THE STRENGTHS AND CHALLENGES OF THE PRIMARY HEALTH CARE SYSTEM IN SRI LANKA

- A systems perspective

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The strengths and challenges of the primary health care system in Sri Lanka - A systems perspective

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by

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Where other people's work has been used (either from a printed source, internet or any other source) this has been carefully acknowledged and referenced in accordance with departmental requirements.
The thesis '*The strengths and challenges of the primary health care system in Sri Lanka - A systems perspective'* is my own work

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List of abbreviations:

CVD – Cardio-vascular disease

EMs – Essential Medicines

HIS – Health Information System

HLCs – Healthy Lifestyle Centres

HRH – Human Resources for Health

LMICs – Low and Middle Income Countries

MoH – Ministry of Health

NCDs – Non-Communicable Diseases

OECD – Organisation of Economic Cooperation and Development

OOP – Out of Pocket

PHC – Primary Health Care

PHCPI - Primary Health Care Performance Initiative

PMCUs – Primary Medical Care Units

UHC – Universal Health Coverage

WHO – World Health Organisation

Glossary of Terminology:

- *Catastrophic health expenditure* - Where households are pushed to spend on health care so much so that they are pushed into poverty (1).

- *GINI index* - a measure of inequity and of wealth distribution across population groups.

- *Informational continuity of care* – An organised collection of each patient's medical information so that it is readily available to any health care provider caring for the patient (2)

- *Longitudinal continuity of care* – A long-term relationship between a primary care provider and patient beyond specific episodes of disease or illness (2)

- *Primary care* – 'Family-doctor type services delivered to individuals' (3)

- *Primary health care* – Although in some literature Primary Health Care and Primary Care are interchangeable, a review of these two terms in the literature has determined that the former can be defined as "an approach to health policy and service provision, which includes both services delivered to individuals and population-level 'public-health-type' functions'' (3)

- Service availability and readiness assessment - A health facility assessment tool done to assess and monitor the services available (4)

- *Universal Health Coverage* – The concept of UHC envisions 3 main aims 1) to ensure access to health services equitably; 2) to ensure quality of services enough that health is improved and; 3) to ensure financial risk protection so that people can access services without financial harm (5).

Foreword:

As a primary care doctor in Australia, I chose to explore public health as I was interested in health system development. I am very interested in the role of Primary care within the health system to improve health outcomes. While undertaking an internship in the Sri Lanka country office of the World Health Organisation, I was fortunate to be involved in discussions related to the new re-structuring of Primary Health Care (PHC) within the country. I was also able to tour multiple primary and tertiary care outposts as part of my work and was able to observe how public and private primary care services functioned.

During my time there I found that the development of Primary Health Care in Sri Lanka had, in the past, been dropped at the wayside in favour of development of the tertiary care system. Any new developments in PHC seemed to be added 'ad hoc', without consideration of the heath system effects. In addition, during discussions for the re-organisation of PHC, interventions for perceived challenges were proposed by stakeholders without consideration of how they related to the system as a whole. The global push to improve PHC is, in my opinion, a step in the right direction for the goal of Universal Health Coverage, thus I was eager to contribute and build on my skills in health system analysis for this cause.

For this thesis therefore, I chose to systematically study the PHC system in Sri Lanka and to determine what the perceived strengths and challenges of the existing system are, as I believe it is difficult to implement changes to a system without first examining the existing structure and how its components interact. The purpose of this study is therefore not to suggest areas of improvement, but more to analyse the strengths and challenges that exist in the system and how they relate, so that solutions can be sought in a more system-sensitive way.

Abstract:

Primary Health Care (PHC) is an essential component of the health system. Its role in promoting efficiency, effectiveness and equity within the health system is backed by extensive research. Sri Lanka's PHC system has until now been provided little attention by the Ministry of Health, thus with the increased global push to increase PHC services, it is currently being considered for re-organisation. However, for this to occur effectively, the current system must be examined from a systems perspective. This review uses an established framework to examine the strengths and challenges of the current system by conducting a literature review of the PHC system in Sri Lanka. Results identified many strengths and challenges in the different domains of system, input, service delivery and outputs. The main over-arching strengths and challenges identified are issues of integration of the PHC system with other structures throughout the domains; disempowerment of the primary care profession; aspects of equity in service delivery and issues associated with continuity of care. It was found that many inter-relationships occurred around these main challenges which influenced other challenges, ultimately affecting outcomes. These are highlighted graphically through causal loop diagrams. The results reveal the inter-related nature of the strengths and challenges of the PHC system, emphasising the necessity of using a system-wide approach when considering any interventions in PHC.

Keywords: Primary Health Care, Sri Lanka, systems perspective, systems analysis

Introduction

Problem Statement

Since the declaration of Alma Ata in 1978, primary health care (PHC) has been acknowledged as an essential part of a health system that will enable all people to lead a socially and economically productive life (6). After three decades of slow progress, the World Health Report in 2008 re-emphasised its importance by stating that in a globalising world, PHC is the key to providing people-centred care (7).

Recent studies and systematic reviews have also shown that countries that have a strong emphasis on PHC have more equitable health outcomes and are more accessible to the population than those more focused on specialty care (8)(9). Equity and accessibility are essential for the new global shift towards the goal of Universal Health Coverage[1] (UHC) (10), emphasised in the Global Program of Work of the World Health Organisation (WHO) for the years 2014 – 2019 (11).

PHC is the most effective health care intervention in addressing the increasing prevalence of chronic diseases (12) and thus it is imperative that effective primary health care structures are in place in Sri Lanka to meet the challenge of its epidemiological transition from a predominantly infectious disease burden to a non-communicable disease burden (13). The current health system was created when infectious diseases were a health priority (14). Today, with increasing chronic disease, the way diseases are managed and treated is different, and with that the structures supporting proper access, diagnosis and management of these diseases also requires a shift. In consideration of this, the government of Sri Lanka is currently considering re-organisation of its primary health care system.

There is the threat that changes to PHC will not be adapted to the specific country context of Sri Lanka and instead a 'one size fits all' approach to PHC reorientation will be taken, as has occurred in various countries in the past (7). Furthermore, countries and organisations have viewed PHC as just another health care programme, among many others (7), ignoring its integrated role and influence within the health system as a whole.

Within the Sri Lankan context, a similar approach may be adopted, with the danger being that PHC system development will occur in an ad-hoc manner rather than in a planned and pre-meditated way (15). This will result in interventions being implemented within a silo, where an identified challenge is addressed without looking at the effect of this challenge on other components, strengths or challenges of the PHC system. This will in effect impact on the various outcomes of PHC. Thus, it is imperative that a

[1] *See glossary of terminology for definition of UHC*

system-wide perspective is used, meaning that the impacts of implementing any new policies, inputs or processes is examined against the system as a whole, before implementation. In order to do this, the strengths and challenges of the current system require examination. To date no literature could be found examining Sri Lanka's PHC system from a systems perspective. During the compilation of this report a case study on Sri Lanka for the 'Alliance for Health Policy and Systems Analysis' was published (14), which aims to inform efforts to strengthen PHC systems. However, only aspects of financing, governance and human resources were examined in this report without systematically examining their impact on the whole PHC system.

This literature review will examine, within an established framework, the strengths and challenges of the Primary Health Care system in Sri Lanka to inform future design of the system by the MoH and other stakeholders.

Objectives

The overall objective of this literature review is to ensure that future interventions adopt a systems approach when analysing strengths and challenges of a PHC system so that PHC outcomes are optimised. The specific objectives of the study are:

- to describe the components of the PHC system in Sri Lanka
- to identify and analyse the challenges and strengths of the PHC system
- to examine whether, and if so, how, these challenges and strengths interact within the system, and
- to demonstrate the value of a systems approach for PHC so that it will be used practically when developing interventions for a PHC system

The study hypothesizes that the PHC system in Sri Lanka is not static, and that each strength and challenge identified influences another in such a way that health outcomes are affected.

Methods:

Step 1: A desk study of the country's health system was initially conducted to identify relevant aspects of the system, to become familiar with the social, political and cultural determinants of health in Sri Lanka and to form a background knowledge of what literature was available. Furthermore, working in Sri Lanka for 3 months in the Health Systems and Policy Unit of the WHO in Sri Lanka, provided the researcher with a grasp of the language used to describe Sri Lanka's PHC system. This also helped to identify appropriate search terms.

Step 2: As highlighted in the introduction, PHC is an area that has been extensively researched over the last 40 years to identify its different components and elements. Thus, prior to the literature search, a scoping review was conducted to find an existing relevant framework with which to organise the search strategy. An evidence-based framework which would act as a comprehensive guide for identifying components of PHC in Sri Lanka was sought. Pubmed and Google Scholar, as well as prominent evidence-based health research search engines, such as the Alliance for Health Policy and Systems Research were searched. A more detailed table of the search strategy as well as inclusion/exclusion criteria for identifying a relevant framework, is included in Appendix 1. The chosen framework is detailed below.

Step 3: Following identification of the framework, a literature search was conducted. The search strategy is shown below

Search Strategy

Search terms:
primary health care OR primary care OR community medicine OR community health OR public health OR preventative health OR first contact care OR health unit system OR family medicine OR family health care

AND

Sri Lanka OR Ceylon

Databases searched included; Pubmed, Medline Ovid, Cochrane Library and Google Scholar. For the search in Google scholar, which was sorted by relevance, search of titles was abandoned after 5 continuous pages of irrelevant articles.

A search of all the publications relevant to PHC from the Ceylon Medical Journal as well as the 'Institute for Health Policy', an independent research institute in Sri Lanka, were also performed from their respective websites (noting that all publications from these sources are in English).

Furthermore, grey literature was searched on the websites of the World Health Organisation, The World Bank and the Ministry of Health of Sri Lanka. Furthermore, policy and legislation documents were searched from government websites and in Google (from servers in both Australia and Sri Lanka). Snowballing of results was performed from the reference lists of relevant articles.

The different rounds of the search strategy as well as the inclusion/exclusion criteria and limitations are shown in table 1.

