Health Master Plan

MASTER PLAN STUDY FOR STRENGTHENING HEALTH SYSTEM
IN THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

SUPPORTING DOCUMENT II
SURVEYS AND STUDY DATA SETS

HEALTHY & SHINING ISLAND IN THE 21ST CENTURY

FINAL REPORT

MINISTRY OF HEALTH, NUTRITION & WELFARE,
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA (MOH)
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

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NOVEMBER 2003

PACIFIC CONSULTANTS INTERNATIONAL

The following foreign exchange rate is applied in the study:
US$ 1.00 = 95 Sri Lanka Rupees (as of November 2003)

Message from Vice President,

Japan International Cooperation Agency (JICA)

In response to a request from the Government of the Democratic Socialist Republic of Sri Lanka, the Government of Japan decided to provide technical cooperation for establishing of a health master plan which will be effective for the next decade for the improvement of the health system in Sri Lanka.   JICA selected and dispatched the study team headed by Dr. Katsuhide Nagayama of Pacific Consultants International to Sri Lanka between March 2002 and November 2003.

I am pleased that the Health Master Plan, presented herewith by Ministry of Health, Nutrition and Welfare, was a fruit of close collaboration with the Study Team.   I hope the Health Master Plan, whose ownership is assured by Ministry of Health, Nutrition and Welfare, will contribute to the promotion of the health system in Sri Lanka.

Finally, I wish to express my sincere appreciation to all the officials concerned of the Government of Sri Lanka for their enthusiastic effort exhibited in the process of formulating the Health Master Plan.

November 2003

Kazuhisa Matsuoka

Vice President

Japan International Cooperation Agency

November 2003

Mr. Kazuhisa MATSUOKA

Vice President

Japan International Cooperation Agency

Tokyo, Japan

Letter of Transmittal

Dear Sir,

We are pleased to formally submit herewith the Final Report of "The Master Plan Study for Strengthening Health System in the Democratic Socialist Republic of Sri Lanka."

This report compiles the results of the Study which was conducted from March 2002 through November 2003 by the Study Team organized by Pacific Consultants International under the contract with JICA.

The report compiles the Sri Lanka Health Master Plan covering both reform and development of the health sector in Sri Lanka. The plan consists of 1) vision, goals and objectives; 2) overall basic strategies; 3) frameworks for health sector reform and development; and 4) priority programmes.

We would like to express our sincere gratitude and appreciation to the officials of your agency and the JICA advisory Committee. We also would like to send our great appreciation to all those who extended their kind assistance and cooperation to the Study Team, in particular to the Ministry of Health, Nutrition & Welfare and provincial/district health officials concerned.

We hope that the Master Plan will be able to contribute significantly to the improvement of the health sector and development in Sri Lanka.

Very truly yours,

Katsuhide NAGAYAMA, Ph.D

Team Leader,

Master Plan Study for Strengthening Health System in the Democratic Socialist Republic of Sri Lanka

PREFACE

The outcomes of the Sri Lanka Health Master Plan Study, for which efforts were made from November 2001 through September 2003, are complied in six volumes of reports prepared by the JICA Study Team in close collaboration with Ministry of Health, Nutrition and Welfare.

The Health Master Plan addresses government polices and strategies based on such a long-term vision that the health service delivery system shall be improved for all people in Sri Lanka, regardless of sex, age, ethnicity and economic class. Necessary actions are delineated to achieve the vision in forms of programs and projects in the next decade time horizon. The Master Plan espouses the slogan *"Healthy & Shining Island in the 21st Century".* This implies a hope that Sri Lanka will become a healthier, more secure and more liveable nation where all people can enjoy their vividly shining lives, overcoming latent constraints and difficulties lying on the currently transitional health situation in terms of demography and epidemiology. To this end, the Master Plan underlines an innovative challenge required by not only the government sector but also each community and individual.

This section provides with a general insight into the basic structure of the Master Plan, explaining:

- Structure of the Final Report;
- Synopsis of the Strategic Framework; and
- Profile of the Health Master Plan Study.

A. STRUCTURE OF THE FINAL REPORT

Health Master Plan (HMP). The HMP is composed of three volumes and three supporting documents (Table A.1).

Table A.1   Six Documents of the Health Master Plan

Volume Number	Title
I	HMP Summary
II	HMP Analysis, Strategies, and Programmes
III	HMP Project Profiles
Supporting Document I	HMP Situational Analysis
Supporting Document II	HMP Surveys and Study Datasets
Supporting Document III	HMP Maps

Volume I

This volume contains the main message of the Health Master plan (2004-2015).   It summarizes the analytical framework of the health sector, the identified issues based on the analysis of the situation, the planning framework, the strategic objectives and approaches, and the policy recommendation for the implementation of the Health Master Plan.

<u>**Volume II**</u>

This volume presents the direction of the health sector of Sri Lanka by the strategic framework and describes the strategies and programmes/projects to achieve the strategic objectives of the health sector in the next 11 years. The aim of this particular discussion is to serve as a guide to future health development efforts.

The Basic Frame of the HMP Volume II;

<table>
<tr><td>Introduction:</td><td>Key Principles in the Institutional Reform and in the Service Delivery Reform,</td></tr>
<tr><td>Part 1:</td><td>Situation Analysis and Identified Institutional Challenges, Future Perspective of Health Needs and Demands, and</td></tr>
<tr><td>Part 2:</td><td>Strategic Framework and Programs, and</td></tr>
<tr><td>Part 3:</td><td>Principles towards Implementation.</td></tr>
</table>

Introduction: Key Principles in the Institutional Reform and in the Service Delivery Reform, discusses the future direction of the health sector in this country based on the global trends and experiences and lessons learned in other countries. The analyses lay out the scientific evidence of health transition along with the demographic, social and economic transition happening in this country, and also points out the fact that Sri Lanka is now at the turning point of low-cost service demands to high-cost service demands at the turn of the 21st century. The country's health services will soon face enormous financial gaps and their manipulation by any self-coping mechanisms would inevitably fail.

Part 1: Situation Analysis and Future Perspective of Health Needs and Demand, shows the evidences to prove the conclusion of the first part.

Part 2: Strategic Framework, discusses the strategic objectives of the health sector in the next 11 years and shows the strategic approaches to achieve these objectives by coming up with Strategic Programs. The Strategic Programs are divided into five areas, namely: Health Service Delivery, Community Empowerment and Client Satisfaction, Human Resource Development, Financing, Resource Allocation & Utilisation, and Stewardship & Management of the Health Sector. In each area, comprehensive programs are formed to achieve each sub-sector objectives.

Part 3: Principles Toward Implementation, lays out the steps towards implementation after drawing up the HMP. The steps are Platform Building for Political Endorsement of Policy Recommendations, Institutionalisation for the Master Plan, Social Mobilisation/Sensitisation, Formulation of Action Plan for Priority Programs/Area, Political Decision-making for the Implementation, Capacity Building for Program Management, Resource Mobilisation, Program Implementation, Monitoring/Supervision of the Implementation, and Evaluation. In Chapter 14, the policy recommendations as a base of implementation are spelled out in detail.

The HMP is a rolling plan and a midterm review will be necessary to evaluate the output of activities and make corrections on the plan according to the evaluation. Priority Projects are identified in the first five-year timeframe to achieve the five-year objectives in the long-term perspective of 10 years. The first mid-term review is expected to take place in 2006.

Volume III

The priority projects mentioned in Vol. II above are the subject of this volume. The profile for each project provided herein contains a Project Summary and the following items:

1) Project Title
2) Project Number
3) Project Priority
4) Focal Point
5) Implementing Agencies
6) Starting Fiscal Year
7) Project Duration
8) Target Areas and Beneficiaries
9) Justification
10) Important Assumptions/Risks/Conditions
11) Project Objective – including indicators and means of verification
12) Project Output/product – including indicators and means of verification
13) Related Projects – including ongoing projects and projects under the Health Master Plan
14) Relevant Agencies to be Coordinated
15) Monitoring and Evaluation
16) Major Activities – including expected results and process indicators

Supporting Document I

Supporting Document I, Situational Analysis, contains the review and analysis of present conditions of health sector in Sri Lanka. The structure of the volume is as follows.

1) Situation Analysis: Its Framework

   This chapter describes "research issues" which lead to the discussion of the following chapters.

2) The External Environment and its Effects on Health and Health System

   This chapter analyses various external environments and their effects on health in this country. These external environments are geography, socio-cultural environment, politics, policies and government, economics, and various marginalised groups.

3) Health system Activities

   This chapter analyses the existing activities of the public allopathic sector and indigenous systems of medicine and private sectors. It encompasses the broad spectrum of activities - preventive, promotive, curative, rehabilitative and social services.

4) Management of Resources for Health

   This chapter examines the management of the following resources: Human Resources, Drug, Medical Equipment, Physical Facility, Funds, and Foreign Aid.

5) Stewardship of the Health Sector

This chapter deals with the stewardship function of the MoH. These functions are policy formulation, planning, priority-setting and resource allocation, regulation, legislation, accountability, M&E, coordination, public/private partnership, information generation, dissemination and use, and resource and research management.

6) North and East Provinces

This chapter looks into the situation of health in N&E Provinces. The existing issues and the transitional strategies are identified.

7) Assessment of the Health System

This chapter analyses and assesses the health sector from the various dimensions of health outcome, responsiveness and patient satisfaction, fairness in financing and equity, quality and safety, and efficiency.

8) Health Transition and Future Health Needs and Demands

The chapter discusses the demographic transition and health transition in Sri Lanka and their implication on the service demands. In addition, the future health expenditures are projected by macro and micro approach for the next 10 years.

9) Opportunities for Consensus Building

This chapter discusses the consensus building within and without the health sector which is a key element in the implementation phase of the master plan. In order to do this, the planners need to consider the following: 1) Lessons learned from previous health sector program, 2) the stakeholders' involvement, and 3) public opinion.

10) Conclusions

This chapter provides answers to the "Research Issues" described in Chapter 1.

Supporting Document II

Supporting Document II: Surveys and Study Datasets, contains the activity records and outputs of surveys/review works/consultation meetings with stakeholders.

Twenty-five (25) surveys were carried out during the first phase of the study and the survey results are summarized in this volume.

Supporting Document III

Supporting Document III, HMP Maps, compiles Maps of GIS (Geographic Information System) database on health facilities and health indices, and the Dataset.

B. SYNOPSIS OF THE STRATEGIC FRAMEWORK

The major planning issues are:

1) Incomplete decentralization of the health sector
2) Lack of Monitoring & Evaluation mechanism
3) Insufficient management capacity at all levels
4) Compartmentalized functions at the central MoH
5) Weak intersectoral coordination on some important health issues
6) Weak coordination mechanism with other health sectors such as private sector and Indigenous Medicine sector
7) Weak coordination mechanism of Human Resource Development Functions at the central MoH level
8) No integration of curative and preventive services at any levels
9) No mechanism for people to participate for monitoring of services
10) Financial constraints in preventive services and primary level health care services.

The Vision, Mission and Goal of the Master Plan are:

VISION:

> **A healthier nation that contributes to its economic, social, mental and spiritual development**

MISSION:

> **To achieve the highest attainable health status by responding to people's needs, working in partnership, to ensure access to comprehensive, high quality, equitable, cost-effective and sustainable health services**

GOAL:

> **A strengthened health system that strives for excellence to improve the health outcomes of the people in Sri Lanka**

The vision of improving the health status of the people will be achieved through addressing the following strategic objectives:

> **1. To improve comprehensive health services delivery and health actions, which reduce the disease burden and promote health;**
>
> **2. To empower community towards more active participation in maintaining and promoting their health;**
>
> **3. To improve the management of human resources for health;**
>
> **4. To improve health finance mobilisation, allocation and utilisation; and**
>
> **5. To strengthen stewardship and management functions of the health system.**

Figures B.1 and B.2 are diagrammatic representations of the dynamic relationships among the Strategic Objectives.
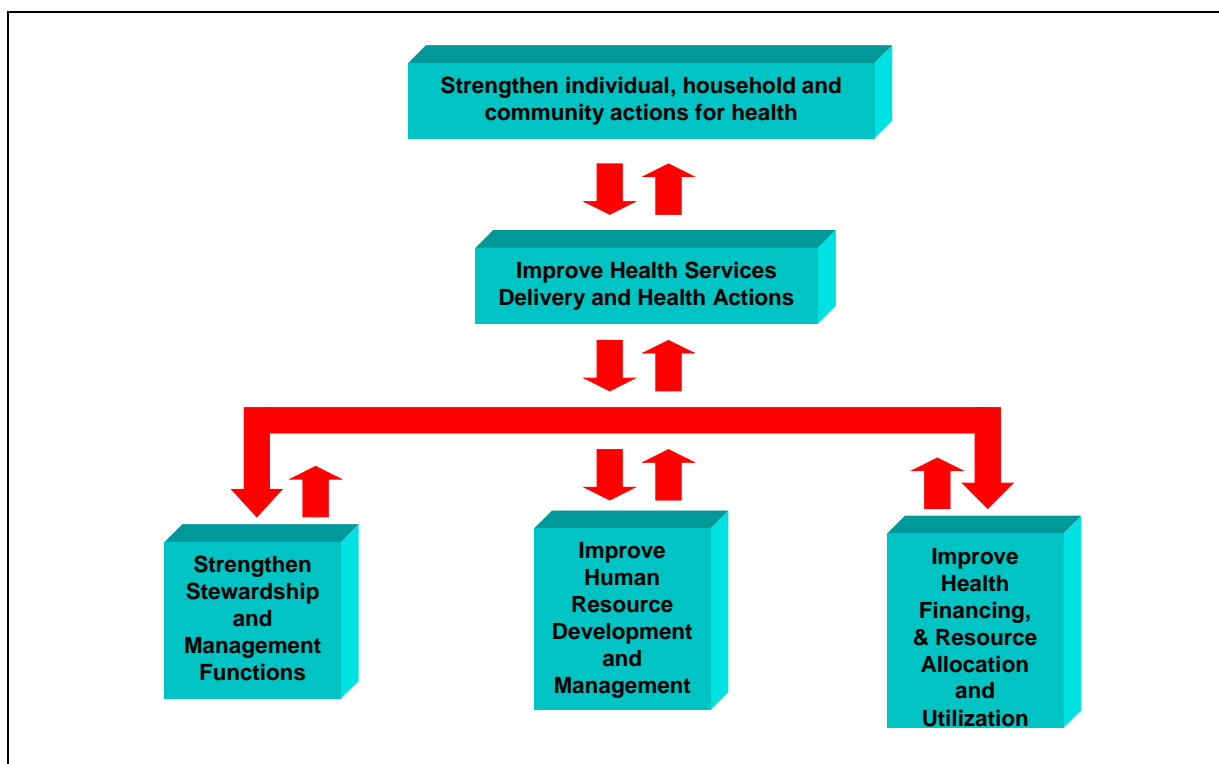

Figure B.1   Inter-relationships among the Five Strategic Objectives
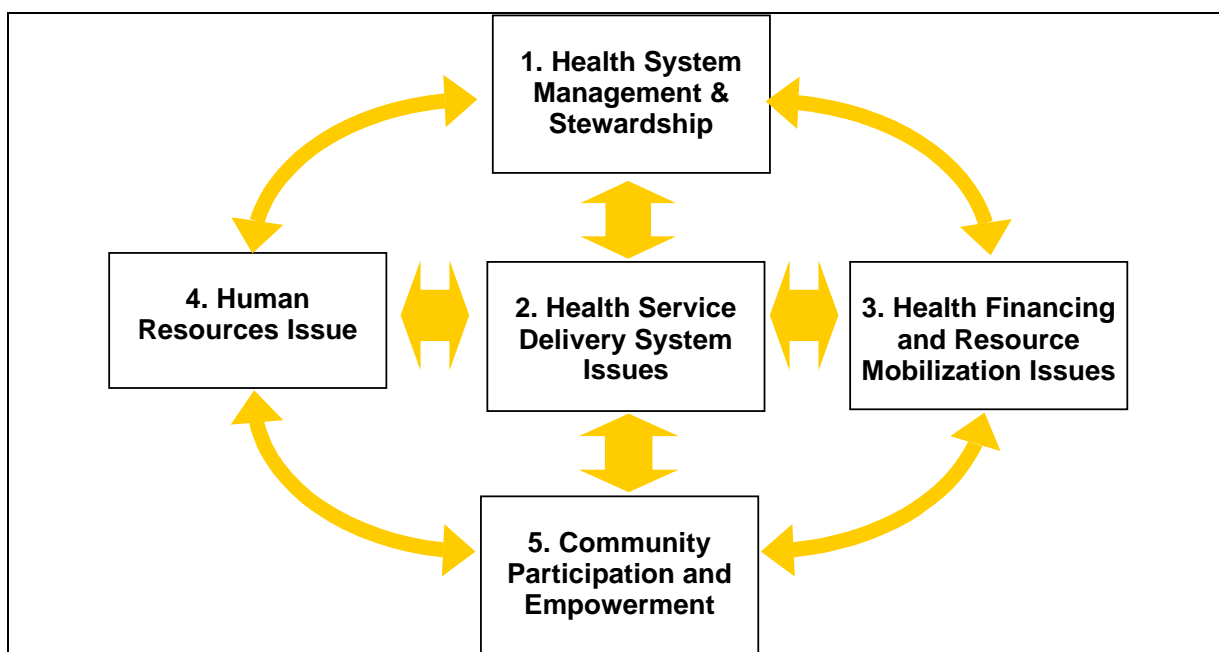

Figure B.2   Inter-relationships among the Five Strategic Objectives

C. PROFILE OF THE HEALTH MASTER PLAN STUDY

(1)   Background

In response to the request of the Government of Democratic Socialist Republic of Sri Lanka (hereinafter referred to as "GOSL"), the Government of Japan (hereinafter referred to as "GOJ") decided to finance a "Master Plan Study for Strengthening of the Health System in the Democratic Socialist Republic of Sri Lanka" (hereinafter referred to as "the Study").

The Japan International Cooperation Agency (hereinafter referred to as "JICA") is the official agency responsible for the implementation of technical cooperation programs of the GOJ. On November 9, 2001, it undertook the Study in close cooperation with GOSL authorities based on the Scope of Work agreed upon between the JICA Preparatory Study Team and the GOSL, represented by the Ministry of Health, Indigenous Medicine and Social Services. According to the official regulations on consultant procurements, JICA selected Pacific Consultants International for the Study Team, headed by Dr. Katsuhide Nagayama, and dispatched the Study Team to Sri Lanka.

The Ministry of Health, Nutrition & Welfare (hereinafter referred to as "MoH") acts as the Counterpart Agency for the Study Team on behalf of the GOSL. The MoH is responsible for coordinating the implementation of the Study with other related government agencies, international donor agencies and international non-governmental organizations.

In the past, while the government of Sri Lanka pursued a policy of economic growth, equity has been emphasised as one of the primary concerns together with self-reliance. Even under the new economic policy the political commitment to equity remains.

The public health sector has provided not only basic but also higher-level health services and has built up an extensive network of health facilities. At the same time, private health providers have increased and flourished by attracting relatively affluent people residing in the greater Colombo area. As a result, Sri Lanka has achieved better health indicators than other comparable lower-middle income countries with relatively few resources.

