independent and there is no proper communication between the public and private sectors. The Ministry of Health also manages the private sector, but there is no system or plan to connect these sectors. Therefore, a sufficient framework needs to be established to allow the private sector to manage NCDs. (#10)
- It feels like a private sector, public sector, community triangle. In order to strengthen communication and referral systems, we believe that coordination among these three parties is necessary. (#10)
- There is no transfer of patient information between sectors between public and private hospitals. (#12)
- It is also important to strengthen private GP services. If people are encouraged to go to private GPs, the financial burden on the government will be reduced. (#2)
- There is lack of training for GPs. (#12)
- Coordination between GPs and public hospitals is very important for patient detection and follow-up, and a formal coordination system is necessary. GP has contact with the community, is trusted and has the ability to collect information, so effective use is meaningful. We need an information-sharing system that uses digital technology for collaboration. (#2)
- There is a network of GPs in the private sector that contributes to patient discovery. They often come to the hospital through a GP diagnosis. (#2)
- Many GPs (about 95%) work part-time in public hospitals, so good communication is possible. GPs often refer NCDs patients from private clinics to public hospitals. We are working together informally but in an appropriate manner. (#2)

4.1.3 Consideration of Sri Lanka's requests

Throughout the study, the Ministry of Health expressed its interest in expanding health screening using Healthy Lifestyle Centers (HLCs). According to an interview with the Ministry of Health, early response to cardiovascular disease risk (secondary prevention) is the main objective of HLCs, while educational activities (primary prevention) will also be emphasized in the future. There are following points to consider in response to the request.

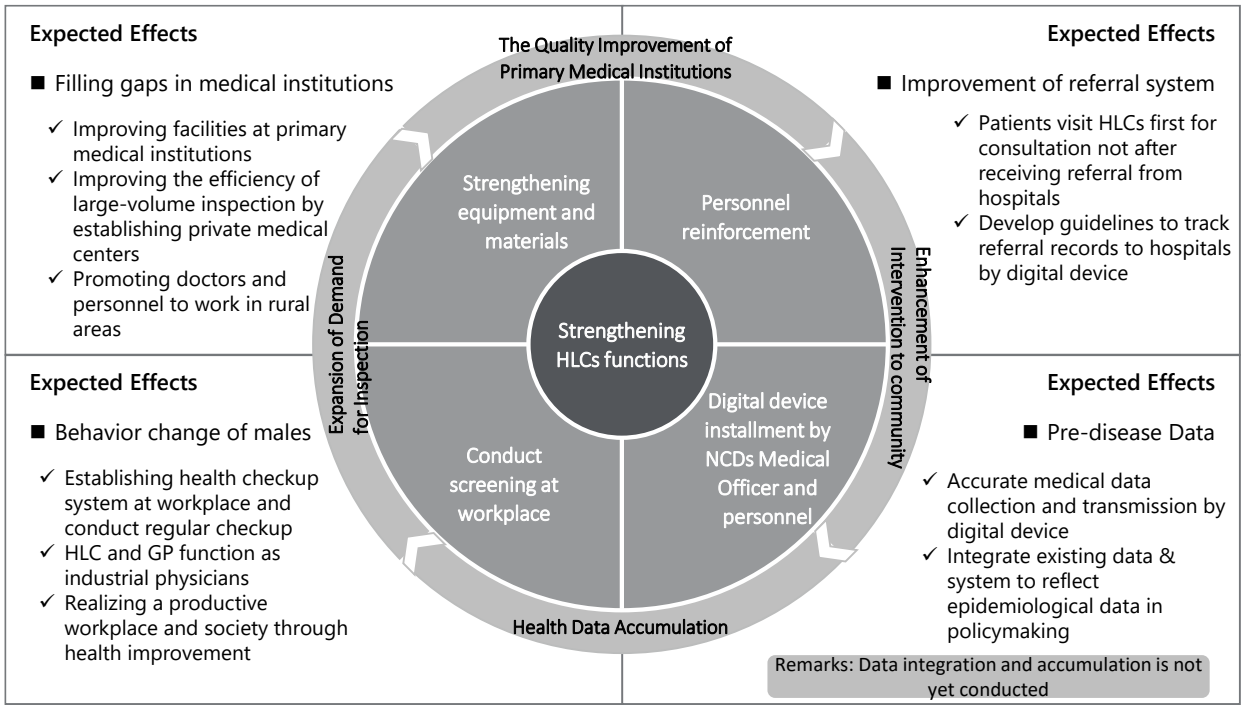
- As discussed in 3.2.3, HLC's vital role in early detection of NCDs were stated in the Health Strategy Master Plan and NCDs MSAP. In 3.2.5, user challenges (especially the low number male users), coordination with follow-up and referral sources, low awareness, staff expertise, and poor monitoring

and evaluation were listed as major challenges. The WHO and the Global Fund also recommended that HLC screening and NCDs risk factor management capabilities be further enhanced through the development of facilities and training of health staff. The World Bank is planning to conduct outreach for HLC services, including workplace screening, the installation of mobile screening vehicles, and media and community awareness activities[236].

- According to a document[237] provided by the Ministry of Health, in terms of referral and facility management, current users of HLCs are recommended optional HLC screening by hospitals when they visit for treatment of other illnesses, which may make it difficult for HLCs to serve as the initial consultation, In addition, while HLCs do encourage patients who need re-diagnosis and treatment to visit higher medical institutions, there is no patient/resident data system or hotline for management, making it difficult to track patients post-referral. In addition to building data systems, it would be therefore important to deploy community physicians (or family doctors) at HLCs which enables residents visit HLCs more easily.
- Referral (especially between private and public hospitals) was cited as a problem in this study. In the interviews, however, there were several opinions that private general practitioners (GP), who play the role of family doctor in the community, have their own network and are able to informally realize referrals between private clinics and public hospitals to some extent.
- There was an opinion from during the meetings with Japanese stakeholders that it would be important to refine information on community health sites through screening by HLCs. It helps HLCs clearly understand the current situation through such additional baseline surveys and, it would further enable HLCs to set clearer activity targets for HLCs and attract more users.
- To expand screening services, it is important to tackle the various challenges at HLCs (staffing, general awareness, referrals, follow-up, and recording/reporting) and to create a path for strengthening the overall service delivery capacity of HLCs. It is also essential to create an environment in which residents can seek advice on their health by increasing the number of professionals. To obtain reliable health information, it is crucial to promote NCD MOs and staff to record and reflect correct data from HLCs or places visited, and to carry out screening activities at workplaces, etc.
- To obtain support and budget for further screening activities at HLCs, it is important to disclose scenarios of the effects of HLCs screening and benefits to the communities. In addition to the benefits of reducing medical costs and extending healthy life expectancy of patients through early detection, socioeconomic conditions that make it difficult for each target population to use services should also be considered. For example, for young labor force and impoverished men, external circumstances such as employment status and community status (negative factors such as being fired or being affected by status in the community if diagnosed as being at risk for disease) may also be a factor. Enlightenment activities call for the community and workplace to respond to these negative factors in a unified manner. Implementation of workplace screening and mobile screening would also lead to alleviating the unequal distribution of primary medical institutions in the long term.

[236] https://www.worldbank.org/en/news/feature/2015/04/02/combating-non-communicable-diseases-health-promotion-prevention

[237] Ministry of Health and WHO (2021) "Review on the National NCD Prevention and Control Programme in Sri Lanka"



Prepared by study team

Figure 4-1 Activities and expected effects on HLC

4.2 Visit to Japan (online)

4.2.1 Overview

(1) Background

The initial plan was to conduct a field study in November 2021 based on the hypotheses of the main NCDs issues from the literature survey, and to conduct a national visit in December 2021 or January 2022 with a program reflecting the results. However, as of October 2021, the spread of COVID-19 had been somewhat contained, but due to concerns about the local medical system and the future of infection, it was decided to switch to online interviews with relevant persons in Japan.

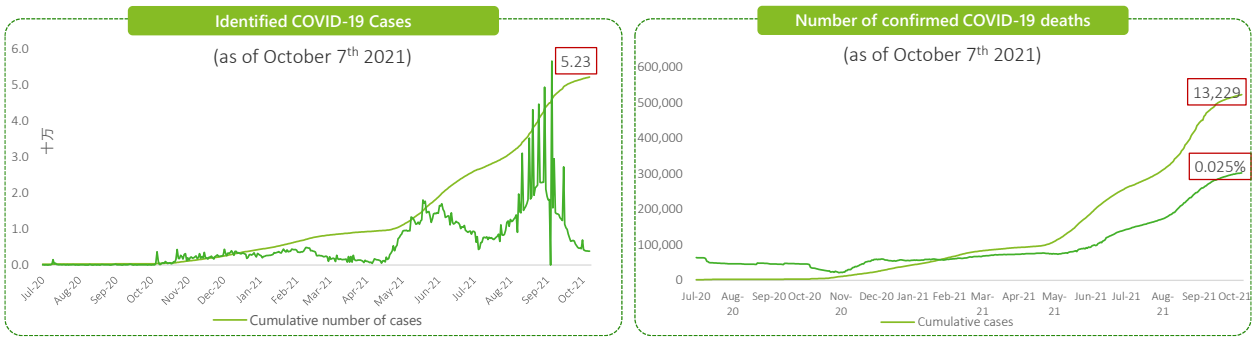


Figure 4-2 COVID-19 infections, total deaths, and mortality rate (as of October 2021)

After the explanation of the Inception Report, it took time to confirm the cooperation system of the Ministry of Health of Sri Lanka. As a result, the work related to the overseas travel in "Step 2" was postponed by

about 1 month, and it was decided to start in early 2022.[238] As a result, online interviews as an alternative to visiting Japan took effect in late February 2022.

(2) Outline of online interviews

The purpose of this visit is for the participants of the Ministry of Health of Sri Lanka to grasp an image of future NCDs and how to deal with them through discussions with Japanese stakeholders. As a result, it was expected to make it possible to elicit concrete opinions on the "Roadmap" proposed by the study team at the field seminar to be held after March, and to propose measures for the issues identified by the Ministry of Health of Sri Lanka through this visit.

In addition, this visit was going to enable key persons in Sri Lanka to gain a better understanding of the Japanese government's policy on health measures, as exemplified by "Healthy Japan 21," through hearings from various Japanese parties involved in community integrated care, etc., where the aging of society and the issue of NCDs are becoming more complex and sophisticated ahead of the rest of the world, as well as the utilization of private technology in the medical field and cooperation between local governments and medical institutions.

In order to deepen the understanding of the mechanism by which Japan works from the field to the policy, individual meetings were going to be held with Japanese policy makers and medical professionals, and then sessions were to be held in a form that brings together all the stakeholders as a whole.

It was envisaged that these notices would be linked to the agenda of the "Field Seminar" to be held after March.

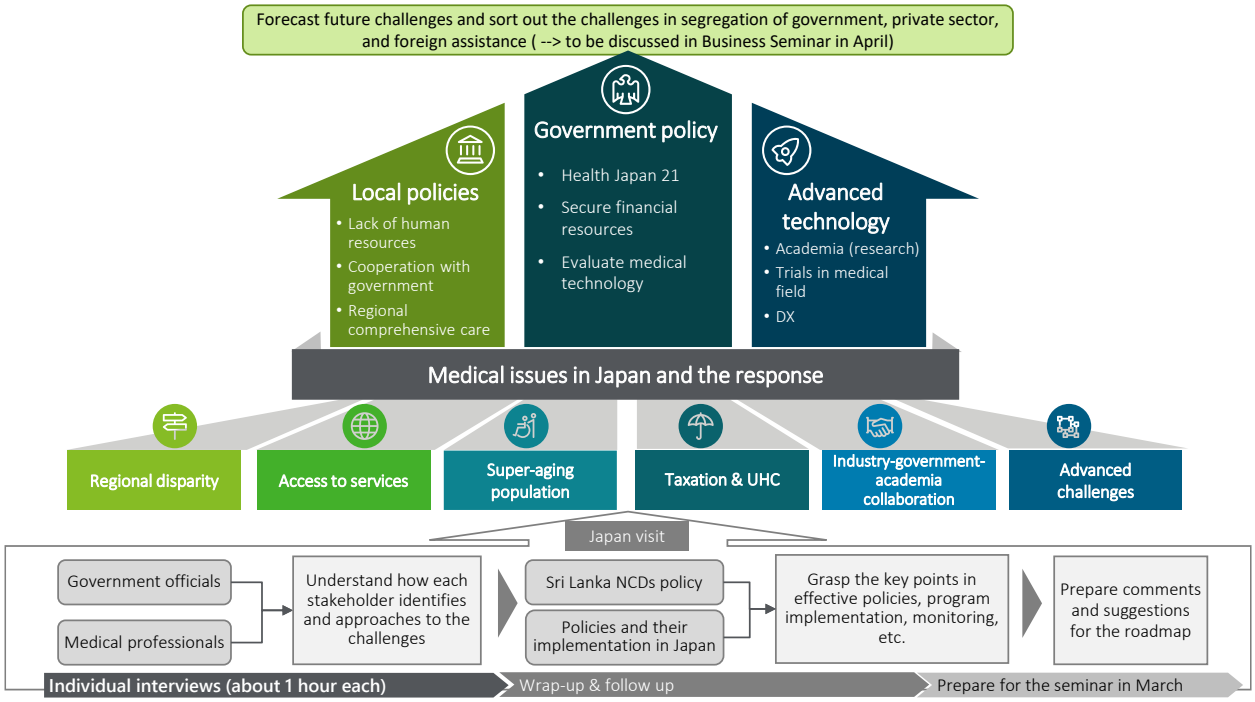


Figure 4-3 Outline and Purpose of Visit to Japan

238 This was possibly due to the busy schedule of the Ministry of Health of Sri Lanka from August to September 2021 to control the spread of infection.

4.2.2 **Individual interviews**

(1) **Policy-related interviews**

For the sake of the health of the people in the 21st century, Japan is strongly promoting measures focusing on primary prevention and extending healthy life expectancy, in addition to secondary prevention and tertiary prevention, which were the traditional centers of disease prevention. To this end, the government established the National Health Promotion Movement in the 21 Century (Health Japan 21) in 2000 and is comprehensively promoting the health promotion movement that the people can independently engage in, with the active participation and cooperation of private organizations that broadly support the health promotion of the people. In 2003, the Health Promotion Law was enacted and the "Health Japan 21" was amended accordingly. Prior to this, in 2000, as the third national health promotion measure, issues related to lifestyle diseases such as cancer, heart disease, stroke, and diabetes, and the improvement of lifestyle habits that cause these diseases were selected.

Japan has been promoting these Japanese policies and a wide range of national initiatives, not limited to the administration, for more than 40 years. The study team is convinced that Sri Lanka has a lot to learn from Japan about measures for NCDs and the promotion of the health of the people. The team therefore requested a meeting with the Ministry of Health, Labour and Welfare of Japan. With regard to the visit to the said Ministry, while keeping in mind that the theme would not be too broad, it sounded out the relevant departments of the Health Department and met with the former Health Department Director.

Table 4-2 Policy-Related Interviews

Interviewee	Contents	Interviewee
Ministry of Health, Labor and Welfare or expert	✓ Current Status of NCDs in Japan (Oncology, cardiovascular diseases, diabetes mellitus, chronic obstructive pulmonary disease (COPD), other chronic diseases, lifestyle-related diseases and multiple diseases, etc., becoming chronic and complex, increasing and diversifying the needs for health care, and advancing technological innovation, etc.) ✓ Outline of Japan's NCDs policy (Health Japan 21, Health Promotion Law, Securing of system for differentiation and cooperation of medical functions by medical care plan, and regional medical care plan) ✓ Medical Technology Assessment (Are medical, social, ethical, and economic rationality related to the introduction of medical technology being transferred?)	Health Bureau
JICA	✓ Japan's Efforts to Combat NCDs ✓ Examples of countries similar to Sri Lanka	JICA South Asia Department, Human Development Department

(2) **Interviews for medical practice in Japan (introduction of NCDs services)**

The study team planned to conduct interviews on the relevance of medical practice activities and policies in Japan. The following were also examined as objectives: aspects of advanced medical treatment and research in the situation in which the medical issues of Japan become complicated with the aging, and the system which adjusted to the characteristics of the region mainly by administration and inhabitant of municipality. The Aichi Cancer Center cooperated in providing their insight. Also, a meeting was held with Saku City Hall and Saku General Hospital in Nagano Prefecture.

Table 4-3 Healthcare providers

Interviewee	Contents	Interviewee
Regional hospitals (regional medical issues)	✓ Regional medical care coordination (development of a regional system that enables integrated provision of medical care and nursing care)	✓ Saku city ✓ Saku General Hospital
Community hospital	✓ Points of Attention Regarding Medical Conditions and Business Plans in Japan	✓ St. Mary's Hospital
Academic institution	✓ Advanced research	✓ Aichi Cancer Center

(3) Interview wrap-up

An Interview was also conducted between counterparts of the Ministry of Health of Sri Lanka and the South Asia Department and the Human Development Department of JICA. The purpose of the meeting was for the Ministry of Health of Sri Lanka to make a presentation on the country's NCDs policy and measures, to convey their ideas about the NCDs policy and measures to be taken in Sri Lanka in the future, and to obtain comments from the Japanese participants. The meeting also intended for the Ministry of Health of Sri Lanka to obtain a more concrete image of the roadmap for the survey.

4.2.3 Summary of interviews

(1) Ministry of Health, Labour and Welfare

(i) Japanese healthcare policy

- Health of the Japanese people
  - As Japan enters a super-aging society, it is ideal to reduce the gap between life expectancy and healthy life expectancy.
  - In the postwar period, tuberculosis and other infectious diseases were the main causes of death in Japan, but the number of deaths has decreased dramatically. Malignant neoplasms, heart disease, and cerebrovascular disease are the main causes. In addition, the number of deaths from cerebrovascular disease has been decreasing since the latter half of 60, and this is a result of guidance on salt reduction at the national level.
  - 1/3 of the nation's medical expenses are devoted to lifestyle-related diseases.
  - Risk factors for NCDs include smoking, followed by hypertension, physical inactivity, hyperglycemia, and excessive salt intake.
- Japan's health promotion policy
  - First National Health Promotion [1978]
    - Focusing on secondary prevention (health checkups), health centers were established at the municipal level and initiatives at the municipal level were initiated (formerly there was no public health center and it was led by the government and the prefecture).
  - Second National Health Promotion [1988]
    - Exercise was encouraged.
  - Third National Health Promotion [2000]
    - Decision of "Health Japan 21" and primary prevention are emphasized.
    - Identification of target groups and increased involvement of the private sector, including NGOs and private companies, led to the passage of the Health Promotion Law (2003).
    - The specific medical examination system was started (Monitoring as well as screening for metabolic syndrome is key in 2008, especially with the start of metabolic checkups).
  - Fourth National Health Promotion [2013]
    - "Second Health Japan 21" was decided and the Health Promotion Law was revised (Strengthening measures against passive smoking in 2018).
- Evaluation of policy
  - Outline of the interim evaluation of the Second Healthy Japan 21 (Conducted in 2016 and reported in 2018)

- ✧ The Healthy Japan 21 has 57 detailed indicators linked to 5 main goals, and each is evaluated in 4 categories of "improved," "unchanged," "deteriorated," and "cannot be evaluated." The overall evaluation was 60.4%.
- ✧ There was a satisfactory improvement in the indicators of extension of healthy life expectancy, correction of prefectural disparities, strengthening of diabetes control, decrease in suicide rate, and increase in prefectures tackling health disparities.
- ✧ The decrease in the number of metabolic syndrome and reserve army, the decrease in obese children, the increase in the number of long-term insurance members, the increase in individual health promotion activities, and the decrease in smoking rate have not improved. However, it is possible to achieve the next (2022 evaluation).
- ✧ With regard to the smoking index, the target smoking rate was 16% in 2019, compared with 12%, and it will be difficult to achieve the next target (2022).

➢ The Health Promotion Law was partially amended in 2018 to focus on the elimination of passive smoking, with a major change being the imposition of fines for smoking outside designated areas.

(ii) Questions and answers

■ What should be considered to promote behavior change?

➢ Advocacy for health and creating a social atmosphere are important

- ✧ The use of mass media and public relations is effective. In particular, it is important to identify the target population and determine PR content that is conscious of the age group.
- ✧ For example, for people in their 20 s and 30s who are less interested in health, there are examples of PR campaigns using popular celebrities, idols and influencers.

➢ Significant impact of private sector involvement

- ✧ Initiatives to ban smoking in the private sector to protect the health of employees were a very important trigger for health policy.

■ Are there examples of successful health behavior modification?

➢ Using the Nudge Theory (Strategies to change people's behavior through small triggers)

- ✧ Adachi Ward, Tokyo, is a district with poor health indicators, but has succeeded in increasing vegetable intake through health promotion measures that promote vegetable intake.
- ✧ For example, they partnered with a local restaurant as a "Vegetable Life Cooperative Restaurant" to create a menu using a lot of vegetables (for example, ramen with a lot of vegetables), and carried out educational activities widely[239].