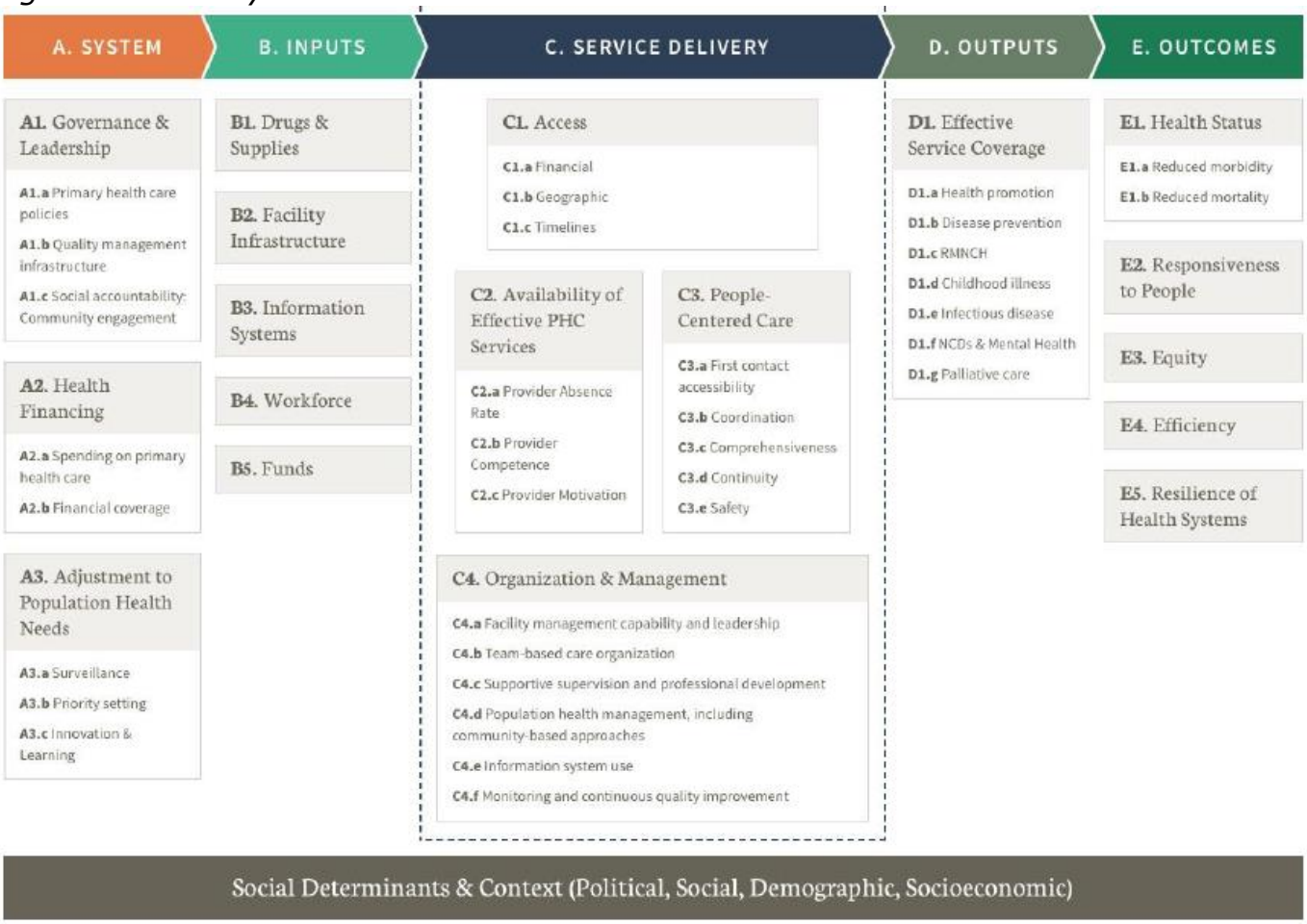
Table 1: Steps in identifying research articles.

Round 1 – Initial search strategy on databases	
Limitations and inclusion/exclusion criteria	Exclusion of articles written prior to 1950. Justification: 1950 was when PHC was established in Sri Lanka (32)
	Only articles in the English language. Justification: Researchers unable to interpret other languages
	Include only scholarly journals, reports, books, working papers, conference papers and proceedings, encyclopedias and reference works, government and official publications, reports, standards and practice guidelines. Justification: To increase reliability of the information
	Limitation to only 'human' results. Justification: So only relevant articles are found
Round 2 – Narrowing of results after abstract identification	
Inclusion/exclusion criteria	Include both literature and empiric studies. Justification: To ensure as much information as possible is captured
	Exclude articles of any pilot studies of new PHC system interventions, unless relevant to a specific sub-domain. Justification: As pilot studies of new PHC interventions are not representative of the system in Sri Lanka
	Exclude articles that discuss PHC in relation to specific disease processes, unless they relate to a specific framework domain. Justification: As the effectiveness of the system for one disease is not representative of the whole system
Round 3 – Additional searches	
Keywords related to the 'input' domain of the framework were also searched individually as the inputs relevant for the PHC system are the same as those for the whole health system. Thus, to ensure all PHC inputs were captured adequately and to provide a more comprehensive picture, articles discussing the inputs of the health system as a whole were reviewed. Terms such as ('information systems' and Sri Lanka and Health) and ('Human resources for health' and Sri Lanka and health) were searched in Pubmed and Google Scholar.	

Analytic Framework:

The chosen framework was created as part of the Primary Health Care Performance Initiative, launched by a collaboration between the Bill and Melinda Gates Foundation, the World Bank and the World Health Organisation in 2015 (16). This framework was created as a tool to help 'catalyse improvements in PHC systems in 135 low and middle income countries in order to accelerate progress toward universal health coverage' (10). Figure 1 shows the table.

Figure 1: Primary Health Care Performance Initiative Framework



The framework uses an input→process→output→outcome logic model which is commonly used to describe systems (17). However, it also includes a 'system' domain and due to the directionality of flow from left to right (as shown by the coloured boxes), it highlights the effect of the system on the other domains. The framework highlights service delivery as a defining and key part of PHC effectiveness, and thus this will be explored in more depth in this literature review.

Unlike other frameworks found (2)(18), this was specifically designed for use in low and middle income countries. It was also more comprehensive

in looking at influencing factors as it used a bio-psycho-social approach (10), acknowledging that PHC sits within and is influenced by social determinants and context. It was also chosen above other frameworks/tools (such as the John Hopkins Primary Care Assessment Tool) as it looks at 'Primary Health Care' rather than 'Primary Care', the latter being a narrower concept of 'family-doctor type services provided to individuals' rather than PHC's broader scope where system-level functions such as universal access, health policy and service provision, are considered[2] (3).

The framework was intended to be used by its creators as a model for measuring performance in LMICs, however here it will be used to guide the exploration of the strengths and challenges in the PHC system in Sri Lanka. As such it will help to categorise the identified strengths and challenges and provide a guide for where these fit within the PHC system. It will also act as a guide to ensure that all PHC components that are identified as important in LMICs, will be analysed within the Sri Lankan context. It will provide the structure for how the results will be presented with the exception of the last two domains. As this review will be analysing the strengths and challenges of the PHC system, the outputs domain will provide limited benefit. Therefore, only aspects of the outputs relevant to the PHC sector will be discussed.

The outcomes of a PHC system are dependent on the effectiveness of the components of all prior domains. The corresponding strengths and challenges identified in these domains will also affect the outcomes. Thus, the strengths and challenges will be discussed in relation to their effect on the outcomes of PHC in the final discussion.

[2] See Glossary of terminology for further definitions.

Country Background

Governance – Health care is partially devolved, where the central Ministry of Health (MoH) is responsible for health policy development and the oversight of health service implementation (14). It is also responsible for managing large tertiary hospitals, while the secondary hospitals and primary health centres are managed by the provincial councils (14). These 9 provincial ministries are autonomous in their services and are responsible for the planning, implementation and monitoring of all health programs, including public health programs within the provinces, but must adhere to the policies and strategies set by the central MoH (19).

Service Delivery – Health care is provided through both the state and the private sector (20). State funded health care is divided into preventative care and curative care. The preventative side focuses on promoting health and preventing disease through maternal and child health care (MCH), environmental sanitation, and prevention of communicable diseases (20). It is provided through 338 health units located in geographically designated medical officer of health areas (19). Public curative services provide free outpatient and inpatient care and range from lower level Primary Medical Care Units (PMCUs) to divisional, secondary and tertiary level hospitals (21). In the public sector all these larger facilities provide primary health care in the form of outpatient department care. Thus, in this review, outpatient care will be synonymous with public primary care. Both the public and private sectors provide alternative traditional medicine services (such as Ayurvedic medicine). However, as they account for less than 10% of all doctor-patient contacts (22), they will not be discussed with regard to the PHC system. Private health care consists of mostly primary care-based services (23). Private hospitals account for only 5% of all inpatient discharges (23).

Health workforce – The number of human resources for health has increased, with the total number of medical officers per 100,000 population rising from 25 in 1995 to 87 in 2015 (19). The number of nurses has increased at a higher rate from 74 per 100 000 in 1995 to 202 in 2015 (19), however they do not play an active role in curative aspects of PHC (24). Nine medical faculties exist for output of medical graduates and overseas graduates must complete an examination before they can be registered to practise in Sri Lanka (14). The central MoH determine the numbers required, recruitment program, training funding and the deployment distribution for human resources for health for the country (15). 11% of medical specialists migrate overseas before they have

finished paying the bond for their specialist training (25). It is difficult to determine exact numbers of migration of all medical personnel overseas due to lack of data, however a survey of medical undergraduates in public universities found that 24% intend to migrate overseas during their career (25). This 'brain drain' of doctors, who are provided free tertiary education and post-graduate specialist training by the state, becomes a strain on finances (19).

Health financing – 3.2% of GDP is spent on health (26) while health expenditure per capita was 91 USD in 2013 (27). Non-communicable diseases (NCDs) account for 35% of health expenditure, while infectious diseases account for 22% (26). 56% of overall health expenditure is by the private sector while the public sector contributes 43% (27).

Government expenditure is financed by general taxation and in 2016, taxation was the highest it has been since 2009, at 12.3% (28). The government funds its health service provision through two main schemes under the decentralised plan; the central government scheme covers all services under the MoH (which include tertiary hospitals), while the provincial government scheme finances all provincial government governed services (14). Some of the central MoH programmes however also financially support the lower levels of government (27).

Private expenditure is divided between out of pocket payments (87%), private insurance (5%), employer provision of private insurance (7%) and non-profit institutions (2%)(27). Since economic liberalisation began in 1977, the private sector has grown (29), leading to a rise in private sector spending on health (30). Increases in out of pocket spending has been spurred by the rising cost of health care (30). The role of health insurance is small in the private sector as private hospital financing is usually only possible in urban areas (22).

Sri Lanka 'graduated' from International Development Assistance in 2017, and is now receiving transition financing for the period of 2018-2020 (31). However donor funding makes up only 4% of health spending (27).

Health information systems –The Ministry of Health runs the national Health Information System (HIS) within its directorate, however as the health system is decentralised, the provinces have their own HIS (32). The preventive and curative facilities maintain a group of registers related to inpatient and outpatient care, epidemiological data, maternal and child health, financial data and human resources and logistics (32). Reports from these are manually prepared and usually transferred by post to the next level of administration – the district offices. Data is consolidated here and then transferred, again usually by post, to the relevant provincial health departments and then onto the national MoH (32). There is no

nation-wide system of electronic health information systems (HIS) in Sri Lanka, but there are pilot programs currently in place (33)(32).

Medicines and Technologies – The 'Medical Supplies Division' supplies all pharmaceuticals and surgical, laboratory and radioactive items to government facilities based on their annual estimates or by request (19). A provincial hospital laboratory expansion program began in 2015 to equip all provincial, district and base hospitals with automated equipment (19). In 2010, the public sector operated 22 CT scanners and 3 MRIs, while the private sector operated 13 CT scanners and 6 MRI machines (23). No numbers could be found on more basic technology such as X-rays and ultrasounds. Low level facilities generally do not have these, which results in patients bypassing care for larger hospitals, leading to underutilisation of these lower level facilities (34).

Socio-economic and demographic context

Sri Lanka is a small island in the Indian Ocean and has a population of 21 444 000 (35). It is governed as a parliamentary democratic system. The last three years (2015 – 2017) have seen a decline in economic growth, which previously had been increasing at a rate of 6.2% per year since the end of the 25 year old civil war in 2009 (31). According to World bank data 81.6% of the population lived in a rural area in 2016 (36), however the economy is transitioning from being rural-based to an urbanised economy, focused on manufacturing and services (31). Poverty has decreased in the country from the national poverty headcount ratio of 22.7% in 2002 to 6.7% in 2012, and unemployment is at less than 7% of the workforce (34). It has been argued that more substantial reductions in poverty have not been achieved due to the country's increasing income inequality, following a period of strong economic growth (34). Indeed Sri Lanka's GINI index has increased from 36.4 in 2009 to 39.2 in 2012 (36). The country is leading the region in the rate of population ageing, with the population aged over 60 years increasing from 6.6% (1981) to 12.4% (2012) (37).

According to the World Bank definition, Sri Lanka moved from a low-income country to a lower-middle-income country (LMIC) just over 10 years ago. It has a strong 'welfare state' history. Successive governments have prioritised free health care, providing it free at the point of delivery (20). Free education up to tertiary level (38) has also lead to a highly literate population, and especially, high female literacy, which reached 94.6% in 2012 (19). Both these free services have contributed to impressive declines in maternal mortality rate and under 5 mortality (34)(20). Its population also has a high health care seeking behaviour, equivalent to those of Organisation of Economic Cooperation and Development (OECD) nations and is much higher than comparable low and middle income countries (LMICs) (22). The leading causes of hospital morbidity, mortality and disability in Sri Lanka are NCDs such as diabetes, hypertension and ischaemic heart disease (20).