However, it has become increasingly difficult to maintain this high performance with growing financial constraints and escalating prices for goods and services. The good performance contributed to the epidemiological transition; statistics show that more and more people are suffering from chronic diseases. With continuously declining mortality rates in association with lowered fertility, the national average life expectancy is expected to be at the level of the industrial countries by 2020. The rapid increase of the ageing population will necessitate public health policy change

In light of these trends past health policies must be reviewed and new policies issued to facilitate the country's continued progress in health in the opening decades of the 21st century.

(2)   Study Objective

The objective of the Study is to formulate a Master Plan for strengthening and improving the health system in Sri Lanka, by 2015.

(3)   Study Approaches

The Master plan Study has used four main approaches, to develop its work.

Locally-Initiated and Owned

The formulation of master plan was initiated by the Government of Sri Lanka asking the Government of Japan to give technical support in the process. The major steps to be taken to formulate the master plan were discussed and decided between MoH coordinators and JICA Study Team members. The question of fostering ownership has been discussed from the beginning of the study in order to ensure the Master Plan is adopted, advocated and implemented. This approach has been adopted throughout the planning work and promotes active participation of the MoH in the study. In conclusion, MoH and JICA have agreed to give authorship of the Master Plan to the Sri Lankans to increase the ownership and hopefully implementation of the plan.

Sector-Wide and Participatory

The planning process adopted a sector wide and participatory approach in order to solicit various stakeholders' opinions and ideas. The Study Team held various meetings and workshops to involve all health sector stakeholders from the beginning of the study. These stakeholders represent not only the national level MoH, but also different levels of sub-national health officials, private sector medical practitioners, traditional medicine sector, researchers and professional groups, other Ministries such as Ministry of Finance, other donor agencies, NGOs and communities. The issues existing in the health sector were widely discussed among stakeholders; the process of discussion was organized in a systematic way to improve the efficiency of the study process

Building on Achievements and Lessons Learned

In the 1990's, there were several health policy formulation exercises. Several different levels of plans were formulated, however, none of them have been implemented with any degree of consistency.

Lessons learned from the previous policies and plans are many. First, it is essential to involve key stakeholders in health sector in the planning process. Key stakeholders in health not involved in the planning would not be interested to implement the plans.

Second, previous experiences have taught that discussion and a participatory process are the best ways to address any significant policy changes. Again the discussions among key stakeholders are important because each stakeholder has different interests and information. There is a need to identify these differences in opinion and information and build consensus through further discussion. Without deep and serious discussion to minimize the conflict over policy issues, naturally it will not be easy to implement plans.

Third, it is necessary to have a proper monitoring system to ensure implementation. Measurable indicators of performance should be developed during the planning stage. The monitoring unit should be close to the planning unit and their activities need to be connected through a common flow of information

Evidence-Based Strategic Planning

The Study team collected most of the existing secondary data and literature. The Study team also conducted over 20 surveys and studies of various health sector issues. The situation of the health sector was analysed by looking at the physical reality, by analysing existing data and information, and by analysing data that came out of extensive field surveys. The plan has been designed based on scientific evidence and data

The Study team found out that some concerns are not covered by any data collection or have poor quality data in the existing MOH information system. These findings are important as they identify aspects that need to be strengthened in the existing information system so that ongoing evidence-based decision-making becomes possible.

(4) Phases of the Study

The Study for formulating the Health Master Plan was divided into three phases, namely:

Phase I: Review and Baseline Surveys of the Health Sector
          (April, 2002-September, 2002, 6 months)
Phase II & III: Formulation of a Master Plan
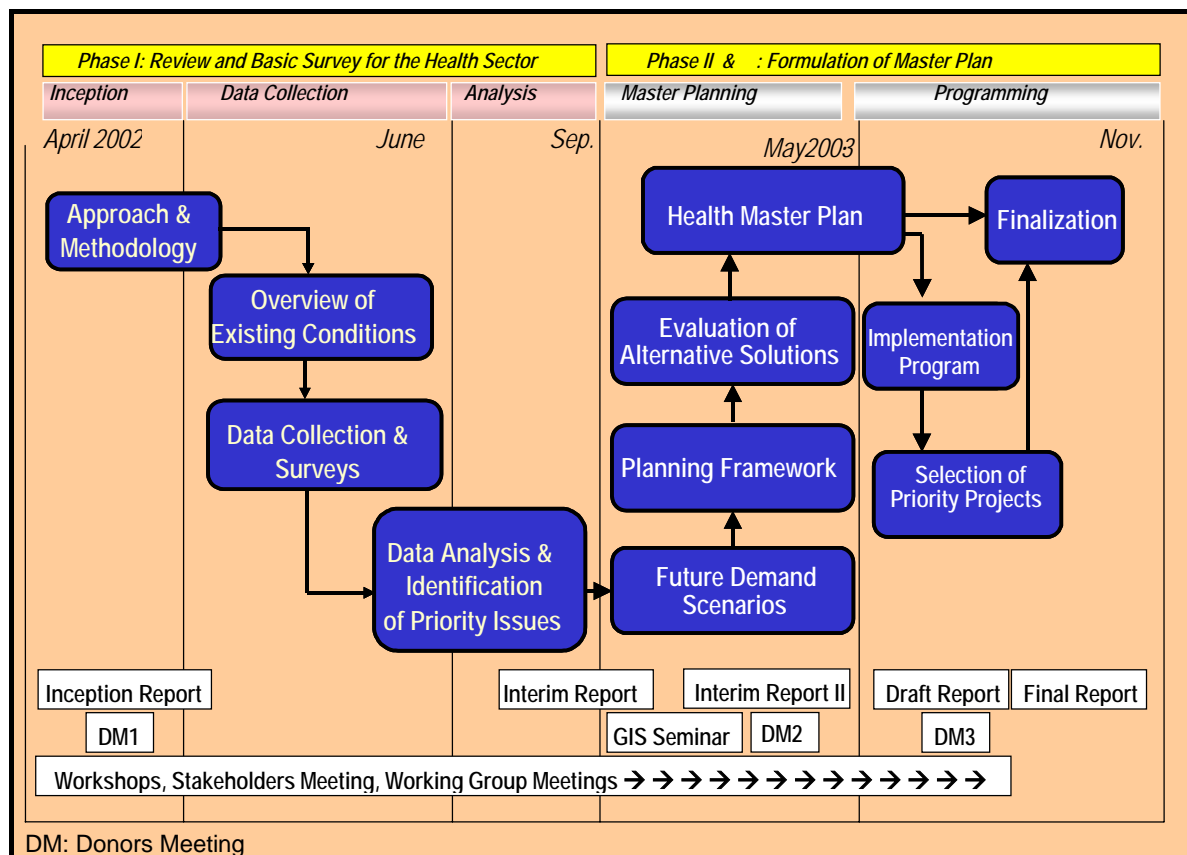   (October 2002-August 2003, 10 months)

Figure C.1   Phases of the Study

Major City
Road
Railway
Provincial Boundary
NORTHERN PROVINCE Provincial Name
District Boundary
Vavuniya District Name
River

RUSSIA
SIBERIA
KAZAKHSTAN
MONGOLIA
CHINA
INDIA
Arabian
Sea
Bay of
Bengal
MALDIVES
SRI LANKA
Indian
Ocean
INDONESIA
AUSTRALIA

Kankesanturai
Point Pedro
Jaffna
Jaffna
Jaffna Peninsula
Elephant Pass
Kilinochchi
Kilinochchi
Palk Bay
Mullaitivu
Mullaittivu
Mankulam
NORTHERN PROVINCE
Mannar
Mannar
Vavuniya
Pulmoddai
Vavuniya
Trincomalee
Bay of Bengal
Hammillewa
Trincomale
NORTH CENTRAL PROVINCE
Mutur
Anuradhapura
Anuradhapura
Bay of Bengal
Kalpitiya
Polonnaruwa
Puttalam
Nawarane
Puttalam
Polonnaruwa
Maho
Gulf of
Mannar
NORTH WESTERN PROVINCE
Batticaloa
Batticaloa
Kattankudi
Chilaw
Kurunegala
Matale
CENTRAL PROVINCE
EASTERN PROVINCE
Kurunegala
Matale
Ampara
Kalmunai
Kandy
Negombo
Gampaha
Kandy
Ampara
Kegalla
Kegalle
Badulla
COLOMBO
Nuwara
Eliya
Badulla
Mount
Lavinia
Colombo
Moratuwa
Nuwara Eliya
Monaragala
Pottuvil
WESTERN PROVINCE
Ratnapura
UVA PROVINCE
Kalutara
SABARAGAMUWA PROVINCE
Monaragala
Kalutara
Ratnapura
Kataragama
Kumana
Ambalangoda
Galle
Matara
Hambantota
INDIAN OCEAN
SOUTHERN PROVINCE
Hambantota
Galle
Laccadive
Sea
Matara

0 20 40 60 80 100km

Map of Sri Lanka

ABBREVIATION AND ACRONYM

ACCDC	All Ceylon Community Development Council
ACD	Ayurvedic Classification of Diseases
ADB	Asian Development Bank
AHPB	Ayuveda Health Promotion Bureau
AHPO	Ayurvedic Health Promotion Officer
AIDS	Acquired Immune Deficiency Syndrome
ALOS	Average Length Of Stay
AMO	Assistant Medical Officer
AMP	Assistant Medical Practitioner
ANC	Ante Natal Care
ARF	Ayurveda Research Fund
ARI	Acute Respiratory Infections
ARTI	Acute Respiratory tract infection
BAMS	Bachelor of Ayurvedic Medical Science
BC	Before Christ
BES	Bio-Medical Engineering Services or BMES
BH	Base Hospital
BMARI	Bandaranayakie Memorial Ayurveda Research Center
BMES	Bio-Medical Engineering Services or BES
BOI	Board of Investment
BS	Birth Spacing
BSMS	Bachelor of Siddha Medical Science
BUMS	Bachelor of Unani Medical Science
CADR	Cardiographer
CBO	Community Benefit Organization
CBO	Community Based Organization
CBR	Crude Birth Rate
CC	Conciliation Committee
CD	Compact Disc
CD	Central Dispensary
CD & MH	Central Dispensary and Maternity Home
CDD	Control of Diarrhoeal Diseases
CDDA	Cosmetics, Devices and Drugs Act
CDR	Crude Death Rate
CEA	Central Environmental Authority
CFR	Case Fatality Rate
CFS	Consumer Finance Survey
CHDR	Child Health Development Record
CIC	Ceylinco Insurance Co, Ltd.
CIC-E	CIC Eagle Insurance Co. Ltd.
CIGAS	Computerised Integrated Government Accounting System
CME	Continuous Medical Education
CMR	Child Mortality Rate

COHRD	Council on Health Research for Development
CPC	Committee for Planning and Cooperation
CPD	Continuous Professional Development
CWC	Ceylon Workers Congress
D/MTS	Director Medical Technology and Supplies
DALY	Disability Adjusted Life Year
DDHS	Divisional Director of Health Services
DDT	Dichlorodiphenyltrichloroethane
DGHS	Director General of Health Services
DH	District Hospital
DHO	District Health Office
DM	Diabetes Mellitus
DMO	District Medical Officer
DoA	Department of Ayurveda
DP	Divisional Pharmacist
DPMU	Drug Processing and Manufacturing Unit
DQAL	Drug Quality Assurance Laboratory
DRA	Drugs Regulatory Authority
DS	Dental Surgeon
DS	Divisional Secretariat
D-SNO	Staff Nursing Officer working in District Hospitals
DTRU	Demography, Demographic Training and Research Unit, University of Colombo
ECCD	Early Childhood Care and Development
EmOC	Emergency Obstetric Care
ENHR	Essential National Health Research
EPDP	Eelam People's Democratic Party
EPF	Employees Provident Fund
EPI	Expanded Programme of Immunization
EPR	Emergency Preparedness & Response
ETU	Emergency Treatment Unit
EU	European Union
FA	Field Assistant
FAO	Food and Agricultural Organization of the United Nations
FHB	Family Health Bureau
FP	Family Planning
F-PHM	Field Public Health Midwife
GAHR	Government Ayurvedic Health Resort
GAP	Good Agricultural Practices
GDCF	Gross Domestic Capital Formation
GDP	Gross Domestic Product
GFCP	Good Field Collection Practices
GFR	Gross Fertility Rate
GH	General Hospital
GMOA	Government Medical Officers Association
GMP	Good Manufacturing Practices
GNP	Gross National Product
GOSL	Government of Sri Lanka
GP	General Practitioner

G-SNO	Staff Nursing Officer working in General Hospitals & Base Hospitals
GST	General Sales Tax
GTZ	German Technical Cooperation Agency
GWAI	Gampaha Wickramarachchi Ayurveda Institute
HC	Health Centre
HCW	Health Care Worker
HDR	Human Development Report
HEB	Health Education Bureau
HIS	Health Information System
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HRD	Human Resource Development
HSPI	Health Service Providing Institute
HSR	Health Systems Research
HVC	Health Vigilance Committee
IA	Impact Assessment
ICSL	Insurance Corporation of Sri Lanka
ICU	Intensive Care Unit
IDRC	International Development Research Center (Head Office locates in Ottawa, Canada)
IEC	Information, Education and Communication
InEC	Institutional Equipment Committee
IHD	Ischaemic Heart Disease
IIM	Institute of Indigenous Medicine
IK	Indigenous Knowledge
IMMR	Indoor Morbidity, Mortality Return
IMPA	Independent Medical Practitioners Association
IMR	Infant Mortality Rate
IP	Industrial Package
IPD	In Patient Department
I-PHM	Public Health Midwives working in hospitals
IPR	Intellectual Property Rights
IPS	Institute of Policy Studies
IPS HPP	IPS Health Policy Programme
ISM	Indigenous System of Medicine
JE	Japanese Encephalitis
JEDB	Janatha Estate Development Board
JICA	Japan International Cooperation Agency
JMO	Jurisdictional Medical Officer
JOCV	Japan Overseas Cooperation Volunteers
JVP	Janata Vimukti Peramuna
KAP	Knowledge, Attitudes and Practices
LAN	Local Area Network
LMP	Licensed Medical Practitioner
LSSP	Lanka Sama Samaja Party
LTTE	Liberation Tigers of Tamil Eelam
MC	Municipal Council
MCH	Maternal and Child Health
MCHC	Maternal and Child Health Centre

MDPU	Management Development and Planning Unit of MoH
MICR	Microscopist
MIM	Ministry of Indigenous Medicine
MIS	Management Information System
MLT	Medical Laboratory Technologist
MO/ MCH	Medical Offer, Maternal and Child Health
MoF	Ministry of Finance
MOH	Medical Officer of Health
MoH	Ministry of Health
MOHIM	Ministry of Health and Indigenous Medicine
MOMCH	Medical Officer for Maternal and Child Health
MoU	Memorandum of Understanding
MP	Medicinal Plants
MPCA	Medicinal Plant Conservation Area
MSD	Medical Supplies Division
MSF	Medicins Sans Frontieres
MSU	Medical Statistical Unit
MTIP	Medium Term Investment Programme
NA	Needs Assessment
NADCDA	National Ayurvedic Drugs, Cosmetics and Devices Authority
NAHF	National Ayurvedic Hospital Formulary
NEM	New Economic Mechanism
NEP	North and East Province(s)
NGO	Non Governmental Organization, (= NGOO)
NHA	National Health Accounts
NHC	National Health Council
NHE	National Health Expenditures
NHSL	National Hospital of Sri Lanka (formerly known as Colombo General Hospital)
NIC	National Insurance Corporation
NID	National Immunization Day
NIE	National Institute of Education
NIHS	National Institute of Health Science
NISD	National Institute of Social Development
NITM	National Institute of Traditional Medicine
NMR	Neonatal Mortality Rate
NNP	National Nutrition Programme
NO	Nursing Officer
NQAL	National Quality Assurance Laboratory
NSC	National Statistical Centre
NTRB	National Traditional Resource Bureau
OLS	Ordinary Least Square
OPD	Outpatient Department
ORS	Oral Rehydration Salt
ORS	Oral Rehydration Solution
ORT	Oral Rehydration Therapy
PA	People's Alliance
PAEHS	Planters Association Estates Health Scheme
PBN	The Post-Basic School of Nursing

PC	Provincial Council
PDHS	Provincial Director of Health Services
PEM	Protein Energy Malnutrition
PERC	Provincial Equipment Review Committee
PG	Post Graduate
PH	Provincial Hospital
PHA	Provincial Health Authority
PHAR	Pharmacist
PHC	Primary Health Care
PHCU	Primary Health Care Unit
PHI	Public Health Inspector
PHM	Public Health Midwife
PHNO	Public Health Nursing Officer
PHNS	Public Health Nursing Sister
PHO	Provincial Health Office
PHYS	Physiothetrapist
PIP	Public Investment Programme
PMEU	Planning Monitoring and Evaluation Unit
PMS	Performance Management System
PMU	Project Management Unit
PNC	Post Natal Clinic
PPO	Programme Planning Officer
PR	Proportional Representation
PR	Progress Review
PTC	Provincial Training Center
PTF	Presidential Task Force
PTF1	1992 Presidential Task Force on National Health Policy
PTF2	1997 Presidential Task Force on National Health Policy
QCS	Quality Control Specifications
RADI	Radiographer
RCS	Rehabilitative Care Services
RDF	Revolving Drug Fund
RE	Regional Epidemiologist
RH	Reproductive Health
RMO	Registered Medical Officer
RMSD	Regional Medical Supplies Division
RTC	Regional Training Center
SCFA	Save the Children Fund Australia
SHS	Superintendent of Health Service
SIDA	Swedish International Development Agency
SJGH	Sri Jayawardanapura General Hospital
SLAAS	Sri Lanka Association for Advanced Science
SLADC	Sri Lanka Ayurvedic Drugs Corporation
SLAMA	Sri Lanka Ayurveda Medical Association
SLFP	Sri Lanka Freedom Party
SLIC	Sri Lanka Insurance Corporation Ltd.
SLMA	Sri Lanka Medical Association
SLMC	Sri Lanka Muslim Congress

SLNHA	Sri Lanka National Health Accounts
SLSPC	Sri Lanka State Plantations Corporation
SNO	Staff Nursing Officer
SOP	Standard Operating Procedures
SPC	State Pharmaceutical Corporation
SPMC	State Pharmaceutical Manufacturer Corporation
SPHM	Supervising Public Health Midwife
SSO	Survey Statistical Officer
STD	Sexually Transmitted Disease
STDs	Sexually Transmitted Diseases
TAC	Technical Advisory Committee
Tb	Treasury bills
TB	Tuberculosis
TBA	Traditional Birth Attendant
TF	Task Force
TFR	Total Fertility Rate
TK	Traditional Knowledge
TM	Traditional Medicine
ToR	Terms of Reference
ToT	Training of Trainers
TP	Traditional Practitioners
TR	Traditional Resources
TULF	Tamil United Liberation Front
U5MR	Under-Five Mortality Rate
UAL	Union Assurance Ltd.
UG	Under Graduate
UGC	University Grant Commission
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNP	United National Party
USAID	United States Agency for International Development
VAD	Vitamin A Deficiency
VHV	Village Health Volunteer
VMA	Value for Money Audit
WB	World Bank
WAN	Wider Area Network
WBC	Well Baby Clinic
WFP	World Food Programme
WHO	World Health Organization
WTO	World Trade Organization

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INTRODUCTION

This "Supporting Document II – Surveys and Study Datasets" contains the summary of the surveys which the JICA Study Team carried out during the period May 2002 to May 2003. The JICA Study Team sub-contracted these surveys (or literature reviews) to Sri Lankan local consultants and directors of the Ministry of Health, Nutrition & Welfare (MoH), under the supervision of expatriates from the JICA Study Team and based on the re-consignment contract with the JICA Study Team and each sub-contractor.