➢ Operation of bonus point system

- ✧ To promote exercise by providing an incentive to receive shopping or prizes with points accumulated through exercise.

➢ Designation of smoking areas in public places

- ✧ Healthy people usually do not care about their health, but by changing their social environment, they can naturally lead to behavioral changes toward health.

■ What is the next medium-term strategy?

➢ Having Big Data in Japan

239 https://www.env.go.jp/earth/ondanka/nudge/renrakukai02/mat03_1.pdf

- ✧ In Japan, the National Health and Nutrition Examination Survey is conducted every year as required by law (this has been going on for 70 years since the end of World War II). It is important to measure the results every year and reflect them in policies.

- ➢ "Health Japan 21" is a 10-year policy, and implementation evaluation is conducted once every 5 years. The results of this evaluation are used to formulate policies for the next five years.

■ What are the possible roles of the private sector and the government in health promotion?

- ➢ In Japan, 90% of medical institutions are private and 10% are public, which is completely different from the structure of the Sri Lankan medical system.

- ➢ However, I believe that the role of the government is to create an atmosphere in society oriented toward health.

(2) **Aichi Cancer Center**

(i) Description of Aichi Cancer Center

■ Basic information

- ➢ It has 500 beds, 132 doctors and 403 nurses, and about 4,600 new patients per year.

■ Central role of regional cancer treatment as designated cancer medical institution in Aichi prefecture

- ➢ It is responsible for chemotherapy with anticancer drugs, the services of palliative care teams, and coordination and cooperation with community health care organizations.

■ Prognosis of lung cancer was extended from 2 months in 1970s to 30 months in 2010s by the development of chemotherapy.

- ➢ Behind this lies a very high cost ($240 a day for treatment, $3300 a month for treatment), and mitigation is a major issue.

■ Focus on prevention and early detection

- ➢ More than 20% of gastric cancer cases are found through cancer screening and health checkups, but only about 5% of cases are found in the liver or bile duct. Most of these cases are found through follow-up examinations for other diseases.

- ➢ It should be noted that cancer screening costs about $1,500, so prevention is also costly.

■ importance of preventive activities

- ➢ It also appeals to communities and schools.

- ➢ Uterine cancer vaccine is estimated to be 7 to 90% preventable, but it has not yet been widely distributed due to safety concerns.

(ii) Questions and answers

■ What is the role of government in cancer prevention activities?

- ➢ The development of guidelines by the government allows hospitals to focus on providing the best medical care and to define minimum cancer treatment and other services in the community. As a result, Aichi Cancer Center has been able to provide high-quality services as a core facility in the region.

■ Is there a way to shorten the waiting time?

- ➢ First of all, it is important that patients understand the standard waiting time, and they are notified on the website and explained to patients.

- Do you have advice on promoting cost-free prevention?
  - Awareness-raising activities are of paramount importance, and how to encourage future patients to think about cancer is important, but reaching those who do not have such awareness is always a challenge.

(3) St. Mary's Hospital

(i) Presentation from St. Mary's Hospital

- Difficulty of seeing objects or results
  - Improvements in public health indicators also cover the social environment, making it difficult to see results.
  - In setting goals, more concrete and objective expressions should be made by using numbers, etc., rather than expressions with different images depending on the reader.
    - For example, when expressions such as "10% reduction" are used, the beneficiary can grasp the current numerical value and use it after specifically referring to the numerical value to be compared, so that the beneficiary can imagine the return to himself/herself after the achievement.
- Identification of factors
  - Identifying factors is critical and difficult, and needs to be accurately analyzed in light of community and social conditions.
    - For example, young people who are relatively healthy should be aware of the points of change, such as "Above a certain threshold, such as reaching an acceptable age for alcohol, the burden of disease in NCDs increases." and should be informed of them at an early stage.
  - Diet, for example, is a part of society and life, and it is not easy to change habits even if it is understood mentally to be bad for the body. Therefore, approaches to NCDs differ between adults who have become habitual to some extent and young adults who do not.
    - For example, it may be sufficient to indicate the risk of NCDs for young adults.
    - On the other hand, it is necessary to understand that NCDs occur when accumulation reaches a certain age.

(ii) Questions and answers

- What are the success stories and the process of behavior change.
  - Past cases of pre-hospital care systems
    - Since the project goal was abstract such as "shortening the transportation time" and "providing medical measures to save the life of the patient," the present transportation time and its factors were grasped in each stage and concretely possible shortening time was examined. We also discussed what measures should be taken against it. Thus, there are cases in which the initial target values are not set correctly, and this is due to the visualization and concreteness of the aforementioned issues.

(4) Saku City / Saku General Hospital

(i) Presentation from Saku City

- Community Complete Healthcare Delivery System
  - Saku City has been telling citizens the importance of having a family doctor. Having a primary care doctor contributes to the establishment of a system to reduce the number of patients who

go on to higher-level medical care. The system which completes the treatment in the region by the cooperation of primary emergency services, secondary emergency services and tertiary emergency services is taken.

- Encouragement of medical examination
  - Those at high risk, such as those with metabolic syndrome, are encouraged face-to-face to undergo close examinations. Debriefing sessions are held for those who have undergone group health checkups, giving the examinees an opportunity to think about the results of the checkups, so that more effective health checkup encouragement can be provided. In addition, lectures to prevent serious illnesses such as lifestyle-related diseases and exercise classes are also held.

(ii) Questions and answers

- Which organizations or professions play a coordinating role in multi-institutional and multi-professional collaboration in community healthcare? What are the necessary elements for smooth collaboration?
  - The respective subcommittees are constituted within the medical association, of which the hospital director is a member of the board of directors. In addition to the medical association, there is also a dental association and a pharmacist association. The three associations are working together to establish a system that facilitates information sharing.
- Are there any measures to improve the participation rate for specific health checkups?
  - In order to increase the number of new examinees, Saku City offers free of co-payments payments for individual and community group health checkups equivalent to specific health checkups. In addition, sending postcards to individual residents to change their behavior and to encourages those who regularly visit medical institutions to take the examinations.
- Are there any efforts to monitor the patient trends and follow up after the patient is referred to a medical institution from the medical checkup? What measures are being taken?
  - For those who have already visited a medical institution, progression prevention programs are implemented. In particular, as a project to prevent dialysis, which is an expensive medical treatment, health guidance is provided in cooperation with medical institutions for those who are undergoing treatment for diabetes and whose renal function is deteriorating. In addition, annual lectures to prevent chronic kidney disease, and health consultations are provided as needed.
- What are the elements necessary for smooth coordination between medical care and in-home care?
  - It is necessary to promote the development of face-to-face relationships between employees of medical institutions and nursing care facilities at the medical and nursing Care Coordination Promotion Council and various training sessions.
- What are the features of the integrated community care system being in Saku City?
  - In cooperation with the Community Comprehensive Support Center and the Council of Social Welfare, Saku City has been conducting various projects to enable the elderly to live their own lives while training people to take the initiative in preventing nursing care and voluntarily participating in community activities.
- It seems that the COVID-19 has made it difficult for the elderly to visit hospitals and receive home-visit medical and nursing care. What measures should be taken to continue monitoring the health of the elderly during the pandemic?
  - The city does not conduct health monitoring, as this is handled by each medical institution and nursing care facility. The city officials visit the homes of all citizens aged 75 and 85 to check their health conditions and raise awareness about care prevention.

- The comprehensive community care system is basically for people aged 65 and over. There are people aged under 65 who need medical care, nursing care and life support due to juvenile dementia, cancer, etc. What kind of care system covers those people?
    - Even for people under 65 years old , the Health Promotion Section provides counseling on physical, mental, and lifestyle issues. If they need nursing care, the staff of the Community Comprehensive Support Center provides consultation and support in cooperation with related organizations, regardless of the age of the person.

(5) **South Asia Department/Human Development Department**

(i) JICA's projects on NCDs in Sri Lanka and other countries

- Health care projects in Sri Lanka
    - In Sri Lanka, where the NCDs problem is more advanced than in other Asian countries, JICA's efforts are also advanced.
- Commitment to NCDs Worldwide
- Health Care Model Cases

(ii) Exchange of views on requests from Sri Lanka

- Request of the Sri Lankan Ministry of Health
    - Strengthening activities of Healhy Lifestyle Centers (HLC)
        - Although the number of NCDs activities has decreased due to the impact of COVID-19, we would like to reinvigorate the screening program and activities against risk factors for NCDs (Ministry of Health Sri Lanka).
        - There are many issues related to these activities, but we would like to consider what we should do first. In doing so, we would like to take care not to overlap with JICA's "Project for Strengthening Ability to Operate Services for the Elderly in Communities."
    - Persons involved in strengthening activities and methods (Ministry of Health)
        - Because these actors are partnerships with the public health sector and health care providers, they involve local physicians (CCPs) and NCD Medical Officers for NCDs.
        - The approach is currently using a risk prediction model based on WHO guidelines to refer patients with a risk of cardiovascular disease of 20% or more to specialty clinics.
- Points to be considered in the future
    - Utilization of JICA’s asset and expertise in activities of Ministry of Health Sri Lanka is important for JICA’s strategy in healthcare. Strengthening HLCs is one of the priority actions. However, JICA would like Ministry of Health to consider the following points (from JICA):
        - The actions that Ministry of Health Sri Lanka expects JICA to support in order to strengthen HLC functions.
        - JICA understands the importance of integrating NCDs services into the existing health system of Sri Lanka. Given that Sri Lanka's health expenditure is limited to around 3% of GDP, NCDs countermeasures cannot be planned alone, but planned in abreast with development of PHC which can be further integrated with NCDs services.

✧ JICA sees it important to expand NCDs screening services to workplaces and schools. At the same time however, it would be also essential to consider multisectoral approaches, such as collaborations between health and education sector in prevention.

4.2.4 Lessons learned from Interviews

The participants from the Sri Lankan Ministry of Health had a lot of input, as the Japanese side actively provided information. The questions asked by the Sri Lankan Ministry of Health centered on the process leading to and effects on the behavioral change of beneficiaries during policy implementation.

MHLW mentioned the importance of learning from various evaluation indicators and progress results under long-term scenarios when formulating short- to medium-term policies. In addition, there was an impression that the episode about the target's preference at the time of implementation and the mechanism that does not make them feel social coercive force (Example: encourage companies to separate smoking areas instead of legislating smoking measures) were techniques that the Sri Lankan participants wanted to reflect in future policy making.

St. Mary's Hospital mentioned the importance of identifying the causal relationship of events by hearing from various parties, as well as expertise in the medical field, because social factors that are different from those in the health care field are often behind the problems of measures against NCDs. The advice that the age and gender approaches to NCDs awareness vary seemed to be a suggestion to the Sri Lankan Ministry of Health as it sought to expand the services of HLCs regarding the activities of NCDs' medical officers.

In this way, it was beneficial for the Ministry of Health of Sri Lanka to become aware of the medium- and long-term perspective and the process leading to behavior change in policymaking. In addition, when asked about issues related to NCDs in Sri Lanka and proposed solutions to their needs, which will be described later in Chapter 5, in the retrospective after the meeting, there was high interest in diagnostic equipment and medical ICT. Therefore, at the local seminar to be held after March, the study team plans to have presentations from companies that have such technologies and have an interest in Sri Lanka, and from the Ministry of Economy, Trade and Industry, which supports the overseas expansion of Japanese companies.

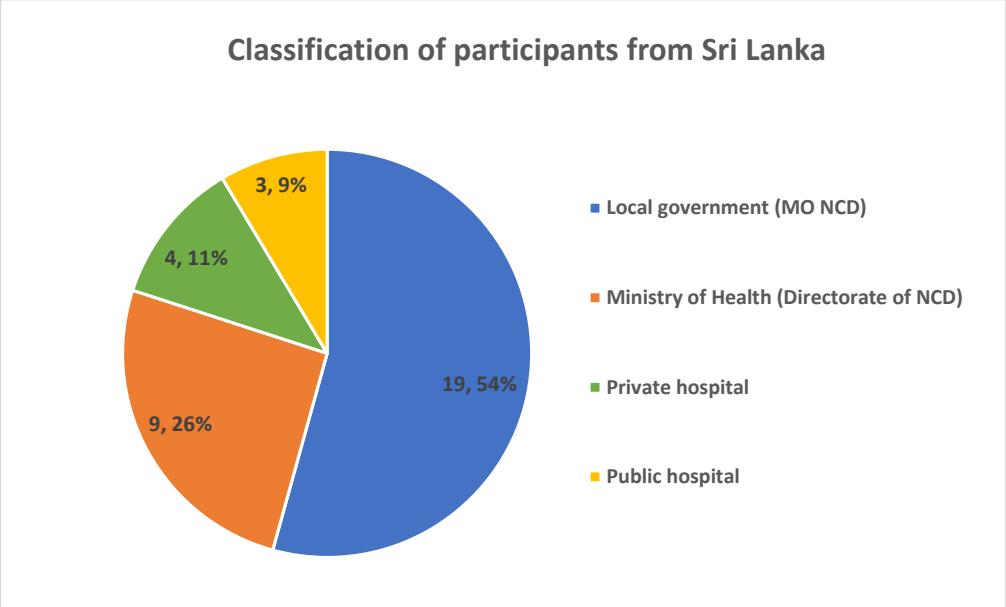
4.3 Field seminar

4.3.1 Overview

(1) Seminar Overview

The summary of the seminar is shown in the table below. Based on the high level of interest in the fields of diagnostic equipment and medical ICT, which was confirmed through interviews conducted prior to the seminar, presentations were made by five Japanese companies that are developing products and services in these fields and by the Ministry of Economy, Trade and Industry, which is working to improve the level of health care in other countries through collaboration with Japanese companies.

Time	April 20th, 2022 (Wednesday) 1.5 hours
Objective	■ Introduce products and technologies from Japanese companies that can lead to solving Sri Lanka's NCDs issues. ■ Discuss the usefulness and applicability of Japanese companies' solutions to the measures indicated in Sri Lanka's NCDs roadmap. ■ Facilitate the understanding of needs from Sri Lankan KOLs through exchange of opinions and matching with solutions from Japanese companies.

Format	Zoom (Online meeting format)
Participants	**Participants from Sri Lanka (Approximately 35 participants)** ・ Ministry of Health of Sri Lanka (NCD Directorate): Approximately 9 participants ・ Local government (MO NCD): 19 participants ・ Private hospital officials: 4 participants ・ Public hospital officials: 3 participants  **Figure 4-4 Attributes of Sri Lankan participants** **Participants from Japan (Approximately 30 people)** ■ Presenters: Japanese companies (Allm Inc., Sysmex Corporation, T-ICU Co., Ltd., Olympus Corporation, Fujifilm Corporation), Ministry of Economy, Trade and Industry of Japan ■ JICA ■ Survey team (Deloitte Japan)

(2) Content of seminar

The seminar was conducted based on the following program:

Table 4-4 Program of the seminar

	Sri Lanka Time	Program	Presenter	Time Required
1	14:30-14:32	Opening Remarks	Ministry of Health of Sri Lanka	2 minutes
2	14:32-14:37	Introduction	Survey Team (Deloitte Japan)	5 minutes
3	14:37-14:49	Issues and measures for NCDs in Sri Lanka	Survey Team (Deloitte Japan)	12 minutes
4	14:49-14:59	Corporate Presentation ① [Medical ICT]	Allm Inc.	Presentation: 8 minutes Q&A: 2 minutes
	14:59-15:09	Corporate Presentation ② [Diagnostic Equipment]	Sysmex Corporation	Presentation: 8 minutes Q&A: 2 minutes
	15:09-15:19	Corporate Presentation ③ [Telemedicine]	T-ICU Co., Ltd	Presentation: 8 minutes Q&A: 2 minutes
5	15:19-15:24	Public Private Partnerships in Health	Ministry of Economy, Trade and Industry of Japan	5 minutes
	15:24-15:29	Corporate Presentation ④ [Diagnostic Equipment]	Olympus corporation	5 minutes
	15:29-15:34	Corporate Presentation ⑤ [Diagnostic Equipment]	FUJIFILM corporation	5 minutes
6	15:34-15:49	Discussion and Q&A	Facilitation: Survey Team (Deloitte Japan)	15 minutes
7	15:49-16:00	Closing remarks	▪ Ministry of Health of Sri Lanka ▪ JICA	11 minutes

First, the survey team made a presentation on the overview of the study, the issues regarding NCDs in Sri Lanka, and the proposed roadmap of countermeasures. Afterward, five Japanese companies gave presentations on their products and services, and the Ministry of Economy, Trade and Industry of Japan made a presentation on the collaborative efforts between the Japanese government and Japanese companies. The details of the presentations from each organization are as follows:

- Allm Inc.

  Allm Inc. gave a presentation on their "Join" application, which allows medical professionals to communicate in a secure environment using mobile devices, and "Team," a cloud service that enables real-time information sharing among medical and nursing care service professionals.

- Sysmex Corporation

  Sysmex Corporation gave a presentation on developing and producing advanced analyzer/systems using AI and ICT technology. As the company considers capacity building to be particularly important in South and Southeast Asia, Sysmex Corporation mentioned providing online information on how to use its equipment as well as troubleshooting.

- T-ICU Co., Ltd.

  T-ICU Co., Ltd. introduced its remote consultation service for intensive care. The company also made a proposal to the Sri Lankan side to provide training for young medical professionals mainly in tertiary hospitals and real-time remote advisory services from Japan through collaboration with medical teams in remote local areas.

- Ministry of Economy, Trade and Industry of Japan

  The Ministry of Economy, Trade and Industry of Japan gave a presentation on the various measures that are being taken to improve the level of health and medical care in countries around

the world through collaboration with Japanese companies. As specific examples of collaboration, the efforts of Fujifilm Corporation (Project involving transferring liver cancer diagnostic technology and developing medical practice guidelines in Thailand) and Olympus Corporation (Project involving transferring endoscopic technology and developing medical practice guidelines in Vietnam) were mentioned.

- Olympus Corporation

  Olympus Corporation gave a presentation on offering a wide range of products from diagnosis to treatment and solutions for colorectal, lung, and esophageal cancer, which each account for 6-8% of all cancers confirmed in Sri Lanka in 2020. The company also touched on providing training for technicians and nurses in Sri Lanka.

- Fujifilm Corporation

  Fujifilm Corporation gave a presentation on providing medical equipment with features including "small size, easy handling, precision, and low cost" in various countries to contribute to the creation of a system to provide appropriate "primary care" in response to issues such as the shortage and uneven distribution of medical resources.

4.3.2 Summary of Q&A and discussion session

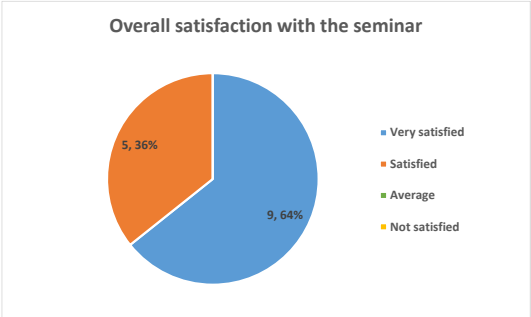
A participant from Sri Lanka commented that the solutions presented by Japanese companies at the seminar could contribute to local healthcare system in terms of providing more information and treatment to patients, even if medical facilities lacked equipment. The high importance of remote diagnosis, especially in rural areas, was mentioned as well. Fujifilm Corporation was asked about the power supply for the small portable X-ray machines, to which the company responded that the machines are equipped with solar batteries, have a built-in battery, and can operate for a day without a power source. Regarding the provision of services by T-ICU Co., Ltd., a participant asked whether a facility that would serve as a center, infrastructure, or special equipment is required, to which the company responded that consultation services could be provided if there was internet connection in the medical facility. The company also explained that a high-resolution camera would allow timely monitoring of patients, but if that is not possible, a specified Excel format could be used as well.

In response to a question regarding Allm Inc.'s applications and its service availability when communication bandwidth is insufficient, the company responded that large bandwidths such as 4G and 5G are not necessary and that its applications can be used in a 2G environment based on its implementation results in the past. Sysmex Corporation was asked what kind of medical facilities in the target countries they would like to partner with, to which they responded that they could partner with primary to tertiary medical facilities, but that they would like to especially consider introducing their products to tertiary medical facilities through collaboration with the Ministry of Health of Sri Lanka.

4.3.3 Issues and requests from Sri Lankan side

Approximately 35 people from Sri Lanka participated in the seminar, of which 14 responded to the post-event questionnaire. (8 from Local government (MO NCD), 4 from Ministry of Health (Directorate of NCD), 2 from private hospitals) The following is a summary of the questionnaire results and the issues and requests from the Sri Lankan side.

As for the overall level of satisfaction with the seminar, all respondents selected 'very satisfied' and 'satisfied'. Regarding the requests for the seminar, many respondents expressed a desire for presentations from companies of their own interest and from the private sector in Sri Lanka.