Results

Overview

32 documents/articles were identified as containing relevant evidence for this study. These included 10 literature-based studies, 4 government policies or acts, 11 empirical studies and 7 reports or international data sources. A small number of websites were also used to find relevant background information used in the results. Of the 11 empirical studies, 5 were published more than 10 years ago, revealing the paucity of published data on the Sri Lankan PHC system. Furthermore, despite the large role private practice plays in the PHC system in Sri Lanka, only 3 empirical studies were found which specifically examine the role of the private PHC sector in Sri Lanka – and one of these was conducted in 1987, so of limited relevance.

Information for certain sub-domains of the framework were not available in the literature, however it was decided to specifically state when this was the case within the results, rather than in the discussion, as then it would be easier to pinpoint exactly where there were gaps in the literature.

The results have been split into 4 chapters - one for each domain, as per the PHCPI framework (henceforth referred to as just 'the framework'). A brief introduction to each chapter is provided to outline its component parts.

System

Challenges and strengths within the 'system' domain affect the foundation on which the PHC system sits. Thus, challenges identified here are likely

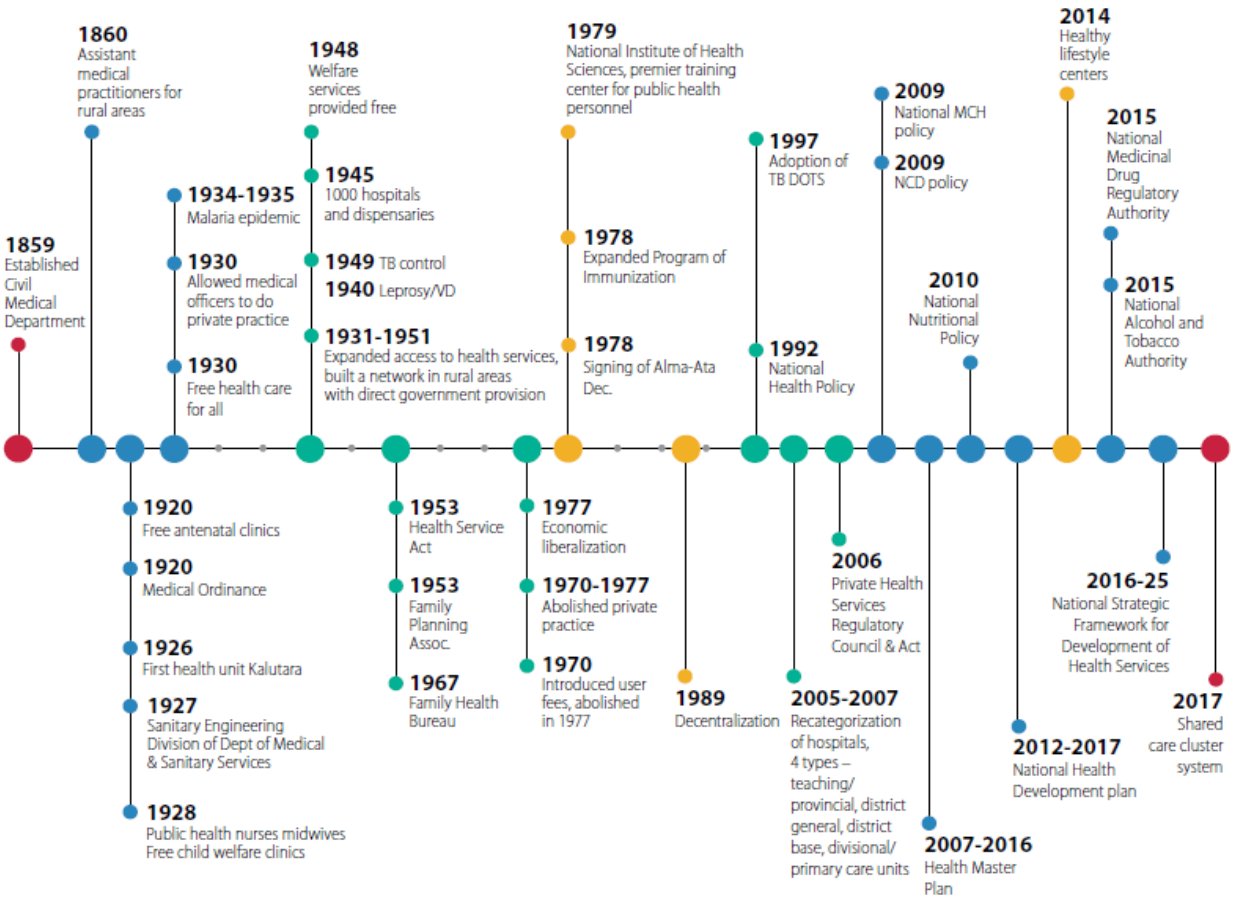
to have far-reaching consequences for the integrity and sustainability of the PHC system. Governance and leadership, health financing and the adjustment of PHC to population health needs have been identified by the framework as system components.

A1. Governance and Leadership

The director of Primary Care Services within the MoH is responsible for developing the curative side of primary health care in coordination with provincial ministries (14). Although larger hospitals provide primary care services in the form of outpatient departments, there is a different directorate overseeing larger hospital networks - the Director-General of health services. She/he is also responsible for preventive community health institutions (14).

The Ministry of Health (MoH) has identified 're-organising and re-tooling primary curative care' as part of the Health Administration and HRH section of its National Health Strategic Master Plan 2016 – 2025 (15). Other than this, no policy documents relating specifically to the function of PHC as a system could be found. Policies which have relevance to aspects of PHC in Sri Lanka were instead identified. These were listed by the recently published Primary Health Care Systems case study on Sri Lanka conducted by WHO, and can be seen in Figure 1.1.

Figure 2: Timeline of policies that have been relevant to PHC in Sri Lanka from 1859 to 2017. Extracted from PRIMASYS Sri Lanka case study 2017 (14).



General Practice (the practice of doctors solely providing primary care services) was recognised as a speciality in Sri Lanka in 1979 by the Post-graduate Institute of Medicine, however as of 2013, it was still not recognised as a speciality by the Ministry of Health (39). As shown in figure 1.1, private medical practice, which provides the bulk of private primary care, has existed since 1930, with a brief interlude between 1970-1977. However the government has not taken much interest in regulating the private primary care sector (22)(23). The government does record or monitor the number of private practices or their location (22). Licensing of all private institutions/clinics was handed over to an independent Private Health Services Regulatory Council outside the MoH in 2006 (23), however there is minimal effort to enforce compliance of licencing by this Council and many providers do not obtain or renew their licences, as is required (23). Thus, there is limited or no monitoring, standardisation nor regulation of private general practice. The role of the private primary care sector is important to consider during the analysis of Sri Lanka's Primary Health Care (PHC) system as it provides almost half of the primary care services of the country (40)(23). Private out-patient care (which includes primary care services and hospital outpatient departments) is the fastest growing part of the private sector (41).

A2. Health Financing

The outpatient share of health expenditure has decreased steadily since 1990 (27). By 2013 outpatient spending was 21% of health expenditure (from 29% in 1990) and inpatient spending was 37% (27). Health expenditure on preventive services was 4.5-5% (27)(26).

Outpatient care was mostly financed by the private sector (74% in 2013) (27). 87% of overall private health sector spending consists of out of pocket (OOP) expenditure (27), however the proportion used for primary care is uncertain. The WHO estimates that OOP expenditure for outpatient care in Sri Lanka is more than 50% (38). OOP payments can occur from both direct costs for private care such as consultation fees, medications and tests; or indirect costs such as transport and food (29). Sri Lanka reached a peak in its OOP spending (as a percentage of total health expenditure) in 2012, at 48%, however in 2014 this dropped slightly to 42% (42). The reason for this decrease was not conclusive.

The MoH provides double the funding of provincial governments to public primary care facilities (14). The funds provided to the provinces overall has however been described as deficient, and resulted in very low investment in improving lower level primary care facilities (14). Both the central and provincial ministries allocate budgets for the recurrent costs of each facility by its historical budget, which relates to the number of beds and staff of each facility (40).

27% of government outpatient spending went to the poorest quintile in 2003/04 (and only 11% to the highest quintile) (34). Two studies suggest that the government's spending on the outpatient sector is 'pro-poor'. One suggests that the system is pro-poor as it guarantees effective access to health services for the poor, and relies on the rich voluntarily opting to use private services due to differentials in the quality of services (34), while the other quotes higher public sector utilisation rates of the poorer quintiles (23).

A3. Adjustment to population health

Surveillance allows a system to self-adjust to population health trends and in Sri Lanka this is done mainly through the primary care sector. Community preventative care clinics survey maternal deaths and perinatal deaths as well as infectious diseases (19). School health programmes which asses nutritional status, conduct general health checks and provide immunisations, are conducted through the medical officers of health and public health inspectors in preventive centres (19). Furthermore, public health inspectors monitor and track communicable diseases such as dengue, leptospirosis, leprosy etc (19).

The health system currently in place was developed at a time when maternal and child health and communicable diseases were the most prominent health priorities (14). To tackle these health burdens, a network of Medical Officers of Health, responsible for an average population of 60 000 people (19) were created. They still form a strong preventive care network (19), with their main responsibilities being health advocacy and promotion through multi-sector coordination, maternal and child health including immunisation and school health and control of communicable diseases including monitoring water and sanitation (19).

Adjustment to population health trends, with the rise of NCDs, resulted in the addition of 'well woman clinics' to the preventative health services in 1996. These screened for selected NCDs like hypertension, diabetes and breast and cervical cancer (19). However these were only for women and utilisation was low (21).
In 2011, another initiative called 'Healthy Lifestyle Centres' was introduced by the primary curative sector (21). These centres were established in Primary Medical Care Units (the lowest level of public care) to reduce the risk of NCDs in the population of 40-65 year olds in Sri Lanka by early risk factor detection and by improving the access to specialised care for those with a high cardio-vascular disease (CVD) risk (21). Although they are expected to see 20 patients a day, the centres rely on self-referral or referral by outpatient departments. Review of these centres found that they were not comprehensive nor were they coordinated with existing services, as; screening for breast and cervical cancer were not included, so patients had to attend the well-woman clinics which were not linked to the HLC services (21); certain tests required for measuring CVD risk, such as total blood cholesterol (which is an integral part of early 'total-risk' factor detection), were unavailable in the public sector; 'total-risk' approaches to management were often not used at all for managing people who were screened; and there was a lack of follow up for patients who did not return for re-screening or who had not presented after referral. Despite this service being provided in response to population health needs, these issues lead to underutilisation of the service and by 2016 only 25.5% of the target population had been screened (21).

Inputs

The inputs of the PHC system form the structural base for service delivery. The results highlight that in Sri Lanka, inputs required for the PHC system merge with those required for the overall health system. The inputs discussed as per the framework are drugs and supplies (B1), facility infrastructure (B2), information systems (B3), workforce (B4) and funds (B5).