This report contains more than 270 pages. However, these are only summaries of each survey report. The full text of each survey is kept by the Planning Division, MoH.

The copyright of all reports on the surveys is held by JICA and MoH and no portion of the report may be reproduced without their expressed written consent.

MoH and the JICA Study Team would like to thank all those who participated in the surveys: the respondents in the interview surveys and questionnaire surveys, the participants in the focus group discussions, the donors of important data, and the sub-contractors. Their cooperation is greatly appreciated.

CHAPTER 1

SURVEYS ON
HEALTH SERVICES DELIVERY

1 SURVEYS ON HEALTH SERVICES DELIVERY

1.1 INFLUENCE OF MEDIA ON SELECTED HEALTH ISSUES

(1)   TELEVISION

Alcohol in television

Any speculation about whether the media influences the behavior of people can only be answered by looking at what the media teaches young people. Therefore the crucial first step in understanding the media is to carefully examine the content of media and identify the influences media might have on young people to change their behavior.

In order to answer the question, we looked at how the media portray alcohol, tobacco and other drugs and what attitudes the media generates among young children regarding eating and sexual behavior

The study sample was one week of total television programs including commercial programs, peak hours of radio programs from 5 selected radio stations, 94 newspapers, and 14 movies selected from public screening and movie rentals.

The study examined the nature and the extent of eating and sexual behavior and the portrayal of substance use in media.

Nearly 90 % (40/43) of the movies, 43% (79/180) of the drama programs, 12 % of songs, and 4% of the advertisements had references to tobacco, alcohol and other drugs

3% of total movie time concentrated on alcohol references. 4% of total drama time and 0.9% of total music time were also centred on alcohol.

Of the total number of referred movies televised during the monitored week, 37% were English, 35% were Hindi, 33% were Tamil and only 5% were in Sinhala. Hindi, Tamil and English movies normally have a larger viewing audience. Similarly, the highest incidence of songs were in English, followed by Hindi and Tamil. Sinhala songs had the lowest incidence.

When considering the numbers of scenes and their visual duration, Hindi music and movies had the highest exposure to alcohol. English drama also had the highest exposure of alcohol.

55 seconds and 50 seconds of scenes where alcohol was referred to appeared every 10 minutes in music and tele-drama, which is a major finding of the survey.

In the television movies and the rental movies, there were also alcohol references.

Scenes of 23 seconds appeared every 10 minutes during movie time.

When measuring the relevance of the alcohol scenes to the theme of the story, in 90% of movie scenes and 93% of drama scenes, where alcohol was referred to, this was found to be not relevant to the main story.

60% of the movie and 98% of the tele-drama references glamorized the alcohol consumption. It is also important to emphasize that 43% of movies and 81% of scenes associated alcohol with pleasure.

4% of all advertisements also referred to tobacco, alcohol and other drugs. 85% of advertisements promoting services and products referred to alcohol; most of these advertisements were during TV and movie programs.

Of the total tobacco, alcohol and other drugs scenes in news programs, 59% were alcohol-related and 45% of these were included in foreign news

Tobacco in television

Regarding movie time, 2% contained tobacco references. 2% of music had tobacco references and 0.9% of the tele-drama time related to tobacco

One of the major findings of the survey is that Tamil movies and tele-drama had the highest exposure to tobacco references, while 53% of all tobacco related scenes were close-ups.

In movies, 16 seconds duration of tobacco references appeared every 10 minutes, which is the highest, followed by music (12 second scenes) and tele-dramas (11 second scene).

99% of references to tobacco in movies and 93% of references to tobacco in tele-drama were not relevant to the main story

62 % of the movie scenes, 64% of tele-drama scenes and 41% of the music visuals glamorized tobacco use.

HIV safer sex and sex reference in television

The highest references were in program time, not including advertisements and news.

5% referred to safe sex and HIV/AIDS, out of which 98% referred to sex

Only 0.9% of HIV and 0.8% safer sex references were in total program time. Of the sex referred scene, 11% were sexually stimulating, and of which nearly 3% implied unsafe sex

30% of scenes that referred to sex appeared every 10 minutes.

(2)   PRINT MEDIA

Alcohol and tobacco in print media

Of news in all papers, the ratio of drug demotion {26%] and promotion [74%] was 1:3.

Of articles in all papers, the ratio of drug demotion {21%] and promotion [79%] was 1:4.

63 of the articles and 87of news was neutral and that implies missed opportunities for making a positive impact.

HIV/AIDS and sex references in print media

HIV/AIDS references were significantly low in print media. Of the total items in the daily papers, 16 had references to HIV/AIDS and 172 had references to sex. Of those with sex references, 11 strongly implied unsafe sex

The highest references were in advertisements, 118 in number.

Of the total of 32 articles in the daily paper, 24 referred to sex, of which 11 strongly implied unsafe sex.

In the weekly papers, the total number of referred items was 127, of which 111 were articles.

Of this 7 were references to safe sex and 2 to HIV/AIDS. All the others were sexually stimulating articles

In the monthly magazines, there were 47 references, of which there were 44 sex, 3 safe-sex and one HIV/AIDS.

Unregistered had a total number of 11 articles which strongly implied unsafe sex. These articles carried 26 coloured and 67 black and white sexually stimulating photographs.

Of the total number of all the papers. 85% had references to sex and nearly 6% strongly implied unsafe sex. HIV/ AIDS references were only 3% and safe sex references were only 5 % of the total content of all papers.

Nutrition

The highest percentage of food commercials were for fat and sugar related products, followed by dairy products.

Dairy products targeted mothers and children.

Most fat and sugar products targeted children and young people.

Vegetables and fruit advertisements were virtually non-existent.

* * * * * * * * * *

This section was prepared by the sub-contracted team from the Alcohol and Drug Information Centre (ADIC, 48/18, Park Road , Colombo 5 / Tel: 94 1 584416, 592515 / Fax: 94 1 508484 / e-mail: adic@lanka.ccom.lk) headed by Ms. Kumari Welagedera and the following members :

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1.2 DEMOGRAPHIC AND DISEASE PROJECTION FOR SRI LANLA 2010 AND 2020

(1)   INTRODUCTION

Sri Lanka is an exception among developing countries in that its level of health status has been achieved despite a relatively low level of economic development. Sri Lanka's health indicators, such as Mortality Rates and Life Expectancy at birth, have reached the levels of some industrialized countries.

Since its independence in 1948 there has been an improvement in the coverage of health services. This commitment is reflected in the expansion of the curative institutions and the preventive services. There is a marked increase in the number of secondary and tertiary care institutions (Teaching, Provincial, Base Hospitals and other special hospitals). Over the years, there has been an increasing utilization of Inpatient hospital care. The number of hospital beds per 1000 population increased from 2.7 to 2.9 between 1945 and 1995; the number of inpatients per 1000 population increased from 75 to 179 during this period.

In preventive health care, the number of medical officers of health have increased considerably, from 92 in 1971 to 219 (1995) and public health midwives from 3394 to 6671 (1995). With the establishment of Provincial Councils in 1987, and the Divisional secretariats in 1992, the implementation of preventive health care became devolved functions. Currently, the service coverage aspects of maternal and child care, family planning, environmental sanitation and special control programmes are quite high.

According to morbidity statistics, cardiovascular diseases, cancer, mental illness, accidents, (road traffic, disasters etc.) and malnutrition are on the increase and will continue into the 21st century. Malaria, tuberculosis, filaria, respiratory illness, diarrhoeal diseases and rabies are still public health problems that tend to persist. HIV infections and AIDS, Hepatitis B, Japanese Encephalitis and Dengue Haemorrhagic Fever (DHF) are challenging situations. The elimination of poliomyelitis and eradication of neo-natal tetanus will be achieved by the end of the next decade.

Clients and professionals demand improved quality, efficiency and effectiveness of health care services at all levels. There is a growing need to ensure equity of access to utilization and outcomes of the health system. Medical equipment and pharmaceuticals are becoming increasingly important and crucial in health care. Skilled health care professionals and new specialities are required to solve emerging health needs. To adhere to the norms and standards in health care, additional human resources for health development are required and better forms of health management have to be adopted. According to the Health Manpower Study of 1971- 1973, 'on an average an inhabitant of Sri Lanka makes 3 visits to government western type medical institutions annually'. This includes visits to the outpatient departments and clinics as well. During the past five years, the government curative care institutions have been annually providing services to about 3-4 million inpatients, 35 to 45 million outpatients and 1 million patients attending various clinics.

All these measures impose a demand for additional financial resources. Better management coupled with resource inputs at appropriate levels of patient care will minimize the bypassing of small medical institutions and overcrowding and resource waste in major medical institutions. Additional resources will be required to provide care to the displaced and deprived populations. As in many other countries, the demand for health care has continuously risen over the past years, outstripping the supply of health resources.

(2)   OBJECTIVES

General Objective

The general objective of the study is to estimate trends of selected Communicable diseases and Non-communicable diseases by 2010, based on demographic transitions, in order to provide direction for planning, and to determine needs for future health care services.

Specific Objectives

The study aims specifically to estimate the following:

1. Population by age group and by Province/districts for the years 2010 and 2020;
2. Disease trends by country for 2010 and 2020;
3. Disease trends by Province for 2010 and 2020;
4. Favourable and non-favourable disease trend scenarios for 2010 and 2020 for the country;
5. Favourable and non-favourable disease trend scenarios for 2010 and 2020 for the selected Provinces by selected disease;

(3) DEMOGRAPHIC PROJECTIONS

At the national level, Sri Lanka has achieved a satisfactory reduction in the rate of population growth during the last several decades. Factors that brought about this decline were falling levels of fertility and considerable net emigration particularly during the 1970s. Falling levels of fertility is an achievement which could well be credited to the recognition by the governments of the period of the need to monitor the country's fertility levels and their efforts in providing the requisite services and, equally importantly, to the high degree of motivation of the people of this country. In recent years, however, there has been a noticeable and unexpected stabilization of fertility levels, a situation which merits attention and monitoring.

International out-migration which has been a strong negative catalyst in the growth process of Sri Lanka during the last decade is subject to a delicate balance of international, economic, social and political climates. Hence, its continuation or otherwise cannot be predicted. Should this emigration be arrested for some reason it would cause a significant rise in population growth.

The implication of the current and anticipated growth patterns is that Sri Lanka's population would change its age structure towards an older configuration. Annual additions to pre-school, school and adolescent age groups would diminish gradually while the middle aged and particularly the elderly would increase remarkably rapidly. The age structure of a population largely determines the allocation of resources to various services. Hence, this change in the age structure of the country's population clearly signals some directions in planning for future educational, health, economic and social services.

At the sub-national level, it is encouraging to note that the high density and highly populous Western provinces and their neighbours have not experienced high growth rates. It is the low density and less populous provinces, such as the North-Central, that have grown relatively faster, which is a desirable condition for the population distribution of the country.

Present Demographic Information

The country's present demography is assessed by considering Natural increase (i.e., Fertility and Mortality) and Migration.

1) Fertility

The most commonly used indicator of fertility, measured as a component of population growth, is the crude birth rate (CBR) which is the number of births per year per 1,000 population. The CBR of the country was high and fluctuating in the early part of the century but a steady and substantial

decline began in the late 1950s as evidenced in estimates for the period 1941-1981, summarized below:

Period	CBR (per 1,000)
1941-45	36.6
1946-50	38.9
1951-55	38.1
1956-60	36.5
19661-65	34.3
1966-70	28.7
1971-75	28.4
1976-80	28.1

A more refined measure of fertility is the Total Fertility Rate (TFR) which can be interpreted as the average number of children that would be born alive to a woman during her life time if she were to pass through all her child bearing years, conforming to the age specific fertility rates of a given year. It answers as nearly as possible the question: " How many children are women having nowadays?"

The magnitude of the fertility decline which set in the late 1950s as reflected in the fall of TFR, from 5.3 in 1953 to 3.3 in 1981, is shown below:

Year	TFR
1953	5.3
1963	5.0
1971	4.2
1974	3.5
1981	3.3

The decline in TFR was modest during the initial stages, but the downward trend began to accelerate in the mid 1960s. Over the period 1963-71, TFR fell at an average rate of 3.4% per annum and in the next 3 years, 1971 - 74, the tempo of the fall was much higher at a rate of 4.5% per annum. Since then, and rather unexpectedly, the falling trend has been arrested while the TFR was still above 3 children per woman.

In Sri Lanka where child-bearing takes place predominantly within marriage, the level of fertility is determined largely by two factors, namely, the proportion of married women among women of child-bearing ages and the fertility of married women, or marital fertility. The early modest fall of fertility in the 1950s was due almost entirely to a lowering of the proportion of married women.

As the transition of fertility to lower levels progressed, the relative contribution of the married state decreased while that of marital fertility increased. Changes in the marriage front contributed to 59% of the changes in TFR during the period 1963-71, but only 27% during the period 1971-80.

2)   Mortality

Mortality trends in Sri Lanka are well known for their unprecedented dramatic fall in the immediate post-World War II years. Prior to this period the crude death rate (CRD), defined as the number of deaths per thousand population per year, was high and fluctuating in response to epidemics, natural disasters, food availability etc. In the few years following 1945, the death rate took a sudden and deep decline falling from its value of 21.5 in 1945 to 14.0 in 1947. Many causes have been attributed to this decline: eradication of malaria, expansion of health services, greater imports of food and improving economic conditions. The downward trend continued through the 1950s and 1960s, with progressively decreasing tempo as seen below.

Year	CDR (per 1,000)	Year	CDR (per 1,000)
1871	19.4	1950	12.6
1881	27.2	1955	11.0
1891	28.7	1960	8.6
1901	27.6	1965	8.2
1911	34.8	1970	7.5
1921	31.2	1975	8.5
1931	22.1	1976	7.6
1941	18.3	1977	7.4
1945	21.5	1978	6.6
1946	19.8	1979	6.5
1947	14.0	1980	6.1
1948	13.0	1981	6.0
1949	12.4		

Corresponding to the decline in crude death rates, the life expectancy at birth, which can be interpreted as the average number of years a new born baby can be expected to live under the existing age pattern of mortality, has increased from 42.8 years in 1946, to 58.2 in 1953, 61.7 in 1962, 65.6 in 1971 and 67 in 1981. The gains in the average length of life during the 1946-53 period were achieved at an unprecedented rate of 2.2 years per annum. As survival chances improved, further gains in life expectancy became progressively more difficult to achieve and the average annual rate of increase decreased to 0.4 years during the period 1963-1971. In the 1970s, while life expectancy remained at levels well below what was attained in more developed countries, the rate of improvement reduced still further to a snail's pace.

3)   Migration

Migration increase contributed heavily to population growth before the turn of the present century: net migration accounted for a proportion of 40-70% of the total growth during the period between 1871-1901. The migrants during this period were South Indian labour who were brought by the British to work in first the coffee and later the tea plantations. The volume of this labour migration was a function of the level of prosperity of the plantations; more migrants were brought in more prosperous times. With the banning of Indian immigration by legislature, the contribution of migration to population growth soon dwindled down to the order of about 5% by the end of the 1940s.

The second migration stream was the employment-oriented emigration of indigenous manpower, which began with a small but selective outflow of academically and professionally qualified persons in the late 1960s. The expatriation of not only high level but also middle level manpower accelerated in the 1970s. Although at first its volume was confined to the order of a few thousands, later on the attractive prospects of foreign employment gave a fillip to the flow of skilled and unskilled labour to oil rich countries of the Middle East.

The data collected from registered employment agencies, which account for about one-third of all placements to the Middle East, have shown that the migrants bound for the Middle East were about 84% of all emigrants for employment in 1980, and it was still higher in 1981. The numbers of emigrant manpower has increased from 25,875 in 1979 to 28,644 in 1980 and then in a sudden spurt to 57,447 in 1981, which is about 19% of the natural increase in that year. About 85% of migrants are between 20-40 years of age and the proportion of females has increased over the years to reach a level of 52.5% of all migrants in 1981.

Thus, since the turn of this century, the natural increase has played an increasingly dominant role in determining the growth of population in Sri Lanka while international migration reduced in relative importance. Since the mid-1940s, growth took place despite an increasing trend of net emigration.

During the 9% natural increase period, the growth rate of the country would have been of the order of about 2.2% rather than the observed 1.7% during the decade 1971- 1981, had it not been for a heavy out-migration amounting to 14%.

Population Projection Methodology

The growth or decline of a population is the result of a 3-component dynamic phenomenon: fertility, mortality and migration. Fertility relates to the actual reproductive performance of an individual, a couple, a group or a population, which increases the population through the addition of births. Mortality refers to the incidence of death, which decreases the population size. Migration refers to the flow of population into and out of a country or other area concerned, which increases or decreases the population depending on whether the net flow is inward or outward.

The net addition to the population resulting from excess of births over deaths is the natural increase often expressed as a rate per year per hundred persons. The algebraic total of natural increase and net migration determines the changes in population size within a defined territory.

The study used people demographic software package. The aim of this approach is to generate five-year survivorship ratios at any given level, that are not fixed to any particular model pattern of mortality. This provides the initial standard pattern at the start of the projection period and then alters the level and pattern of mortality to suit local requirements. Thus the method allows the retaining of any given pattern of mortality and the varying of the level or the varying of both the level and pattern.