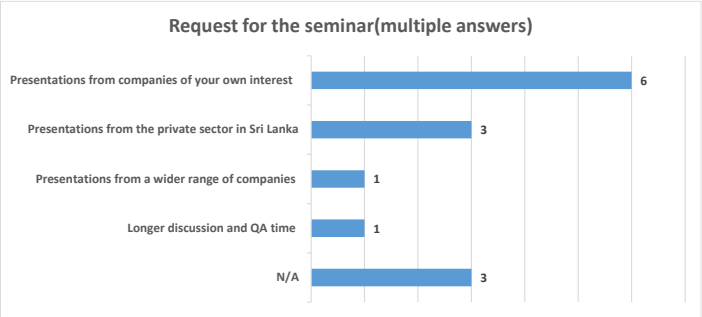


Figure 4-5 Overall satisfaction with the seminar and requests

Four questions were asked in the post-event questionnaire: ① what areas of NCDs in Sri Lanka the participants felt were challenges, ② what areas their organizations would like to strengthen in the future, ③ what they expected from the public sector of Sri Lanka, and ④ what they expected from Japanese companies in the NCDs field.

Regarding the first question, "Which of the following phases regarding NCDs (Prevention, Diagnosis, Treatment, Follow-up care) do you find most challenging in Sri Lanka?", 63% answered 'prevention', followed by 32% answering 'follow-up care' and 5% answering 'diagnosis'. Many respondents also commented on the low rate of health checkups among the general population particularly among men, the low rate of visits to medical facilities, the challenges in how to approach people to change their behavior such as their eating habits, and the need for strategic planning that takes Sri Lanka's multi-ethnicity into account, including the country's multiple cultures, religions, and geographical conditions.

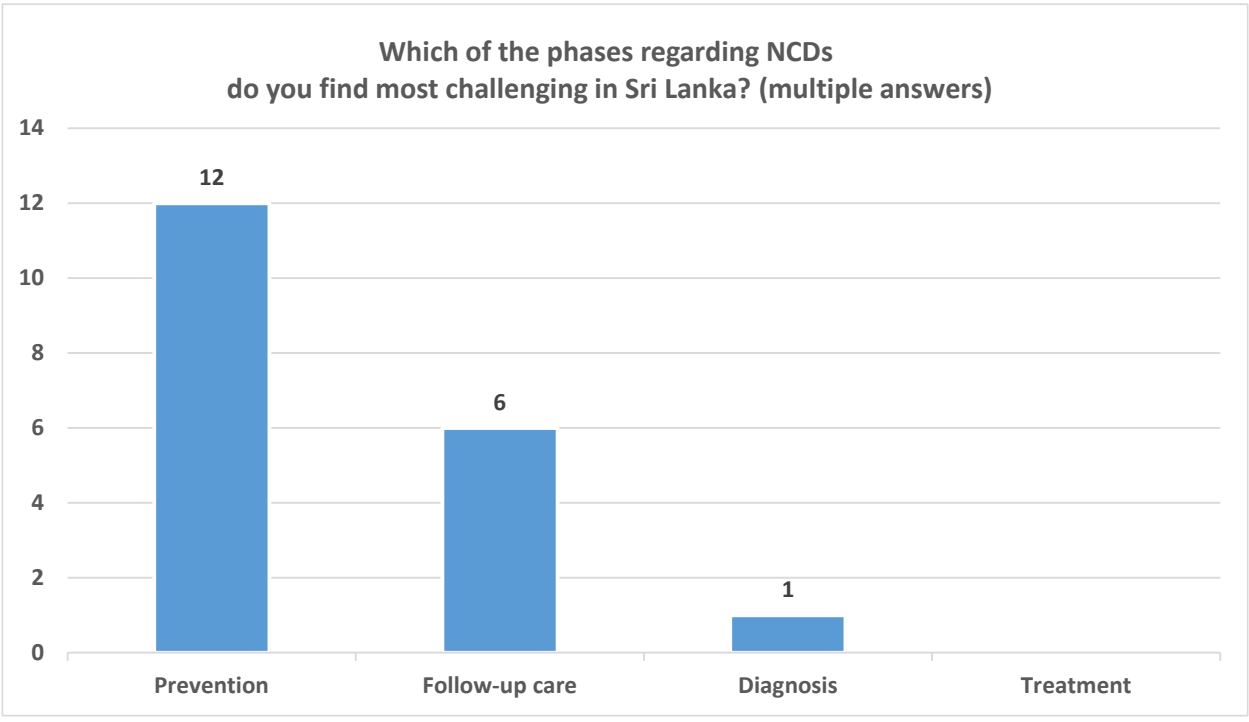


Figure 4-6 Challenging areas regarding NCDs

To the second question, "Which NCDs areas do you want to strengthen your organization's capacity to deal

with?", approximately 71% of respondents (10 out of 14 respondents) answered 'diabetes', and 50% answered 'cardiovascular disease', followed by 'high blood pressure' and 'cancer' (See figure below).

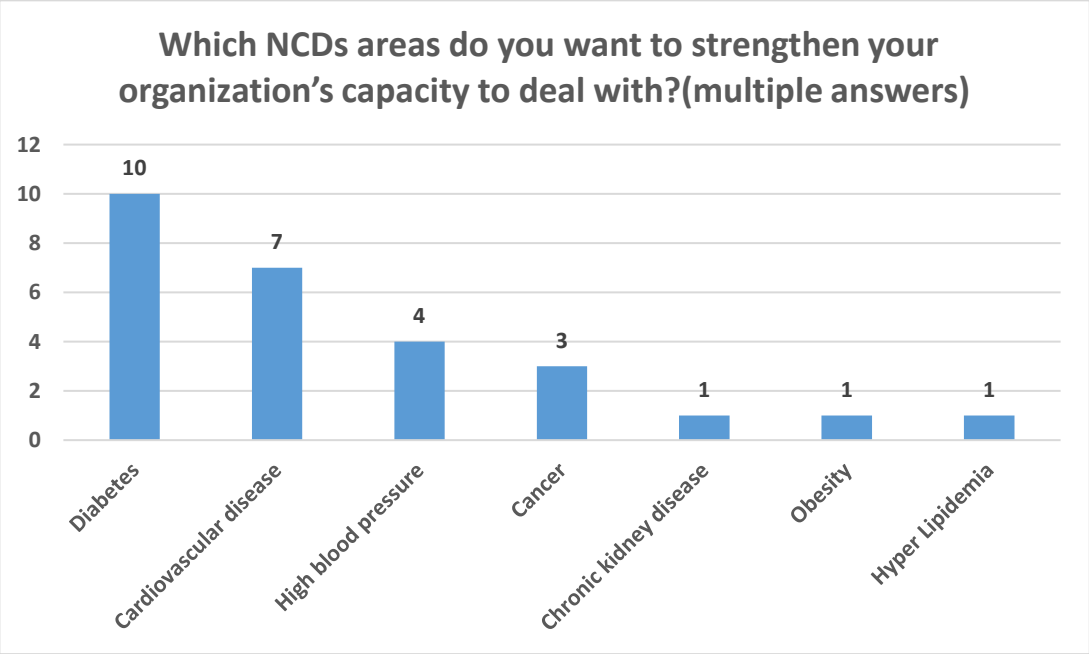


Figure 4-7 Areas to strengthen measures in the future

To the third question, "In order to solve the challenges/issues regarding NCDs, what kind of support do you expect from the public sector in Sri Lanka?", approximately 57% of respondents answered that they would like to see stronger 'policy making and regulatory reform', followed by assistance in 'financing' and 'human resource' support. In terms of policy making and regulatory reform, the respondents mentioned measures to promote behavioral change among the general public, such as ensuring safe roads for pedestrians and cyclists in order to promote physical activity, and strengthening regulations on the importation of tobacco-related products and tobacco production in the country to reduce smoking rates. Participants who indicated support related to financing also commented on the need for financial support to purchase equipment for remote medical care, to conduct health checkups and subsequent follow-up, and to purchase equipment such as test strips for measuring blood sugar levels. Participants who responded with support related to human resources mentioned that they expected support for the lack of medical personnel needed during treatment.

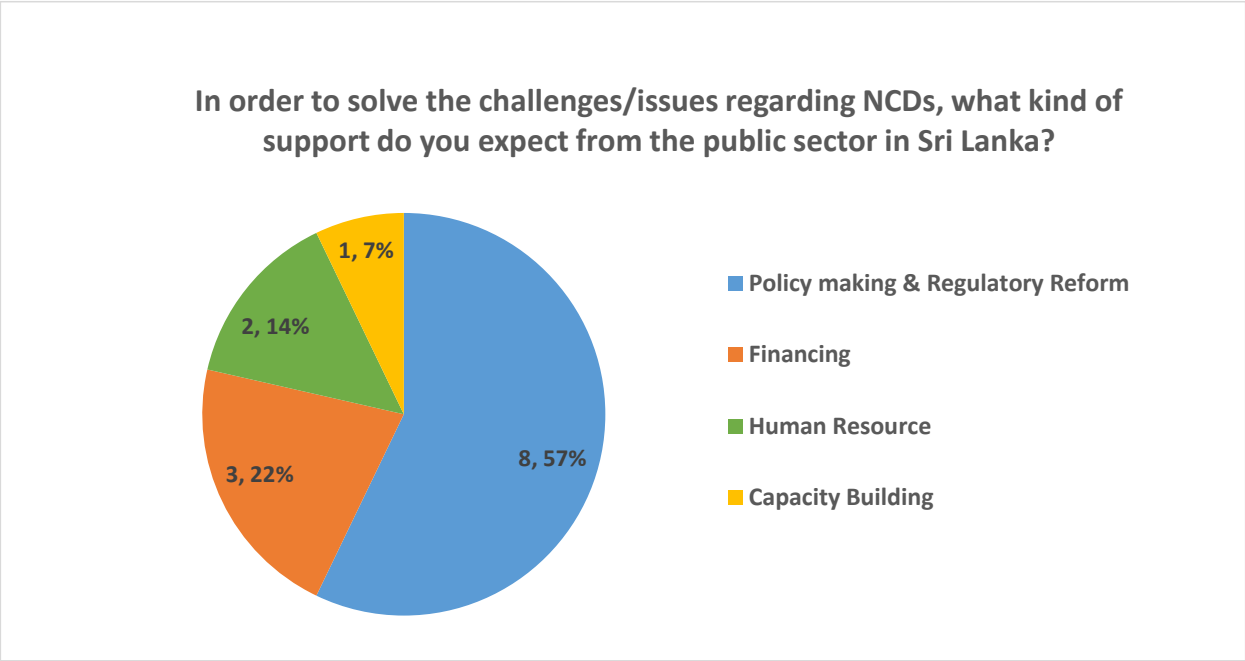


Figure 4-8 Expectations toward the public sector

Regarding the fourth question, "Are there any challenges your country/organization faces regarding NCDs? What kind of products and services do you expect from Japanese companies to solve them?", respondents referred to the use of cutting-edge technologies such as AI, high-performance diagnostic equipment that can be used with few resources, and remote diagnosis and treatment technologies. Some respondents also commented that they expect the introduction of tailor-made products and services to ensure the use of Japanese systems and equipment in Sri Lanka, while others requested that the deployment of Japanese services be carried out with local personnel familiar with local conditions.

Chapter 5 Summary and recommendations

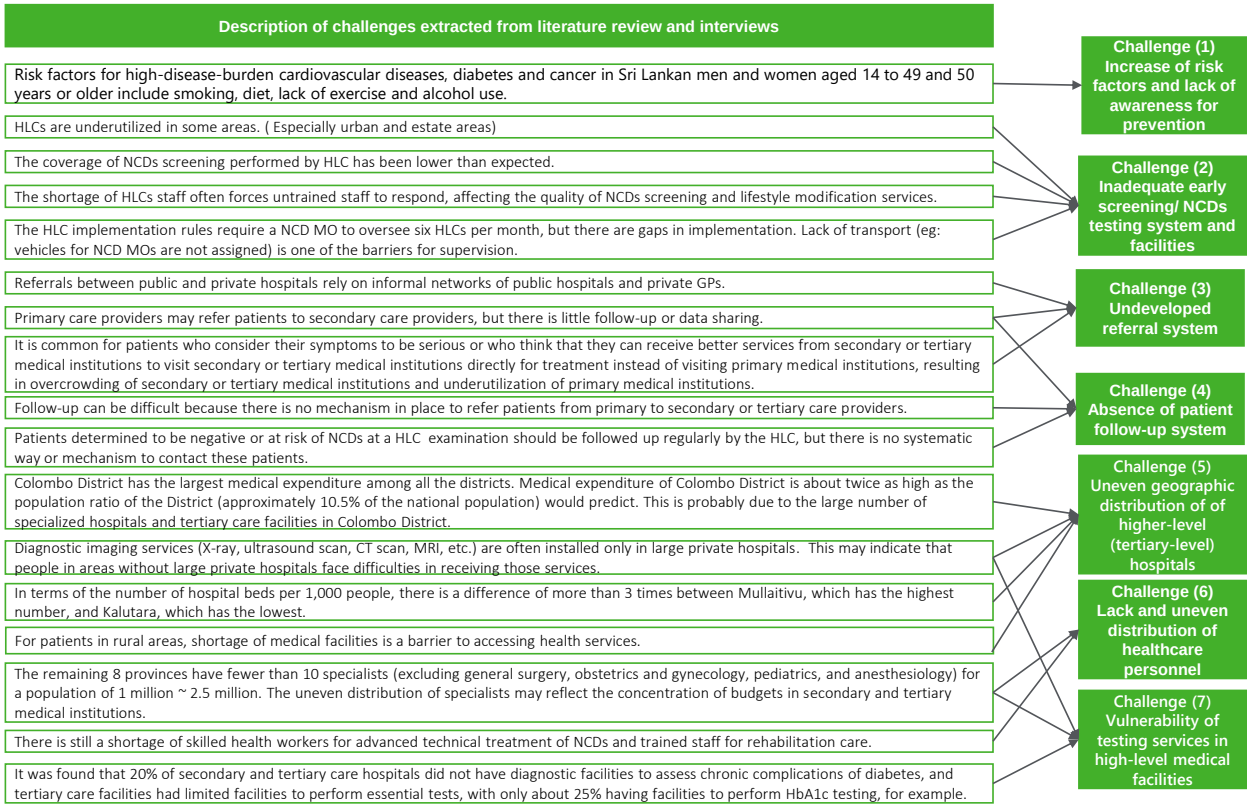
Chapter 5 summarizes this study and describes future developments based on the study. First, Section 5.1 summarizes the NCDs-related issues that Sri Lanka has faced based on the information obtained through literature research and interviews. Next, Section 5.2, presents a proposal for possible assistance to Sri Lanka based on Section 5.1.

5.1 Summary of NCDs-related challenges in Sri Lanka

In Section 5.1, NCDs-related challenges are extracted based on the information obtained through the literature review (Chapters 2 and 3) and the results of interviews (Chapter 4). Summarizing similar challenges and excluding overlapping ones, 11 challenges are identified and briefly explained again. After reviewing the interrelationships between the challenges, the 11 challenges will be positioned against the overall picture of Sri Lanka's NCDs sector. Finally, the importance of each challenge will be confirmed and consideration will be given for intervention.

5.1.1 Challenges extracted from the literature review and interview results

As shown in the figure below, descriptions referring specifically to NCDs challenges in Sri Lanka were extracted from information obtained through literature review and interviews, and similar issues were grouped into 11 issues excluding overlapping issues. A brief explanation of the 11 challenges will follow.



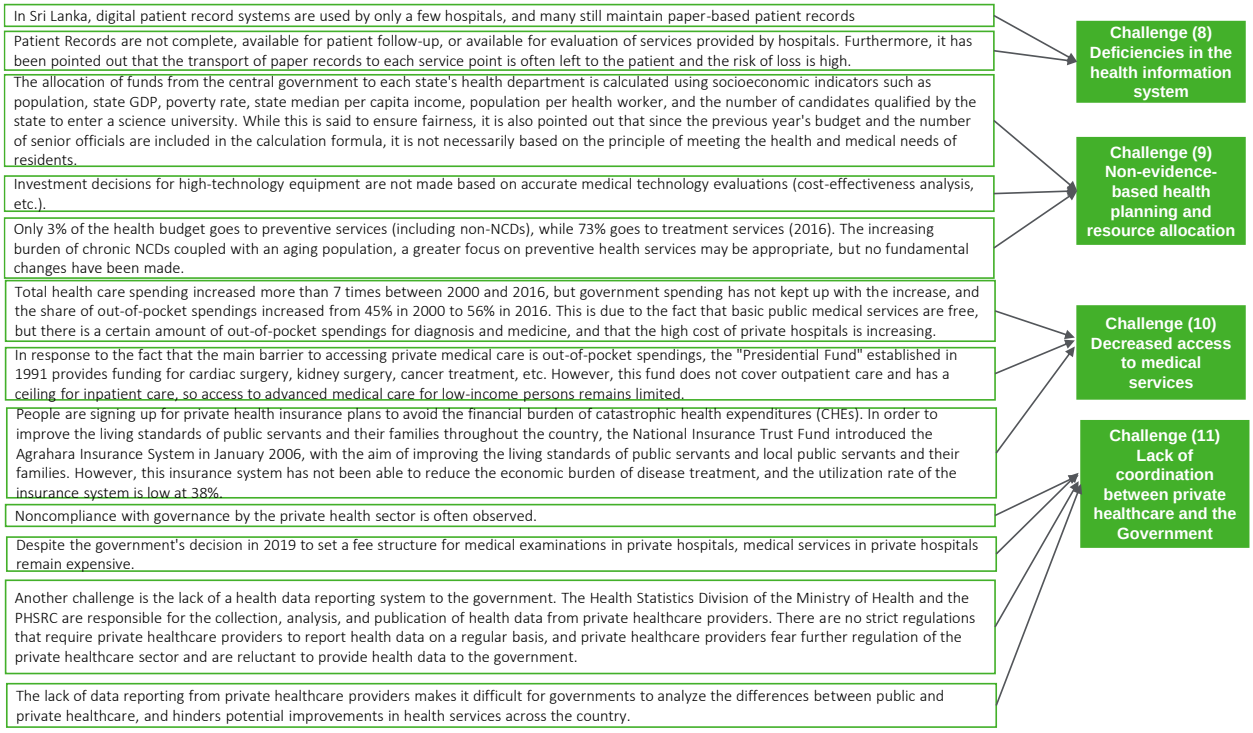


Figure 5-1 Process of identifying challenges

(1) Increase of risk factors and lack of awareness for prevention

In Sri Lanka, there are high risk factors for NCDs including alcohol use, smoking, unhealthy diets, and physical inactivity. Regarding alcohol use, it was explained in Chapter 2 that 9.1% of the Sri Lankan population aged 15 years and over has a heavy drinking habit, and 16.6% of males drink heavily. Interviews also confirm that alcohol consumption has increased in recent years. For smoking, Sri Lanka's smoking rates are similar to the world average, but smoking rates are higher among adults and young men than women. With regard to unhealthy diets, eating habits have changed due to popularity of fast food. The interviewees also noted that due to lockdowns and online education as a measure against COVID-19, the number of people who do not exercise is increasing. According to interviews, these changes are occurring not only in urban areas but also in rural areas, and it seems that behaviours with high risk factors have been observed in young people and children.

It is considered that awareness-raising is needed to change the lifestyle habit, but many interviewees pointed out the lack of it. In the interviews, there were many comments that information was provided to those who visit hospitals, but not to those who do not visit hospitals and that awareness-raising at community level was effective, but it was inadequately practiced.

(2) Inadequate early screening/ NCDs testing system and facilities

Chapter 3 noted that the coverage of NCDs screening conducted by HLC continues to be lower than the Ministry of Health had assumed. In the 2020 survey, only about 7-10% of targeted participants for screening (people aged 35 or older with no underlying health conditions and people aged 20-24 with moderate risk factors) were screened annually. Among the screening participants, the participation rate of men was particularly low, with about 25% of all male participants.

While there are several possible reasons for low participation rate in NCDs screening, the Ministry of Health found in their study that the services provided by HLC are not widely known by general people. Also, the

study conducted by Sri Lankan Ministry of Health, WHO and Global Fund in 2017 pointed out lack of human resources to conduct screening at HLCs and lack of primary medical institutions. There has been a suggestion to build and strengthen the capacity of HLC for screening and control of NCDs risk factors should be strengthened through developing health facilities and training healthcare workers.

It is pointed out that the lower participation rate in screening among men was due to inconvenience of HLC's business hours for working men. To increase the participation of men in screening, the Ministry of Health introduced workplace screening in 2020, as discussed in Chapter 3. However, the Ministry of Health and WHO pointed out that a problem with workplace screening is the lack of trained full-time staff.

As described in Chapter 3, the geographical distribution of HLCs varies. In urban and estate areas, HLCs are underserved, especially in Colombo, where the use of HLCs remains particularly low, given the lowest number of primary healthcare facilities per population in the country.