B1. Drugs and supplies

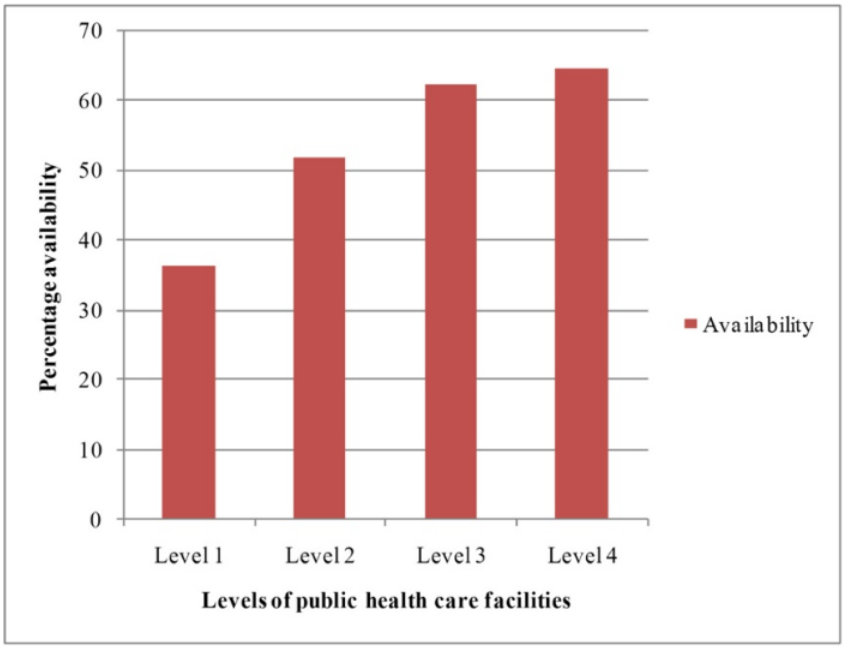
In 2016 Sri Lanka introduced a price ceiling for 48 essential medicines used for NCDs (43). This was in response to rising costs of medication (43) after price controls were abolished in 2002 (44). It also established the National Medicines Regulatory Authority in 2015 to be the regulator for all aspects of drugs and devices (45).

Local drug manufacturers account for 15% of the total pharmaceutical market (46). A study of drug availability in 2007 found that the availability of locally manufactured medicines in Sri Lanka was better than those produced overseas, suggesting that local manufacturing has an important role to play in increasing the supply of medicines in Sri Lanka (47).

Drugs (except narcotics) are procured centrally and then supplied to both government facilities and semi-government community pharmacies (48). All hospitals have an outdoor pharmacy which provides free medication to outpatients (48), however if any medicines are unavailable, then patients are expected to purchase them from private pharmacies (34)(48), resulting in out of pocket costs for patients.

A national survey conducted in 2013 sought to determine the availability, affordability and price of 50 essential medicines (EMs) for NCDs in both the public and private sectors in Sri Lanka (48). It found that the mean availability of these specific EMs was 58% in the public sector and 74% in the private sector, and of those in the public sector, outdoor pharmacies of public hospitals had the lowest availability. They also looked at availability of these medicines as specified in the 'stock medicine' list by level of public facility (as shown in Figure 2.1) and found that the highest level tertiary hospital had 65% availability of its stock medicines, while the lowest level of care - PMCUs only had 36.4% availability of the stock medicines that should have been available at a facility of that level (48). These lower level facilities encompass the Healthy Lifestyle Centres (HLCs) mentioned in the previous chapter, suggesting medicines needed for NCD management may not be available for patients of these clinics either. It is also important to note that this survey was conducted at the beginning of the year when most medicines are expected to be stocked (48), thus drugs may be less available later in the year.

Figure 3: Availability of stock medicines for NCDs according to level of public health care facility. Extracted from Dabare et al 2014 (48)



Medicine prices were also reported, and it was found that some medicines in the private sector were cheaper than International Reference Prices, suggesting that pricing in private pharmacies was not excessive (48). The results found that medicines sold in the private sector were generally affordable to the lowest paid government worker (48), similar to the results of previous studies conducted by Senarathna et al (44) and Rannan-Eliya et al (22). It is important to note that the current minimum wage in Sri Lanka is approximately 65 USD a month (49), while the lowest monthly salary for a government worker is approximately 156 USD (50). Rannan-Eliya et al's study found that the overall cost of prescriptions is 'relatively low' in the private sector, likely because a very high rate of generics are prescribed. This high rate of generics is due to the practice of private doctors dispensing their own medicines. As they charge a combined fixed price for the consultation and drugs, they have a greater incentive to buy more generics (22).

Senarathna et al's study found that the cheapest generics had a high availability of greater than 80% in the two types of facilities they studied - the private and semi-government community pharmacies. They also found that there was no difference in affordability between these two types of dispensers (44), however the study was only conducted in one geographical area on 15 pharmacies, so is not nationally representative.

A situational analysis conducted by the MoH in 2008 in 135 hospitals in 20 districts found that basic supplies such as weighing machines and

measuring tapes were not available in many outpatient departments. Furthermore, 14 out of 29 district hospital outpatient departments didn't have electrocardiograph (ECG) machines. The availability of supplies decreased from tertiary to PHC facilities and many of the smaller peripheral PHC facilities did not have basic equipment (51)

B2. Facility Infrastructure

In 2015 there were 474 public Primary Medical Care Units providing free primary care services (19). In addition to these centres, there are an additional 631 hospitals which provide primary care type services in the form of outpatient departments (52). There were also 341 Medical Officer of Health (preventative health) centres (19).

Since 2011, the number of HLCs in Sri Lanka has increased to 826 (2016), with almost 80% of 'Medical Officer of Health areas', which have a catchment area of 60 000 people, having two or more centres (21).

Despite the primary care infrastructure being available at all levels of public facilities, the government specifically classifies divisional hospitals and Primary Medical Care Units as primary level health facilities (which numbered 906 in 2016) (15). However, there is currently no identified essential package of services defined for each of these types of facilities in Sri Lanka (15) to help distinguish what services are available (or unavailable) at each level. A service availability and readiness assessment[3] has not yet been completed for Sri Lanka (4).

As the private sector plays such a large role in primary health care provision, the distribution of these services is also important. The geographical distribution of private GPs is quite skewed - with a high proportion working either in the Colombo district or in the adjacent Western district (22). However as the private system is poorly regulated, it is difficult to obtain accurate numbers for a denominator (23). 35% of full time private primary care practitioners (surveyed in a study in the year 2000) provide care from premises located within their own home (22).

There is no guidance nor regulation on what basic services should be provided by private primary care facilities nor what equipment a practice should have (23), however it is known that the private sector only provides curative PHC services (14).

[3] See glossary of terms for definition

B3. Information systems

Health information systems (HIS) for PHC data collection are poorly implemented country-wide (53). No information is recorded regarding the demographic makeup of the patients presenting to outpatient departments, from which geographical areas they are coming nor for what conditions they present (53). On an individual patient level, outpatient departments generally do not record patient visits and do not have continuous patient records (52).

As of 2016, the outpatient department at Trincomalee District General Hospital was the only public facility that had a fully functioning computerised outpatient Health Information System (53). This was introduced as a collaboration between WHO and the Epidemiology Unit in 2008. Some electronic systems have been put in place by WHO and the MoH in other regions, however they have not been completely evaluated and/or are not fully functional (53). A review of the use of the system in Trincomalee, using competency assessments and self-administered questionnaires was done in 2016. It found that 100% of Medical Officers used it to write prescriptions and >70% entered patient histories, viewed demographic information and retrieved medical records through it (54). It also found that 75% of the doctors agreed that the electronic HIS system was worth the time and effort needed to use it and all doctors, nurses and pharmacists thought that the quality of the work of the outpatient department had improved after its use. Greater than 90% of doctors and nurses were competent in using the system (54).

Although improving HIS is mentioned in the National Health Strategic Master Plan for 2016-2025 under 'Improve health service delivery through better health information management' (15), no specific proposal to upgrade services was found.

B4. Workforce

The exact number of doctors providing primary care services in Sri Lanka is difficult to determine due to the fluid structure of public and private PHC systems. The only distinguishing characteristic of a PHC doctor in Sri Lanka is that they provide 'first-contact access' (15). Thus, this could range from; a public doctor doing a shift in an outpatient setting; a full time public provider in a primary health care unit; a dual practice provider who is supplementing their hospital income by working privately; or a sole full time private provider of primary care services (40)(22)(14).

Government medical officers are deployed by the central MoH to health centres around the country (14). Medical staff shortages occur more in primary level institutions as the large bulk of medical officers are deployed to teaching and base hospitals (51).

Other than medical practitioners, no other cadres who currently provide direct primary care treatment in the curative PHC system were mentioned in the literature. On the preventative side, public health inspectors and public health midwives also provide direct patient care (14). Approximately 40% of government medical officers work as dual practitioners in private general practice (14), and although registration is poorly implemented, as of 2017, 500 full time private general practitioners were registered with the Private Health Services Regulatory Council (14).

A survey conducted in 2000 found that not many younger doctors were entering the private primary care profession full time, with fewer than 10% being under the age of 40 years (22). Comparing ages to a previous study conducted in 1987, it also found that the private primary care workforce was ageing (22).

Of the few doctors who hold a diploma in family medicine (1500 as of 2016 (14)), there is no policy in place to deploy them into primary care institutions or departments (14). A higher qualification is as a specialist in family medicine, however there are only a few (18 as of 2014 (55)) and they mostly serve in primary care level divisional hospitals or in universities (14).

B5. Funds

See A2 – Health financing

C. Service Delivery

Service delivery is a key part of an effective PHC system, and this domain has been highlighted in the framework as the most important consideration. Thus, the results will look in more detail at each sub-domain in this area which includes: C1. Access, including financial, geographic and timeliness related components of access; C2. Availability of effective PHC services, which looks in detail at provider competence, motivation and absence rates; C3. People-centred care, which explores the essential characteristics of primary health care such as first contact access, coordination, comprehensiveness, continuity and safety; and C4 – Organisation and management. The last sub-domain contains many smaller components which will be touched on where relevant information is found.

C1. Access

Sri Lankans have high health seeking behaviour for outpatient services, with an average of 4-5 outpatient consultations per person per year, which is higher than some OECD countries (52).

C1a - Financial Access: Financial inaccessibility results when patients are unable to access health care due to its expense, or are pushed into catastrophic health expenditure[4] (1). The most effective way to prevent this is to decrease household out of pocket payments (1). A study examining OOP payment effects on poverty (when OOP expenditure was 46%) found that Sri Lanka was effective, relative to other LMICs in Asia, in preventing 'poverty-inducing' health spending in its population (56). Only 0.3% of Sri Lankan households were pushed below international poverty lines as a result of health expenditure (compared to 2.6% in China and 3.7% in India) (56). Another study conducted in Sri Lanka, however, found significant effects of OOP payments *within* the country (29). In many rural areas spending for private care could be far higher than the income earned (29). Furthermore, direct and indirect financial costs of seeking medical care for poor households, even at 'free' public centres limits their health care access (29). This was especially the case for chronic diseases due to the recurrent costs incurred (29). It was clear that for these rural households at least one of these costs (direct, indirect, recurrent) were incurred when seeking health care. For example, they were required to travel larger distances to obtain free care for certain conditions, such as diabetes, due to lack of comprehensive services in smaller centres. This then caused indirect costs for themselves and family members due to transport, food and importantly, due to loss of income/working time. To avoid having to wait in long queues (to decrease income lost), 'under the table' payments were sometimes made to secure earlier access (29). As this indirect cost is too high for some poorer

[4] See Glossary of terminology for definition

households or for those who cannot afford to be away from their work for long periods, they were pushed to use the private sector (29). This study conducted a cost-analysis for outpatient care for diabetes which found that the direct and indirect costs of an outpatient visit to a *public* hospital resulted in low and middle income groups paying 345% and 150%, respectively, of their daily household income. The costs increased to an average of 408% of a household's daily income for people accessing private care. In addition, chronic diseases require monitoring on a regular basis and a significant financial burden on household finances was found with respect to this recurrent cost for all income levels (29).

Another study of urban poor areas found similar reasons for direct costs – the main direct costs from the private sector being consultation fees and medicines and the main costs from the public sector being transport related costs (57). However, this study did find that the free health care services protected the majority of poor urban households against high OOP payments (57). This study also conducted longitudinal research to understand the effect of chronic conditions on poor, urban households. It showed that while low or moderate direct costs once or twice over an 8 month period did not affect poverty levels, conditions which were chronic and required more visits resulted in 'debt accumulation, asset depletion and made the household vulnerable to other shocks' (57).