Population Projection for 2010 and 2020

Sri Lanka - 1981

Sri Lanka - 2010

Sri Lanka - 2020
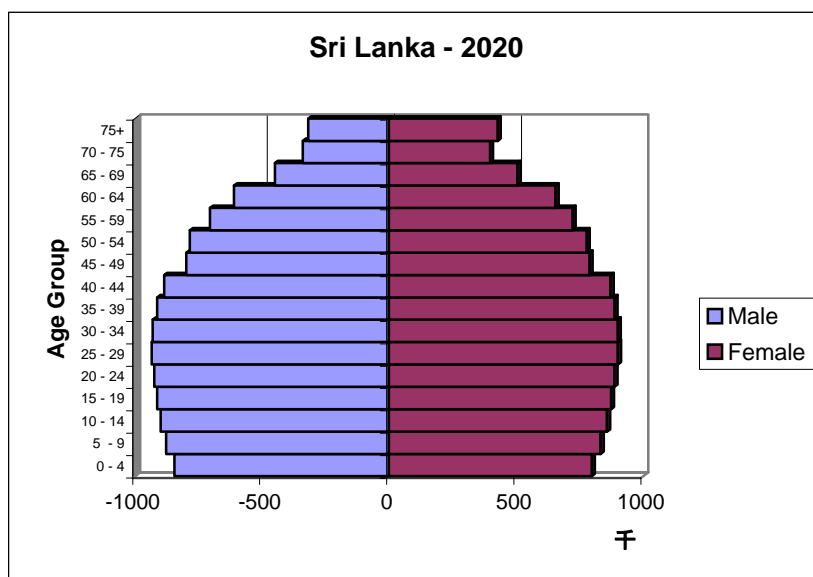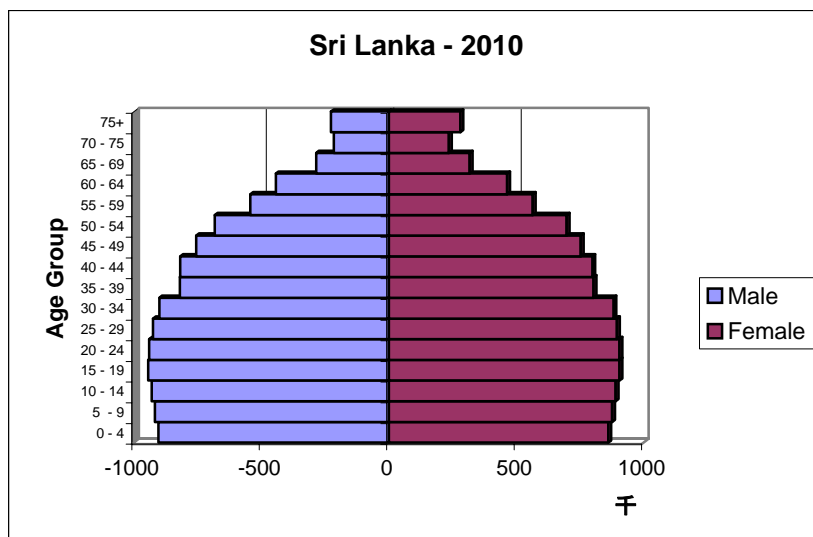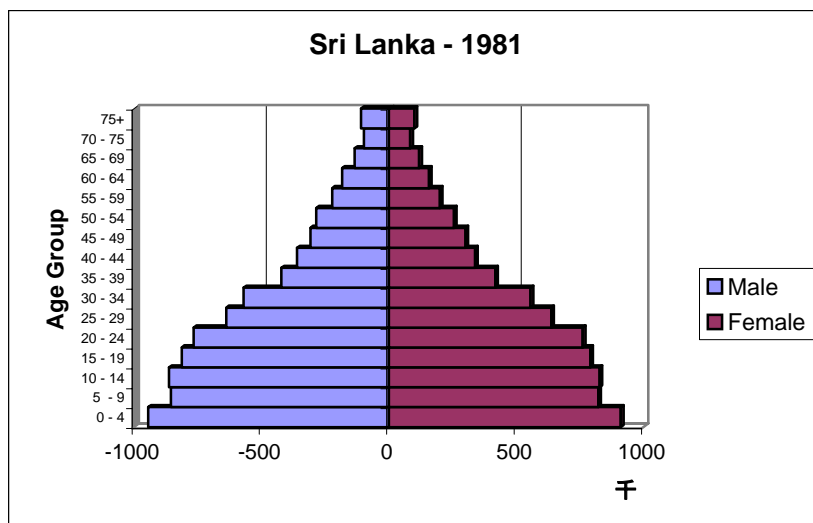
The size and age-sex composition of the population in the years to come are essential inputs for population-related planning and policy formulation; they find direct application in planning for educational facilities, food requirements, health services, and manpower management. However, making population projections is a hazardous task, for the forces that operate to change population size are not governed by any laws that can be found among natural phenomena. They are governed partly by natural factors and partly by human behavioural patterns. For instance, the changes in levels of mortality and fertility - two of the factors responsible for population change - are governed to some extent by biological processes and to some extent by human intervention. Migration is even more a function of behavioural patterns, both rational and irrational. To the extent that it is difficult to predict human decision-making with respect to child bearing and residential mobility, which is governed by a host of social, cultural and environmental factors, it is difficult to predict trends in these components of population growth and, hence, trends in population size and its age-sex composition. However, it is possible to make reasonable assumptions on the future trends of mortality, fertility and migration based on past experience and accordingly project population growth.

(4)   DISEASE PROJECTION

Present Situation - Disease Epidemiology

The selection of the following diseases for the present study is based on:

- Prevalence of the disease over the last 20 years in all parts of the country
- Leading causes of morbidity and mortality in the country
- Challenges: Emerging or re-emerging diseases
- Outcome: 'High' case fatality rate or/and disability or possible consequences
- Impact: Burden to both the government and the family
- Public Health concern: Possible interventions in order to decrease the disease burden
- Availability of reliable information: Reliability of diagnosis

The study used ICD 10th revision codes.

1)   Diabetes Mellitus (ICD/E10 - E14)

Diabetes mellitus is one of the ten leading diseases in Sri Lanka. Diabetes and its complications accounted for 10% of patient-days in Sri Lanka in 1999. The prevalence of diabetes among those aged 30 - 64 years is 5.2% in urban areas and 2% in rural areas and it is rising steadily. There has been a three-fold increase in the number of Diabetes mellitus cases reported from hospitals in the country. In 1990, there were 12,401 cases of diabetes, which increased to 39,645 cases in 2000.

Most patients have Type 2 Diabetes mellitus (Non-Insulin Dependent Diabetes Mellitus). In general, health care facilities, particularly diagnostic services in the country, expanded rapidly during the period 1990 to 2000. Therefore, many new cases of diabetes were diagnosed and this may have contributed to the increase in the number of cases hospitalized.

2)   Hypertension (ICD/110 - 115)

Hypertension is one of the non-communicable diseases that became increasingly prevalent in the country in recent years. From 1990 to 2000, the number of cases of hypertension, reported by

hospitals, doubled. In 1990, 35,443 cases of hypertension were reported and, in 2000, there were 86,557 cases.

The general expansion and improvement in the health care facilities in the country supported a better diagnosis of hypertensive patients, increasing the number of cases reported by hospitals.

3)   Ischeamic Heart Disease (ICD/I20 - I25)

Over the ten years from 1990 to 2000, the number of cases of ischeamic heart disease (IHD) has increased almost three-fold. In 1990 there were 21,482 cases of IHD in Sri Lanka, which tripled over the next ten years to 60,633 by the year 2000. This data was obtained from hospital inward records.

4)   Neoplasm (ICD/C00 - C48)

Neoplasm as a clinical entity has gained increased importance in Sri Lanka over the last two decades. The number of cases diagnosed as neoplasms increased by three-fold within the 10 years from 1990 to 2000. In 1990 there were 16,290 cases of neoplasms hospitalized and by 2000 this number rose to 50,370.

During the last two decades, the country's demographic profile changed and the proportion of older people increased. The life expectancy of Sri Lankans was also high compared to other developing countries. With a larger older population, the disease pattern also shifted towards non-communicable disease and neoplasm became a more common disease entity.

5)   Traumatic Injuries (ICD/S00 - T19)

Traumatic injuries were reported as the commonest cause of hospitalization in Sri Lanka over the last few years, from 1995, with an increasing proportion of morbidity each year.

The number of cases hospitalized with traumatic injuries has increased at a steady rate over the last two decades. In 1980, the number of cases hospitalized with traumatic injuries was 36,165 and by 1990 it was 56,650. Within the next 10 years, this number increased rapidly to record an alarmingly high number of 520,049 cases by the year 2000. This increase was remarkably high within 5 year period from 1995 to 2000.

Traumatic injuries in Sri Lanka are mostly the result of Road Traffic Accidents (RTA). Intentional injuries account for a small percentage among this number. The cause of this epidemic of traumatic injuries in the country was the high rate of motorization during this period. An overwhelmingly large number of motor vehicles were imported during the late nineties and used on roads that lacked the capacity to accommodate them.   Poor road conditions and the irresponsible behaviour of drivers are cited as the root cause for the majority of RTAs.

6)   Poisoning and Toxic Effects (ICD/T36 - T65)

The number of cases of poisoning in Sri Lanka doubled from 1990 to 2000. There had been 21,520 cases of poisoning in 1990 and 50,255 in the year 2000. These figures included both

accidental and suicidal poisonings and data on these two individual entities are not available separately.

The number of suicidal poisonings has been increasing in the country over the years and, incidentally, Sri Lanka reported the highest number of suicides in the world in the early part of this decade. Suicide and attempted suicide are considered as important social issues in Sri Lanka society. The causes for suicides are many. According to limited available data, a majority of suicides are due to poisoning.

7) Malaria

Malaria is an endemic disease in the dry and intermediate climatic zones in Sri Lanka. It has been a major public health problem in the country throughout the twentieth century. From 1990 to 2000, the number of cases of Malaria in the country decreased considerably. In 1990 there were 98,386 cases of Malaria, which decreased to 58,863 in 2000.

This decade shows a marked improvement in screening facilities for malaria in health institutions around the county, which is endemic in Sri Lanka. Simple technology, i.e., microscopes, was provided to hospitals for the screening of the population for the disease and cadres of technical personnel e.g., microscopists, field assistants and entomological assistants were also increased. This facilitated the early diagnosis of feverish patients and early and proper treatment for Malaria, leading to a reduction of the paracetimic phase in patients so that transmission of the disease was low.

The Anti-Malaria Campaign, which is the authority in the health sector for the control of Malaria in Sri Lanka, initiated a new 'Global Malaria Control Strategy' in 1993 and thereafter, in 1999, the 'Roll Back Malaria Initiative' was launched on WHO recommendations. These strategies were effective in controlling the disease to a great extent.

8) Tuberculosis (ICD/A15 - A19)

The incidence of tuberculosis, which was a common and fatal disease in the first half of the century, has now been reduced to a low level. Its incidence in Sri Lanka is one of the lowest in the region. Technological advances, coupled with the proper application of control measures, are responsible for this satisfactory state.

BCG vaccination was introduced as early as 1948 and, as a result, tuberculosis in children including meningitis is now a rarity. However, a slight increase of incidence among young adults was reported in the past five years. The most possible reasons for this are better screening and rising HIV in the country.

9) Diarrhoeal Diseases (ICD/A00 - A09)

These diseases are Watery Diarrhoea, Dysentery, Typhoid, Paratyphoid, Amoebiases, Worm infestation etc. The number of diarrhoeal diseases cases reported from hospitals in the country has remained equally high throughout the decade from 1990 to the year 2000. In 1999 there were 121,027 cases and, in the year 2000, 144,682 cases had been reported.

10) Diseases of the Respiratory System (ICD/J20 - J22, J40 - J98)

The morbidity resulting from diseases of the respiratory system is very high for Sri Lanka. It has been the second most common cause for hospital admission in the country over the last few years.

In the twenty years from 1980 to 2000, the number of cases of respiratory diseases has increased marginally. In 1980, there had been 250,996 cases. By year 2000, this has increased to 341,134 cases.

The use of firewood as a source of fuel in homes and poor nutritional status are also important in maintaining the high caseload. The large number of motor vehicles in the country emit an excessive amount of toxic fumes, resulting in a highly polluted environment. This has been highly conducive in increasing the number of cases of respiratory diseases.

Disease Projection Methodology

Time trends

In the context of descriptive epidemiology, there are many reasons for studying time trends. Information on the historical evolution of risk (incidence or mortality) can generate etiological hypotheses or confirmation of suspected associations between risk factors and disease. While the existence of a geographical variation in incidence between populations might be explained by genetic differences, changes in incidence in single populations imply the introduction or disappearance of environmental risk factors much more clearly. Comparison of the development of environmental factors with the development of the frequency of different types of cancer should therefore be profitable. However, in etiological research, the interpretation of chronological covariation remains delicate.

Calculations based on age-adjusted rates, which in principle control the effects of population ageing, provide an incomplete picture of the phenomenon, and hide its more interesting components. This example underlines the importance of observing changes in risk in young adults when the consequences of a new risk factor or protective agent are to be assessed (or predicted). For cancer, as for most non-transmissible diseases, etiological factors are often linked to forms of social behaviour which come and go with passing generations. On the other hand, the examination of rates calculated for less than and greater than 65 years of age shows that the trend in standardized rates is due to changes which diverge with age, with an increase in risk for the oldest age groups and a decrease for the youngest. It is likely that this decline signals an inversion of trend which will ultimately affect other age groups.

Effect of data quality

In addition to real trends in risk and random variations, changes in data quality over time affect the observed trend in incidence or mortality.

For incidence data, time series partially reflect progressive improvements in the registration rate, whether resulting from the development of diagnostic techniques or improved reporting systems for the registry. The newer the registry, the stronger this effect is likely to be. In some situations, the very existence of the registry creates an awareness which increases the proportion of cases diagnosed (such as through post-mortem examinations).

Finally, incidence can fluctuate as a result of changes in the stage at which disease is detected, particularly for Non-communicable ones. The detection of early stage disease has an even greater effect in the study of time trends in survival.

Problems in classification have been discussed too extensively in many studies. It is simply noted that all changes in classification, or even coding practices, can affect the number of cases at a given site or due to a specific cause of death and distort trends.

The problem of imprecise data is accentuated by the differences in the evolution of precision with region or age. Errors in diagnosis are generally more serious in older people, and improvements in diagnostic precision can therefore have a fundamental effect on incidence rates in this age group. As a final point, it should be noted that chronological patterns in incidence or mortality rates depend on the quality of the denominators over time. Population estimates provided by statistical services may be increasingly distorted the farther they are from the date of the census. This distortion often results in an underestimation of the denominators, because enumeration is not as accurate for persons leaving the population as it is for those arriving.

Role of modelling

Observed time trends should be evaluated in the context of the problem under study. Sometimes it is sufficient to describe long-term trends; in other situations, interest might focus on variation over a more limited time period, in particular the recent past, if the goal is to predict new directions of the phenomenon. Apart from the simple description of changes in risk over time, the study of trends should therefore involve the search for models which can describe observed data via plausible hypotheses about the causes of observed changes. Under this approach, the relevant components of the time trend can effectively be separated from the random or systematic (e.g., seasonal fluctuations), allowing a more complete interpretation of the observed data.

Models of risk evolution over successive generations have a particularly important place in the study of cancer incidence, because of the long latency period between the start of exposure to a risk factor and the occurrence of the disease. When interest focuses on the generation effect, also known as the cohort effect, the inevitable presence of period effects created by, for example, changes in diagnostic practice or the appearance of an environmental risk factor which could simultaneously affect all age groups, necessitates the combined analysis of both the cohort and period components of risk. In other situations, the period effect may be of primary interest and the cohort effect is only a confounding factor that must be controlled.

The use of models in the study of trends has not been widespread because of two fundamental problems, which will be discussed in this section. The first is the difficulty of separating meaningful variations from those which can be considered to be random fluctuations. Simpler models might be discarded because the random component is in fact greater than that predicted by the Poisson distribution, which is used to assess the significance of the terms included in the model. In such a situation, it might be wrongly concluded that specific factors play a significant role in the explanation of the observed phenomenon. The second difficulty lies in the impossibility of satisfactorily separating cohort and period effects from the data alone, when hypotheses on the nature of these components cannot be formulated a priori. It is for this reason that some authors have questioned the value of modelling over traditional graphical approaches to carrying out this type of investigation. This point of view, however, ignores the fact that the exclusive use of graphical methods can also lead to subjective interpretations which an appropriate model may avoid.

Best Possible Model: Cosinor Analysis

The concept of a cosinor analysis is when one wants to fit a linear model with a cyclical component. This is useful in looking at data, which naturally oscillates and can be modelled with a sinusodial curve.

This type of model can be fit using standard regression packages, as long as the independent variables are properly computed. The simple linear model has the form:

$$Y_i = \beta_o + \beta_i x_i + \Sigma_i$$

Where y represents the dependent variable, the disease rate, and x is the independent variable, time.

This model suggests that, at time zero, the disease rate would be β_o units, and would go up or down β units every year.

An adaptation of a cosinor model allows the fitting of a linear model with two independent variables - in essence two functions of time, based on the sine and cosine of the time values - which allows the fitting of a sinusodial curve. This is still considered a linear model, because the β s, as described above, will still indicate a linear change in disease, but will change for unit changes in cos (time) and sine (time).

The greatest concern for analysis involving data like these is the lack of information between time points. The study considered only annual rates and there may be a variability from year to year and there is no way to smooth out the data without interim measures. This is one of the limitations in this study.

In this study, MINITAB 11.12 Inc version is used and a time series analysis is followed.

Assumptions

The following assumptions were made during diseases projections:

- The age and sex structure of the population do not change over time.

  Although the demographic projections were made available, they could not be applied to the disease projections as the age and sex specific incidence/prevalence rates were not available for morbidity data.

- The trend seen in the past would continue unchanged up to year 2020.

Disease Projections

Non-communicable diseases (NCD) will be the leading causes of morbidity, mortality and long-term disability in Sri Lanka over the next decade, despite many strategic activities taken by health authorities. The overall impact of NCD is increasing, especially among the oldest age groups. Since most of the NCD incidences increase with advancing age and the number of elderly population is also increasing, the impact of NCD on families, communities and the health service will rise significantly. However, the possible impact of emerging and re-emerging communicable diseases such as Tuberculosis, Malaria, HIV/AIDS cannot be underestimated. Whereas the causes of communicable diseases are much more clear, and it would be less difficult to modify the preventive strategies, those for NCD are much more complicated. Overall, the impacts of both NCD and communicable diseases in future disease projection are almost identical depending upon the disease burden in the country.

Incidence of NCD (Diabetes, Hypertension, IHD) rises with increasing age. Although NCD incidence and mortality are higher in middle age and older people, it is unclear whether this reflects a different impact, or susceptibility, to risk factors in those age groups, or is a result of some, as yet undefined, ageing process.

The contribution of different risk factors to the risk of NCD may vary across different population groups. The risk of NCD associated with smoking, alcohol and life style is apparently present in all population groups. Further, some factors, such as poverty, the level of education and geographic distribution, are reported to be have a mixed pattern of either increased or decreased relative risks across population groups. The relative risk and/or attributable risk between NCD and risk factors across different population groups are not necessarily unique and even vary within a risk factor.   The possible explanations for such varying strength of association of risk factors for NCD with different population groups are complicated and ill defined.

The potential for prevention of disease depends upon a clear understanding of the relative and absolute contribution of risk factors or disease agent(s); the relative and absolute risk reduction produced by both individual and population based interventions; the absolute levels of risk factors in the different populations; and the effectiveness of intervention strategies in routine practice.

Given that most NCD's occur in middle or older age groups, there is clearly a need to understand whether different strategies may be required to address NCD prevention in these age groups. This is a little complicated by the fact that the understanding of risk factors for NCD in Sri Lanka is limited. Nonetheless, it is necessary for us to understand the implications of intervention strategies which may vary in effectiveness for different population groups, and that there is variation in the relative risk of different risk factors for NCD, particularly with age.   A well defined epidemiological assessment of the impact of risk factors across age groups may be useful for any intervention programmed targeted to reduce NCD incidence in Sri Lanka, particularly planning for future demands for health services.

If there is a real variation in the contribution of risk factors, then the strategies used to reduce NCD may need to be revised and modified. This is important due for at least two reasons: the increasing elderly population due to population ageing and the increased risk of NCD among elderly. Therefore, a wider

epidemiological knowledge on the impact of risk factors across age groups is needed, particularly for health policy makers and health care providers.

Susceptibility to NCD among different population groups (age, sex etc.,) also varies and the underlying reasons are not clearly understood. At different age groups, the gender relationship with NCD incidence shows little consistency, showing men at higher, similar or lower risk than women.

- *Morbidity trends & projections for selected diseases - National Level*

The following graphs present the morbidity trends and projections for Sri Lanka for selected diseases. The source of data is the Medical Statistics Unit (unless stated otherwise) and data is based on the indoor morbidity and mortality register, i.e. admissions to government hospitals.

The statistical terms used in this section and their descriptions are as follows.