(3) Undeveloped referral system

First, referral/reverse-referral system are not fully developed and are not well operated by both medical institutions and patients. For example, primary-level hospital may refer patients to secondary-level hospital, but there is limited follow-up or patient's data sharing between two hospitals. In addition, it is also very common for patients to directly visit secondary and tertiary-level hospitals for better treatments instead of visiting primary-level hospital. This situation has caused concentration of patients in higher-level hospitals and has also led to a decline in the quality of medical services, including long waiting time and inadequate staffing. On the other hand, the services in the primary-level hospital are underutilized.

Furthermore, there is no official referral system between public and private hospitals. In severe cases, the lack of a referral system between public and private hospitals is a barrier to access services, especially for patients in rural areas with few medical institutions. On the other hand, the interview results confirmed that unofficial referrals were being made between public and private hospitals. Since majority of doctors work at both public and private hospitals, they have established an informal network between public hospitals and GPs of private hospitals.

(4) Absence of patient follow-up system

Chapter 3 identified that the patients with NCDs, particularly chronic diseases, require prolonged treatment and care and require a certain amount of hospital visits and care. However, lack of patient follow-up system makes continuum of treatment and care difficult. For example, patients with negative result of NCDs screening and those at moderate to high CVD risk who are suggested to make lifestyle changes should be followed up regularly. However, there is no systematic method in place to contact these patients for necessary follow-up and continuum of care.

The lack of a referral system described in (3) above is also one of the reasons why patients' follow-up is difficult.

(5) Uneven geographic distribution of higher-level (tertiary-level) hospitals

There is an issue that higher-level hospitals are concentrated in large, populated areas. As mentioned in Chapter 3, the largest city of Colombo and the capital city of Sri Jayawardenepura, have a relatively large number of specialized hospitals and tertiary medical facilities. Patients in areas with few tertiary care facilities may be limited in the services they can receive, as some testing services cannot be performed at public primary and secondary hospitals.

As for private medical institutions, it is described in Chapter 3 that Colombo and Gampaha accounted for

45% of the total number of private medical institutions. On the other hand, there are no private medical institutions in Kilinochchi, Mullaitivu, Mannar and Nuwara Eliya districts. Private medical institutions in Sri Lanka are thus concentrated in areas with high disposable income, such as the Western Province, Colombo District, and other major urban centers. However, since diagnostic imaging services (X-ray, ultrasound scan, CT scan, MRI, etc.) are often installed only in large private hospitals, there is a geographical bias in the testing and treatment available.

Geographic uneven distribution of resources also exists in the number of hospital beds available. Looking at the number of hospital beds, as discussed in Chapter 2, there is more than a threefold difference between the district (Mullaitivu) with the highest number of hospital beds per 1,000 population (2019) and the district (Kalutara) with the lowest number.

(6) Lack and uneven distribution of healthcare personnel

As indicated in Chapter 2, the number of doctors working in public hospitals per 1,000 people is highly skewed by district, with a 5 times difference between the district with the highest number of doctors and the district with the lowest number (2019). There is also a large gap in the number of medical specialists in Western District, where includes the largest city, Colombo, and the capital, Sri Jayawardenepura, and in other districts, revealing the uneven distribution of doctors between urban and rural areas.

There is also a shortage of nurses. As mentioned in Chapter 3, compared with the WHO standard for the number of nurses, there is a shortage of 15,000 nurses nationwide as of 2019. In addition, the study conducted by the Ministry of Health and WHO indicates a shortage of skilled health workers for advanced treatment and trained staff for rehabilitation care. As noted in Chapter 3 and 5.1.1 (2), a shortage of staff at HLCs and trained staff for workplace medical checkup have also been identified. A lack of human resources at all stages of prevention, diagnosis, treatment, and care is a challenge.

In addition, we saw in Chapter 3 that medical personnel in private medical institutions are composed of doctors and medical staff who work in both the public and private sectors, a small number of general practitioners, medical personnel who have retired from public medical institutions, nurses, and nursing assistants, resulting in a shortage of medical personnel in the private medical sector and a lack of basic training for nurses and paramedics.

(7) Vulnerability of testing services in high-level medical facilities

A survey conducted by the Ministry of Health in 2017 revealed that 20% of secondary and tertiary level hospitals do not have the diagnostic equipment to assess chronic complications of diabetes. Also, tertiary level hospitals have limited equipment to perform essential tests. For example, only about 25% of tertiary level hospitals the equipment to perform HbA1c testing. In Sri Lanka, there are limited medical facilities equipped with testing system and equipment for diabetes of which disease burden is high.

(8) Deficiencies in the health information system

As discussed in Chapter 3, only a few hospitals in Sri Lanka use digital patient record systems, and many hospitals still maintain paper-based patient records. As a result, difficulties have arisen in patient follow-up and in information sharing with other hospitals during referral. During the interview, the lack of a health and medical information system was pointed out as a problem, and some hospitals in rural areas did not have access to the internet connection which is essential infrastructure for health information system.

(9) Non-evidence-based health planning and resource allocation

As described in Chapter 3, health financing in Sri Lanka is under pressure due to COVID-19, and health

resources are more limited than before. Therefore, evidence-based health planning is necessary to allocate and utilize the limited resources efficiently and effectively. However, as seen in (8), many hospitals in Sri Lanka manage patient information on a paper-based basis, and data collection and analysis systems are not maintained, making it impossible to develop evidence-based health plans.

In addition to the use of patient information, it was also pointed out that decisions for investing medical devices were not made based on accurate medical technology evaluations (cost-effectiveness analysis, etc.). Under a situation where the burden of chronic NCDs continues to increase with the process of aging population, it was pointed out that a greater focus on preventive health services may be appropriate, but there have been no changes to increase the health budget allocated for preventive health services. Some interviewees also mentioned the delays in the disbursement of the allocated budget at both the national and local levels, preventing the activity implementations in a planned and timely manner.

(10) Decreased access to medical services

As discussed in Chapter 3, total healthcare spending increased from 2000 to 2016, but government spending did not keep up with the increase, with out-of-pocket spending increasing from 45% in 2000 to 56% in 2016. The reasons are that although basic public medical services are free, there is a certain amount of out-of-pocket expenses for diagnosis and medicine, and that the high cost of private hospitals is increasing. Increasing out-of-pocket costs have made it difficult for some people to continue treatment for NCDs. In response to the fact that out-of-pocket expenses are one of the causes of poor access to private medical care, the "Presidential Fund" established in 1991. Despite partial subsidies for medical expenses upper limit setting to pricing of private health care services by the Presidential Fund, access to advanced medical care for low-income people remains limited. Although the rate of enrollment in private health insurance programs is low, as mentioned in Chapter 3, the Ministry of Health states that "expanding health insurance coverage does not help health care resources." Lack of a referral system is also a barrier to access, especially for patients in rural areas with few medical institutions, yet avoiding private hospitals due to their cost.

(11) Lack of coordination between private healthcare and the Government

Despite the Private Sector Health Services Regulatory Council (PHSRC) in place, in Sri Lanka, has not been able to effectively regulate the private health sector. This concern was raised by the interviewees and highlighted the needs for revitalizing the PHSRC to effectively regulate and supervise private healthcare (fee regulations, service regulations, certification and registration, health data collection, etc.). The private health sector has not been complying with government's regulations is often observed. The PHSRC is expected to develop standards to ensure quality of service, including qualifications for the recruitment of medical staff and standards for training, and to monitor registered private healthcare providers, but this function has been criticized for failing to fulfil. Also, although all private healthcare providers are required to register with the PHSRC, 20% of them were not registered with the PHSRC in 2018 and were practicing medicine illegally. In addition, it was pointed out that private medical institutions were not involved in NCDs coordinating mechanisms such as the National NCD Steering Committee or the NCD Council, land that mechanisms to ensure compliance with the latest circulars, clinical guidelines, and protocols issued by the government were not fully utilized.

With regard to renumeration system, despite the government's regulation in 2019 on the remuneration system for medical examinations in private hospitals, medical services in private hospitals remain expensive. In the interviews, it was mentioned that the medical fee system of private hospitals was not thorough enough and it was hardly used.

Another problem is the lack of a health data reporting system from private hospitals to the government. The Health Statistics Division of the Ministry of Health and the PHSRC are responsible for the collection, analysis, and publication of health data from private healthcare providers. There are no strict regulations in place that require private healthcare providers to report health data on a regular basis. The lack of such a

data reporting system makes it difficult for governments to analyze the differences between public and private health care and hinders potential improvements in health services delivery across the country.

In addition, it has been pointed out that although medical personnel of public hospitals can have concurrent jobs at private hospitals, their busy schedule affects the medical care capacity of public hospitals. On the other hand, as seen in (3), it can also be seen that doctors with dual jobs help build informal networks between public and private hospitals.

5.1.2 Challenges against the overall picture

In Section 5.1.2, we will review the 11 issues identified in 5.1.1 against the overall picture of NCDs sector in Sri Lanka. The Sri Lankan Ministry of Health, in collaboration with WHO, conducted a comprehensive review of the prevention and control of NCDs in Sri Lanka in 2021. In this report, responses to NCDs are classified into the following six major items: (1) governance, (2) financing, (3) service provision, (4) information systems, (5) human resources, and (6) access to treatment and pharmaceuticals[240]. The following table shows the issues related to each of the 11 challenges identified in this survey. The 11 challenges identified in the survey are related to one or more of the middle categories and can be identified as comprehensive when viewed against the overall picture of Sri Lanka's response to NCDs.

Table 5-1 Overall response to NCDs in Sri Lanka

Main Category	Subcategory	Related Challenges
① **Governance for NCDs**	Ensuring governance at the national and local levels and for private health services	⑨⑩⑪
②**Funding for NCDs**	Cost estimation and economic evaluation	⑨
	Formulation of government budget for NCDs	⑨
	Allocation of resources	⑨
③ **Delivering services to prevent and manage NCDs**	Planning and coordination to deliver NCDs services	⑨
	Provision of NCDs risk mitigation services	①
	Improving coverage and quality of NCDs screening programs	①②
	Ensuring the level of treatment for patients with NCDs	③⑤⑦⑩
	Improve quality of follow-up, compliance, and disease management for NCDs patients	④
	Expanding services for management of NCDs complications and emergencies	④
	Expansion of NCDs services for rehabilitation and palliation	④
	Strengthening linkages with the private sector for the provision of NCDs services	⑪
	Strengthen collaboration with civil society for provision of NCDs services	⑪
④ **Information systems for NCDs**	Improve the process, timeliness, and quality of death registration data processing	⑧
	Improve coverage and quality of death registration data	⑧
	Scale up personal electronic health record systems	⑧
	Strengthening the Strategic Information Management Unit as an information hub	⑧
	Gathering evidence and reflecting it in policy and practice	⑨

[240] Ministry of Health and WHO (2021) "Review on the National NCD Prevention and Control Programme in Sri Lanka"

	Strengthening regional-level monitoring of NCDs prevention and control	⑧
	Strengthening collaboration between NCD bureaus, PSSP and HSEP	⑨
	Scaling up NCDs data through a cloud-based health information management system	⑧
	Review of NCDs-related early mortality at the regional level	⑧
	Development and implementation of information systems on palliative care	④⑧
	Conduct NCDs-related surveys on a regular basis	⑧⑨
⑤Human resources for NCD prevention and control	Improvement of planning and coordination of health personnel	⑥
	Promoting the recruitment of Health Promotion Officers	⑥
	Fill vacancies for Medical Officers	⑥
	Formulation or revision of standards for human resources engaged in NCDs services	⑥
	Advocate expansion of human resources engaged in NCDs services	⑥
	Identify staff to perform tasks related to NCDs in health care institutions	⑥
	Appoint a team of personnel with appropriate skills to provide NCDs services, including rehabilitation, in health institutions	⑥
	Capacity building of health care staff	⑥
	Ensuring optimal facilities for employees to perform their duties effectively	⑥
	Securing human resources in private health care institutions	⑥
⑥Access to NCDs technologies and essential medicines	Strengthening the Strategic Information Management Unit	⑧
	Strengthening of regional NCDs reviews	⑧⑨
	Posting of information on the official NCDs Directorate website	⑪
	Updating the list of essential medicines	⑩
	Ensuring that patients receive appropriate levels of care according to their stage	③
	Strengthen client-centered care	⑩

5.1.3 Interrelationship between the challenges and their importance

So far, 11 major challenges on NCDs in Sri Lanka have been identified through literature reviews and key stakeholder interviews. These challenges are not independent but are interrelated. Interrelationship between issues is summarized in the figure below.

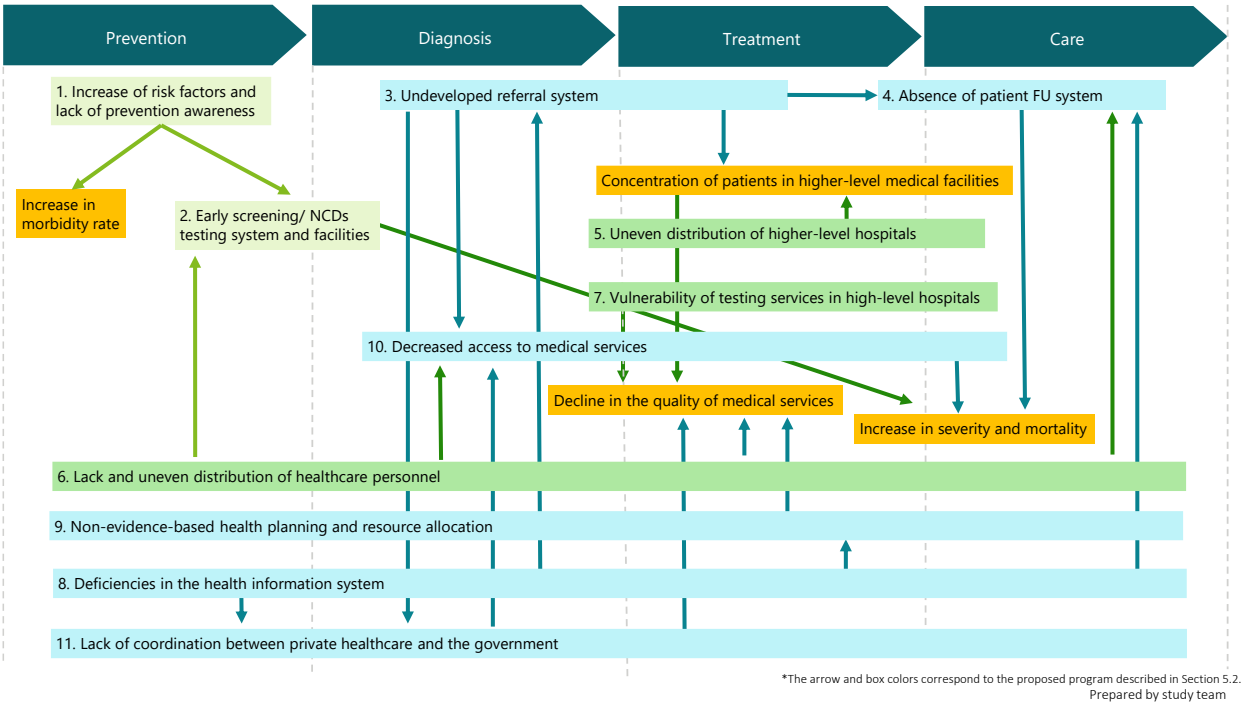


Figure 5-2 Interrelationship between issues

Looking first at "(1) Spread of risk factors and lack of prevention awareness," the prevalence of NCDs is increasing due to high risk factors, and the number of people undergoing early screening is decreasing due to insufficient prevention awareness.

Looking at "(2) Deficiencies in the early screening/NCDs testing system and equipment" as a starting point, it can be considered that the delay in early detection in some people without screening or testing has led to increased severity and mortality.

Regarding "(3) Inadequate referral system," the lack of a formal referral system between public and private hospitals has resulted in cases in which information sharing of a patient between public and private hospitals are not made appropriately when the patient is referred. In addition, because the referral system between public hospitals is not functioning properly, many patients directly visit secondary and tertiary medical institutions instead of using primary medical institutions, resulting in a situation where patients are concentrated in higher-level hospitals and patients are not followed up appropriately.

Taking "(4) Absence of patient follow-up system" as the starting point, it is considered that the lack of continuous follow-up/treatment leads to an increase in the severity rate and mortality rate of patients.

"(5) Uneven geographic distribution of higher-level hospitals" may lead to a situation where patients are concentrated in higher-level hospitals, especially in rural areas where there are few higher-level hospitals, because the number of hospitals where they can receive specific examinations and treatments is limited.

"(6) Lack and uneven distribution of health personnel" is observed at all stages of prevention, diagnosis, treatment, and care, and is thought to lead to a variety of challenges, including lack of early screening and testing, reduced access to medical services for patients, reduced quality of medical services, and poor patient follow-up.

"(7) Vulnerability of testing services at higher-level hospitals" may lead to a decline in the quality of medical services available to patients because some tests and treatments are not available even at higher-level hospitals.

"(8) Inadequate health information systems" have affected a variety of other issues. The lack of health

information system to share patient's information between the public and private sectors and between hospitals has adversely affected public-private partnerships and the establishment of referral systems. The lack of a system to collect and analyze patient information also makes it difficult to develop evidence-based health plans and effectively allocate the limited resources. It is also considered that patients who have been diagnosed and treated at one medical institution must waste time and effort when they are followed up at other medical institutions.

"(9) Insufficient evidence-based health planning and resource allocation" does not allocate the limited resources, such as funds and human resources, appropriately on actual needs basis. Therefore, this may lead to dilute effectiveness of health resources, leading to a decline in the quality of medical services.

"(10) Decreased patient access to health care services" appears to result in increased morbidity and mortality from inadequate treatment.

Finally, "(11) Lack of coordination between private healthcare and the government" may also lead to a decline in patients' access to medical services and a decline in the quality of medical services as patients are unable to receive the services they were originally entitled to.

As it can be seen from the above, NCDs-related challenges in Sri Lanka are interrelated, and it is hoped that by placing measures with multifaceted effects, they will contribute to improving multiple challenges.

5.1.4 Importance of the challenges

In 5.1.4, we will examine the importance of the 11 challenges we have looked at so far from three perspectives: 1) the progress of each challenge, 2) the breadth of the stage of the challenges, and 3) their compatibility with the needs of Sri Lanka.

(1) Progress of each challenge

Before examining the importance of the challenges, the first prerequisite is to review the progress in addressing each challenge. In 2021, the Ministry of Health, in collaboration with WHO, formed a national and international expert review team to conduct a comprehensive review of the program's progress, focusing on the NCDs prevention and management program in Sri Lanka for 8 months from November 2020 to July 2021. Based on the results of the review shared by the Ministry of Health[241], this section describes the progress made on the 11 challenges identified in this survey (literature surveys and interviews). Specifically, progress is evaluated from the following 3 points: "Whether policies, plans, guidelines, etc. are in place ("Policies" in the following table)", "Whether measures for policies are being implemented ("Implementation" in the following table)", and "Whether measures are being evaluated ("Evaluation" in the following table)".

The results are shown in the following table. In particular, for issues (3) undeveloped referral system, (4) absence of patient follow-up system, and (9) non-evidence-based health planning and resource allocation, progress was assessed as not sufficient, as policies and plans were not adequately developed, implementation of policies was insufficient, and evaluation was not conducted (4 points). Following the above, issues (1) increase of risk factors and lack of awareness for prevention, (2) inadequate early screening/NCDs testing systems and facilities, (6) lack and uneven distribution of healthcare personnel, (10) decreased access to medical services, and (11) lack of coordination between private healthcare and the Government were rated 3 points, as countermeasures have not made much progress.