C1b - Geographic Access: Most of the Sri Lankan population lives within 3 kilometres of a public facility, which may be a preventative health unit or a curative centre such as a hospital or primary medical care unit (34). The health system was created so that the first point of contact is at the primary-level service (34). Unlike with preventative health services, accessing curative services does not require one to register with an institution (15). Thus, any patient can access any level of facility, in any location (34). One consequence of this, however, is that patients bypass closer, lower level facilities due to unavailability of services or perceived service quality variations – they instead present at larger public hospitals (34). From the supply side, this leads to long waiting lists and overcrowding in larger hospitals (15). However, from a patient perspective, this can be seen as geographic inaccessibility to required services. One study showed that although one could seek health care for most infectious diseases at the nearest public facility, facilities for diagnosing and testing for risk factors or chronic diseases such as high cholesterol (21) and diabetes (29) were scarce and made accessing 'appropriate' centres difficult. With regard to diabetes, facilities testing for blood and urine tests were only available at district level hospitals, so rural patients would have to either incur travel and loss-of-income costs or costs for accessing the private sector for these services (29).

As discussed in the prior chapter, most private primary care practices are located in Colombo or adjacent districts (22). However, as many public

sector doctors work in private practice after hours, doctors working in rural areas in public hospitals/facilities may also provide private services after hours (58).

C1c – Timeliness: Public primary care service providers – including all outpatient departments and PMCUs, only operate between 8am and 4pm (40). HLCs operate even shorter hours – from 8-12am, one day a week. Analysis of HLCs found that due to their operating hours, people who are working (especially men), are unable to present to these clinics (21). The screened men to women ratio was approximately 3:7 in 2016, and this ratio has hardly changed since measurement began in 2013 (21).

40% of government doctors work part time in a private primary care setting after finishing their work in public hospital (14). Thus the private primary care sector compliments the non-availability of public primary care services after hours (58) however these services may not necessarily be accessible as patients must pay OOP (22).

C2. Availability of effective PHC services

C2a - Provider competence: It is not necessary to hold any qualification in primary care or general practice to practice as a primary care doctor (39). A nationally representative survey conducted in the year 2000 of registered full time private primary care practitioners found that only 54% of full time practitioners had a postgraduate qualification that was relevant to general practice (22). As of 2016, 1500 doctors had completed a diploma in family medicine (14). However, no studies could be found on whether doctors with post-graduate training in PHC are more competent than doctors who do not have training.

C2b – Provider Motivation: Since 1980, out of 2380 specialists trained for a MD by the Postgraduate Institute of Medicine (the only organisation providing postgraduate MDs in Sri Lanka) there were only 18 family medicine graduates (55). This suggests that primary care practice is not a popular career choice. One researcher, who reportedly conducted focus group discussions and opinion surveys for his research, suggests that the attraction to become a 'specialist' is higher due to its higher earning potential and higher social recognition (55). Furthermore, he suggests that it is 'rare for a doctor to decide to take up Family Medicine as their first career choice at the onset' (55). This idea is supported by Rannan-Eliya et al's survey which found that full time private primary care doctors worked in the public sector for a median of 9.2 years before deciding to be a primary care doctor (22). However, no specific studies with primary data on motivation of primary care doctors in the Sri Lankan context were found. The 2000 survey found that three major concerns of full-time

primary care doctors in Sri Lanka were 'a lack of vocational training', a 'lack of referral mechanisms between public and private sectors' and 'a lack of financing methods to ensure that future doctors will have incentives to go into private practice' (22).

C2c – Provider absence rate: A human resources for health situational analysis performed by the MoH found that absenteeism is generally not documented thus no information is available for provider absence rates (51).

C3. People-centred care

C3a - First contact accessibility: All the medical officers in public outpatient departments and primary care facilities, as well as those doing private practice are providing first contact care (55). The aim of first contact care is to 'facilitate entry into the rest of the health system' (59). However, even specialists can function as a first contact doctor, as patients do not require a referral to be seen privately (55) and there is no enforcement of a referral system (34). Primary care providers in Sri Lanka do not have an organised 'gate-keeper' function (34) causing a strain on specialist services (15).

C3b- Coordination: Although there is no formal referral mechanism, public outpatient departments are able to directly refer patients to specialist clinics in the public sector (19). Similarly, patients presenting to public primary care units are able to be referred/transferred to the closest admitting hospital (19). The 2000 survey found that referral rates for private providers were low, with only 5% of visits resulting in a referral to another provider. There are no recent statistics for referral rates in public outpatient departments. 90% of referrals made by private practitioners were for outpatient departments - of which 75% were in the public sector. 30% of referrals were for inpatient admissions – of which 98% were in the public sector[5] (22).

C3c - Comprehensiveness: A World Bank review of Sri Lanka's health system found 'implicit rationing of care' of health services in Sri Lanka (34). The MoH does this is by restricting the availability of certain services considered too expensive and by restricting the supply of specific services (such as certain specialist services or lists of approved drugs) to only certain categories of government hospitals (34). This results in some lower level rural health facilities lacking essential equipment, such as electro-cardiograph (ECG) machines (51), requiring patients to be transferred to higher level care. Despite this, of public outpatient care-

[5] Note that the percentages do not add to 100% as some patients are referred to both outpatient and inpatient services

seeking, 69.7% of patients still seek care from lower level primary care facilities (15).

C3d - Continuity: Continuity of care involves both longitudinal continuity of care[6] and informational continuity of care[7] (2).
Two-thirds of patients in the poorest quintile seek their primary care needs from the public outpatient departments, however this means that they have no longitudinal continuity of care as they must see whichever doctor is available (22). Further they have no informational continuity as doctors in outpatient departments do not write patient notes, and therefore there is no continuous patient history recorded for the next doctor to consult (52).
In contrast to the public sector, longitudinal continuity of care seems to be relatively high in the private sector – with 78% of visits being by patients who had previously been seen by the practitioner, and 31% of visits being repeat visits for the same condition (22). However, informational continuity of care is an issue here too, as many private doctors do not keep a record of each visit and when they do, their records are neither standardised nor detailed (52). A study of full time private practitioners found that no written records were made for 43% of visits (22). The researchers suggest that this was due to a high turnover of patients (22).

C3e - Safety: Safety for the patient, along with effectiveness and continuity, relates to quality of care (60). Although quality can be measured in multiple ways and is difficult to standardise, a review of currently used health system performance indicators found that a patient's experience of health care (expressed as patient satisfaction), can be used as an indicator of the quality of health systems (60). Thus, as no specific studies were found on safety related aspects of the PHC sector in Sri Lanka, studies on the quality of care will be presented.
A study investigating patient and observer perceptions of quality between public and private primary care providers found that the public sector scored statistically significantly higher in the observer scored domains of investigation and management ($P < 0.05$) and patient examination ($P < 0.001$) than the private sector (52). However, patients in the private sector were more likely to receive information and education on their conditions and how to manage it than public sector patients were ($P < 0.001$). Regression analysis showed that this greater level of patient education was not a result of the different patient mix (age, sex level of education or socio-economic background) or longer consultation times in the private sector (compared to the public), but that it was intrinsic to private primary care practice. In terms of patient perception, patients from the public sector had statistically significantly higher levels of satisfaction with the technical quality of the doctors than in the private

[6] See Glossary of terms
[7] See Glossary of terms

sector (P <0.05), but they had higher interpersonal satisfaction and system satisfaction in the private sector than the public sector (P<0.001 and P < 0.01 respectively). The mean length of a consultation in the private sector was more than double that in the public sector (7.8 mins vs 3.1 mins). Overall satisfaction was similar in both sectors at 98%. Different socio-economic and ethnic groups showed similar results for patient satisfaction (52).

A qualitative study specifically analysing diabetes care and quality found that patients using private care perceived it to be of higher quality than public care, however when they had to resort to public hospitals (due to financial difficulties), they found them to be of equally high or higher technical quality (29).

C4. Organisation and management

C4a - Team-based care organisation: Only one study was found on team-based primary care. It found that 60% of registered doctors and 78% of unregistered practices did not employ other doctors. As this study was published in 1987, it is likely not relevant to the current context. Another survey conducted in 2000 found that 76% of primary care practices were run by a single partner (22). No studies could be found on team-based services in the public outpatient departments or lower level PHC clinics.

C4b - Supportive supervision and professional development: The Sri Lankan College of General Practitioners provides continuing professional development programs (39), however it is not compulsory for doctors practicing in primary care settings to be a member of this college (61). The MoH also, 'from time to time', offers in service PHC training to its medical officers, however there is currently no structured, regular or continuous professional development programmes in PHC for medical officers employed in the public sector (14).
In contrast to the lack of support for curative primary care, the preventative branch of the public PHC system holds regular in-service training programmes and has regular supervision (14).

Undergraduate education in primary care is not uniform among the 9 medical faculties and more emphasis is placed on public health and community medicine than on primary curative care (14).

C4c - Community based approaches: Civil society is utilised more in the preventive health sector than those in primary care facilities as field officers have more contact and involvement with families in the community (14).

C4d - Information system use: Information systems allow health managers to carry out evidence-based planning and interventions (32). A self-reported region-wide survey performed in 2009 of health managers in the central province of Sri Lanka found that most of the health managers surveyed did not use vital health information when planning interventions and programs (32). 84% of those surveyed stated that the support for management received by the HIS was either unsatisfactory or poor with regard to relevance, timeliness, accuracy, availability and accessibility. They were asked to rate the various types of data sources used in making decisions related to health planning and management. The three most highly rated factors were 'community requests', 'political interests' and 'donor requests'. More details of their answers are shown in Table 2. Ninety-five percent agreed with the statement that 'existing HIS was in urgent need of significant reforms'. The response rate to the survey was 55%, thus it should be considered that those unsatisfied with the current system were more likely to respond. Identified strengths in the current system were the 'user-friendly paper-based system (45%), the availability of the centralised planning system (45%), the efficient disease notification system (40%), and the meaningful use of some data (30%)(32).

Table 2: Most influential factors affecting the management decisions of regional health managers in Sri Lanka. Extracted from Ranasinghe et al, 2012 (32).

TYPE OF DATA OR RESOURCES	PERCENTAGE OF RESPONDENTS ACCORDING TO THE RATE OF IMPORTANCE			
	NOT USED	PROVIDES MINOR SUPPORT	PROVIDES SIGNIFICANT SUPPORT	CRITICALLY IMPORTANT
Political interests		12%		88%
Community requests		6%		94%
Donor requests		17%		83%
Inpatient data		84%	8%	4%
Out patient data	6%	88%		
Clinic data	10%	90%		
Notifiable disease data	4%	96%		
Financial data	98%	2%		
Epidemiological data	10%	90%		
Demographic information	12%	88%		
Health indicators	98%	2%		
National Health policies	2%	44%		
Biomedical supplies and distribution data	5%	95%		

C4e - Monitoring and continuous quality improvement: Reviews of institutions and public health units are conducted by provincial health directors, however more focus is given to review of preventive services (14).

D Outputs:

The challenges of effective service coverage come from the components of the other domains. No information is available on what conditions are covered effectively by which sector of the health system, thus it is difficult to allocate disease-specific outputs directly to PHC. For preventive components of PHC, however, relevant information is provided in this section.

D1. Effective Service Coverage

Infectious diseases in Sri Lanka are being managed well by the primary preventive services, as evidenced by its recent certification of elimination of malaria, lymphatic filariasis and maternal and neonatal tetanus (43).

Maternal and child health services provided by the preventative arm of primary care services ensure good maternal coverage, with 93.5% of pregnant mothers being registered by midwives in 2015. Of these, 95% visited a field antenatal clinic at least once during their pregnancy (19). 99.9% of all pregnant mothers delivered in a hospital (19). Furthermore, 74% of mothers were visited at home by a public health midwife at least once in the first 10 days after birth.