MAD

MAD, which stands for Mean Absolute Deviation, measures the accuracy of fitted time series values. It expresses accuracy in the same units as the data, which helps conceptualize the amount of error.

MAPE

MAPE, or Mean Absolute Percentage Error, measures the accuracy of fitted time series values. It expresses accuracy as a percentage.

MSD in time series

MSD stands for Mean Squared Deviation. It is very similar to MSE, mean squared error, a commonly used measure of accuracy of fitted time series values. Because MSD is always computed using the same denominator, n, regardless of the model, MSD values can be compared across models. Because MSEs are computed with different degrees of freedom for different models, MSE values cannot always be compared across models.

1) Diabetes Mellitus (ICD/E10 - E14)

Time series plot
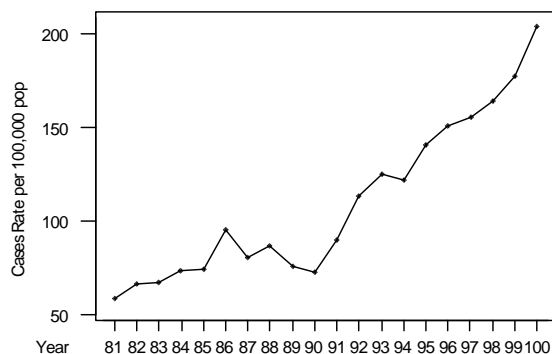
Trend analysis

Quadratic Trend Model

$Yt = 68.8545 - 1.5066*t + 0.396173*t**2$

	MAPE:	7.4104
	MAD:	6.9539
	MSD:	79.4834
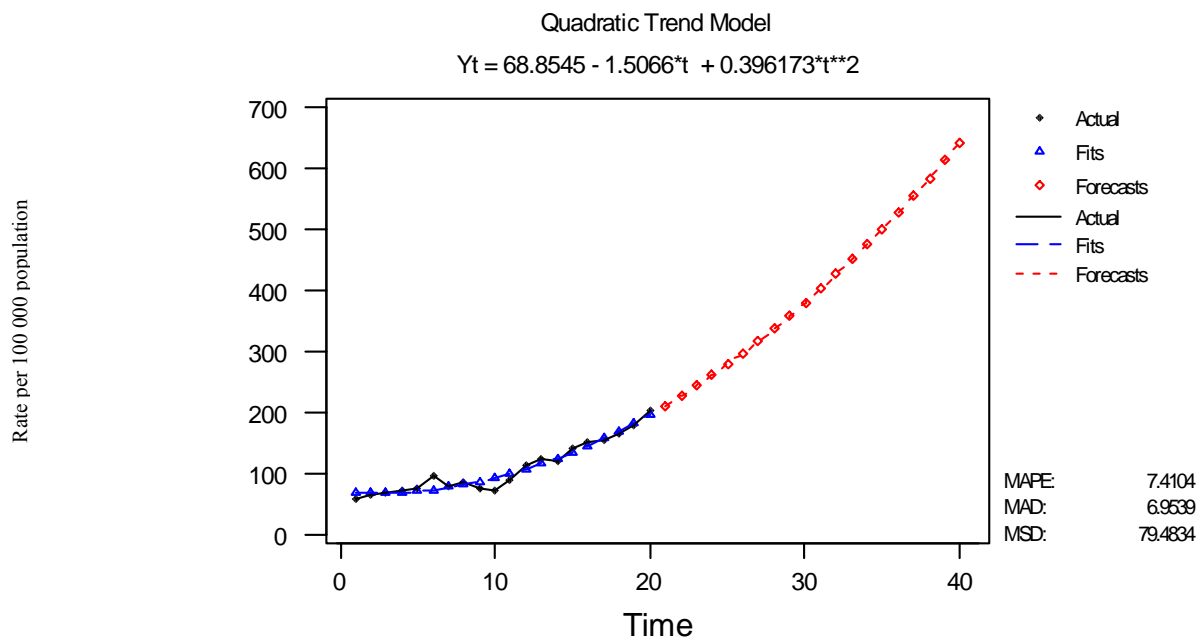
Year	Projected incidence/prevalence (as a rate per 100,000 population)
2001	211.928
2005	278.798
2010	380.212
2015	501.435
2020	642.467

- If there are some effective strategies in place, this caseload may be reduced to 3.4/1000 in 2010 and 5.3/1000 in 2020. Similarly, in the absence of any strategic intervention, this might be increased to 7.5/1000 in 2020.

2) Hypertension (ICD/I10 - I15)

Time series plot
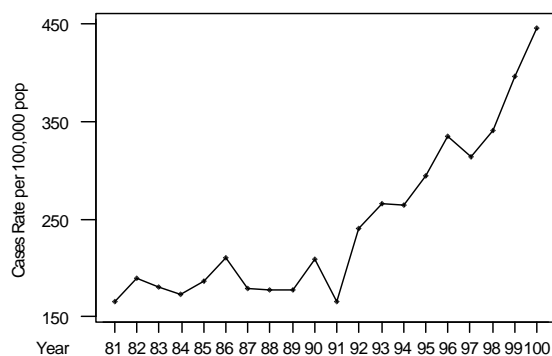
Trend analysis

Quadratic Trend Model

$Y_t = 199.014 - 10.7568*t + 1.11144*t^{**}2$
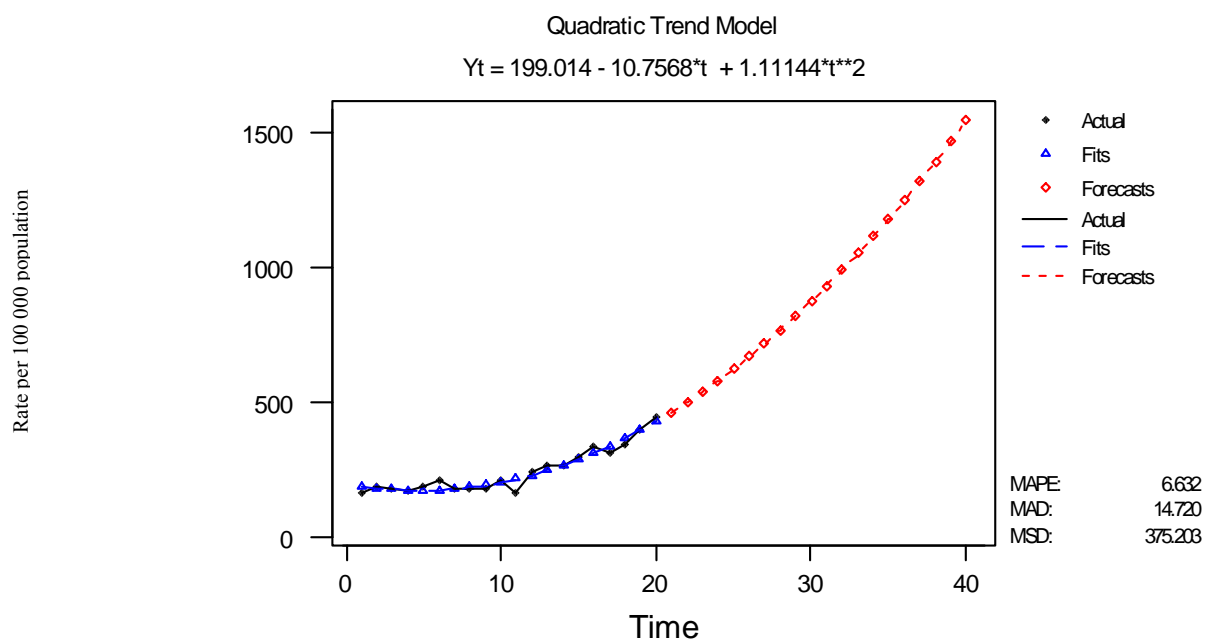
Year	Projected incidence/prevalence (as a rate per 100,000 population)
2001	624.74
2005	876.60
2010	1184.04
2015	1184.04
2020	1547.04

3) Ischeamic Heart Disease (ICD/I20 - I25)

Time series plot
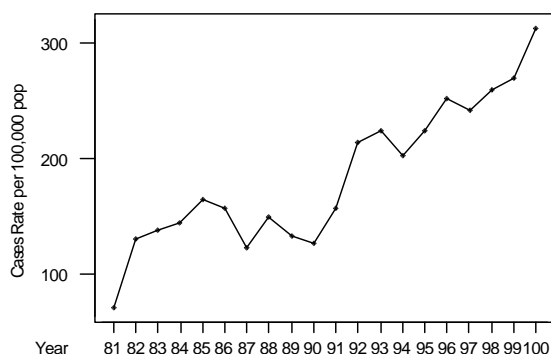
Trend analysis

Quadratic Trend Model

$Yt = 112.782 + 1.43382*t + 0.393796*t**2$

MAPE:	13.277
MAD:	18.759
MSD:	486.291
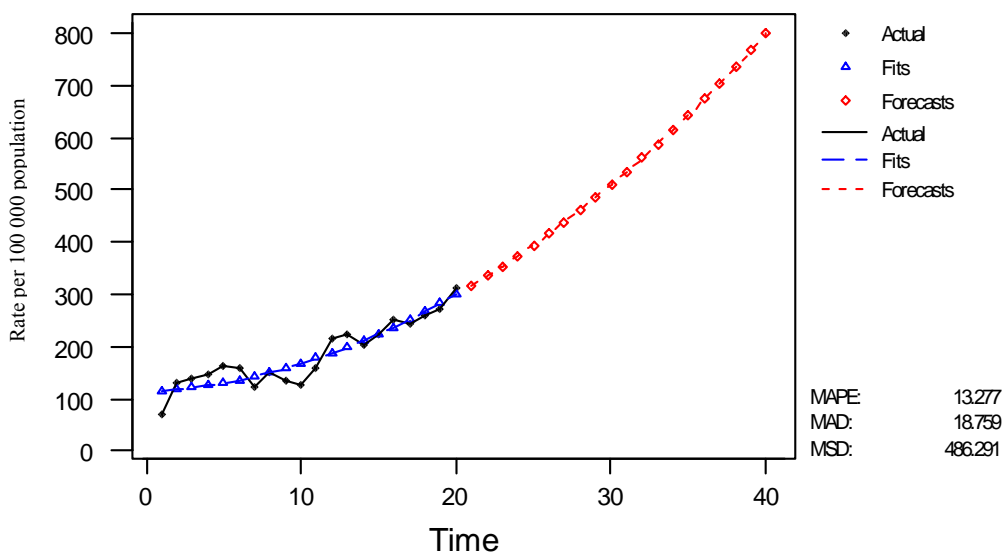
Year	Projected incidence/prevalence (as a rate per 100 000 population)
2001	316.556
2005	394.750
2010	510.213
2015	645.366
2020	800.208

4) Neoplasms (ICD/C00 - D48)

Time series plot
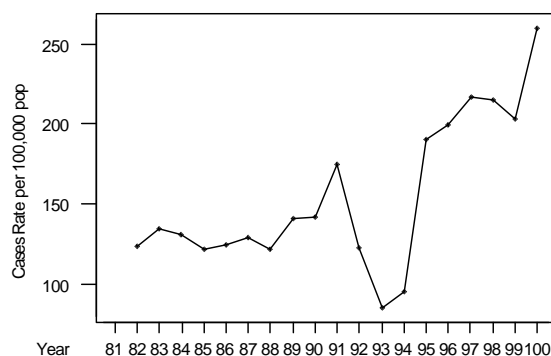
Trend analysis

Quadratic Trend Model

$$Yt = 158.225 - 10.7428*t + 0.755728*t**2$$

MAPE:	14.797
MAD:	19.091
MSD:	681.733
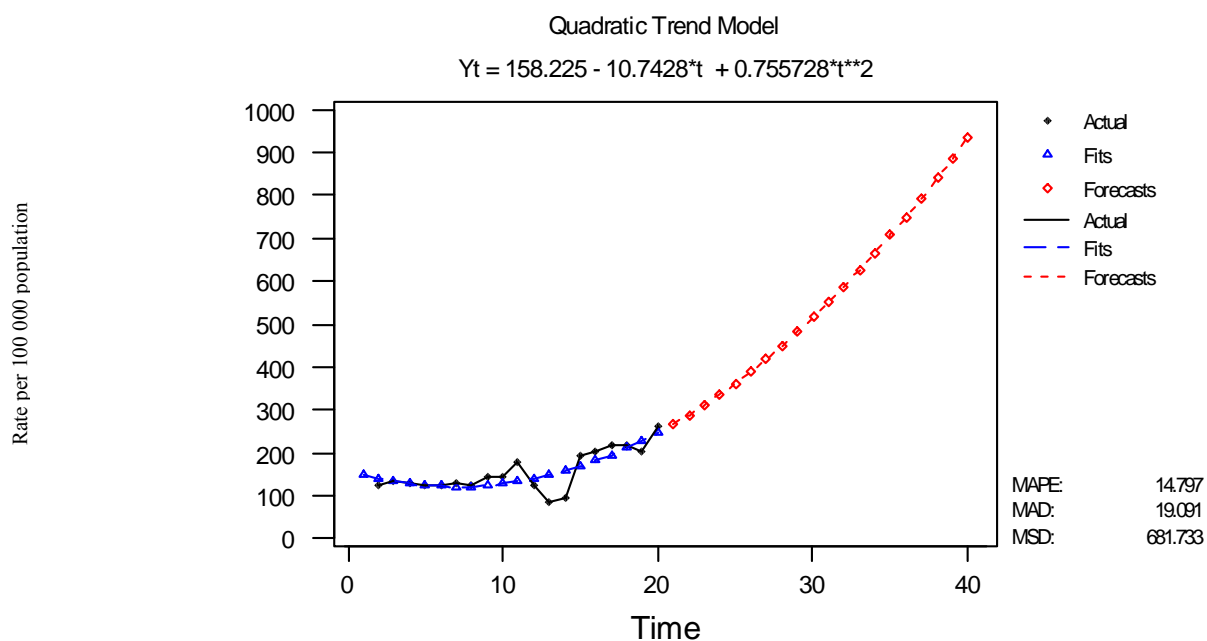
Year	Projected incidence/prevalence (as a rate per 100 000 population)
2001	265.901
2005	361.983
2010	516.094
2015	707.991
2020	937.675

5)   Traumatic Injuries (ICD/S00 -T19)

Time series plot
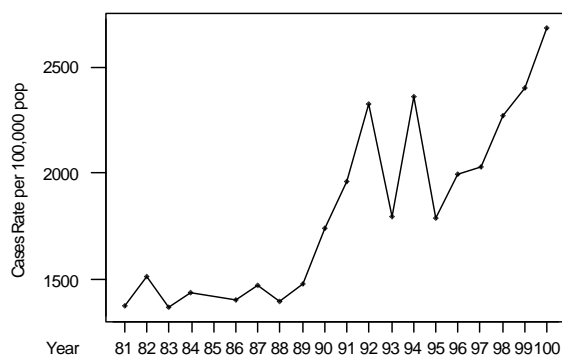
Trend analysis

Quadratic Trend Model

$Yt = 1342.04 + 13.1286*t + 2.30578*t**2$
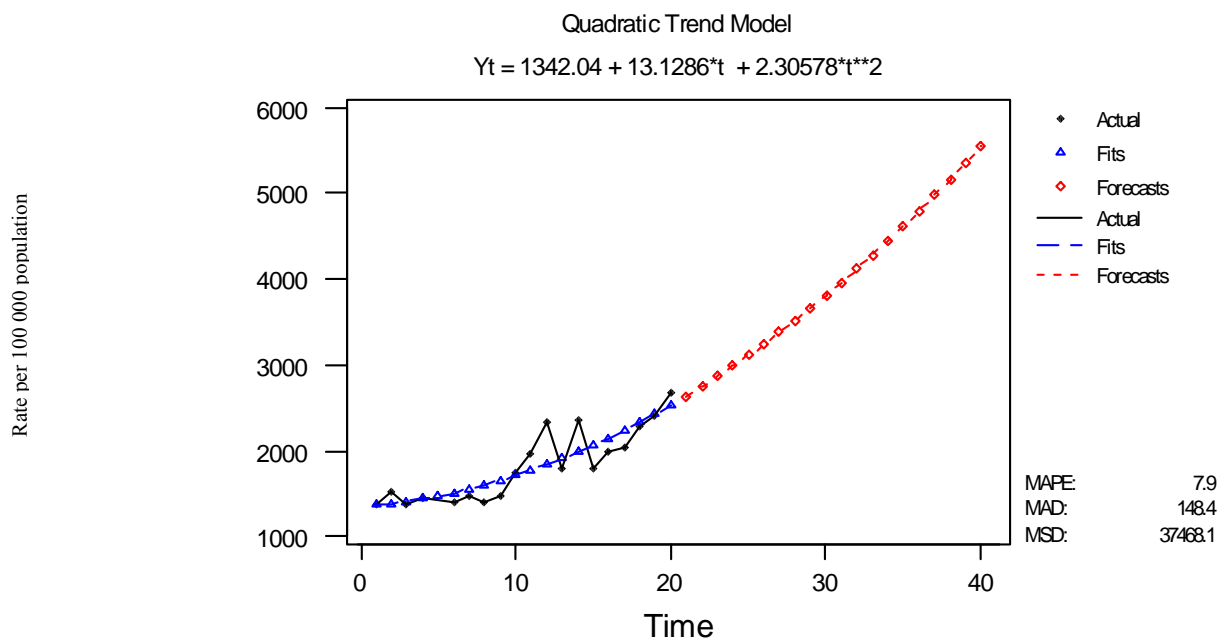
Year	Projected incidence/prevalence (as a rate per 100,000 population)
2001	2634.59
2005	3111.37
2010	3811.10
2015	4626.12
2020	5556.43

6) Poisoning and Toxic Effects (ICD/T36 - T65)

Time series plot
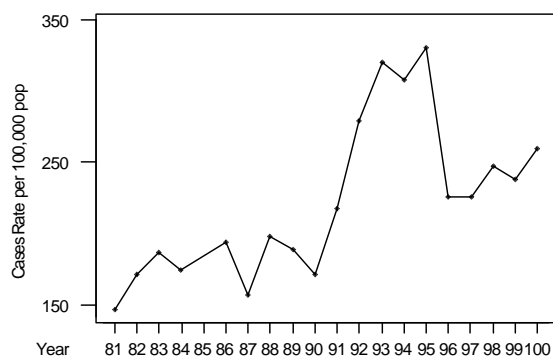
Trend analysis

Growth Curve Model

$$Y_t = 157.267*(1.03028**t)$$

MAPE: 12.64
MAD: 30.74
MSD: 1629.09
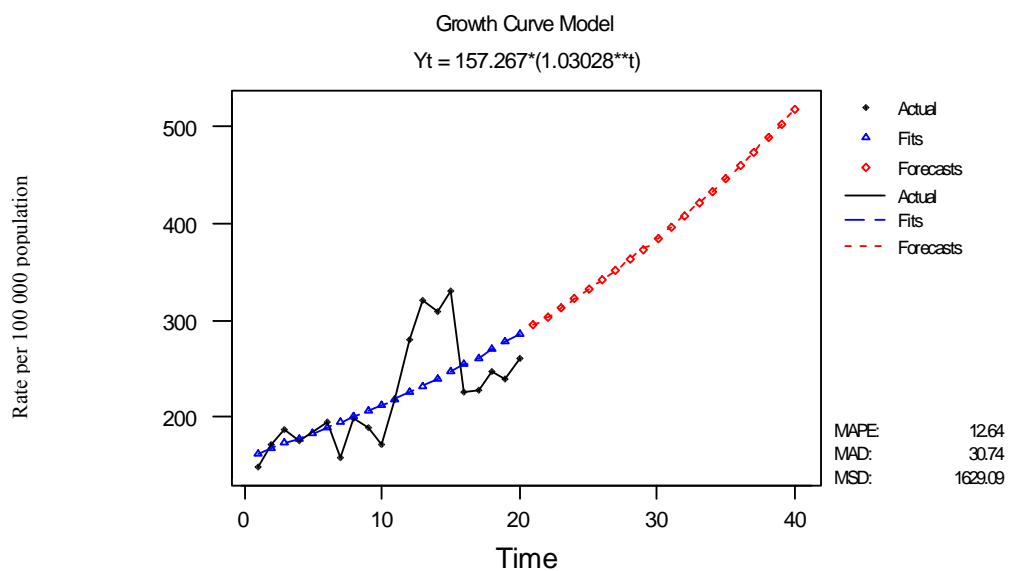
Year	Projected incidence/prevalence (as a rate per 100,000 population)
2001	294.224
2005	331.509
2010	384.828
2015	446.723
2020	518.572

7)   Malaria (ICD/B50 - B54)

Data on the incidence of Malaria were obtained from two different sources.