[241] Ministry of Health of Sri Lanka and World Health Organization "Review on the National NCD Prevention and Control Programme in Sri Lanka" (2021)

Table 5-2 Assessment of the progress of each challenge

Challenges	Evaluation items	Achieved (0 point)	Partially Achieved (1 point)	Not Achieved (2 points)	Explanation	Score
1. Increase of risk factors and lack of awareness for prevention	**Policies**	✓			In addition to the description in the National Policy and Strategic Framework for the Prevention and Control of NCDs (2010) and the NCDs MSAP, for tobacco, the NATA Act provides regulations against advertising, sales to minors, and smoking cessation in outdoor public areas. For alcohol, a policy for control has been developed (The National Policy on Alcohol Control 2016)[242] . In terms of diet, there are other health sector policies and strategy documents such as the National Health Strategy Master Plan 2016-2025, the National Nutrition Policy (NNP) 2020-2030, and the National Salt Reduction Strategy 2018-2022. Regarding physical activity, the NCD department has also developed a medium-term multi-sectoral action plan (2021-2025) to promote physical activity.	3 points
	Implement ation		✓		While there has been an increase in sugar taxes, and public awareness of healthy eating, the definition of "unhealthy food" is ambiguous, and the message of healthy eating habits is weakened. Although there are various national policies and initiatives regarding the movement, the scope of community-based awareness programs (including schools and workplaces) and community empowerment to promote physical activity is limited.	
	Evaluation			✓	There is no mechanism to monitor and evaluate alcohol policy. There is no surveillance system for tobacco control. Systems for dietary habits and exercise are unknown.	
2. Inadequate early screening / NCDs testing system and facilities	**Policies**		✓		It is positioned as a key strategy in Sri Lanka's NCDs policy and NCD MSAP. Service packages with trained staff have been defined as a function of the HLC, and several guidelines on service packages and a NCDs screening manual have been introduced. However, testing services for diseases with high screening needs, such as gestational diabetes and gestational hypertension, have not been established.	3 points
	Implement ation		✓		It is carried out through HLC and some workplace checkups and private hospital screenings. However, there is a gap in the geographical distribution of HLCs, and there are areas where HLC services are not adequate due to inadequate facilities of HLCs. In addition, the low rate of medical examinations is an issue.	
	Evaluation		✓		Inadequate monitoring and evaluation of HLC services is a challenge. There is a framework for MO/NCD to monitor HLCs, but they have not been adequately implemented. Poor transportation (most MO/NCDs do not have official vehicles to conduct efficient activities) and MO/NCD post vacancies are barriers to monitoring.	
3. Undevelope d referral system	**Policies**		✓		Although the National Health Services Strategic Framework calls for the establishment of a sustainable referral system, a pathway has not been established in the system to refer patients from primary medical institutions to secondary and tertiary medical institutions.	4 points
	Implement ation		✓		Although the referral system is not fully developed, referrals between private clinics and public hospitals have been realized to some extent, albeit informally, by having doctors from	

[242] http://mentalhealth.health.gov.lk/images/Resources/Publications/Policies/national_policy_on_alcohol_cotrol_en.pdf

Challenges	Evaluation items	Achieved (0 point)	Partially Achieved (1 point)	Not Achieved (2 points)	Explanation	Score
					public hospitals concurrently serve as private GPs.	
	Evaluation			✓	Since an official referral system has not been established, evaluations have not been conducted.	
4. Absence of patient follow-up system	**Policies**		✓		The National Health Services Strategic Framework calls for the establishment of a follow-up system, but there is a lack of a system for tracking patients for follow-up care.	4 points
	Implementation		✓		At the secondary and tertiary care levels, patient overcrowding leads to inadequate follow-up care of patients by health care providers. At the primary health care level, clients who screened negative at the HLC and those who were found to be at moderate to high risk for NCDs after screening and suggested lifestyle modifications need to be followed up regularly at the HLC according to management protocols. However, there is still no systematic method or mechanism to call such patients back.	
	Evaluation			✓	There has been no formal assessment of the circumstances of those who have defaulted or discontinued treatment.	
5. Uneven geographic distribution of higher-level (tertiary-level) hospitals	**Policies**	✓			In the Master Procurement Plan (2019-2021)[243], plans are being made to expand the hospital and increase equipment.	2 points
	Implementation		✓		Higher-level medical facilities are concentrated in areas with large populations, and some tests and treatments cannot be performed at public primary and secondary hospitals. Therefore, patients in areas with few higher-level medical facilities have limited access to services. For example, insufficient number of stroke care units and limited opportunities for neurorehabilitation are major challenges in stroke care. Interventions such as cardiac catheterization are available only at some tertiary care centers, and patients may be delayed in arriving at these centers within the first hour of illness to receive standard care. The expansion of higher-level medical facilities has been planned and is being implemented, but the uneven distribution has not been resolved.	
	Evaluation		✓		Resource allocation at regional level is not necessarily needs-based.	
6. Lack and uneven distribution of healthcare personnel	**Policies**	✓			The MoH has a dedicated Human Resource Coordination Unit (HRCU) to streamline the coordination of human resource activities, and a plan for staffing has been developed.	3 points
	Implementation		✓		HRCU has established a database on personnel in the MoH, but it does not include details on the distribution of vacant posts, training, qualifications, and other personnel categories, and vacancies are noticeable in the Deputy Directorate of the NCD Department and MO/NCD in the provinces. Overall, there is a shortage of human resources.	
	Evaluation			✓	The current allocation of human resources is understood, but a gap analysis of personnel knowledge and skills has not been conducted.	
7. Vulnerabili	**Policies**	✓			The National Health Strategic Master Plan (2016-2025) analyzes the challenges and interventions required for healthcare services provided by healthcare providers.	1 point

[243] http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/2019/MPP2019-2021-non-pharmaceuticals.pdf

Challenges	Evaluation items	Achieved (0 point)	Partially Achieved (1 point)	Not Achieved (2 points)	Explanation	Score
ty of testing services in high-level medical facilities	**Implement ation**		✓		It cannot be said that secondary and tertiary care facilities provide a comprehensive range of testing services that meet the needs of their patients. For example, diabetes is a condition with a high burden of disease in Sri Lanka, yet 20% of secondary and tertiary care facilities do not have diagnostic facilities to assess chronic complications of diabetes. Tertiary care facilities also face challenges, with limited facilities to perform essential laboratory tests, and only 25% of facilities to perform HbA1c testing.	
	Evaluation	✓			Periodic assessments are conducted through the Service Availability and Readiness Assessment (SARA) survey.	
8. **Deficiencies in the health informatio n system**	**Policies**	✓			Health information systems are in place for policy purposes, including a Hospital Information System (HIMS) for electronic reporting of NCDs morbidity from HLCs to MO/NCDs, and an Electric Indoor Morbidity and Mortality Record (E-IMMR) system to classify and report the main diagnosis of hospital deaths occurring in public health facilities.	2 points
	Implement ation		✓		HLC data coverage is low also because HLC services have low coverage and the population visiting HLCs does not represent the entire population. IMMR data coverage is also low. There are limited human resources and equipment for data management. Although an electronic system exists, some hospitals rely on paper-based reporting.	
	Evaluation		✓		Projects by other organizations (ADB and World Bank) have assessed the need for improvement of health information systems and the issues in their utilization, but there is no formal assessment.	
9. **Non-evidence-based health planning and resource allocation**	**Policies**		✓		The importance of using available evidence to formulate policy and monitor its effectiveness is recognized in policy, but has not been translated into a specific intervention plan.	4 points
	Implement ation		✓		The use of research results in planning and policy making is not systematic, and the low coverage of data collection indicates that it is done only when necessary, depending on the situation. There is also little systematic effort to translate the evidence into policy and practice.	
	Evaluation			✓	There has been no assessment of whether the development of evidence-based policies and action plans is prevalent down to the local level.	
10 **Decreased access to medical services**	**Policies**	✓			For many years, concepts related to equity and universality have been key elements in Sri Lanka's health care system, guided by the "free health care" policy adopted after independence (1951). Public health care is free for the public.	3 points
	Implement ation		✓		Growing medical needs of an ever-increasing and aging population and the growing demand for expensive and high quality medical services have increased the demand for healthcare financing.	
	Evaluation			✓	Out-of-Pocket Spending (OOPS) is recognized as a growing concern, but the lack of comprehensive and comparable assessments hinders a proper understanding of the magnitude and relevance of the problem. Consideration should be given to conducting an independent survey or incorporating aspects	

Challenges	Evaluation items	Achieved (0 point)	Partially Achieved (1 point)	Not Achieved (2 points)	Explanation	Score
					of NCDs-related health care spending into existing household surveys.	
11 Lack of coordination between private healthcare and the Government	**Policies**	✓			Private health facilities are established in accordance with Private Healthcare Providers (Registration) Act No. 21 of 2006 and are governed by the Private Health Services Regulatory Council (PHSRC), headed by the Director of Health Services.	3 points
	Implementation		✓		The provisions of the Private Health Care Organizations (Registration) Act No. 21 of 2006 have not been fully implemented. The private sector does not participate in NCD coordinating bodies such as the National NCD Steering Committee and the NCD Council. Mechanisms are in place to disseminate the latest circulars, clinical guidelines, and protocols to the private sector and ensure that they are followed, but are currently not being fully utilized.	
	Evaluation			✓	The function of PHSRC itself and the evaluation of private medical services have not been conducted.	

(2) Breadth of stages affected by each challenge

Next, as a second premise for examining the importance of the issue, we confirm the breadth of stages affected by each challenge. "Breadth of stages" refers to the number of following four stages in which each challenge affects: prevention, diagnosis, treatment, and care. As discussed in Chapter 2 ~ 4 and 5.1.1, challenges (6) lack and uneven distribution of healthcare personnel, (8) deficiencies in health information system, (9) non-evidence-based health planning and resource allocation, and (11) lack of coordination between private healthcare and the Government, are widespread challenges affecting all stages of prevention, diagnosis, treatment, and care.

Table 5-3 Breadths of stages affected by each challenge

Challenges		Prevention	Diagnosis	Treatment	Care	Score
①	Increase of risk factors and lack of awareness for prevention	✓				1
②	Inadequate early screening/ NCDs testing system and facilities	✓	✓			2
③	Undeveloped referral system		✓	✓		2
④	Absence of patient follow-up system			✓	✓	2
⑤	Uneven geographic distribution of higher-level (tertiary-level) hospitals		✓	✓	✓	3
⑥	Lack and uneven distribution of healthcare personnel	✓	✓	✓	✓	4
⑦	Vulnerability of testing services in high-level medical facilities		✓	✓	✓	3
⑧	Deficiencies in the health information system	✓	✓	✓	✓	4
⑨	Non-evidence-based health planning and resource allocation	✓	✓	✓	✓	4

⑩	Decreased access to medical services		✓	✓	✓	3
⑪	Lack of coordination between private healthcare and the Government	✓	✓	✓	✓	4

(3) Needs of key Sri Lankan stakeholders

Next, as another prerequisite for examining the importance of the challenges, the needs for each challenge identified in the interview (4.1) are summarized below. In assigning the scores, 0 points were given to issues that were not mentioned at all in the Ministry of Health and other hearings, 1 point was given to challenges mentioned by one organization in the Ministry of Health and other hearings, and 2 points were given to issues that were mentioned more than once in the Ministry of Health and other hearings. Note that items that were mentioned in the hearings and interviews as wanting to obtain support from development partners, rather than as issues, are listed. In particular, regarding issues (2) inadequate early screening/NCDs testing systems and equipment, (4) lack of patient follow-up system, (5) uneven geographic distribution of higher-level (tertiary-level) medical facilities, (8) deficiencies in health information system, and (11) lack of coordination between private healthcare and the Government) needs were expressed from multiple sources.

Table 5-4 Sri Lanka's needs for each challenge

Challenges		Remarks on Sri Lanka's needs during the interviews	Score
1.	Increase of risk factors and lack of awareness for prevention	■ Demand for activities to reduce risk factors and motivate people to screen for NCDs through community prevention awareness and BCC, leading to early detection and diagnosis of NCDs and preventing serious illness (Kurunegala NCD MO)	1
2.	Inadequate early screening / NCDs testing system and facilities	■ Demand for activities to reduce risk factors and motivate people to screen for NCDs through community prevention awareness and BCC, leading to early detection and diagnosis of NCDs and preventing serious illness (Kurunegala NCD MO) ■ Interest in expanding health screening using HLCs (MoH)	2
3.	Undeveloped referral system	■ A good referral system is necessary. (The National Hospital of Sri Lanka)	1
4.	Absence of patient follow-up system	■ There is no database system that can be used for patient FU and improvement is necessary. (Kamburupitiya Base Hospital) ■ Rehabilitation should be taken up. Rehabilitation is important for patients with NCDs such as cardiac disease. Rehabilitation is also important for patients who have been involved in car accidents (Thalalla Divisional Hospital)	2
5.	Uneven geographic distribution of higher-level (tertiary-level) hospitals	■ Demand for infrastructure development of medical facilities in rural areas (Kurunegala NCD MO) ■ A central laboratory of CATH laboratory (catheter laboratory) is required. There needs to be one central lab every two or three hospitals that serve people in a particular area, and a good referral system. (The National Hospital of Sri Lanka)	2
6.	Lack and uneven distribution of healthcare personnel	—	0
7.	Vulnerability of testing services in high-level medical facilities	—	0

8.	Deficiencies in the health information system	■ There is no database system that can be used for patient FUs and needs improvement. Also, an official collaboration system between GPs and hospitals is needed. A digital information sharing system would be useful for this purpose. (Kamburupitiya Base Hospital) ■ Demand for activities that utilize data, for example, medical data for patient counseling and regular monitoring (Kurunegala NCD MO) ■ Establishment of a good e-health system to record data (Trincomalee District General Hospital)	2
9.	Non-evidence-based health planning and resource allocation	—	0
10.	Decreased access to medical services	—	0
11.	Lack of coordination between private healthcare and the Government	■ An official cooperation system between GP and the hospital is required (Kamburupitiya Base Hospital) ■ Demand for activities that promote partnerships between the public and private sectors (Kurunegala NCD MO) ■ A project on improving patient management at home in cooperation with private hospitals could also be considered (Badulla Provincial General Hospital) ■ Demand for good relations with private hospitals and more cooperative management in disease prevention (Trincomalee District General Hospital)	2

(4) Assessment of the importance of each challenge

Next, in addition to the progress of measures for each issue identified in (1) and the needs of Sri Lanka identified in (2), the importance of the issue is evaluated based on three indicators: the breadth of the stage of the challenges. The "breadth of the stage of the challenges" is evaluated on a scale of 1 to 4 points, depending on the number of stages affected by the issue among the four stages of prevention, diagnosis, treatment, and care of NCDs.

As shown in the table below, issues (11) lack of coordination between private healthcare and the Government were rated as the most important, followed by issues (4) absence of patient follow-up system, (8) deficiencies in health information system, (9) non-evidence-based health planning and resource allocation. They were followed by issues (2) inadequate early screening/NCDs testing systems and facilities, (3) undeveloped referral system, (5) uneven geographic distribution of higher-level (tertiary-level) hospitals, and (6) lack and unequal distribution of healthcare personnel.

Table 5-5 Assessment of the importance of each challenge

Challenges		Progress on issues measures	Breadth of the stages of the challenges	Needs of key stakeholders	Total
1.	Increase of risk factors and lack of awareness for prevention	3	1	1	**5**
2.	Inadequate early screening / NCDs testing system and facilities	3	2	2	**7**
3.	Undeveloped referral system	4	2	1	**7**
4.	Absence of patient follow-up system	4	2	2	**8**
5.	Uneven geographic distribution of higher-level (tertiary-level) hospitals	2	3	2	**7**

6.	Lack and uneven distribution of healthcare personnel	3	4	0	**7**
7.	Vulnerability of testing services in high-level medical facilities	1	3	0	**4**
8.	Deficiencies in the health information system	2	4	2	**8**
9.	Non-evidence-based health planning and resource allocation	4	4	0	**8**
10.	Decreased access to medical services	3	3	0	**6**
11.	Lack of coordination between private healthcare and the Government	3	4	2	**9**

5.1.5 Consideration for intervention in each challenge

In 5.1.5, we have listed four items that should be considered when intervening in the 11 challenges we have looked at so far and rated them on a three-point scale of "0," "1," and "2" for each (importance of the challenge is rated on a five-point scale, as it is expected to be considered the most when planning interventions). The details of the criteria for the items to be considered are shown in the table below.

Table 5-6 Evaluation criteria for items to be considered

Items for consideration/ points	Importance of the challenge	Ease of intervention	Degree of intervention by other countries and organizations[244]	Degree of utilization of JICA's past support[245]
0 points	The importance rating in 5.1.4(4) is 0~2 points	Difficult to implement from a financial, technical, and operational standpoint.	Past or current interventions by other countries or institutions are recognized, but are difficult to coordinate.	Results from past projects related to NCDs are not well utilized.
1 point	The importance rating in 5.1.4(4) is 3~4 points	From a financial, technical, and operational standpoint, it will take time to coordinate and implement interventions in both Japan and the local community.	Intervention by other countries/agencies has been recognized in the past or at present, and collaboration can be expected in this area.	Some results from past projects related to NCDs can be utilized.
2 points	The importance rating in 5.1.4(4) is 5~6 points	The project is able to draw on past project experience in terms of technical and operational aspects, and the funding is reasonable.	Intervention by other countries or institutions in the present and past is not recognized.	Results from past projects related to NCDs can be utilized to a great extent.

[244] The degree of intervention by other countries and agencies is referenced in Tables 3-4 and 3.2.3, focusing on the following projects.

- World Bank "Primary Healthcare System Strengthening Project"
- World Bank "Health Sector Development Project"
- ADB "Health System Enhancement Project"

[245] Regarding the extent to which JICA's past support results have been utilized, the following four projects (project overview is provided in 3.1.3 (1)) were referred to as the major NCDs-related support activities that JICA has implemented for Sri Lanka to date.

- "Project fr the Improvement of Health Promotion and Preventive Medicine Services"（Technical assistance project, 2008~2013）
- "Project for Strengthening Measures against Non-Communicable Diseases"（Paid account technical cooperation、2014~2018）
- "Project for the Improvement of Health Care Services"（Yen loan, 2018~currently taking place）
- "Aging Sector Information Collection and Confirmation Study"（2021）

3 points	The importance rating in 5.1.4(4) is 7~8 points
4 points	The importance rating in 5.1.4(4) is 9~10 points

Based on the above evaluation criteria, considerations for intervening in each challenge were evaluated. The table below shows the results.

As for the priority for intervention, issues with a total score of 8~10 points are "high," issues with a total score of 5~7 points are "medium," and issues with a total score of 0~4 points are "low.

The table shows that the total scores for issues (2) inadequate early screening / NCDs testing system and facilities, (3) undeveloped referral system, and (4) absence of patient follow-up system are high. In other words, these are the fundamental issues in Sri Lanka's NCDs, and the implementation of interventions is appropriate in terms of financial, technical, and operational aspects, and it is considered possible to provide assistance based on past support experience in the country and interventions by other countries and organizations.

On the other hand, JICA's interventions in issues (8) deficiencies in the health information system, and (9) non-evidence-based health planning and resource allocation are not relatively easy because JICA has little experience in providing assistance in Sri Lanka and it will take time to coordinate technical and operational aspects of the interventions.

Table 5-7 Evaluation criteria for items to be considered for intervention

Challenges		Importance of the challenge	Ease of implementation	Level of intervention by other countries and organizations	Utilization of outcomes from past assistance	Total	Priority for intervention
1.	Increase of risk factors and lack of awareness for prevention	2	2	1	2	**7**	**Medium**
2.	Inadequate early screening / NCDs testing system and facilities	3	2	1	2	**8**	**High**
3.	Undeveloped referral system	3	2	1	2	**8**	**High**
4.	Absence of patient follow-up system	3	2	1	2	**8**	**High**
5.	Uneven geographic distribution of higher-level (tertiary-level) hospitals	3	2	1	1	**7**	**Medium**
6.	Lack and uneven distribution of healthcare personnel	3	2	1	1	**7**	**Medium**
7.	Vulnerability of testing services in high-level medical facilities	1	2	1	2	**6**	**Medium**
8.	Deficiencies in the health information system	3	1	0	0	**4**	**Low**
9.	Non-evidence-based	3	1	0	0	**4**	**Low**

	health planning and resource allocation						
10.	Decreased access to medical services	2	1	2	0	**5**	**Medium**
11.	Lack of coordination between private healthcare and the Government	4	1	2	0	**7**	**Medium**

5.2 Future interventions

This section lists potential interventions to solve 11 challenges identified from the literature review and interviews described at 5.1.1 and describes effective and efficient programmes of cooperation to implement the interventions by JICA, taking into account the priority of the proposed interventions as assessed at 5.1.4.

5.2.1 Proposed interventions

This section lists the proposed interventions to address the challenges, examines to position of such interventions in the roadmap for measures against NCDs up to 2030, and finally proposes drafted cooperative programs by JICA.

Specifically, 5.2.1 provides 11 interventions that contribute to solving 11 challenges extracted from the literature research and hearings described in 5.1.1. Then, 5.2.2 reviews Sri Lanka's process for addressing NCDs towards 2030 (roadmap) and the positions of proposed interventions in the roadmap. Lastly, 5.2.3 outlines effective and efficient programs of cooperation for JICA to implement interventions.

(1) Capacity Enhancement of prevention and early detection of NCDs

Based on the groups of Challenges extracted from the literature search and interviews described in 5.1. 1, as shown in Figure 5-3, this section gives a comprehensive list of proposed interventions for increasingly necessary measures against Sri Lankan NCDs to resolve these challenges. This section also describes the purpose and necessity of each intervention.

(a) Support for strengthening HLC capacity

The survey team proposes developing and introducing systematic ways to attract clients to HLCs and lifestyle awareness methods to reduce risk factors, while supporting facilities and equipment in areas where HLC services are not available (especially in the Colombo region), with the participation of frontline health and non-health sector staff and CSOs.