School child health is also conducted at a primary health care level, by doctors from the medical officer of health unit, with 97% coverage of schools in 2015 (19). School dental therapists are also employed to conduct oral health checks and these staff screened 75% of the target group of children (grades 1, 4 and 7) in 72% of schools around the country (19).

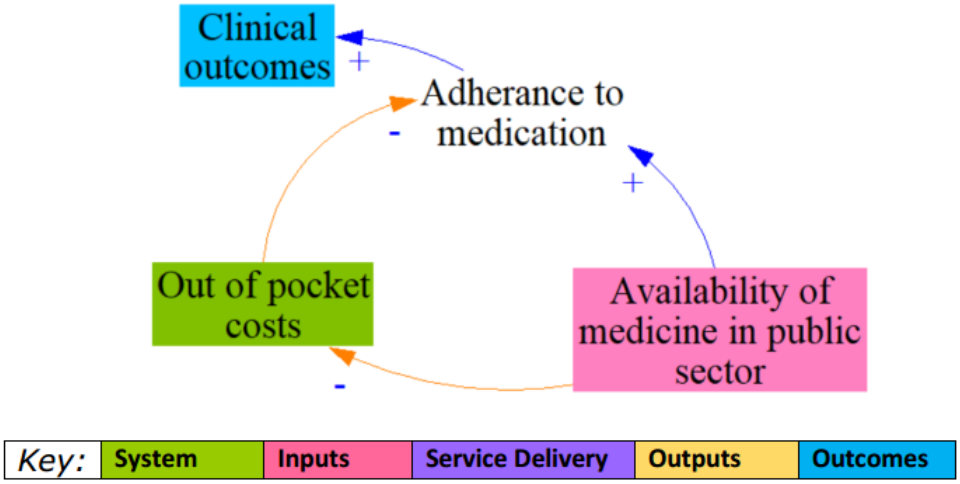
Discussion:

The main over-arching strengths and challenges, of the PHC system in Sri Lanka, identified in this review are issues of integration of the PHC system with other structures throughout the domains; disempowerment of the primary care profession; aspects of equity in service delivery and issues associated with continuity of care. However, as seen through the results, strengths and challenges are evident in every domain of the framework. To untangle these in an ordered way, the strengths and challenges identified in relation to the overall outcomes of PHC will be discussed.The primary health care outcomes of the PHCPI framework will be used for this. These outcomes are; resilience of health systems, equity, efficiency, responsiveness to people and health status.

It is evident that many of the strengths and challenges identified are inter-connected and influence one another, thus causal loop diagrams identify and clearly depict how the challenges and strengths within different domains of the PHC system are inter-related. Figure 1 provides a brief explanation of how these causal loop diagrams can be interpreted.

Figure 4: Interpretation of causal loop diagram

Components from identified domains are coloured in the figure according to the key below to show inter-relationship between the different domains.
The blue arrow with the + symbol indicate possible linear relationships between the two subjects. *- For example, when there is **low** availability of medicines in the public sector, it leads to **low** adherence to medication leading to **low** clinical outcomes. Alternatively, the linear relationship may be positive, where **more** availability of medicines leads to **more** adherence leading to **better** clinical outcomes*
The orange arrow with the – symbol indicate possible inverse relationships between the two subjects. *- For example, **low** availability of medicine leads to **high** out of pocket costs. **High** OOP costs in turn lead to **low** adherence which in turn leads to **low** clinical outcomes. This can also be reversed, where **high** availability of medicines leads to **low** OOP costs leading to **higher** adherence to medication and **better** clinical outcomes.*



Resilience of Health Systems:

Resilience of health systems is built through the development of supportive environments, which in turn requires collaboration among policy making sectors and the full engagement of civil society (62). The challenges affecting resilience of Sri Lanka's PHC system lie in these areas - the lack of coordination and policy integration by the many government players involved in aspects of the PHC system and issues of disempowerment of primary care practitioners. Compounding these challenges are the low health budget and lack of effective HIS.

Numerous directorates are involved in PHC governance in Sri Lanka - this makes coordination of services difficult. One example of this is the separation of PHC into preventative and curative entities. Preventive activities are cost-effective in primary care settings (2) and a key element of PHC (59), however as they are separated from the curative primary care services in Sri Lanka at the levels of governance, financing and service delivery, they are not well integrated, impacting not just resilience, but also efficiency. This is most clearly shown by the existence of 'well woman clinics' run by the preventative arm in community health centres, and 'healthy lifestyle centres' (HLCs) run by the curative PMCUs. These both have similar functions but are not coordinated or integrated. The lack of linkage of this new service into the existing health system suggests that an ad-hoc manner of implementing a PHC intervention to tackle a health challenge – increased NCD prevalence - was adopted with the introduction of HLCs in 2011. Integration itself may prove difficult as preventative health has had many successes (as highlighted by the outputs section) and has a long history of autonomous activity in the Sri Lankan context (14). Thus, without strong governance, these services may not even be considered for integration as part of the PHC system going forward. It is encouraging that PHC re-organisation has been outlined as a priority for the forward looking National Strategic Master Plan. However, despite the proposal for the re-organisation touching on aspects of human resources for health, HIS, hospital services and other fields, the concepts proposed have not been reflected or referred to in the proposals of these other fields, again, suggesting a lack of integration with other sectors (15). This may be because there are a lack of policy directives which address primary health care as a whole (14), therefore not providing a common ground for all of these different health fields to harmonise services and create a resilient PHC system. Thus, as was cautioned in the introduction, there is a danger that re-structuring of the PHC system is being considered as 'another programme' among many, and not as a system-wide change requiring input from all building blocks. This ultimately will affect resilience of the system.

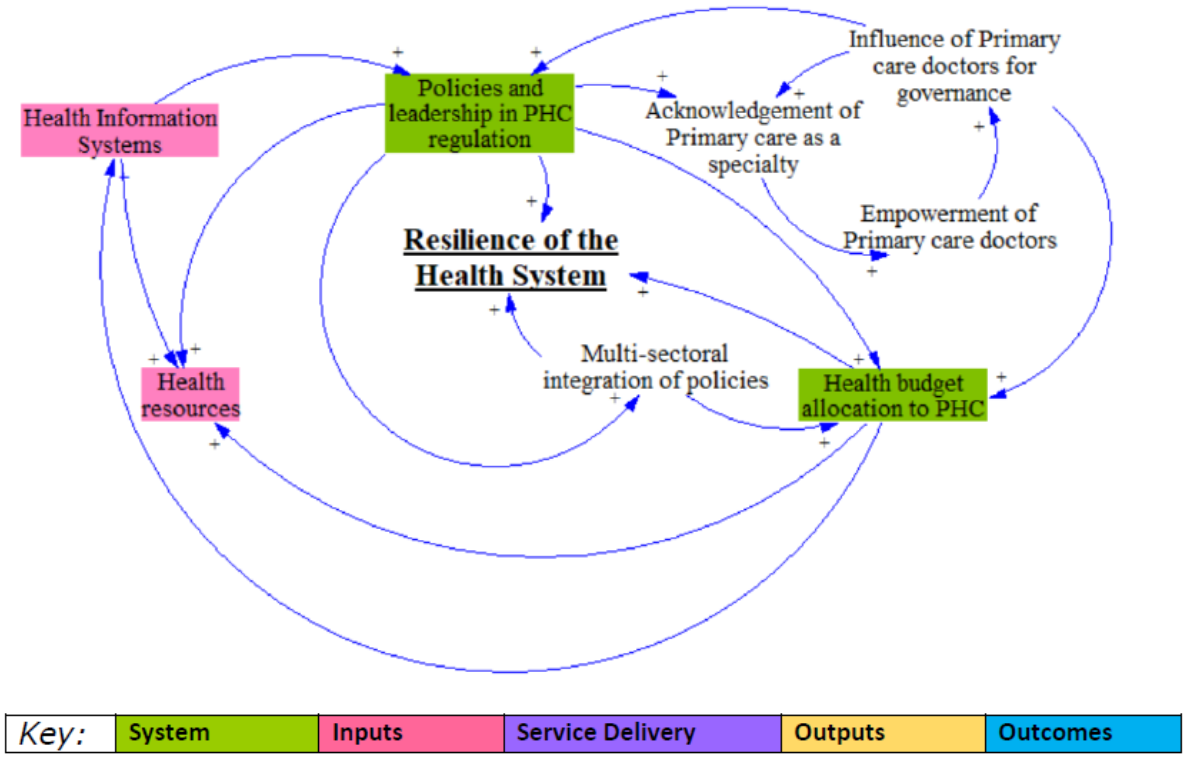
Related to the lack of governance, but also an important issue for building resilience, is the disempowerment of the primary care profession in Sri Lanka. There is a lack of development of primary care practice as a

profession in the medical specialties, as evidenced by its lack of recognition as a speciality area by the MoH (39). Even though primary care doctors have a long history of practice in Sri Lanka, they have remained as private general practitioners and not been considered as part of the government service of primary care (39). Lack of recognition disempowers the profession from having any political standing and thus in influencing real policy decisions.

The lack of political backing is compounded, however, by the restricted health budget of the country. Although the government has pledged to increase allocation for healthcare (15), without strong leadership on the importance of PHC, the continually decreasing percentage spent since 1990 by the government on outpatient care (27) is unlikely to be reversed. If this trend continues, PHC will not be able to keep up with changing epidemiological trends, increases in the population or improved technological advancements (40). However, if health funding was increased, the ability to make informed decisions on where money should be spent is crucial. This is difficult due to the poor use and quality of health information systems at the health management level (32), which will be discussed in detail below.

Figure 5:

Causal loop diagram of the components of PHC and the challenges identified in relation to their effect on each other and the resilience of the health system.



Equity:

Investing in PHC results in more equity in a society than if investments were made in the general health care system (2). Access to care; the risk of people being pushed into poverty due to OOP payments for PHC; and ensuring quality of care to all, reveal both strengths and challenges, which in turn affect equity of the system.

Sri Lanka has been able to ensure that a health centre is accessible within 3km for most of its population (34), thus ensuring geographical accessibility. However, the challenge lies in ensuring availability of health resources (medicines and supplies) at all these facilities for the needs of the population. It is evident that limited availability of timely services (21), medications (47)(29) and blood tests (21) leads to less affordability and acceptability of the PHC system. This is because patients must either travel further to find facilities offering these services, resulting in indirect costs, or must resort to the private sector to purchase what is needed at the time that suits them (34). Unavailability leads to unaffordability which in turn limits access. These issues are heightened for those living in rural areas (29)(57), which in 2016 was 81.6% of the population (36).