Time series plot
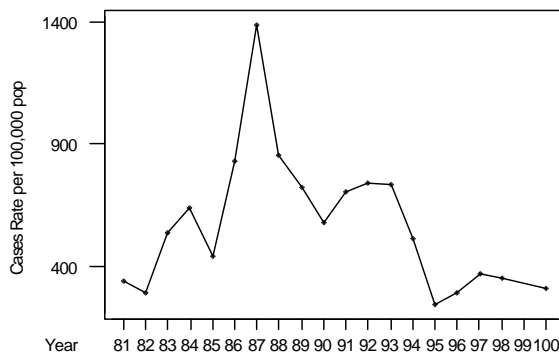
Source: Medical Statistics Unit (Indoor Morbidity & Mortality data)

The following graph shows the incidence of cases with parasite positive blood films.
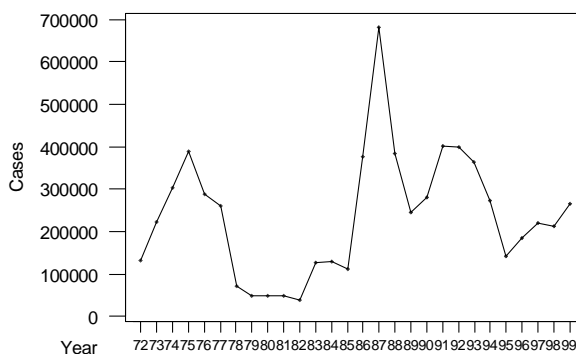
Source: Malaria Control Programme

Though several attempts were made to fit a time series model to the above data, this was not successful, as the past events do not assume a reasonable trend.

8)   Tuberculosis (ICD/A15 - A19)

Time series plot

Though several attempts were made to fit a time series model to the above data, this was not successful, as the past events do not assume a reasonable trend.

9)   Diarrhoeal Diseases (ICD/A00 - A09)

Time series plot
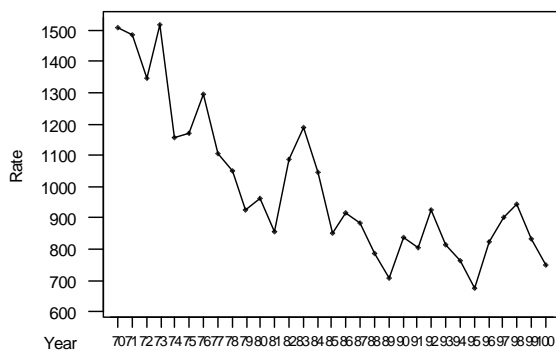
Trend analysis (Diarrhoeal Disease)

Trend Analysis for Rate

Growth Curve Model

$$Y_t = 1349.56*(0.979670**t)$$
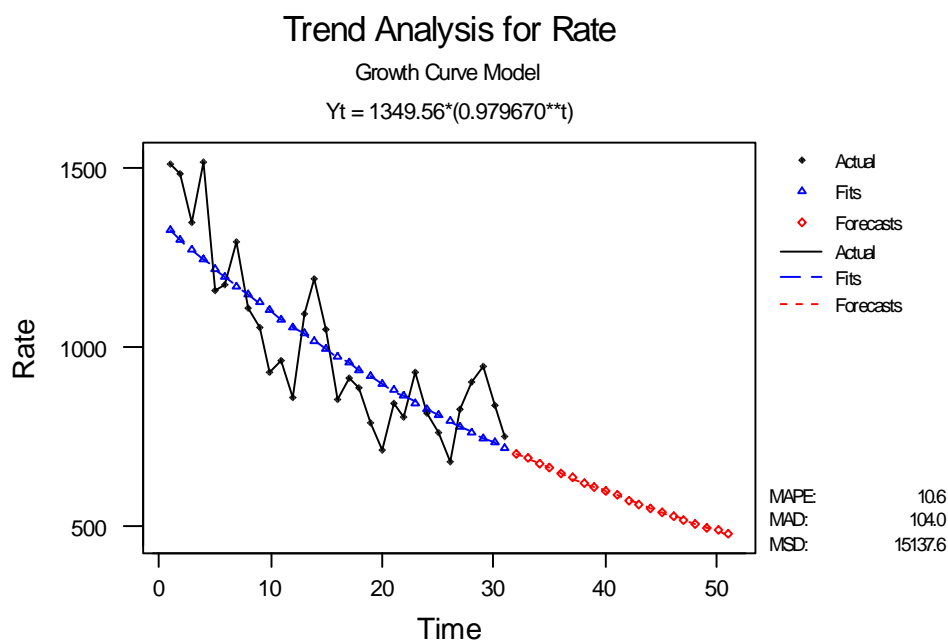
Year	Projected incidence/prevalence (as a rate per 100,000 population)
2001	699.434
2005	644.268
2010	581.387
2015	524.644
2020	473.439

10) Diseases of the Respiratory System (ICD/J20 - J22, J40 - J98)

Time series plot
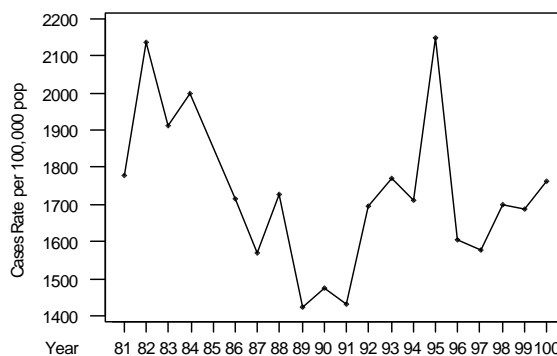
Though several attempts were made to fit a time series model to the above data, this was not successful, as the past events do not assume a reasonable trend.

(5)   CONCLUSION

The study has identified that most of the diseases (NCD) have increasing trends for the next two decades, both for similar and varying components, compared to the national and provincial levels. Only the diarrhoeal diseases have declining tendencies in the next two decades. Prospective epidemiological studies, the projected disease burden in some other parts in the world, have yielded similar or inconsistent results. In part, this may reflect disparate study populations and the methodology adopted. As discussed earlier, different disease projections are highly complicated and need to be understood in both epidemiological and service aspects. Therefore, it is suggested that a series of age and period cohorts allowing cross-sectional, cohort, and cohort sequential analyses may give much more comprehensive findings on how these disease trends change with the time factor.

R.Haniffa/June 2003.

* * * * * * * * * *

This section was prepared by the sub-contracted team headed by Dr.D.A.C.L. Amarasinghe and the following members :

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1.3 ISSUES TO BE ADDRESSED IN THE AREA OF NUTRITION

(1) INTRODUCTION

The issues to be considered in the area of nutrition, for the development of the master plan for the health sector, could be broadly grouped as follows:

1. Observations on nutritional status/problems
2. Issues related to service provision
3. Issues focusing on information needs
4. General issues

The above issues are analyzed in detail under the following categories (classification based on the life cycle approach):

1. Infants and pre-school children
2. School children and adolescents
3. Pregnant and lactating women
4. Adults (Men and Women)
5. Elderly
6. Special groups
7. Specific nutritional problems
8. General issues

(2) NUTRITIONAL PROBLEMS OF INFANTS AND PRESCHOOL CHILDREN

Poor nutrition, which commences in utero, extends its influence well into adolescence and adulthood. For many decades, interventions focusing on improvements of fetal and young child nutrition have been implemented through the family health services in Sri Lanka.

Important nutritional problems in these age groups are:

1. Low Birth Weight (LBW)
2. Protein Energy Malnutrition (PEM)
3. Anemia
4. Vitamin A deficiency

Low Birth Weight (Birth Weight of <2500grams)

Most recent data are available from the DHS (Demographic and Health Survey) of 2000. The DHS included a sample of approximately 8000 households from geographic areas in Sri Lanka (excluding the North and East) The overall prevalence of LBW for Sri Lanka, according to DHS 2000, was 16.6%.

A few more studies carried out in Sri Lanka, with regard to the prevalence of LBW, are listed below.

- LUCAS (1990):

  Hospital-based study including 1003 babies weighing <2500grams.

  Of the 1003 babies, 5.5% were appropriate for gestational age.

  LBW incidence was highest among mothers with low maternal age, maternal height <141cm, maternal weight <35.5kg, low income, illegitimacy, multiple pregnancies and pregnancy-induced hypertension.

- DECHERING WHJC, PERERA RS. (1991)

  Estate-sector-based study.

  Included 844 children in 8 estates.

  Prevalence of LBW was 38%.

  Higher rates among mothers <19 yrs., birth interval <12 months. Mothers who had "too many" and "too little" clinic visits.

- MINISTRY OF HEALTH (1992)

  Community-based study in Mawanella DHS area.

  1851 pregnant women followed up.

  Prevalence of LBW is 18.6%, of whom 59% were between 2250 - 2500 grams.

  The study showed weak correlation with maternal weight gain, maternal height, parity, and pregnancy interval and passive inhalation of smoke from cooking stoves.

Low birth weight

(2)-1   Recent data do not enable the identification of the contribution made by the two categories, i.e., IUGR and preterm to LBW, even though earlier studies have indicated that 15% - 20% of the LBW babies were preterm. Studies in tertiary hospital settings indicate that problems related to preterm babies are becoming increasingly important.

(2)-2   There are no studies in Sri Lanka on the importance of low birth weight, especially the group with IUGR, on subsequent morbidity, short term and long term, and on mortality.

(2)-3   There are no recent data on risk factors for low birth weight: pre-pregnant weight, height or BMI, or weight gain, parity, age of mother spacing before the child's birth and their influence on the pregnancy outcome for the mother and the child, including birth weight.

(2)-4   Low birth weight continues to be a problem in Sri Lanka even though a declining trend is seen in all sectors, most markedly in the estate sector. However, in absolute terms, the estate sector still has the highest prevalence of LBW at present. There is a need to standardize the assessment of birth weight and have monitoring programs for the same.

(2)-5   Available data indicate the need to continue and intensify ongoing programs aimed at promoting maternal care, with improved quality and the active involvement of mothers and the families in implementing the programs, specifically those aimed at improving food intake (protein and calorie balance, sufficiency, micro-elements vitamins and antioxidants), with an emphasis on within household food distribution. These programs should also collect data on risk factors so that after 1 year, at most, the risk factors could be better known and actions made in a more focused manner.

PEM

There are two main sources of information on the prevalence of PEM at the national level (except north and eastern provinces). These are the Demographic and Health surveys (DHS) of 1993 and 2000, and the Nutrition and Health surveys (NHS) carried out by the Ministry of Plan Implementation in 1994 and 1995.

DHS SURVEY:

Table 1.3.1   Summery of Data from DHS, 1993 and 2000

PREVALENCE	DHS 1993	DHS 2000
TOTAL PREVALENCE OF STUNTING (HEIGHT FOR AGE)	23.8%	13.5%
TOTAL PREVALENCE OF WASTING (WEIGHT FOR HEIGHT)	15.5%	14.0%
TOTAL PREVALENCE OF WEIGHT FOR AGE (UNDERWEIGHT)	37.7%	29.4%

Note: Age of children considered was 3 months to 59 months.

NHS SURVEY

Table 1.3.2   Prevalence of Stunting, Wasting and Underweight, Reported in NHS

DATE	% STUNTED	% WASTED	% UNDERWEIGHT	SAMPLE SIZE
March/Sept 1994	20.9%	13.4%	34.3%	1959
Oct/Dec 1994	20.8%	12.1%	31.3%	1547
July/Aug.1995	20.4%	13.4%	32.9%	2782

Source: Ramanujam and Nestel, 1997.

(2)-6   There is a reduction in the prevalence of stunting seen in all sectors and in both sexes, but the rate is still unacceptably high. Wasting remains at the same level among infants and preschool children. The rate of decline seen in the prevalence of under-nutrition in this age group falls short of expectation, identifying the need for continued, effective programmes targeting the children in problem families.

(2)-7   DHS 2000 indicates an interrelationship between the occurrence of diarrhoea in the preceding 2 weeks and the occurrence of wasting. The synergism between illness and malnutrition also means both malnutrition and infection need full attention and care. Activities related to prevention and proper management of common infections have to be strengthened, especially in sectors where poor sanitary conditions prevail.

(2)-9   There is inadequate information in Sri Lanka on morbidity which is usually associated with wasting or stunting, be it in childhood or in adult life.

(2)-10   There is little information on childhood obesity in Sri Lanka, except that some obese children develop diabetes type 2. There is a need to study obesity in early childhood and its morbidity; and to try and popularise an understanding of the need not to reward children with high caloric food or carbohydrate food.

Anemia

TABLE 1.3.3a   Prevalence of Anemia in Children under Five Years of Age

Age group (in months)	Sample size	Prevalence (%)
3-5	74	52.7
6-11	184	56
12-17	218	56.9
18-24	229	54.1
25-35	383	45.8
36-47	441	40.8
48-59	398	30.7
TOTAL (3 - 59 months)	1924	45.1

Table 1.3.3b   Association of Anemia with Nutritional Status of Children

Nutritional status	% anaemic
Stunted only	44.0
Stunted and wasted	62.0
Wasted only	41.7
Not wasted or stunted	43

Source: Mudalige and Nestel, 1996.

(2)-11   The high prevalence of anemia in infancy and preschool children needs special attention, in view of the well-documented negative implications.   It is proposed that there be yearly screening with a low cost method, followed by advice.

(2)-12   Supplementation of iron during infancy, through an oral preparation suitable for infants, has been considered a costly option. In view of the importance of iron in infancy and early childhood, alternative approaches to supplement iron during infancy and early preschool age have to be explored.

Prior to introducing such a programme at national level, the feasibility and cost effectiveness has to be studied. Attention has to be paid to identifying infants and young children who may have negative health effects related to iron supplementation.

(2)-13   Development of a low cost complementary food with an adequate amount of iron, and with a high degree of bio-availability, would be the ideal solution. Such a food could be made commercially available. An alternative to be considered is to take steps to fortify the commonly used complementary foods taking into consideration the bio-availability.

Interventions

(2)-14   The duration of exclusive breast feeding compatible with adequate growth must be considered based on locally relevant data, but should be no earlier than 4 months and no later than 6 months

(2)-15   There is evidence to show that breast-feeding practices have improved in recent years especially the practice of exclusive breast-feeding for the first 4-6 months and this is probably

related to the focused efforts made through the MCH services. Still, the message has not yet reached everyone and some inappropriate complementary foods are offered too early.

It is imperative that these programmes continue and intensify, in order to be responsive to groups or families that have been known to follow mixed diets for children at an early age.

The lower prevalence of exclusive breast-feeding seen in the estate sector is probably linked with the employment pattern of the estate women. Focused interventions for this group are a priority.

(2)-16   Available data highlight the need to improve complementary feeding practices during weaning. Data available do not provide quantitative information on caloric or nutrient adequacy of complementary foods offered.

The focus has been to promote complementary feeding though home-based foods, which may vary in nutritional quality within and between children, e.g., cunji.

It was observed that plain biscuits have been used by a substantial proportion of mothers as a complementary food, possibly due to their easy access and low cost. There is a need to consider the development of a low cost complementary food that can be commercialized or easily prepared and accessible to mothers in low-income groups.

The development of recipes for home based complementary foods, using locally available ingredients, and encouraging the mothers to use such foods as complementary foods has to be considered as a priority.

(2)-17   Not enough data are available on current practices relating to feeding during illness. This is an area that needs urgent attention with feedback into MVH teaching.

(2)-18   Even though the problem of stunting has shown a decline, wasting continues to be an important nutritional problem in this age group. This highlights the need for continuing the ongoing interventions implemented through the MCH services, e.g., immunization, growth monitoring and promotion (GMP). The GMP programme should be properly implemented and monitored and it is necessary to ensure that the data available are used at all levels, i.e., individual, clinic, and PHM area, and by the DDHS and at higher levels.

There is a need to review the criteria for identifying malnourished children for food supplementation programs. Changes have been made in the criteria used for identification of the target group for food supplementation, from '% underweight' to 'growth faltering'. Introducing an indicator able to identify the most vulnerable group e.g., a thinness chart (this will capture only acute malnutrition but the wt/age is also a predictor of illness and death as is weight gain), should be considered.

(2)-19   Data available on childcare practices (presence/absence of mother, number of meals, snacks, distribution of food) in different subpopulations of Sri Lanka and its influence on nutritional status of the young child are limited.

Such data could provide useful inputs to the development of programmes aimed at improving the 'health status' of children as a whole (including psychosocial development). Especially targeted programmes need to be developed for vulnerable groups, e.g., children of mothers employed overseas.

(3)   NUTRITIONAL PROBLEMS AMONG SCHOOLCHILDREN AND ADOLESCENTS

Nearly 1/3 of the population of Sri Lanka is below the age of 18. This results in an absolute figure of about 6.2 million (National Census, 2001). Of this 6.2 million, 4.3 million belong to the school-going age group of 5 to 14. Of this, 4.1 million attend government schools.

- NHS 1994

  Age group: 11 - 19 years

  Overall prevalence of anemia (Hb, 12gms/dl): 36%

  Males -31.6%, Female - 40.0%

- PERIS AND FERNANDO, 1997.

  University students age between 20 -22 years

  % with BMI <18.5   - 49% Females

                     - 36% Males

(3)-1   Available data indicate that the importance of stunting among younger schoolchildren has declined during the past decades, along with a reduction of anemia, indicating an improvement in the nutritional status among schoolchildren. What remains to be solved?

(3)-2   School mid-day meal programmes implemented over the past years have shown varied results. A well-targeted programme aimed at schoolchildren at high risk, identified using specific criteria, could have a positive influence on the nutritional status of children in this age group.

(3)-3   In view of the intergenerational effects of the nutritional status of the adolescent female, programmes focusing on this group are a necessity, even though available data shows some improvement in selected nutritional status indicators. To have a positive influence on the behavior and practices related to the nutrition of the adolescent female, such programmes should focus not only on the target group but also on the family and the community.

(3)-4   The relatively high prevalence of over-nutrition seen at varying degrees in the 7 districts included in the 2002 study is significant. A detailed study of the reasons for this observation and the possible interventions has to be considered.