Awareness raising to reduce risk factors include not only the prevention of NCDs, but also the prevention of severe symptoms and recurrence of NCD in patients who have already suffered from NCDs. Many NCDs require long-term care even after acute treatment, and it is important for patients to continue self-care in their post-treatment recuperation such as medication, dietary restriction, rehabilitation, and physical exercise. It is necessary to develop lifestyle awareness program to reduce risk factors by paying attention to this point.

In addition, this intervention aims to realize the original purpose of HLC that can detect NCD-presymptomatic, early and borderline patients, the reduction of the number of patients with NCDs and the severity of NCDs. It is essential to work in an integrated manner with "strengthening the referral system" and "strengthening the patient follow-up system" described later in (3) Strengthening the NCDs health system (cross-sectional intervention), and to establish a system to ensure that patients are connected to medical institutions from early detection, and to continuously follow up with patients at medical institutions.

(b) Awareness-raising on NCDs prevention through media and promotion of early education for children

The survey team suggests designing and implementing sustainable and attractive mass media and social media campaigns to promote and sell HLC features and services to target audiences.

(c) Development of skills of primary healthcare service providers

As it has been pointed out that there is an absolute shortage of primary healthcare professionals working in HLCs and primary healthcare institutions, to increase the number of such professionals nationwide in the future, the standard curriculum on primary healthcare, lifestyle awareness and NCDs screening should be more focused and enhanced in the pre- and in-service training courses for health care professionals

(2) **Capacity building for higher-level diagnosis, treatment and care for NCDs**

(a) Expansion of functions at higher-level hospitals

Diagnostic imaging services (X-ray, ultrasound scan, CT scan, MRI, etc.) are often installed only in large private hospitals, and since it has been pointed out that public higher-level medical institutions (secondary and tertiary medical institutions) lack equipment, equipment support is necessary. In addition, since 20% of secondary and tertiary care facilities do not have diagnostic facilities to evaluate chronic complications of diabetes, and only 25% of tertiary care hospitals provide HbA1c testing, support for equipment to evaluate complications of diabetes (HbA1c blood glucose meter, urinalysis device, funduscopy device, blood pressure pulse wave device, etc.) can be considered.

In order to expand the functions of diagnosis and treatment of cardiovascular diseases in Sri Lanka, which have caused a high burden of diseases, as well as diabetes, it is important to extend the support to hospitals for the development of catheter laboratories for diagnosis and treatment of cardiovascular diseases to provinces other than the current target provinces of Western Province, North-Western Province, Central Province, North-Central Province, Eastern Province and Uva Province in the future in cooperation with the ODA loan "Health and Medical Service Improvement Project," and to intervene in the development of medical personnel for diagnosis and treatment of cardiovascular diseases along with facility development[246].

In addition, NCDs rehabilitation and palliative care services, for heart disease, lung disease, and stroke, are essential elements in improving the life span and quality of life of NCD patients, but they are provided only in selected tertiary and secondary care hospitals in Sri Lanka. Also, palliative care services provided uniformly throughout the country in an organized manner have not yet been fully developed in Sri Lanka. Therefore, support for the extension of rehabilitation and palliative care functions to higher-level hospitals can be considered.

The Sri Lankan Ministry of Health also used the COVID-19 crisis to encourage telemedicine to help NCDs patients avoid the risk of COVID-19,and introduced the telemedicine application “MyDoctor” at 16 national and public nephrology clinics. This telemedicine experience shows that in the future, products such as telemedicine applications can facilitate communication between NCDs patients and their treating physicians, even in peacetime, and can be a powerful tool for the follow-up of NCDs patients and the continuation of treatment and care. For this reason, the introduction of a telemedicine system in a high-order hospital and the development of telemedicine human resources are also suggested as possible interventions.

(b) Development of human resources for diagnosis, treatment and care of NCDs

[246] A similar example of the expansion of functions of higher-level hospitals and the development of medical personnel is the East West Medical College Hospital Project in Bangladesh. One of the features of this project is that it is an overseas investment and loan project in which Ship Aichi Medical Service Limited invests in a local subsidiary established by Green Hospital Supply Co., Ltd. in Japan. By investing in a local subsidiary of a Japanese hospital, the project aims to implement international-level medical services locally by utilizing the know-how of Japanese hospitals.

In parallel with the equipment support for diagnosing diabetes complications and diagnostic and treatment equipment for cardiovascular diseases as mentioned above, training for clinical laboratory technicians and physicians in the use of equipment and diagnostic and treatment protocols for diagnosis and treatment should be provided.

In addition, there is a strong need[247] to organize and train specialized and coordinated multidisciplinary teams of trained physicians, nurses, physical therapists, occupational therapists, speech therapists, social workers, and counselors to improve rehabilitation and palliative care services for cancer and stroke patients, and thus support the development of human resources for rehabilitation and palliative care and the strengthening of interprofessional collaboration.

(3) Strengthening NCDs health system (Cross-sectional interventions)

(a) Enhanced utilization of health data

In addition to data on patients who have already been diagnosed and treated at medical institutions, data on unaffected patients and patients with a risk of disease who have undergone screening from primary medical institutions and HLCs will be collected and analyzed, and a system for subsequent treatment and follow-up will be strengthened. It is also possible to establish efficient and effective ways to use the limited health budgets and resources of the Ministry of Health and local health authorities by strengthening the capacity of evidence-based planning by utilizing such data for the development of health plans for NCDs.

Further, in order to connect the data acquired by primary medical institutions and HLCs to the subsequent diagnosis and treatment process and promote their utilization, it is necessary to work in unison with "Reinforcing the referral system" and "Strengthening partnerships with private medical institutions" described in the following points.

(b) Reinforcing the referral system

In order to improve the continuity of treatment and care for NCDs, it is necessary to establish a system with the ability to track (follow up) screened individuals being referred to different medical facilities or returning to HLCs, as well as develop guidelines for the operation of the system, and disseminate the guidelines to healthcare professionals through training.

(c) Strengthening partnerships with private medical institutions

We propose strengthening systems for monitoring the implementation of reimbursement and service provisions in private medical institutions and strengthening management and supervision of service quality. In addition, to ensure the capacity of private sector medical staff to provide NCD services, it may be possible to mandate in-service training on NCDs based on the curriculum advocated by the NCD Board and include it as a prerequisite for registration and renewal. This could help address the shortage of NCDs personnel in public hospitals.

(d) Reduction of out-of-pocket medical expenses (OOP)

Since the increase in OOP has been cited as a factor hindering access to NCDs services for low-income groups, long-term support could include reform support in the social security sector. First, although the introduction of a public health insurance system that covers private medical expenses and self-medication can be considered, there are limits to intervention in the public health insurance system due to limited government resources and the lack of concrete measures taken by the Sri Lankan government. For this reason, overseas investments and loans may be made to companies that provide private health insurance services for low-income people and to microfinance institutions to expand health care coverage by the private sector.

[247] Review Report "Review on The National NCD Prevention and Control Programme in Sri Lanka"

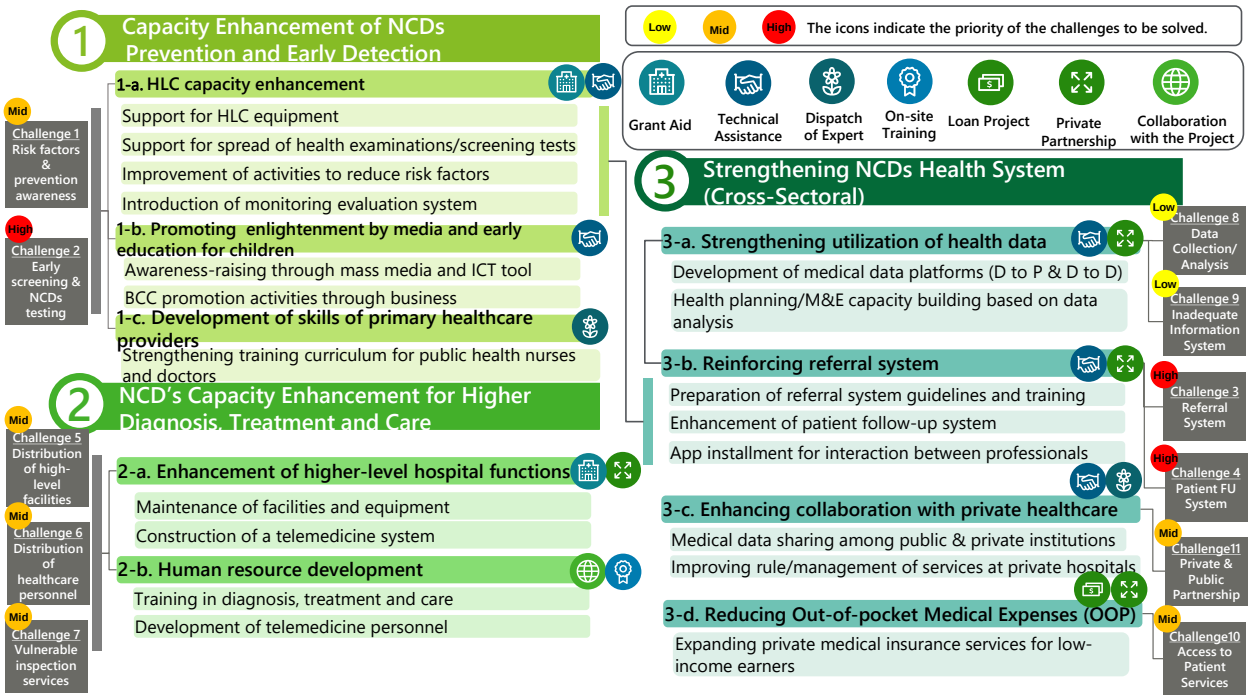


Figure 5-3 Proposed interventions against NCDs challenges in Sri Lanka

5.2.2 Road to 2030

This section reviews measures for NCDs in Sri Lanka towards 2030. The following steps were taken: (1) comparison with the current situation of Sri Lanka as seen from the trends of disease issues at each stage of economic development in the world; (2) prediction of long-term (up to 2030) NCD-related trends in Sri Lanka based on the information obtained in this study; (3) possible procedures (roadmap) for responding to future trends; and (4) analysis of proposed intervention measures from perspectives of actors (public and private) and scale of project, and further clarification of interrelations between the proposed interventions and roadmap from perspectives of time and prevention stage. The Roadmap states that the short-term promotion consisting human resources for primary healthcare represented by HLCs, and the adoption of data will be a fundamental to address a wide range of challenges. It also states that the intensive strengthening of primary and secondary prevention will ease the difficulty to consider measure to reduce the burden of medical costs and health financing in the long run.

(1) Development status and medical issues in Sri Lanka

In general, when economic development and life expectancy are grouped, medical issues are correlated. Figure 5-4 shows an overview of the situation. Compared with Asian countries, Vietnam is slightly ahead in medical issues, and the country is positioned at the same level as the Philippines and slightly behind Indonesia and Thailand. This is a transition period in which economic growth is slowing down and NCDs become prominent. In the medium term, the burden of diseases of mature adults, such as cancer, will increase, and in the long term, mental illnesses and terminal care will become central medical issues. We are also at a stage where we are looking ahead to measures to combat aging, with Alzheimer's disease becoming one of the highest-ranking diseases in the disease burden discussed in Chapter 2.

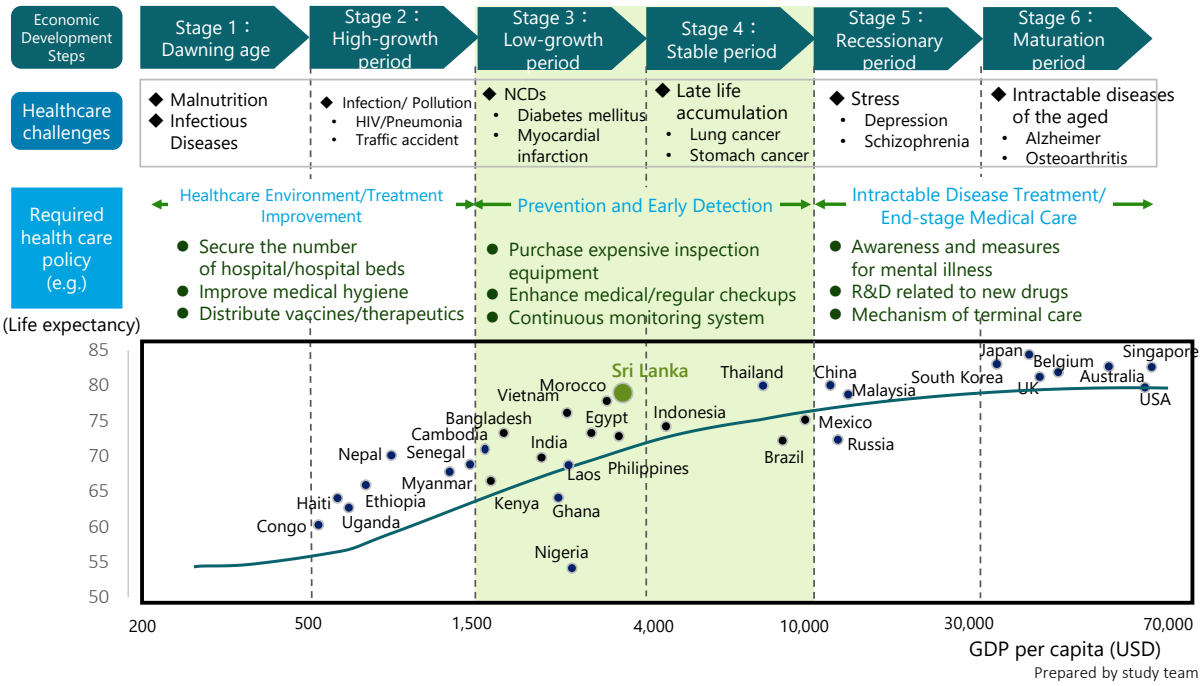


Figure 5-4 Correlation between economic development and medical challenges

(2) Medium term outlook for Sri Lanka

In an interview with the Ministry of Health, Labour and Welfare on a visit to Japan, the Ministry pointed out the importance of having a long-term perspective in policymaking, setting objective targets for achieving short- to medium-term goals, and analyzing the current situation to achieve them. For example, even in a 5-year mid-term plan, it is important to have a blueprint for the next 5 years after achieving its goals. It is important to visualize the health improvement of people and its benefits that can be seen after the achievement of the policy target. Activities involving the communities to which people belong, such as the elimination of stereotypes, are necessary to encourage people to change their behavior. Therefore, Japan also emphasized primary prevention rather than the third national health promotion and proposed Health Japan 21.Taking the promotion of smoking cessation as an example in the involvement of communities, it is said that encouraging the establishment of smoking areas and the separation of smoking areas in communities (workplaces) of the smoking generation was more effective than laws and regulations. It is also possible that policy monitoring and lessons learned are not sufficiently implemented at present. In the next medium-term plan, it is also important for the Ministry of Health, Labour and Welfare to identify unfavorable factors for progress in monitoring the medium-term plan and to work on those factors[248]. It is also important for the next medium-term plan to establish a long-term and logical framework, such as predicting the effects of measures and implementing current policies based on scenarios up to the next one.

Based on the changes in the medical issues described in the Figure 5-4, the future medical issues of NCDs in Sri Lanka and the measures to be taken were discussed with the local hearings and the visitors to Japan. In terms of disease issues, considering the increase in diseases and their major causes over the past decade, it is expected that the burden of cancer, Alzheimer's disease, mental illness, and diseases of mature adults will increase in the future.

[248] During the Second Health Japan 21 Interim Assessment in 2016, 57 indicators were evaluated, and this was reflected in the partial revision of the Health Promotion Law in 2018

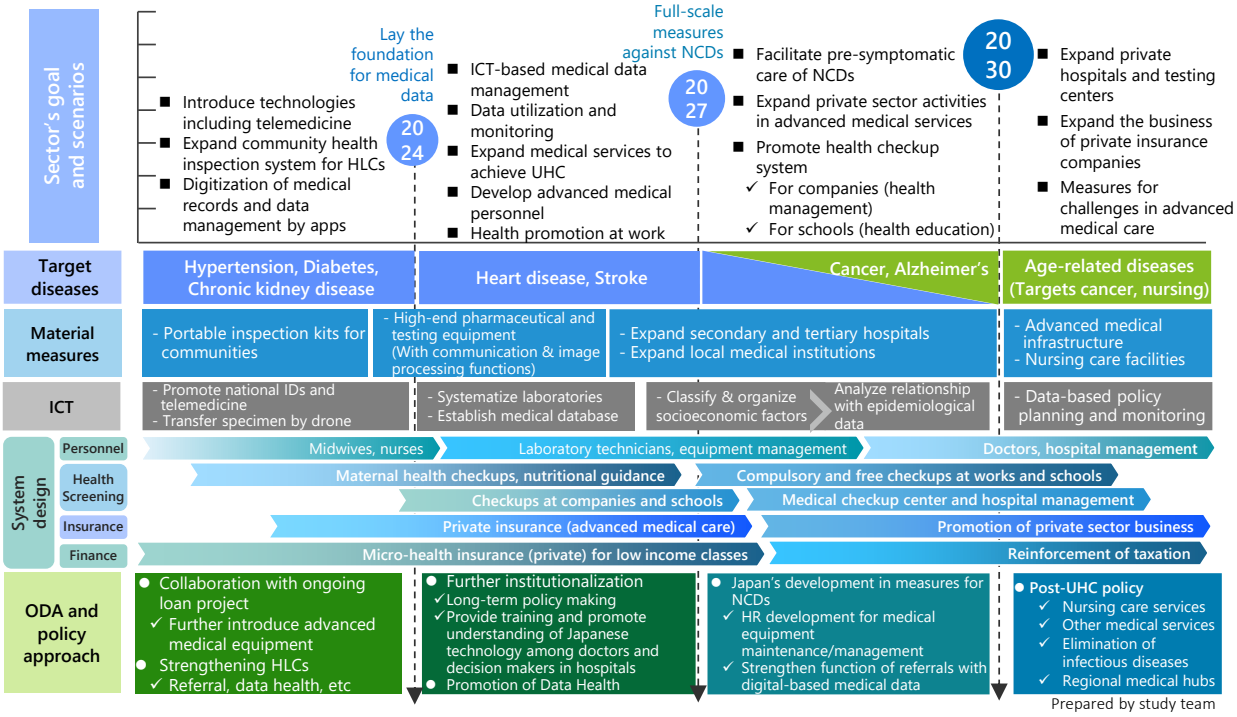


Figure 5-5 Medium and long-term scenario

In terms of material measures, as discussed above, community medical care should be expanded to rectify disparities in medical care seen by region, city, and income, and ICT should be used to obtain medical data for disease management. By correctly accumulating information on community healthcare, demand for examination items in higher-level medical institutions can be clarified, and equipment reinforcement can be promoted. In addition, the overall demand for testing will be raised from the community healthcare services, leading to the establishment of private testing centers, etc., thereby reducing the expenditure on NCDs by public medical services. ICT is expected to contribute to the promotion of referrals, an issue in Sri Lanka, by enabling appropriate data collection and analysis at each stage, as well as data coordination among different medical institutions. In the long term, it is also important to build facilities to integrate and store medical information and to strengthen the capacity to incorporate medical information into policy.

In parallel with resources and ICT, medical personnel are essential for the development of community healthcare centered on the HLCs mentioned above. As the demand for inspections increases, the quality and quantity of personnel will be increased, and the role of public institutions in human resource creation will become even more important, while the role of the private sector in terms of supplies can increase. It also promotes health by developing screening and health checkups starting from HLCs.

Due to the increasing sophistication of medical issues and the increasing role of the private sector, the expansion of private insurance for advanced medical care is expected. It has been pointed out by JICA[249] that public medical care in Sri Lanka is currently free of charge in principle, putting pressure on public finances. As stated in Chapter 3, the Ministry of Health is negative about the burden of medical expenses with public funds for private medical care. On the other hand, there is a need to expand public medical expenses. For this reason, while public medical services should focus on prevention and control the expansion of medical expenditure, advanced medical care, such as treatment, should be dealt with in two phases: promotion of private activities and development of an insurance system with private financial resources. In addition, due to the current financial difficulties, there is room for a certain amount of

[249] https://openjicareport.jica.go.jp/pdf/12236311.pdf

consideration to cover public medical expenditures from tax revenues[250].

(3) **Roadmap**

Based on the future medical issues described in Figure 5-5, the following Figure 5-6 shows an intervention plan discussed with the parties concerned from the viewpoint of primary, secondary, and tertiary prevention. This section also describes the relationship with 5.2.1 and the cooperative programs shown in Figure 5-3.

Considering that COVID-19 has reduced screening people with risk factors to avoid contact, it is important in the short term to use the HLC as a starting point for early detection of NCDs through testing and lifestyle modification for NCDs high-risk groups ("1-a. HLC Capacity Enhancement" from 5.2.1 and "1-b. Promotion of enlightenment and early education for children through the media"). It is also important to use the data obtained through screening as reference guidelines for effective referral to higher-level hospitals and case monitoring, and to digitize the data (3-a. and 3-b.).