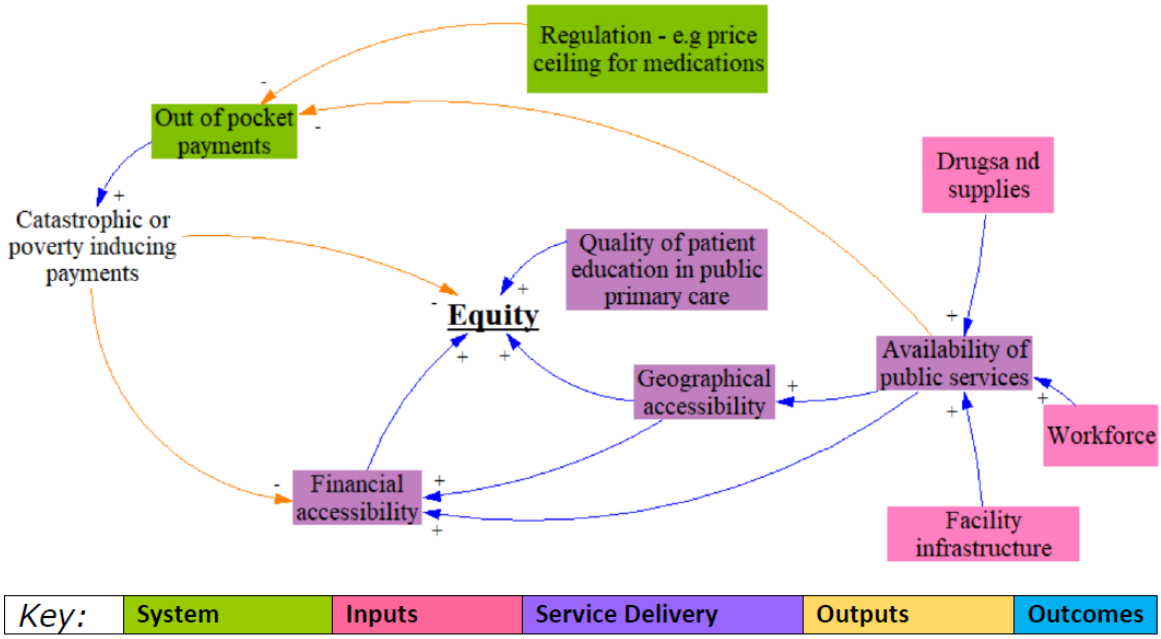
As more than half of primary care service spending is from OOP payments (38), OOP payments are a significant obstacle for equitable PHC. Sri Lanka's increasing income inequality (34) and rising GINI index (28) makes this challenge even more imperative to address. The results highlight that it is difficult to avoid having to pay OOP within the PHC system. The idea that patients are *expected* to privately buy medicines that are unavailable in the public sector (34)(48), suggests that spending OOP for aspects of health care is an ingrained and accepted practice. Although reports suggest that the costs of private medicines is 'affordable' (48)(44), these studies used the wages of the lowest paid government worker to calculate affordability. As the country's minimum wage is less than half of this salary (49)(50) and it is known that many people in LMIC earn less than the wages of the lowest paid government worker (47), medicines, even if they are generics, will likely not be affordable to these people. In addition, the chronic nature of the most prevalent diseases in the country (eg NCDs), require recurrent costs to be incurred which in both rural and urban studies of OOP expenditure posed a greater financial burden, increasing the risk of catastrophic health expenditure. Thus, households are 'pushed' into health care spending, despite the 'free' public system and the apparent 'pro-poor' public spending by the government. The recently introduced price ceiling for 48 essential medicines for NCDs (43) may however take some strain off these costs.

Rannan-Eliya et al's report suggests that the government relies on the high-income population to opt out of government facilities due to differences in quality (34), however the study looking at quality of care in the two sectors suggests that the public sector is the one that scores higher for patient examination, investigation and management (52). This

study used validated internationally accepted methods of assessment and biases were well accounted for, thus providing a reliable indicator of quality. Therefore, from this survey, a positive aspect of PHC in Sri Lanka can be seen in terms of equity, as public services which are accessible to all, have high quality indicators. It is important to note however that patient education was found to be statistically significantly higher in the private sector. The reduced quality of patient education provided in the public sector means the poorest income quintile will not receive as much health education, as 2/3^{rds} of this quintile seek primary care from public outpatient departments (22). This in effect will mean they have less capacity to manage their chronic conditions as it is known that health education is vital for prevention of complications and progression of NCDs (63). As NCDs are the leading cause of morbidity and mortality in Sri Lanka (20), the deficiency of health education to help in management of these diseases for the poorest income quintile is an important contributor to inequity. As the Sri Lankan population have high literacy rates (97% for men, and 95% for women (19), providing health education may indeed have a higher impact in the Sri Lankan population.

Figure 6:

Causal loop diagram of the components of PHC and the challenges identified in relation to their effect on each other and equity of the health system.



Efficiency

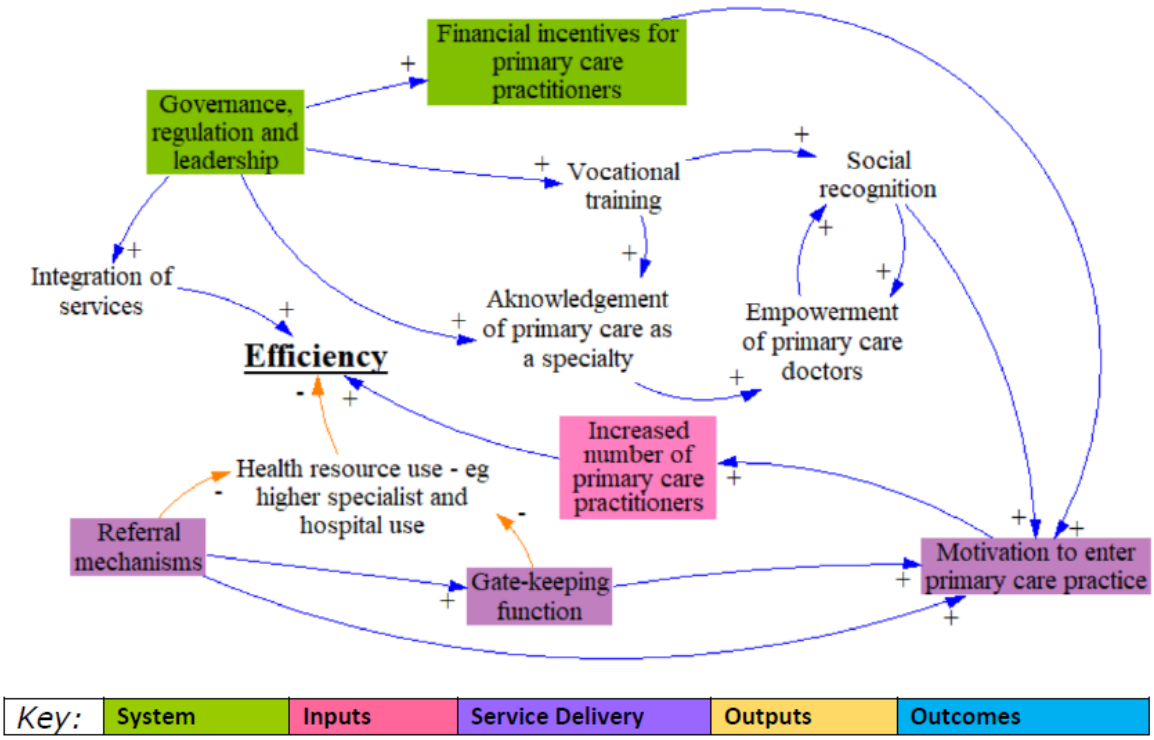
There is a large body of evidence suggesting the greater efficiency of a primary care oriented health care system (12). More specifically, coordination functions of primary care are known to improve efficiency (2). Lack of referral capability and lack of a gate-keeping function for primary care practitioners were found to be challenges to efficiency in Sri Lanka's health system.

Only 5% of private primary practitioner visits resulted in referrals being made to other providers (22), showing that primary care doctors in Sri Lanka are effective in limiting the need for patients to access higher levels of health care. However as there is no referral system in place and primary care doctors do not provide a gatekeeping function in Sri Lanka (34), higher level public hospital services and private specialist services are strained (15). This is inefficient for the health system as it costs more to see patients in higher level facilities (12) and potentially inefficient for the patient, as it is the patient who is differentiating their complaint, running the risk of spending money to seek care for a condition for which a different specialist would have been more appropriate. Further, it is an inefficient use of the specialist's time, as they must see more undifferentiated patients who could have had their medical complaints addressed at a primary care level. As training a specialist takes more resources than training a primary care doctor (which in Sri Lanka requires no additional training (39)), it is also an inefficient use of resources.

Thus, considering the increased efficiency that primary care doctors provide, and as private primary care services help to reduce the burden on government services (22), it is concerning that there were less younger primary care doctors entering full time private primary care practice, especially as those currently in place are ageing (22). Lack of vocational training, lack of referral mechanisms between public and private sectors as well as a lack of financing methods to ensure future doctors will be incentivised to go into private practice were the major concerns among full time primary care doctors (22), and may be some of the reasons why less younger cohorts are coming into the profession. Another article suggests that primary care practice is not the first choice of doctors due to lower financial benefits and lower social recognition (55). Addressing these concerns requires effective regulation and governance of PHC and touches on empowerment of primary practitioners.

Figure 7:

Causal loop diagram of the components of PHC and the challenges identified in relation to their effect on each other and efficiency of the health system



Responsiveness to People

A system that is responsive to the people it serves needs to adapt to changing disease burdens and demographic trends in population. The ability to provide continuity of care and the ability to recognise service and resource needs affect responsiveness in the Sri Lankan PHC system.

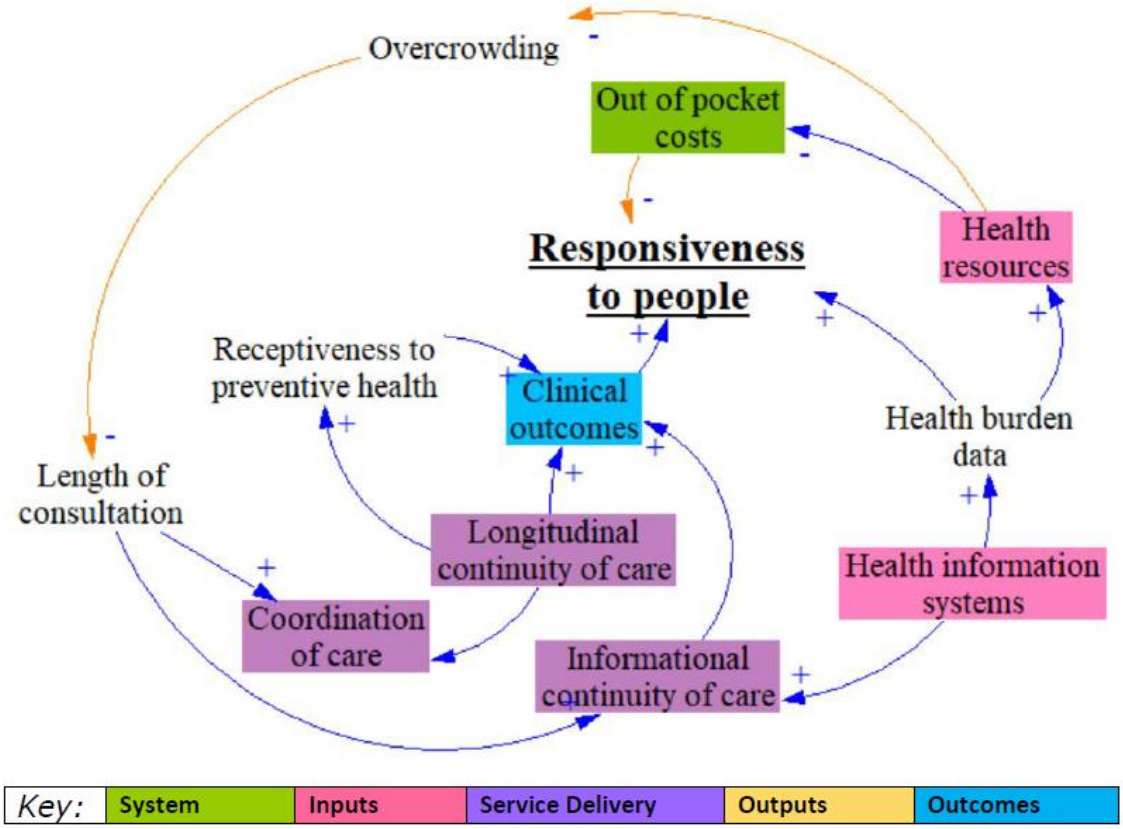
NCDs, ageing related diseases and mental health problems are chronic conditions which require long term care, thus continuity of care is needed to respond to this disease burden (14). Studies have found that there is a positive association between continuity of care and coordination of care and the receptiveness to preventative services (2). Furthermore, continuity of care improves efficiency of services and is cost-effective in primary care (2). Within Sri Lanka's PHC system, continuity of care proves to be a difficult challenge. Many of the public primary care settings are outpatient departments which are staffed by medical officers doing shift rotations. Thus, there is no longitudinal continuity of care for the patients attending these services. The lack of longitudinal continuity means that medical histories have to be explored at each visit, unlike in the private sector, where 78% of visits were by patients who had previously seen the same doctor (22). However, past histories are unlikely to be explored

adequately as consultation times are on average 3.1 minutes in the public sector. This, in turn, may lead to repetition of investigations or inappropriate treatments being given. The lack of informational continuity of care in both the private and public sectors compounds the effects of lack of longitudinal continuity. A positive step for informational continuity is seen in the evaluation of the pilot HIS system in Trincomalee, where the positive attitude of the staff towards maintaining clinical records suggests that it will be an acceptable step forward.