(3)-5   The school as a place for 'change of behaviour', and the school child as a change agent influencing dietary habits of the family, needs to be explored in an effective manner. It will be necessary to assess the effectiveness of the ongoing activities implemented through the school (e.g., curriculum, school health clubs etc.), with a view to identifying areas and approaches for improvement.

(3)-6   A holistic approach must be used in developing appropriate programmers for this group, taking into consideration the contribution made by factors related to diet, physical activity and other social influences on the nutritional status.

(3)-7   There is minimal data on the nutritional status of out-of-school youth. This is especially important in view of the finding of over-nutrition as an emerging problem among older school children. Dietary practices of school children should be studied in depth, along with factors that influence such practices.

(4)   NUTRITIONAL PROBLEMS IN PREGNANT AND LACTATING WOMEN

Even with decling fertility rates in recent decades, the number of pregnant and lactating women for whom health services have to be provided remains high. Their nutritional vulnerability and the influence of their nutritional status on their own health and well-being and that of the newborn are well documented. In Sri Lanka, maternal health services provided at field and institutional level include several programmes aimed at improving the nutrition of pregnant women.

Information available on nutritional status among pregnant women pertains to weight gain in pregnancy and anaemia.

Weight Gain in Pregnancy

- MINISTRY OF HEALTH, 1992.

  MOH area Mawanella. Follow up of 1851 mothers

  Average weight gain was 0.29kg per week.

- ATHUKORALA, 1994.

  Pregnant women in the plantation sector - 46% had rates of weight gain less than 0.20kg per week.

- HAPUGODA, 1994

  Two groups of pregnant women, with POA less than 24 weeks from 4 MOH areas.

  Group 1,n = 306. Group 2 n = 307.

Table 1.3.4   Nutritional Status of Pregnant Women with POA Less than 24 Weeks from 4 MOH Areas

	GROUP 1	GROUP 2
Chronic PE Deficiency (BMI<18.5)	36.3%	35.4%
Height <145cm	10.1%	12.4%
% of Anaemia	50.8%	48.4%
Mean weight gain 24 – 40 weeks	6.39kg	7.45kg
Incidence of LBW	21/7%	15.2%

Anaemia in Prgnancy

There are no nationally representative data on anaemia in pregnancy. Several small-scale studies have been conducted to assess the prevalence of anaemia in pregnant women.

Table 1.3.5   Summary of Studies on Prevalence of Anaemia in Pregnant Women

AUTHOR AND YEAR	SAMPLE SIZE	PREVALENCE (%)
Piyasena (1991)	692	59.8
Athukorala et al (1994)	275	58.4
Goonaewardena et al (1995)	236	69
Mudalige and Nestel (1996)	88	38.6
Athukoral et al (1996)*	309	58

* included a sample of women aged between 18 -40 years in the plantation sector. 23.4% were severely anaemic with an
  Hb<8gm/dl.Importance of folate deficiency was highlighted where 65 - 95% of the women had associated folate deficiency.

(4)-1 Educational interventions focusing on dietary practices have shown a positive influence on weight gain in pregnancy. Effective educational programmes, along with nutrient supplementation, will continue to be the most practical and relevant intervention and would need to be intensified and documented.

Limited data available indicate that the maternal weight gain is low (7 - 8 kg.). A recent study conducted in two areas in Colombo district has, however, shown a higher weight gain. The relationship between pregnancy weight gain and pregnancy outcome, especially LBW, is debatable. However, weight gain in pregnancy is also important because of its influence on the health of the mother, especially during and following lactation and on the amount of breast milk.

(4)-2   Identification of pregnant women with BMI <18.5 early in pregnancy, and targeting them for an appropriate intervention (e.g. food supplementation) with monitoring and follow up, is a necessity.

(4)-3   There are no recent data reporting nutritional status and nutritional problems among lactating women. In the ongoing service programmes, lactating women have not been a priority group for intervention. Even during postnatal care, the focus has been on the infant and on the health aspects of the mother. The development of uniform educational messages should be linked with the use of these messages. The involvement of family members (including the husband) who influence dietary practices of lactating women is necessary.

        There is a need to improve educational inputs as well as the communication skills. Educational inputs have to be well targeted, well structured and focus on behavioural changes that are required to promote dietary practices during pregnancy, optimizing intake while negotiating food taboos, intra-familial food distribution, work load etc. Listening and helping to solve practical problems should be considered as well.

(4)-4   Anemia continues to be a problem among pregnant women.   At present, the nutrient supplements provided through the MCH services include iron, foliate and vitamin C. This practice needs to be continued and an effective programme to promote compliance should be implemented. Strengthening educational inputs is a crucial area in improving compliance.

        Improved targeting of iron/foliate supplementation has to be considered, linked with the use of a simple screening method to detect anemia that could be used at field level. Other programmatic issues relevant to ongoing interventions have to be addressed, especially in areas such as streamlining the distribution system to ensure the continued availability of supplements and the development of an effective surveillance system.

(4)-5   Activities to support the spacing of births needs to be strengthened.

(4)-6   The supplementation of foliate to prevent neural tube defects has been recommended. Such supplements have to be taken by all women in the reproductive age group who are at risk of pregnancy. Educating the public regarding the benefits of such supplementation is necessary, in order to encourage them to take foliate on a regular basis.

(5)   NUTRITIONAL PROBLEMS IN ADULT (MEN AND WOMEN)

Adult malnutrition includes both under-nutrition and over-nutrition. Both these states have important health, social and economic consequences. Studies on nutritional status among adults, carried out during the period 1991 – 2001, are limited.

Under-Nutrition (Proportion Below BMI<18.5)

NUTRITION AND HEALTH SURVEY, 1994 AND 1995 (NHS 3 AND 4)

- 1994

  Males - 42.2%, Females -35%

  Urban/Males -28.9%, Rural Males- 51.1%

  Urban/Females -21.1%, Rural Females - 44.4%

- 1995

  Males - 36.2%, Females 33.4%

Urban/Males - 27.6%, Rural/Males - 43.0%, Estate/Males 50.2%

Urban/Females - 21.1%, Rural/Females - 43.3%, Estate/Females - 58.6%

- **Both surveys clearly indicate that within each sex group, the proportion of 'UNDERNOURISHED' decreases with increasing income.**

Over-Nutrition (BMI >25)

- NHS (1995)

  This studied the BMI of mothers and fathers of the children included in the study and reported the following.

Table 1.3.6   Nutritional Status of Mothers and Fathers of Children included in NHS Study of 1995

Nutritional Category	% among mothers (n=1344)	% among fathers (n=1288)
Mild over-nutrition	8.2	6.5
Moderate over-nutrition	3.4	1.9
Severe over-nutrition	1.2	0.6
Obese	1.5	0.8

Source: Raman jam and Nestel (1997)

- MRI (2002)

  Percentage of non-pregnant females in the age group 15 - 49 years, by BMI values 25 and over by sector, given below

Table 1.3.7   Percentage of Females in the Age Group 15 -49 Years by BMI

BMI Category	Urban	Rural	Estate	All Sectors
25 - 29.9	25.7	7.7	1.3	15.6
30 - 34.9	15.2	2.5	0.3	2.9
35 - 39.9	2.4	0.8	-	0.4

Anaemia

- Mudalige and Nestel (1996): Reported the prevalence of anaemia (Hb<12g/dl) to be 44% in a sample of 1268 adult non-pregnant women.

- MRI (2002): Reported an overall anaemia prevalence of 31.4% among non-pregnant women in the 15 - 49 age group (n=4628). The prevalence varied between sectors (i.e., Urban 31.4% , Rural - 32.5%, Estate 41.5%.with overall prevalence of 32.9%).

(5)-1   Problems of under-nutrition are high among adults, especially in the estate sector. The reported prevalence of over-nutrition in the adult population is important in view of its relationship with non-communicable chronic diseases.

(5)-2   The impact of nutritional status on productivity has been documented. However, in Sri Lanka, there are limited data on nutritional status and productivity. Such data will be useful in

motivating the political hierarchy and employers in paying attention to the nutritional status of the adults and, maybe, the future workers?

(5)-3   Due to a variety of reasons, adults (especially men) have not been a target group in health interventions. Even though married women in the 15 - 49 age group constitute a target group for services related to reproductive health, recognition given to their nutritional status has been minimal.

In view of the emerging problem of over-nutrition/obesity among adults, especially women, a focused intervention to maintain their nutritional status at optimal level needs to be considered. The fact that the health system has access to this group is a positive feature.

For adult men, alternative approaches that can positively influence their nutritional status have to be considered, such as inputs through the workplaces.

(5)-4   Nutritional problems in adults should be addressed from school age onwards.

(5)-5   The effects of food advertising, availability of 'fast foods' etc. on the dietary practices of the adult population have to be studied.

(5)-6   A multi-pronged approach will be required to improve the nutritional status of adults, e.g. through media and workplaces for short-term effects and through schools for long-term effects. The messages should clearly focus on the long-term benefits of good dietary practices.

(6)   ELDERLY (OVER 60 YEARS)

The decline in fertility and in mortality rates in Sri Lanka over the past few decades and the increase in life expectancy have led to an increase in the proportion and the absolute number of "elderly". It is estimated that the elderly, i.e., those over 60 years, constitute approximately 10% of the population of Sri Lanka at present and this percentage is expected to increase to 13% by 2011 and 18% by 2026.

In the past, the emphasis of the health services was on the mother and child in keeping with the morbidity and mortality experience. However, due to the changing demographic scenario in Sri Lanka, it is necessary to draw attention to the older age groups with respect to their nutritional needs, as well as focus on the importance of nutrition in promoting healthy aging.

Studies on the nutritional status of the elderly are limited and the main findings of a few are given below.

- Lokkubakasuriya (1999):

    Community-based study of a sample of 400 persons over 60 yrs. in the Gampaha district. The assessment of nutritional status was based on the BMI. (BMI,18.5 - underweight, 18.5 -24.99 - Normal, >=25 Obese)

    Nearly a third of the group was undernourished.

    13% were overweight.

    Percentage overweight was higher among females.

    Percentage undernourished increased with increasing age.

- Balasuriya (1999)

    A case control study in Kalutara district.

    Comparison of the nutritional status of 196 institutionalized elderly and 594 non-institutionalized elderly.

The proportion with BMI<18.5 was 65% of the institutionalized group and 67% of those who were not institutionalized.

Of those institutionalized, 8.2% had BMI>=25, the comparable figure being 16% among the institutionalized group.

- Jayakody (2002)

A community-based study in the Matale district, with a sample of 3194 elderly females from the urban (1200), rural (1163), and estate (831) sectors.

Prevalence of under-nutrition using BMI in urban, rural and estate sectors was 22.3%, 40.1% and 58.3% with an overall prevalence of 38.4%.

Prevalence of under-nutrition among elderly in all sectors diminishes with increasing age.

In all sectors, the prevalence of over-nutrition was higher among females.

In all sectors, the prevalence of over-nutrition was highest in the 60-64 age group and decreased with increasing age.

(6)-1 Nutritional status and the nutritional needs among elderly vary with age. Data from studies for the age group 60 - 70 years show that both under-nutrition and over-nutrition are important. Appropriateness of using BMI to assess the nutritional status of those over 70 years needs to be studied.

(6)-2 To some extent, the variations in the percentage of undernourished reported in different studies could be due to the differences in the selection of study populations, e.g., institutionalized and non-institutionalized groups. Available data indicate the importance of paying attention to the type of intervention/education and the manner it was given, and towards the nutritional status of the elderly, a vulnerable group which has not, as yet, received adequate attention in Sri Lanka.

(6)-3 "Arthritis" (possibly indicating a bone mineral deficiency state) and general body ache rank high among the self-reported morbidities in the elderly. In view of the reported benefits of calcium supplementation, it is necessary to consider a programme to encourage the use of calcium supplements appropriately.

Educating adults, both men and women, on the importance of an improved dietary intake of calcium and calcium supplementation could have a beneficial effect in the long term.

(6)-4 The importance of economic, social and environmental factors as risk factors of under-nutrition highlights the need for a holistic approach to improve the nutrition and the health status of the elderly.

The nutritional needs of the destitute elderly have to be identified and the organizations involved in caring for this group, both in the governmental and non-governmental sectors, need to be sensitized on their needs. Feasible interventions have to be developed.

(6)-5 Provision of care for the elderly, through 'Day Care Centres,' has been introduced in recent years. The possibility of introducing a programme to improve nutritional status through such centres should be explored.

(7)   SPECIAL GROUPS

These groups listed below are considered nutritionally vulnerable based on their social and/or economic circumstances.

- Displaced populations and those affected by the conflict situation
- Urban low income groups
- Estate populations
- Fishing communities

Displaced Populations and those Affected by the Conflict Situations

Data on the nutritional status of the residents of welfare centres have been reported in a limited number of studies.

- SAVE THE CHILDREN, COLOMBO (1998)

  High prevalence of acute and chronic malnutrition among children in refugee camps.

  Problems in access to food by poor and marginalized populations.

  High morbidity levels, especially respiratory tract diseases.

  Poor sanitation.

  Unhygienic practices.

  Survey of all welfare centres in Vavuniya district in 1998 found 58% of all children 0 - 59 months were below the 3rd centile on the CHDR.

  In the 12 -23 months age group, this was higher - 71%.

- Becker, D.,Kelly, M. (2000)

  Nutritional survey of the displaced population in Jaffna peninsula living in refugee camps. 24 of the 122 camps in the Jaffna peninsula were selected using a two-stage cluster sampling technique.

  Prevalence of acute malnutrition was 18.9%.

  Among children between the ages 6 -17 months, prevalence was 30.7%.

- MRI (2000)

  Study carried out in World Food Programme (WFP) assisted welfare centres in Puttam, Anuradhapura, Polonaruwa, Ampara and Batticaloa. 12,607 children under 5 years residing in 169 welfare centres. The nutritional assessment was carried out in a sample of 1391 children.

  34.4% (n=480) were stunted. Males (n=238) 33.4% and Females (n=242),35.6%

  15.8% had wasting (n=228). Males (n=125) 16.7%. Females (n=103) 13.8%

  47.5% were underweight (n=664). Males (n=336) 46.8%. Females (n=3280 43.8%)

- Reinhard, I., and Kraemer, D. (1999)

  Community-based study.

  Carried out in 5 out of 11 administrative divisions of Trincomalee district, and villages were selected to include children under 5 years from all three ethnic groups of Sinhala, Tamil and Muslim. A sample of 515 households with 702 children under 5 years was included in the study.

  Main problems identified were lack of income (71%), and food shortages (42%).

  Prevalence of stunting - 27%, wasting - 26%, underweight - 50%

Nutritional status of non-pregnant mothers showed that 48% were malnourished (BMI<18.5), of whom half were severely malnourished (BMI <17).

(7)a-1   Several ad hoc surveys have been carried out from which some data are available. Introduction of an ongoing surveillance system, which includes the resettlement period, is an urgent need.

(7)a-2   Available data show a wide variation in the prevalence of nutritional problems, the variations being influenced by factors such as the duration of stay in welfare centres, availability of food aid, environmental sanitation and nutritional status prior to displacement. The numbers affected are relatively large and the circumstances under which they live vary, especially in conflict-affected areas and un-cleared areas. With the possibility of a resettlement programme in the coming years, it is necessary to pay attention to the nutritional needs of this group, not only at the present time, but during the next few years.

(7)a-3   At present, several governmental and non-governmental organizations have responsibility to provide services for this group.

Setting up an organizational structure to coordinate all activities that influence nutritional status needs to be done urgently, if the resources available for rehabilitation are to be used for the optimal benefit of this population. The possibility of establishing an NGO Consortium to coordinate the work among the NGOs could be considered a useful approach. Such attempts have been made in some districts.

Estate Sector

Data from DHS surveys are summarized below.

(7)b   Data on nutritional status indicators and other relevant variables with regard to estate sector are shown below.

INDICATOR	DHS 1993	DHS 2000
% Ht for age (<2SD) Children 3-59 months	53.7	33.8
% Weight for Height	9.5	11.8
% Weight for age	52.1	44.1
% Babies with birth weight <2500grms	-	18.6
% anaemic (Hb<12gm/dl) non-pregnant women	59.4 (1995)	
% exclusively breast-fed (4months)	-	72.7
Mean duration of breast feeding	24.4	21.6
% Received trained assistance at delivery	87.0	54.7
% reporting diarrhoea within preceding 24 hrs	3.7	4.7
% reporting diarrhoea within preceding 2 weeks	7.2	6.7
% of households with sanitary facilities		35.5
% of households with safe drinking water		24.8
Mean age at marriage	24.6	23.4
Fertility rate	2.6	2.6
Contraceptive prevalence rate	54.5	63.1
% of children <5yrs fully immunized		71.4

(7)b-1   Even though the prevalence of low birth weight, stunting, and adult under-nutrition is relatively high in the estate sector compared to national level data, it must be noted that there

has been a marked improvement in the nutritional status indicators in the estate sector during the past few decades.

(7)b-2 Even though the highest calorie consumption was in the estate sector, the gap between calorie intake and the requirement (RDA) is highest in the same sector. The food expenditure pattern in this sector also differs, with a relatively higher percentage of money spent on 'beverages' and tobacco.

It is reasonable to assume that the nutritional problems in this sector are related to the type of work, workload and other environmental factors.

Urban Low Income Groups

Even though large-scale surveys such as the DHS 2000 include the urban sector, available information on the nutritional status among the low-income groups is limited.

- Thiagarajah, 1995

   200 infants and older school children in Kolonawa.Clinic based study.

   19% - Stunted, 9% - Wasted, 0.5% - Stunted and Wasted. 25.5% reported respiratory tract infections.

- Hapuarachchi H.T., 1997

   Residents within Colombo Municipality. Infants and older school children.

   11.5% - stunted,16.%5 - Wasted, 2.0% -Stunted and wasted. 47.5% - had respiratory tract infections. 7.5% had Diarrhoea and 19.5% had LBW.

(7)c-1 Data available are limited to a few studies on small samples. All studies have focused on the urban low-income groups in Colombo. High prevalence of infections, especially those of the respiratory tract, indicates the importance of environmental factors. Being in an urban environment, this group is likely to be influenced by a range of social and environmental factors that negatively influence nutritional status. Data on dietary practices among this group, especially among older school children and adolescents, will be useful in developing educational interventions.

(7)c-2 Improving standards of food hygiene and promoting practices for maintaining food quality have to be considered in view of the large number of food outlets that serve the urban low-income groups

Fishing Communities.

Limited data are available.

- MRI 1999.

   Carried out among 308 adults in 2 selected fishing communities.

(7)d   The nutritional status of adults in the selected fishing communities is shown below.

Range of BMI	% Males	% Females	Total
<18.5	58.2	50.3	53.3
18.5 - 24.9	31.6	34.8	33.6

| 25 - 29.9 | 7.1 | 9.9 | 8.9 |
| >=30 | 3.1 | 5.0 | 4.2 |

(8)   SPECIFIC NUTRITIONAL PROBLEMS

Iodine Deficiency

(8)a-1   Available data indicate that iodine deficiency continues to be a problem even though the extent and the intensity of the problem has decreased. The urinary iodine levels vary widely between provinces and within provinces

(8)a-2   The iodine content in the iodized salt also shows a wide variation, indicating the need for close monitoring of the system for fortification and distribution of iodized salt. An effective, feasible, valid technique for monitoring iodine in salt in field situations must be used. Regular surveillance at all levels of the distribution system will be necessary to avoid any negative health effects. It is essential that information from the surveillance programme be regularly made available to a Monitoring Committee that includes all stakeholders, so that effective remedial action could be taken without delay.