Next, in relation to the expansion of HLC screening as requested by the Sri Lankan Ministry of Health, it is important to consider strengthening the curriculum of community medicine in existing medical worker development courses (1-c.), as well as to utilize accumulated medical data and develop human resources from diagnosis to treatment and care of NCDs (2-b.). It is also important to strengthen the facilities of higher-level medical institutions that respond to NCDs (2-a.). Further, if medical data is mutually utilized between the public and private sectors and medical institutions (3-a.), it becomes easier to refer to them.

As mentioned above, due to Sri Lanka's severe financial situation, there is a limit to the existing free public medical care provision, and it is expected that the use of private insurance and the provision of services by private medical institutions will become increasingly important for advanced medical care. Therefore, it is necessary to enhance the systems and supervision systems for expanding private activities (3-c.). It is also possible to consider supporting medical expenses for low-income and socially vulnerable people through microfinance, etc. (3-d.).

In the medium term (4-5 years from now), medical data on high-risk groups in HLCs will be accumulated, and it will be important to reflect such data in policies through analysis. With the completion of the Health Strategy Master Plan and the mid-term review of the next NCDs MSAP expected at that time, capacity building to reflect data in its monitoring and revision is also required (Ibid 3-a.). Since the demand for intractable diseases of the elderly and terminal care will increase at this time, it is thought that planning for new areas such as mental care and rehabilitation will also be necessary. Based on the evaluation of the efforts of the Sri Lankan Ministry of Health at that stage, it is would be possible to consider providing a policy loan (results-based financing) which budgetary supports implementations of projects initiated by the Ministry of Health.

In addition, Interventions 1 through 3 correspond with three categories of cooperation programs in Figure 5-3, while the details are discussed in Figure 5-8.

[250] In Ghana, for example, the Natonal Health Insurance Levy provides national health insurance through a 2.5% tax on common goods and services.

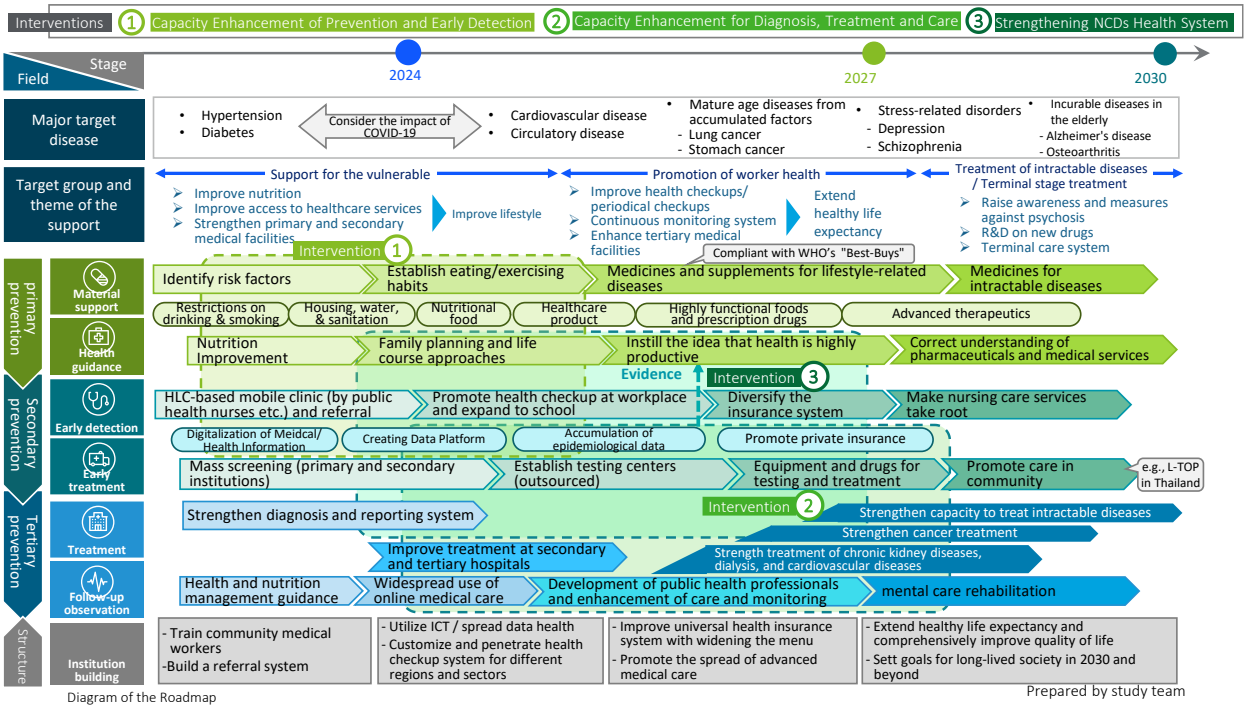


Figure 5-6 Roadmap for NCDs

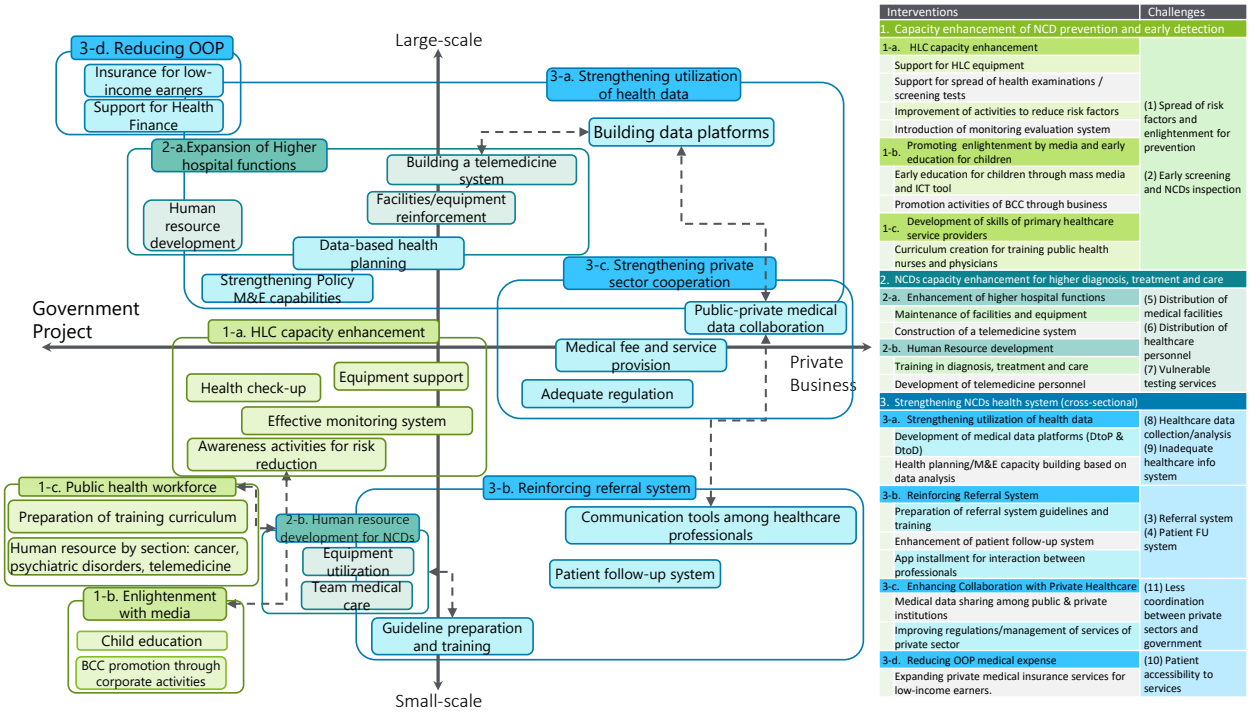
(4) Involvement of public and private sectors and their cooperation

To implement the interventions described in Figure 5-6 effectively, it is important to coordinate the interventions and to cooperate with various public and private actors. To this end, the scale of intervention measures (vertical axis) and public and private actors (horizontal axis) were mapped in Figure 5-7. The task numbers are consistent with 5.1.1 and the intervention numbers are consistent with 5.2.1 and Figure 5-3.

Programs 1-a. to 1-c. associated with "(1) Strengthening NCDs Prevention and Early Detection Capacity" focus on human resource development rather than physical support to strengthen community health and public health, and are expected to be relatively small in scale and implemented by Sri Lankan government projects.

2-a, which is related to "(2) Enhancement of NCDs' capacity for higher-order diagnosis, treatment, and care," involves large scale and involvement of the private sector in building equipment and systems for higher-level medical facilities. 2-b is the development of advanced medical personnel, which will be of the same scale as 1-c.

Linked to "(3) Cross-Sectoral Strengthening of NCDs Health Systems," 3-a. is also closely aligned with 2-a. and 3-b. particularly regarding building a platform for medical data. 3-b is interrelated with the utilization of medical data and ICT and the human resources of 1-c and 2-b, and the scale and the degree of relevance between the public and private sectors vary depending on the details. As in 3-a, the guideline development intervention is small, but has an impact on the overall function of referrals. For 3-c., the health care data linkage is large and has an impact on referrals, and other details have regulatory and surveillance requirements.



Interventions	Challenges
1. Capacity enhancement of NCD prevention and early detection	
1-a. HLC capacity enhancement	(1) Spread of risk factors and enlightenment for prevention (2) Early screening and NCDs inspection
Support for HLC equipment	
Support for spread of health examinations / screening tests	
Improvement of activities to reduce risk factors	
Introduction of monitoring evaluation system	
1-b. Promoting enlightenment by media and early education for children	
Early education for children through mass media and ICT tool	
Promotion activities of BCC through business	
1-c. Development of skills of primary healthcare service providers	
Curriculum creation for training public health nurses and physicians	
2. NCDs capacity enhancement for higher diagnosis, treatment and care	
2-a. Enhancement of higher hospital functions	(5) Distribution of medical facilities (6) Distribution of healthcare personnel (7) Vulnerable testing services
Maintenance of facilities and equipment	
Construction of a telemedicine system	
2-b. Human Resource development	
Training in diagnosis, treatment and care	
Development of telemedicine personnel	
3. Strengthening NCDs health system (cross-sectional)	
3-a. Strengthening utilization of health data	(8) Healthcare data collection/analysis (9) Inadequate healthcare info system
Development of medical data platforms (DtoP & DtoD)	
Health planning/M&E capacity building based on data analysis	
3-b. Reinforcing Referral System	(3) Referral system (4) Patient FU system
Preparation of referral system guidelines and training	
Enhancement of patient follow-up system	
App installment for interaction between professionals	
3-c. Enhancing Collaboration with Private Healthcare	(11) Less coordination between private sectors and government
Medical data sharing among public & private institutions	
Improving regulations/management of services of private sector	
3-d. Reducing OOP medical expense	(10) Patient accessibility to services
Expanding private medical insurance services for low-income earners.	

Figure 5-7 Scale of cooperation programs and classification of ODA and private sector

Figure 5-8 organizes cooperation programs in the chronological order to fit in the Roadmap (Figure 5-6). Based on "(1) Enhancing NCDs prevention and early detection capacity" to be implemented as the first intervention program, reinforcement of HLCs (capacities of screening and equipment) are developed in line with community health officers, while the child education and Behavior Change Communication (BCC) are promoted through media. The effective monitoring system would be developed through such activities.

During the implementation of the intervention program (1), the reinforcement of referral system under "(3) Cross-Sectoral Strengthening of NCDs Health Systems" would begin in terms of human resources and medical data. Regarding human resources, referral guidelines and trainings are provided in abreast with capacity development for HLCs and are reflected in the intervention program (2). About medical data, the programs aim to contribute to building effective referral systems through disseminating communication tools among healthcare practitioners, building data platforms between them, and leading to medical data linkages between public and private health-related institutions. It would be then remarkable to set adequate regulations and revision of medical fees to effectively lead to coordination between public and private institutions. Through encouragement of private sector interventions, public health expenditure would be mitigated, which contribute to improvement of health finance.

"Health and Medical Service Improvement Project" has been implemented to improve medical services in diagnoses and treatments for NCDs (with focus on cardiovascular disease) through providing capacity enhancement and facilities for tertiary hospitals and training centers. "Capacity building for higher-level diagnosis, treatment and care for NCDs" would assist further cooperation of the abovementioned project (enhancement of tertiary hospitals and training centers) in collaboration with the intervention program (3). Through the program of expanding functions of higher-level hospitals, in addition to system development for medical data and telemedicine, meeting the growing demand for diagnoses through intervention programs (1) and (2) and further capacity enhancement for provision of medical services (such as cancers and other intractable disease) would be considered.

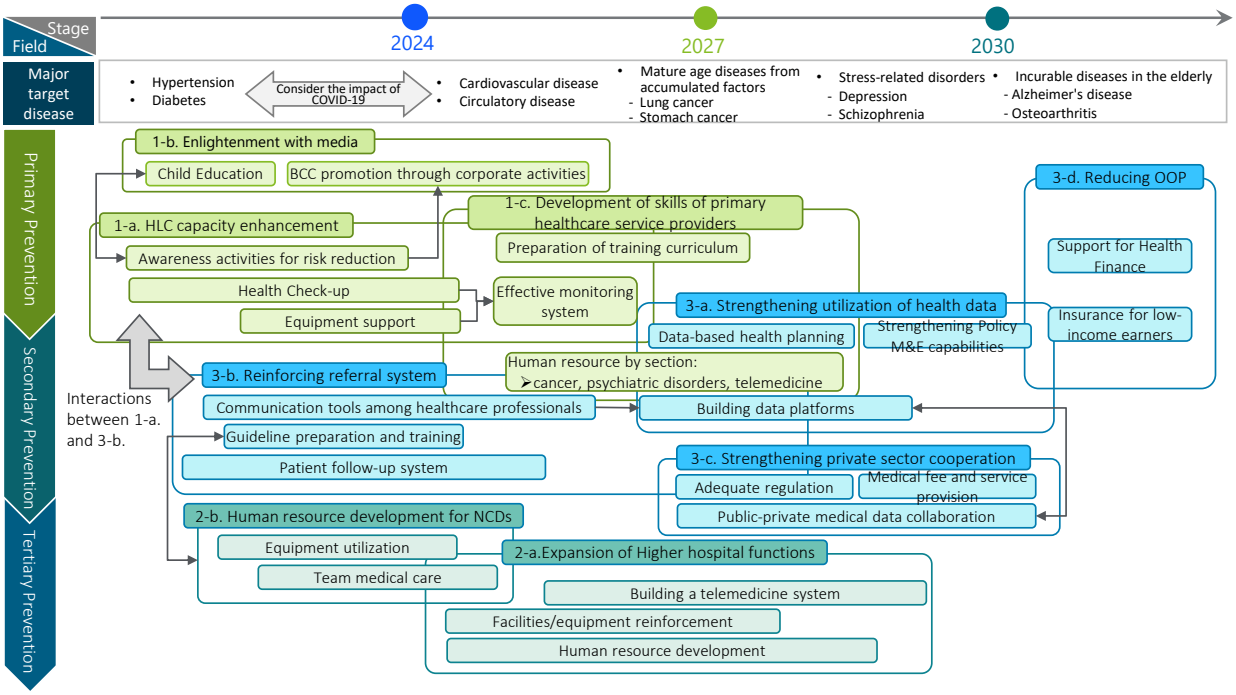


Figure 5-8 Intervention programs in Roadmap

5.2.3 Proposed cooperative program by JICA

So far, 5.2.1 has discussed possible interventions for the challenges identified in 5.1, and 5.2.2 has described intervention procedures and interrelationships with a roadmap.

In this section, based on the interventions for measures against NCDs mentioned in the previous section 5.2.1, multiple interventions were combined and programmed to compile the following solutions that lead to the resolution of 11 issue groups.

When the interventions were programmed, interventions to address interrelated challenges as indicated in 5.1.3 were in cooperated into the same program.to tackle the interrelated challenges effectively. Also, considering the priority for interventions assessed by 5.1.5, interventions with similar priorities were incorporated into the same program as much as possible to also make the priority on implementation of programs clearer.

Details of each proposed cooperative program (Proposals for specific activities, support schemes, implementation structures, implementation periods, and budget estimates) are described below.

Table 5-8 Outline of Cooperative Programs

Priority for Intervention	Challenge	Related Intervention	Cooperative Program
Medium	①Increase of risk factors and lack of awareness for prevention	•1-a：Support for strengthening HLC capacity •1-b：Awareness-raising on NCDs prevention through media and promotion of early education for children •1-c：Development of Public health human professionals •3-b：Reinforcing the referral system	Program 1 Enhancing NCDs prevention and early detection capacity
High	②Inadequate early screening / NCDs testing system and facilities		
High	③Undeveloped referral system		
High	④Absence of patient follow-up system		
Medium	⑥Lack and uneven distribution of healthcare personnel		
Medium	⑤Uneven geographic distribution of higher-level (tertiary-level) hospitals	•2-a：Expansion of functions at higher-level hospitals •2-b：Development of human resources for diagnosis, treatment, and care of NCDs	Program 2 Capacity building for higher-level diagnosis, treatment, and care for NCDs
Medium	⑥Lack and uneven distribution of healthcare personnel		
Medium	⑦Vulnerability of testing services in high-level medical facilities		
Low	⑧Deficiencies in the health information system	•3-a：Enhanced utilization of health data	Program 3 Strengthening health and medical data utilization
Low	⑨Non-evidence-based health planning and resource allocation		
Medium	⑪Lack of coordination between private healthcare and the Government	•3-c：Strengthening cooperation with the private health sector	Program 4 Strengthening cooperation with the private health sector
Medium	⑩Decreased access to medical services	•3-d：Reduction of out-of-pocket medical expenses (OOP)	Program 5 Reduction of out-of-pocket medical expenses

(1) Schemes with high involvements of JICA (Technical Cooperation, Loan and Grant)

(i) Proposed collaborative program 1: Enhancing NCDs prevention and early detection capacity

Table 5-9 Proposed collaborative program 1: Enhancing NCDs prevention and early detection capacity

PJT No.	Challenge	Intervention measures	Details of support (Specific activity proposal)	Support scheme ／ Implementation structure	Implementation period ／Estimated budget
PJT 1-1	Challenge #2 Inadequate early screening/NCDs testing system and facilities	(i) Reinforcement of HLC facilities (1-a)	• Based on advice from the Ministry of Health, HLCs will be sampled, particularly in provinces where HLC services are lagging behind, and an equipment survey will be conducted to identify the types of equipment and facilities that are in short supply. • Based on the survey results, the HLCs to be supported will be determined in consultation with	[Support scheme] Grant aid	Short-term (Begin within 3 years) [Duration] In parallel with the following technical cooperation projects. [Budget] Based on HLC survey results and discussions with the Ministry of Health.

			the Ministry of Health, and the identified facilities and equipment will be provided.		
PJT 1-2	Challenge #2 Inadequate early screening/NCDs testing system and facilities	(ii) Dissemination of health checkups and screening tests (1-a)	• Develop a systematic method of promoting resident visits to the HLC. (ex: develop an App for HLC users to search HLC facilities and services) • Train HLC staff on the developed methods of promoting resident visits to the HLC. • Review and brush up an existing HLC screening manual if needed and train existing HLC staff on how to conduct screening tests based on the manual. • Review and make recommendations on how to operate HLCs to expand service delivery to male residents	[Support scheme] Technical cooperation project [Implementation structure] <u>Sri Lankan side</u> Ministry of Health/Local health authorities Primary-level hospitals HLCs <u>Japanese side</u> - Three long-term experts (Chief advisor, Medical checkup/screening, referral system, Project coordinator)	Short-term (Begin within 3 years) [Duration] 5 years [Budget] USD 4.5 million
	Challenge #2 Inadequate early screening/NCDs testing system and facilities	(iii) Strengthening monitoring and evaluation systems (1-a)	• Review the implementation status of the HLC supervision tools and national guidelines developed under the "Strengthening Non-Communicable Disease Control Project", identify areas for improvement, and		

			re-enforce the monitoring and evaluation system. • Conduct periodic monitoring and evaluation for target HLCs in cooperation with competent local health authorities. • Based on the results of the monitoring and evaluation, hold review meetings in each target province and develop action plans to improve HLC functions.		
	Challenge #3 Inadequate referral system Challenge #4 Absence of patient follow-up system	(iv) Enhancement of the referral system (3-b)	• Confirm the implementation status of the referral system to strengthen collaboration between tertiary hospitals, HLCs, and primary hospitals supported by the "Strengthening of Non-Communicable Disease Control Project". • Confirm the implementation status of the follow-up system for patients referred from HLCs supported by the "Strengthening the Control of Non-Communicable Diseases Project" and for patients identified as at risk for NCDs at HLCs.		