Not only is improving HIS important for informational continuity of care (2), it is also important for service delivery from a health management perspective. Currently no data is collected on who presents, for what illness and to which facility for outpatient departments (53). Thus, important information about the outpatient burden, which could inform provincial health managers of facility, resource and staffing requirements, are not available. Further, the current system of HIS is slow and involves manually posting aggregated data up the chain of command (32). This means that funds and health resources are unable to be allocated in response to changing needs, and instead are allocated by annual estimates (if no specific requests are made) (19)(40).This can result in stock outs of medication, leading to OOP costs; under-staffing of facilities, leading to overcrowding; or unmet needs for services due to lack of awareness of local disease trends. As the central MoH provides double the funding of provincial governments to public primary care facilities (14), it is vital that health information is available in a timely manner to these higher levels of government, so that they can provide adequate funding for the needs of the population. Interestingly, 90% and 88% of health managers in regional areas stated that clinic data and demographic information, respectively, provided only 'minor support' in making management decisions while, 88% and 94% stated that political interests and community requests, respectively, were 'critically important' in making decisions (32). This hints at an added challenge of needing to develop a culture of evidence-based decision-making amongst those who make decisions about the system.

Figure 8:

Causal loop diagram of the components of PHC and the challenges identified in relation to their effect on each other and responsiveness to people



Health status

All the challenges mentioned above affects the health status of the population.

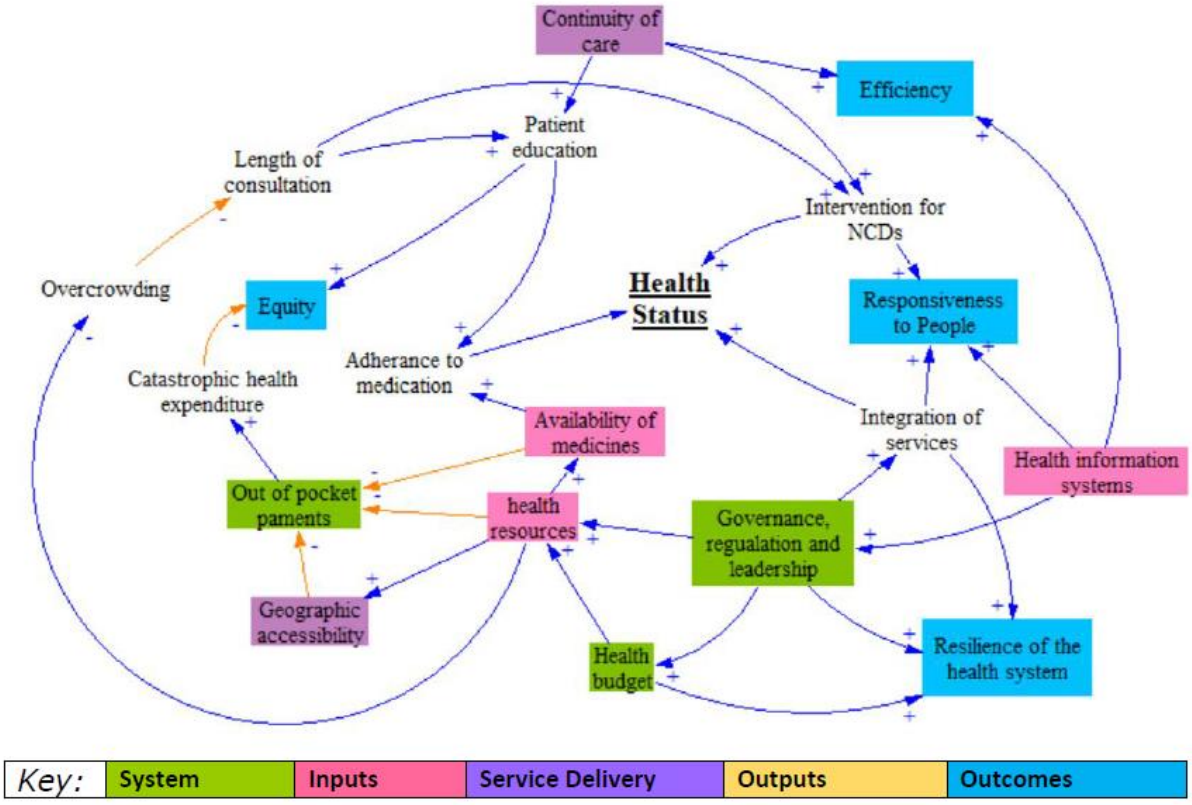
Poor regulation, lack of health information systems and a low health budget leads to low availability of health resources (such as medicines), in public facilities. Low availability leads to indirect costs of travelling to higher level facilities or purchasing from the private sector to obtain such things as medicines. Due to financial difficulties with OOP payments, patients may resort to taking the medicines required less often or forego taking them altogether (29). Poorer patients are not only the ones who are least able to afford medicines, but they are also the ones who will have less patient education about the importance of taking medicines to prevent progression of their non-communicable diseases. All these factors lead to poor health outcomes.

The high health seeking behaviour of Sri Lanka's population is a strength. It magnifies the gains that would be seen from improving access to health

services. However, this strength would be wasted if patients with NCD risk factors were not screened and counselled on prevention when they present to a health service. As public doctors are not able to provide continuity of care and also spend half as much time for a consultation as those of their private counterparts, not much time is left for screening and education, thus missing an opportunity for intervention. This occurs inequitably, as it is the low-income population who uses public services the most. Relocating screening to another service system instead of integrating services together, as was done for HLCs due to lack of governance, results in confusion for patients and underutilisation for the system leading to inefficiency and poor health outcomes in the long term.

Figure 9:

Causal loop diagram of the components of PHC and the challenges identified in relation to their effect on each other and health status



Limitations:

Limitations of the framework:

This review involved analysing PHC components in Sri Lanka which were identified in the literature. Therefore, if no evidence assessing this component in the literature exists, it will not be found through this study, and therefore its challenges will not be known.
Similarly, as an existing framework for components of PHC is being used to guide the search for challenges, PHC components unique to the Sri Lankan system may not be noted as they will not be actively looked for. To address this limitation, the search terms were kept broad (without creating specific search terms for each domain/sub-domain of the framework), so that any articles discussing unconsidered components of PHC in Sri Lanka would be captured. This scenario eventuated in the results found on quality of care. As this is an important area to discuss information on quality was placed in areas which were loosely connected to quality indicators. Another limitation of this framework for this study is therefore that there is no identified sub-domain discussing quality of care which is important when analysing challenges.

This framework was used as a guide to identify strengths and challenges, however it became clear during the discussion that it was limiting for looking at interactions between challenges. As this is a relatively static framework, there is a danger that policy-makers will concentrate on just one domain for improvement and ignore the system effects. The causal loop diagrams were able to highlight in this study. Thus, frameworks such as these may inadvertently cause interventions to be considered in silos, which is what this review is aiming to avoid.

Limitations of the study

The search was limited to results in the English language, thus the breadth of information found is limited. Furthermore, it became clear once the results were collected that the search terms 'outpatient' and 'OPD' would have been useful to include, as much of the public PHC is provided by these departments.

As the health information system in Sri Lanka is still largely manual in its data collection and dissemination, it is likely that more detailed information about facility infrastructure, supplies and workforce are available in print form. These were unfortunately inaccessible for this review.

Limited literature was available on just the primary care sector, thus for some sub-domains, general information relevant to the whole health system needed to be consulted. As a broad view is required to cover all components, it is difficult to explore in detail with the limited word count of this review.

This review would be strengthened by complementing it with information from key informant interviews as some of the key articles used were written more than 10 years ago.

Conclusion

Improvement of PHC systems is a global movement and one that Sri Lanka is considering in the near future. Ahead of this re-organisation, the strengths and challenges affecting PHC require examination. The challenges of the PHC system in Sri Lanka are complex, multi-faceted and affects PHC outcomes.

It is clear the system challenges of lack of governance and leadership leads to less policy development. Empowerment of the primary care workforce would improve these challenges. Furthermore, lack of integration of health services within the system leads to inefficiency and decreased resilience of the system. This is evident through misalignment of aspects of preventive and curative services. Lack of referral mechanisms causes inefficiency in the system and is one factor among many, demotivating PHC practitioners to enter the field. Although quality of care is relatively similar in public and private care, lower health education in the public sector, which is vital for NCD management and prevention, means that there is inequity in health outcomes. Lack of continuity of care in the public sector further compounds this and leads to poor health outcomes. The unavailability of health resources leads to the risk of people being pushed into poverty due to OOP payments for PHC which in turn limits access to care, resulting in inequity. Ineffective HIS for monitoring health resource deficiencies may compound unavailability of medicines and supplies. Socio-cultural-political determinants such as high literacy, increasing poverty and high health seeking behaviour influence the challenges. It becomes clear through the discussion that the components of the different domains and their strengths and challenges are inter-related and influence each other to impact on health outcomes. These are further highlighted through the causal loop diagrams. The complexity in the relationship of the strengths and challenges highlight that challenges to the PHC system should not be viewed in a static framework, as this then risks addressing a particular challenge within the silo of that domain. A systems approach should instead be adopted.

Recommendations:

The challenges are complex and inter-related - it is difficult to provide recommendations that cover all the identified challenges. Thus, recommendations for those challenges which have the most tangible outcomes will be given for policy-makers and government stakeholders involved in re-organisation of the PHC system

1. Unavailability of medicines and supplies leads to more OOP spending by the population. To improve availability, it is recommended that more timely and reliable HIS systems be developed. This will allow health managers to determine needs before allocating services and the provincial and central health departments to ensure they are allocating funds to things which are really needed. As pilot programmes are already in place, it is also recommended that these be evaluated for best practice.

2. PHC improves efficiency of the system, and as seen through this study, PHC providers reduce the burden on government services by reducing the populations use of higher levels of care and specialist services. It is evident from this review that empowering PHC practitioners through means such as recognising General Practice as a specialty may have far-reaching benefits – for example it will lead to more influence of these doctors in policy-making which may in turn lead to better policies and enforcement for things such as referral mechanisms. It may also attract more of the younger cohort into the field of general practice so that efficiency can be maintained. Thus, measures to empower primary care practice should be considered

3. Finally, although the private primary care sector provides almost half of all primary care services, there is limited information with which to assess it. It is difficult to gauge what is currently provided in terms of facility infrastructure, cost of care, distribution of providers or quality and breadth of services to be able to develop any regulatory guides. Thus, studies examining the private primary care sector is recommended to determine its impact and influence on the public PHC sector.

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Appendix 1 – Method for identifying the analytic framework

Search terms:

(Primary Health Care) AND (framework OR conceptual model) AND (low income country OR middle income country OR developing country)

	Inclusion/exclusion criteria	Justification

Pubmed	Only articles published in the last 10 years	As it is assuned that those published more recently will also incorporate prominent older study findings/frameworks
	Only frameworks derived from studies looking at countries in low and middle income countries	As high income country PHC systems may not have the same characteristics
	Only considering frameworks specifically looking at primary health care	To ensure components studied are specific to PHC
Google scholar	In addition to the above criteria, only looking at the first 10 pages of search results	Due to time restrictions

Grey literature such as the Alliance for Health Policy and Systems Research was also searched. Snowballing of references were also conducted in order to find other frameworks.