			• After confirming the implementation status of the above systems, identify areas that need improvement, formulate and implement intervention measures, considering Shared Care Cluster System in Sri Lanka.		
PJT 1-3	Challenge #1 Increase of risk factors and lack of awareness for prevention	(v) Improvement of risk factor reduction awareness activities (1-a)	• Develop a health education curriculum and develop lifestyle awareness methods for local residents to reduce risk factors for the prevention of NCDs, and prevention of aggravation and recurrence of NCDs. • Train existing HLC staff on the developed lifestyle awareness methods.	[Support scheme] Technical cooperation project [Implementation structure] <u>Sri Lankan side</u> Ministry of Health/Local health authorities HLCs Local companies <u>Japanese side</u> - Three long-term experts (Chief advisor, Health promotion, Project coordinator)	Short-term (Begin within 3 years) [Duration] 2 years [Budget] USD 2 million
		(vi) Awareness raising activities through medica and ICT tools and Promotion of BCC through corporate activities (1-b)	• Prepare ICT materials (for children over 12 years, adolescents, and adults) on knowledge dissemination of NCDs risk factors and lifestyle awareness. • Disseminate the created ICT materials through government PR, television, social		

			media, and corporate training.		
PJT 1-4	Challenge #6 Insufficient and uneven distribution of health care personnel	(vii) Development of skills of primary healthcare providers (1-c)	• Review and enrich the contents of standard curriculum of pre- and in-service trainings for medical professionals (including paramedics) related to community health, lifestyle awareness, NCDs screening, screening, etc. • Develop a mid to long-term public health human resource development and deployment plan.	[Support scheme] Dispatch individual experts [Implementation structure] Sri Lanka Ministry of Health Japan 1 individual expert (Public health education)	Short-term (Begin within 3 years) [Duration] 3 years (In parallel with the above technical cooperation projects) [Budget] USD 5 million

Interventions (ii), (iii), (v) and (vi) are components that can cooperate with each other because the main target of these interventions is to strengthen the capacity of HLCs. For example, intervention (v) to facilitate the awareness-raising activities to reduce risk factors at HLCs enables to promote the visit to HLCs of the target population to be tested and screened. It also leads to the identification of the target population to be screened, that may result in achievement of popularization of the health check-ups and screening test in intervention (ii).

(ii) Proposed collaborative program 2: Capacity building for higher-level diagnosis, treatment, and care for NCDs

Table 5-10 Proposed collaborative program 2: Capacity building for higher-level diagnosis, treatment, and care for NCDs

PJT No.	Challenges	Intervention measures	Details of support (Specific activity proposal)	Support scheme ／Implementation structure	Implementation period ／Estimated budget
PJT 2-1	Challenge #5 Uneven distribution of higher-level medical facilities	(i) Expansion of higher hospital functions (2-a)	• Conduct a survey of the results of the ongoing ODA loan "Health Service Improvement Project" and the needs of the Ministry of Health and higher-level	[Support scheme] Loan assistance	Short-term (Begin within 3 years) [Duration] 5 years

	Challenge #7 Vulnerability of testing services in higher-level health care facilities		hospitals, and identify, in particular, needs related to: - Equipment needs of higher-level hospitals outside the target states of the ODA loan project (Western Province, North-West Province, Central Province, North-Central Province, Eastern Province, Uva Province) (In particular, the needs of hospital laboratories pointed out by the ODA loan project) -Needs for diagnostic and therapeutic equipment for diseases other than cardiovascular diseases (Diseases with a high burden of disease, such as diabetes and cerebrovascular disease, identified in this survey) that are central to ODA loan project interventions - Equipment needs related to the rehabilitation and care fields. • Based on the results of the above needs assessment, target tertiary hospitals, target diseases, and target facilities and equipment that require further functional expansion will be identified, and a facility equipment plan will be developed.		[Budget] Determined by the results of the needs assessment and consultation with the Ministry of Health.

PJT 2-2	Challenge #6 Insufficient and uneven distribution of health care personnel	(ii) Human resource development for NCDs diagnosis, treatment, and care (2-b)	• Conduct on-the-job training for physicians and laboratory technicians on diagnosis, treatment, and care for diseases subject to expansion of higher-level hospital functions. • Conduct training in Japan for physicians and laboratory technicians involved in the diagnosis and treatment of NCDs at regional tertiary hospitals.	[Support scheme] Paid account technical cooperation (Projects Derived from ODA Loans for Health Service Improvement Projects) Training in Japan [Implementation structure] Sri Lanka - Ministry of Health - Secondary and tertiary level hospitals Japan - Two long-term experts (Chief advisor, Project coordinator/training management) - Several short-term experts (NCDs diagnosis and treatment, laboratory technicians, rehabilitation and care, etc.)	Short-term (Begin within 3 years) [Duration] 3 years [Budget] USD 3 million

(iii) Proposed collaborative program 3: Strengthening health and medical data utilization

Table 5-11 Proposed collaborative program 3: Strengthening health and medical data utilization

PJT No.	Challenges	Intervention measures	Details of support (Specific activity proposal)	Support scheme ／ Implementation structure	Implementation period ／Estimated budget
PJT 3-1	Challenge #8 Inadequate health care information system	(i) Development of medical data platforms (D to P and D to D)	• Conduct surveys of existing health information systems, reporting lines, and data utilization.	[Support scheme] Technical cooperation project	Medium to long-term (Begin within 3 to 10 years)

		(3-a)	• Conduct a survey with donors from other countries and organizations intervening in health information systems. • If the above survey identifies a fragmented process in the collection, reporting, and utilization of health and medical data, intervention measures using local and Japanese private sector technologies will be developed and implemented. (Particular attention will be paid to the process of collecting, reporting, and utilizing screening and screening data gathered by HLCs.)	[Implementation structure] Sri Lanka - Ministry of Health - Local health authorities Japan - Three long-term experts (Chief advisor, health administration capacity building, health data analysis) - Several short-term experts (ICT, etc.)	[Term] 3 years [Budget] USD 3 million
	Challenge #9 Non-evidence-based health planning and resource allocation	(ii) Health planning and M & E capacity building based on data analysis (3-a)	• Develop methods and tools for healthcare data analysis, identify issues based on data analysis (especially issues in the primary and secondary prevention phases using screening and medical checkup data accumulated in HLCs), and strengthen planning capacity for actions and resource allocation. • Strengthen capacity to implement, evaluate, and improve health and resource allocation plans in accordance with the PDCA cycle.		

(iv) Proposed collaborative program 4: Strengthening cooperation with the private health sector

Table 5-12 Proposed collaborative program 4: Strengthening cooperation with the private health sector

PJT No.	Challenges	Intervention measures	Details of support (Specific activity proposal)	Support scheme ／Implementation structure	Implementation period ／Estimated budget
PJT 4-1	Challenge #11 Lack of coordination between private health care and government	(i) Health data coordination among public and private medical institutions (3-c)	• Based on the results of the survey on existing healthcare information systems, reporting lines, and data utilization status presented in Program Proposal 3, the current status of health care data reporting and collaboration between the public and private sectors will be examined. • Provide policy advice on platforms and regulations on health data linkage systems from the private health sector and propose measures.	[Support scheme] Dispatch individual experts [Implementation structure] <u>Sri Lankan side</u> - Ministry of Health - Private Health Services Regulatory Council (PHSRC) <u>Japanese side</u> - One individual expert (Policy advisor)	Medium to long-term (Begin within 3 to 10 years) [Duration] 2 years [Budget] USD 400,000
		(ii) Regulation of reimbursement and services, strengthening of management and supervision for private hospitals (3-c)	• Conduct a survey on issues related to the private healthcare sector's non-compliance with the Private Health Services Regulatory Council's (PHSRC) regulations on facility certification and registration, reimbursement, and service content. • Based on the results of the survey, provisions will be reviewed, and policy advice on the monitoring process for compliance will be provided.		

(2) Other schemes

(i) Partnership with the private sector

During the business seminar at the end of this study, Fujifilm, Sysmex (high-accuracy diagnosis), Olympus (standardization of diagnostic techniques for endoscopes), Allm (medical data between hospitals and patients), and T-ICU (technology transfer related to remote ICU) did presentations. Japanese technologies and services, mainly for tertiary-level medical institutions, were introduced. As most of them have not yet been introduced in Sri Lanka, JICA's private partnership scheme (with demonstrations/verifications at a symbolic public hospital) is expected to directly appeal to the Ministry of Health and other hospitals. If such partnership project led to an adoption of the relevant technologies as a technical standard in Sri Lanka, it would boost the involvement of private sector (both Sri Lankan and Japanese) in healthcare development. Such private sector interventions would even make it possible for Sri Lanka to reduce the burden on its health finances and for Japan to develop business opportunities.

In addition, the seminar was attended by executives from large private hospitals that are active in introducing advanced technology. Therefore, the possibility of business development could be explored through follow-up after the seminar.

Table 5-13 Proposed collaborative program 5: Capacity building for higher-level diagnosis, treatment, and care for NCDs (private sector)

PJT No.	Challenges	Intervention measures	Details of support (Specific activity proposal)	Support scheme ／Implementation structure	Implementation period ／Estimated budget
PJT 2-3	Challenge #5 Uneven distribution of higher-level medical facilities Challenge #7 Vulnerability of testing services in higher-level healthcare facilities	(i) Expansion of higher hospital functions (2-a)	• Improve examination quality and reduce patient waiting time by introducing advanced diagnostic technology (X-rays, ultrasound, AI diagnosis, blood and urine tests, endoscopy) • Improve treatment techniques using the abovementioned techniques • Spread telemedicine by technology transfer of remote ICU	[Supporting scheme] Private Sector Partnership ✓ Collaboration with a loan project "Health and Medical Service Improvement Project" ✓ Needs at tertiary hospitals aside from target provinces of loan project (Western, North Western, Central, North Central, Eastern, Uva) with focus on laboratories	Short-term (begin within three years) [Term] 2 years [Budget] USD 1 million each

			• Standardize the distribution of medical data between hospitals and patients • Enhance follow-up after diagnosis and treatment through the use of medical data • Promote utilization of medical data (policy making, statistics and administration)	✓ Diagnosis and treatment for NCDs with high disease burden other than cardiovascular (target of loan project) ✓ Japanese companies' involvement in training programs [Input] Sri Lanka ✓ Ministry of Health ✓ Tertiary hospitals	
	Challenge #6 Insufficient and uneven distribution of health care personnel	(ii) Human resource development for NCDs diagnosis, treatment, and care (2-b)	• Conduct training for physicians and laboratory technicians on diagnosis, treatment, and care through the introduction of technologies and services		
		(iii) Building telemedicine systems and human resource development for telemedicine (2-a) (2-b)	• Introduce a DtoD telemedicine system connecting NCD-related specialists at tertiary hospitals and private general hospitals in urban areas • Develop human resources for telemedicine to cover the lack of human resources and skills for diagnosis and treatment of chronic high-order NCDs in local high-order hospitals		

In addition to the JICA private partnership projects, there are also support schemes provided by the Healthcare Industries Division of the Ministry of Economy, Trade and Industry (METI), who did presentation at the business seminar, and public-private missions implemented by the Medical Excellence JAPAN under METI. Some Japanese companies utilize opportunities with these schemes before and after the JICA private partnership projects. Therefore, effective bridging between schemes is also important.

(ii) Private Sector Investment Finance, Two Step Loan, etc.

"Private Sector Investment Finance" are provided by JICA for private sector projects that are in line with the development policies of the target countries, and it has a high development effects. Microfinance for the poor and micro-enterprises is also in the scope.

The out-of-pocket (OOP) medical expenses are increasing, and the Government of Sri Lanka has not yet actively taken measures to expand public insurance coverage. Financial support is inevitable for rural and low-income patients to receive treatment from private medical institutions, and an expansion of private health insurance as well as insurance services for low-income patients are important. While enterprises and NGOs in Sri Lanka are expected to play a leading role in a case of private health insurance, there are also cases of the Private Sector Investment Finance to expand the services developed by JICA's private sector partnership project and a joint venture between local and Japanese companies[251].

Table 5-14 Proposed collaborative program 6: Reduction of out-of-pocket medical expenses (OOP)

PJT No.	Challenges	Intervention measures	Details of support (Specific activity proposal)	Support scheme ／Implementation system	Implementation period ／Estimated budget
PJT 5-1	Challenge #10 Decreased patient access to services	(i) Expansion of private health insurance services for low-income individuals (3-d)	• Conduct a basic survey on private health insurance services operating in Sri Lanka or third countries (South Asia region). • In Sri Lanka, the lack of capacity in public hospitals and the tightening of public health care resources due to the introduction of free public health care services have increased the dependence on and need for private health care. Thus, the formation and feasibility of foreign investment and loan projects that will revitalize the private health insurance service sector to improve patient access to the private health care sector and reduce the cost burden will be considered.	[Support scheme] Private Sector Investment Finance (Preparatory survey)	Medium to long-term (Begin within 3 to 10 years) [Term] 1 year [Budget] USD 1 million

[251] The former is the off-grid solar project "WASSHA" in Tanzania, and the latter is the #East West Medical College Hospital Project" in Bangladesh (https://www2.jica.go.jp/en/evaluation/pdf/2018_1838_1_f.pdf).

(iii) Remarks on partnerships with private sector

In the past, private sector partnership projects have often attempted to solve individual problems faced by counterpart organizations through applying the technologies and know-how of individual Japanese companies. However, in order to deal with these cross-sectoral issues, the study team believes it effective to promote collaboration of multiple Japanese companies with multiple (integrated) programs, and the formation of development projects involving local companies using funds and networks of international organizations.

In addition, the packaging of specific technologies in response to a comprehensive response to specific cases (diagnosis, treatment, and monitoring) and the utilization of new demand stimulation brought about by the resultant effect of individual businesses (e.g., improvement of the accuracy of treatment by establishing an effective diagnostic system) may be considered. In addition, the building and utilization of health data systems that mediate these different solutions and the utilization of digital technologies, such as AI-supported diagnosis, can also be considered. At the business seminar, Fujifilm, Sysmex (high-accuracy diagnosis), Olympus (standardization of diagnostic technology for endoscopes), Allm (handling medical data between hospitals and patients), and T-ICU (technology transfer related to remote ICU) made proposals on diagnosis, treatment, and monitoring to Sri Lankan participants.

(3) Cross-sectoral activities

In comparison with other countries, the number of people infected with COVID-19 is relatively low in Sri Lanka. However, in the field study, it was confirmed that the number of visitors to medical institutions has drastically decreased, the disease has become severe due to the delay in detection of the disease caused by insufficient screening during the COVID-19 pandemic. The ongoing COVID-19 has also impacted on the mental health of the people in particularly those with NCDs. COVID-19's enormous impact is a “syndemic”, a combination of health factors such as obesity, the spread of NCDs and the fragility of the health system, environmental factors such as climate change and the loss of biodiversity, and social and economic factors such as urbanization and increasing inequality. Some people argue that a single-point approach with vaccines and new technologies alone cannot overcome this[252]. In the analysis of the progress of the issues and measures in Sri Lanka in this survey, it was found that there were delays due to a variety of socioeconomic and epidemiological factors, and that, as witnessed in the case of COVID-19, it became clear that the problems could not be solved by specific sectors or local efforts alone. Therefore, we examined the intervention of the combined program mentioned above.

A multi-sector response, as seen in the case of NCDs MSAP in Sri Lanka, is essential for health issues. For example, it is important to work with other sectors, such as through schools, for HLC awareness campaigns. As shown in the following figure, an "agenda-building" type of project would be effective in which multiple companies and stakeholders could find themes that cross between "health care" and adjacent sectors such as "nutrition" and "medical infrastructure" and propose solutions. Cross-sectional efforts such as nutrition improvement, surveillance system, and health promotion are also necessary for NCDs prevention. By adding a specific health checkup system (Japan’s unique and specialized health screening to find presymptomatic disease and follow-ups by lifestyle improvement guidance) to the HLC screening capacity enhancement, it is expected that such agenda formation and efforts will be promoted.

[252] https://uhcday.jp/2021/06/11/1742/

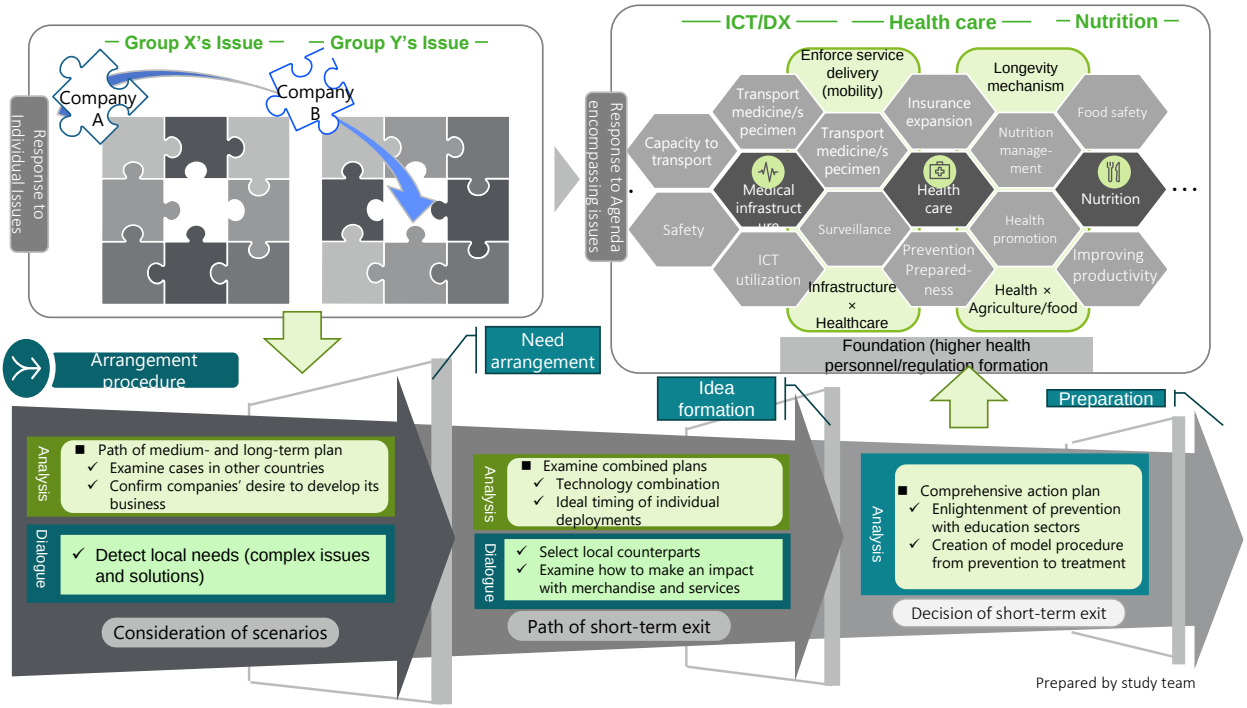


Figure 5-9 Agenda setting for cooperation

In Sri Lanka, pilot public-private initiatives have been conducted on a nationwide scale, such as the promotion of telemedicine during the pandemic, and a public-private partnership system has been established. On the Japanese side, JICA, the Ministry of Economy, Trade and Industry, the Ministry of Health, Labour and Welfare, the Cabinet Secretariat, private companies, Medical Excellence Japan, and other organizations are promoting international health assistance through various public-private partnership schemes. In view of the increasing burden of NCDs in Sri Lanka, the government and private sectors of both countries should work together to promote joint assistance, which would be an effective measure against NCDs.

As a remarkable aspect, a large amount of health expenditure should be avoided under the current economic situation. Considering the free and universal health service to all diseases in Sri Lanka, an increase in revenue and a decrease in expenditure should be considered for the sustainable health finance. With regards to the increase of revenue, a taxation for public insurance could be considered. On the other hand, for the decrease of expenditure, an institutional building (such as setting an adequate fee of medical services, introduction of health technology assessment (HTA), encouragement of private health insurances) to lead to more intervention of the private sector in advanced medical care and services, while the public sector would focus more on primary care and prevention which require lower expenditure.

5.2.4 Final note

This study has examined the issues and factors of NCDs in Sri Lanka, the progress of existing measures, and the proposed interventions through review of literature, interviews with key stakeholders, and seminars. As mentioned above, NCDs in Sri Lanka have multiple challenges. Therefore, it is expected that designing and implementing the interventions from multiple approaches and the study of other intervention methods based on the prediction of their effects will produce collective and interactive effects to prevention and control of NCDs in Sri Lanka.

In response to COVID-19, JICA launched the "Initiative for Global Health and Medicine" to strengthen health and medical systems in developing countries to achieve the goals of "Human Security 2.0" and

"UHC"[253]. In this respect, JICA formulated the global agenda strategy for health and medicine towards the achievement of UHC. The strategy has objectives to build resilient response to any emerging health threat and to promote health in abreast with the abovementioned initiative.

Under these JICA initiatives, it is important to understand not only Japan's trends but also the efforts of other donors, bilateral agencies, international organizations, and major local actors through dialogue with local government officials, medical and health personnel, including practitioners, and key opinion leaders, and to design and implement projects in a collaborative manner.

[253] https://www.jica.go.jp/english/about/at_a_glance/action_health.html