(8)a-3   There is a need to review the recommended 'level' of iodine to be used for fortification, which at present is either too high or too low.

(8)a-4   The feasibility of implementing a programme for screening neonates should be considered.

Vitamin A Deficiency

(8)b-1   Available data indicate that the percentage of the study group with vitamin A levels <20ug/l was 35.3% and that with vitamin A level <10ug/l was 9.0%.

(8)b-2   Vitamin A megadose programme for children and lactating non pregnant mothers was introduced in 2001 and an effective monitoring system has to be implemented to assess the coverage, quality and the effectiveness of this programme.

(8)b-3   Alternative approaches to improve the vitamin A status should be considered.

(9)   GENERAL ISSUES

(9)-1   Available data from large-scale studies indicate that there are improvements in nutritional status, especially among infants, preschool children and young schoolchildren. Though it is not possible to quantify the contribution of each intervention, the multiple interventions implemented through the health sector must have made a significant contribution to this improvement.

(9)-2   However, there is a need to make a critical assessment of the ongoing programmes/interventions with a view to improving quality and cost effectiveness.

(9)-3   Variations in the prevalence of nutritional problems between sectors and between geographical areas need to be taken into account and appropriate targeted interventions have to be identified and implemented.

(9)-4   The development of an effective surveillance system to assess changes in nutritional problems at different levels (on a geographic basis or through different levels of the health care system) is an important activity, in order to monitor not only the nutritional status but also the effectiveness of interventions. The surveillance system must be linked with an effective mechanism to take necessary "action", based on the information obtained from the

surveillance system. Such systems have to be effective at all levels, i.e., DDHS, district, province and national level.

(9)-5   An action-oriented nutrition information system should be developed most urgently and validated against DHS data, and which should measure the same indicators and risk factors, including participation in MCH programs.

(9)-6   With changes in social and economic circumstances, it is necessary to plan and implement a system for monitoring the negative effects of dietary practices linked not only to under-nutrition but to over-nutrition as well. The problem of over-nutrition is an area that has not yet received much attention in the health sector programmes. The importance of this problem, especially in urban areas and in younger age groups, has to be viewed, taking into consideration the linkages that negative dietary practices in early life have on degenerative diseases later in life.

(9)-7   Development of guidelines to ensure food safety and food quality should be considered, along with an effective mechanism for the implementation of such guidelines.

(9)-8   In most programmes that focus on improving nutritional status, the target groups are those discussed in this document. However, there are several other vulnerable groups that need to be paid attention to.   Among these groups are: rural low income families, subsistence farmers in different agricultural zones of Sri Lanka for under-nutrition, urban high/middle income groups (problem of over-nutrition). So what do we do? A couple of pilots if possible?

(9)-9   There is a need to include relevant inputs to the basic training of health personnel, based on the current status of nutritional problems in Sri Lanka, their determinants and interventions. Improving communication skills among all health workers is a priority. All health personnel should be able to assess nutritional status and its determinants, taking into consideration factors within the individual, family and the community and to mobilize the resources within the family and the community for improving the nutritional status of the family. In addition to changes in the basic training, it is necessary to have continuing education programmes for all categories of health personnel.

(9)-10   Increasing use of commercial foods, as seen in food consumption patterns, is of importance and necessary action must be taken to ensure food safety and proper food practices.

(9)-11   The influence of food advertising and food marketing practices that exist could have an important influence, especially on children. Effective interventions to counteract the negative health effects related to food advertising are a priority. In this context, steps should be taken to develop an appropriate nutrition information system, able to counteract the impact of advertising. Steps must be taken to implement the Food Advertising Code.

(9)-12   'Messages' focusing on improving nutritional status are delivered by a wide range of personnel which include those in the fields of health, education, agriculture, women's programmes, non-governmental organizations etc. It is important to ensure that the key messages delivered are uniform, accurate, clear and practical. (At the present time, it is not uncommon to see occasions when varied messages on the same topic are given by members of the same profession).

(9)-13   All programmes aimed at improving nutrition require behavioural changes, in one form or another. Use of participatory approaches has been shown to have a positive impact in achieving these changes. Such an approach has the added benefit of being able to empower the community to 'look after themselves'. Monitoring of such programmes should be based on practical, feasible and relevant indicators. It is necessary for the health sector to incorporate such approaches in their programmes as far as possible. This will require a change in the knowledge, skills and attitudes of all categories of health personnel responsible for planning, implementation and monitoring of nutrition programmes.

(9)-14   Anecdotal evidence suggest that there have been many 'success stories' related to attempts to improve nutritional status of communities. These should be studied in depth and documented, for use in the development of interventions.

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This section was prepared by Prof. Dulitha N. Fernando, University of Colombo.

1.4 COST EFFECTIVE, PRUDENT PROCUREMENT AND LOGISTICS OF MEDICAL SUPPLIES BY STRATEGIC APPLICATION OF MORBIDITY AND MORTALITY DATA

(1)   INTRODUCTION

Sri Lanka has had a history of pharmaceutical management dating back to 1857 when the state assumed responsibility for providing medical care and a medical store was established. In 1867, the registration of vital events came into operation and, in 1897, registration of births and deaths was made compulsory.

However, about 80% of the registrars are non-medical personnel, hence, the cause of death is not as accurate as desired, even among urban deaths which are medically confirmed or at least medically examined. A study carried out in 1986 revealed that the cause of death was correctly recorded only on 30% of the death certificates.

In the limited survey of data to ascertain the present drug management system and logistics in state hospitals, only 20% said that one of the criteria used in estimating annual drug requirements was the pattern of diseases in the region, while 79% said that they followed the method stated in the manual on management of drugs, while 4% considered financial allocation.

Again, on criteria for drug allocation to institutions, 90% said it was according to the levels indicated in the drug estimates book, 41% depending on the population and only 17% said it depended on morbidity patterns. One pharmacist said that drugs were distributed according to percentage received, while another said it was done according to prescribing habits.

In Sri Lanka it is observed that 85% of patients seek allopathic OPD treatment: 50% of the patients visit government institutions and 35% visit private general practitioners and institutions for their treatment. Ninety-nine percent (99%) of the population seek allopathic treatment when hospitalisation is necessary for surgical intervention. According to a study carried out in 1973, a resident of Sri Lanka, on average, makes 3 visits to a government allopathic institution annually. These included visits to the OPDs and clinics.

Morbidity and Mortality data are routinely collected only in patients seeking treatment as in-patients in state hospitals. Other than the limited information collected through surveys, registers maintained by special campaigns and programmes for control of diseases such as T.B., Cancer, and Leprosy and from notifications, the Indoor Morbidity and Mortality Return (IMMR), is the only source of data. The IMMR is based on the 10th revision of the International Classification of Diseases (ICD).

The absence of a well-developed medical records department, even in large hospitals, has hindered the analysis of discharges for important epidemiological information such as age, sex, place of residence etc., as such morbidity and mortality data cannot be solely utilized as a reliable source for the estimation of drugs.

(2)   STATE PHARMACEUTICAL CORPORATION (SPC)

1)   The SPC annually purchases, on behalf of the Director-General of Health Services (DGHS), pharmaceuticals, surgical consumable items, laboratory chemicals and equipment etc., and the value of purchase for the year 2002 is approximately Rs 5 billion. All expenses incurred in the purchase are advanced by the Corporation from its own funds and subsequently collected from the Department of Health Services (DHS). The Corporation receives a service charge of 10% of the C & F value of goods, out of which all ordering and clearing expenses such as taxes, defence levy etc. are met.

2)   Goods on arrival in the Port of Colombo and the airport are cleared and delivered to the stores of the Medical Supplies Division (MSD) by the SPC.

3)   In the procurement of drugs to the DHS, the SPC follows laid down government tender procedures.

4)   Problems faced by SPC in the procurement of drugs for the DHS are as follows:

   - On completion of the stringent tender procedure and award of the tender, the successful supplier informs the SPC that he/she is unable to ship the goods within the specified period for various reasons (e.g., late receipt of raw materials, delays and strikes at ports of shipment, non-availability of carrier vessels, unforeseen circumstances).

   - No suitable offer after invitation of worldwide tender.

   - Non-availability of sources. Items not manufactured at present.

   - Quality problems re items upon receipt at MSD stores. Awards are made to suppliers after testing of samples. However, instances of quality failure in certain batches, after receipt, has been noted in some cases.

   - Inability to forecast accurately the estimates of requirements. This compels the Director of Medical Supplies Division to order the same item more than once in one year.

(3)   MEDICAL SUPPLIES DIVISION (MSD)

1)   The MSD is the main storehouse of the Department of Health for the following items: Pharmaceuticals, Dressings, X-ray films and chemicals, Contrast media, Special drugs, Surgical consumables and non-consumables, Special drugs, Dental Items, Laboratory chemicals and glass wear and Printed forms.

2)   The MSD is responsible for the accumulation of requirements of the institutions under the Central Ministry and Provincial Councils. Indents that are developed are passed on to the SPC for procurement. The procured drugs are sent to the MSD, by the SPC, for storage and distribution to all institutions under the Ministry of Health, Nutrition and Welfare and Provincial Councils. Medical supplies to the estate sector are supplied by the Provincial Councils.

3)   Regional Medical Supplies Division (RMSD)

- There are 25 RMSDs in number and these are situated in each DPDHS area for the storage of medical supplies for the respective region. Most RMSDs have been constructed according to a plan but, despite this, lack some basics in the storage facilities required to maintain the quality of drugs (e.g., of all RMSDs, only Badulla has cool room facilities for the storage of vaccines and X-ray items and drugs which need low storage temperature. Others have fridges for this purpose).

- In general most RMSDs are understaffed.

- Most RMSDs have a lorry and some vans for the transport of vaccines. A common complaint is that these vehicles are being used by the provincial authorities, for other activities, who do not realize the problem of drugs getting out of stock in the respective health institutions.

4) Information on epidemics in the Badulla and Ratnapura districts.

Disease	Badulla District	Ratnapura District
Diarrhoea	Mainly Jan – May	Mainly April – June
Malaria	Mainly in Dambana, Kandeketiya, Akiriankubura, Rideemaliyadda, Uraniya and Girandruukotte areas.	Kolonna, Embilipitiya, Kaltota and Pallebadde areas.
Hepatitis A	After the rains is found in Koslanda, Haldumulla and Bandarawela.	After rains in Gilimale and Ratnapura town limits.
Dengue	Badulla town limits	Kahawatte and Ratnapura town limits
Scabies	Mainly in the Estate and Prisons at Badulla and Thaldena	Mainly in the Estate and Prison in Kuruvita.
Thyroid deficiency	Estates in Badulla division.	-

5) Allocation of funds

- Estimation of drugs for the following year is carried out 6 months earlier but, at the time of estimation, officers do not have any information on the rupee allocation which would be granted and, as such, it would be difficult to predict a realistic estimate.

- The Deputy Provincial Director of Health decides on an allocation to an institute. In certain instances, this amount is decided without considering the population, facilities available in institutions, the geographical situation, morbidity and mortality patterns.

- In certain instances, same category institutions receive equal allocations without considering the above.

(4)   TEACHING / PROVINCIAL HOSPITAL DRUGSTORES

1) There are 18 teaching hospitals, which come under the line ministry. Drugstores, indoor dispensaries and OPD dispensaries vary between these institutions.

Buildings are not according to any specified plan. In most institutions, the available space is grossly inadequate and, as such, only a week to two weeks stock can be accepted and stored. As a result, it is observed that many bulk items are being stored in corridors or wherever space is available. All teaching hospitals obtain supplies directly from the MSD.

2) In these institutions, depending on the allocation of cadres', manpower availability differs.

3) Some teaching hospitals, although they have either a lorry or a van, depend entirely on MSD vehicles for the transport of drugs.

(5)   BASE HOSPITAL DRUGSTORES

1) All base hospitals come under the Provincial Health Ministries. In Sri Lanka there are a total of 35 base hospitals.

2) Drugstores, Indoor dispensaries and OPD dispensaries are similar to those of Teaching / Provincial hospitals, but smaller in size and with a lesser number of staff.

3) The type of specialities available from province to province varied. Buildings are not constructed to any specific plan. Unlike in Teaching hospitals, drugs are received from the respective RMSD. As the available space for storage for drugs is limited, many bulk items are stored in corridors or wherever space is available.

4) Staff varies between institutions. Pharmacists, dispensers and labourers are involved in the logistics of drugs. In most institutions, cadre vacancies have to be created and approved for the smooth functioning of the institutions, or existing cadres must be filled.

5) Most base hospitals depend on vehicles of RMSDs for the supply of drugs. However, when urgent, even ambulances are used to collect drugs.

(6)   ADDITIONAL DATA SOURCES

In addition to visiting the institutions surveyed, a questionnaire was sent to Medical Officers of health, Officers in-charge of RMSDs and Divisional Pharmacists. Analysis of this data is given below.

- 80% stated that the annual drug estimates are prepared by the chief pharmacist.
- 27% stated that the criteria used for the estimation of annual drug estimates are by adding 10% to the previous estimates.
- 48% stated that financial allocation is also considered.
- 90% indicated that the retention of buffer stock would be essential
- 30% have stated that this should not be essential as local purchasing could be done.
- 44% stated that supplies are received very late.
- 24% stated that quarterly regional drug review meetings are being conducted.
- 24% indicated that meetings are not being conducted at all.
- The majority have noted the very poor attendance by supervising officers at drug review committee meetings.
- Over 75% have indicated that drug shortages, and the existing situation on drugs, are being

discussed in the drug review committee meetings.

- 90% have indicated that drugs are being allocated to institutions according to the levels as indicated in the drug estimate books.

- 55% have indicated that additional allocations are given whenever the supplied drugs have run out of stock.

- 92% have stated that drugstores in institutions are situated in many small rooms with poor storage facilities.

- 25% have stated that expired drugs are stacked in dispensaries for several years, due to the delay in appointing boards of survey for destruction.

- 92% have indicated that available cool-room facilities are grossly inadequate and only a few fridges are available to store drugs, which required cool-room facilities.

- 96% have stated that deletions are not done at all in preparing the regional consolidated estimates.

- 76% have indicated that severe delays are experienced due to non-availability of transport facilities and limitation of fuel, overtime and manpower.

- 96% have indicated that MSD lorries dispatch drugs and lorries from their own regions.

- 62% have indicated that drugs, to be collected weekly as adequate stocks, are not available at the MSD.

- 76% have indicated that collecting drugs from MSD is a very tedious process and many delays are encountered at all sections.

- 79% have requested drugs to be supplied by MSD lorries and the regional lorries.

(7)   RECOMMENDATIONS

- Monthly institutional drug review committee meetings should function actively so that problems pertaining to drugs could be identified. These meetings must be chaired by DPDHS and minutes circulated to all concerned.

- Officers directly involved in the management of drugs should be given special training periodically and Director/MSD should monitor the progress. Director/MSD should draw up a programme incorporating the essential components. Seventeen percent (17%) said that no programmes were conducted while 10% said that they could not participate due to their workload.

- Provincial authorities (secretary of health/provincial director of health services/deputy provincial director of health services) should be advised or concentrate more on the management aspects of drugs and closely monitor and supervise the officers concerned.

- Whenever the regional, institutional estimates have to be changed, this should be done with the consultation of the officer in-charge of the institution, chief pharmacist, Divisional Pharmacist and officer in-charge of RMSD based on diseases patterns, referrals and populations.

- Prescribers should be advised to adhere to treatment protocol and ensure implementation.

- Storage facilities in all institutions should be upgraded.

- All RMSDs should be provided with cool-room facilities to store vaccines and drugs that have to be stored under cool conditions.

- Automatic generators should be provided, at least at RMSDs.

- Vehicles allocated to RMSDs should not be taken over for any other activities.

- SPC should strictly comply with the delivery schedules requested by MSD, as otherwise the entire chain of activities would be delayed in the supply of drugs. When essential and life-saving drugs are out of stock at institutions:

    1. Prescriptions would be given to patients to purchase from the private sector.

2. There is local purchasing of drugs at a higher cost.

3. Criticism of the department of health by the public, in the mass media, should be expected.

- When drugs are withdrawn due to quality failure, SPC should ensure replacement speedily and at the same cost.

- MSD should actively get involved in supplying the information and re-distribution of drugs among provinces during an excess or shortage situation.

- If quarterly distribution of all requisition is not done by MSD, it would be the responsibility of MSD to deliver the balance of drugs in MSD lorries to the relevant provinces and to be reimbursed from SPC, if the delay had been at SPC.

- All teaching hospitals should be provided with funds to construct the drugstore complex, according to the plan developed by the Ministry of Health.

- An out-of-stock drug list should be provided to all teaching hospitals and regions by MSD to keep the prescribers informed so that substitutes could be prescribed. Drug information sheets for all drugs should be provided per WHO specifications.

- Prescribers should be educated on the cost of drugs.

- Adequate copies of the manual on the management of drugs should be made available to all institutions.

- A percentage of waste can be eliminated if patients are made to pay a token sum for OPD prescriptions.

- A streamlined statistical unit, manned by competent medical officers and assistants (RMP/AMP/Pharmacists), should be set up, at least in the teaching hospitals, Provincial hospitals and base hospitals initially, and to be extended to the other institutions in time.

- Computers for medical statistical use as well as for drug inventory management should be provided.

- Consider outsourcing inexpensive day-to-day requirements of OPD supplies to strategically selected pharmacies with registered pharmacists in their cadre. The pharmacies can, in turn, claim the cost of such drugs dispensed from the hospital or DDPHS (follow the NHS in UK). While these drugs are inexpensive, they occupy space which can be used for the more expensive and essential drugs which must not go out of stock

- Currently SPC imports approximately 600 drugs for the MSD. To reduce this to the essential drug list for primary, secondary and tertiary care per WHO criteria, these criteria can be adapted to local needs. This will probably half the national drug bill, reduce inventory and logistics and provide ample space for storage.

- Set up a poison centre at the teaching hospital in Jaffna. This is important because farmers use agro-chemicals indiscriminately with no focal point for treatment.

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This section was prepared by Edwards & Edwards (Pvt) Ltd. headed by Mr. Chris Edwards.

1.5 ASSESSMENT OF ANNUAL REQUIREMENTS OF DRUGS, SURGICAL CONSUMABLES AND LABORATORY CHEMICALS OF HOSPITALS IN THE PROVINCES

(1) INTRODUCTION

This study is part of a master plan study for strengthening the health system in Sri Lanka. Over the past years, the life expectancy has improved in Sri Lanka in addition to an increasing total population. Despite remarkable improvements in the field of health, problems remain. New challenges also have to be faced. Considering the spiralling costs, public funds spent on the health sector have to be cost effective with minimum wastage.

Currently, the assessment of the annual requirements of drugs, surgical consumables and laboratory chemicals of hospital is based on past consumption. Annually, the MSD delivers estimate books carrying the list of items to the hospitals. The required estimate is entered in the book and forwarded to the deputy provincial director's office, where it is consolidated by the divisional pharmacist. The estimate book is then sent to the provincial director's office where it is further consolidated and forwarded to MSD. The assessment of requirements is based on past estimates and consumption. Consumption is arrived at from an inventory system maintained with ledger and inventory books. Quality assurance data are obtained from circulars. The overall objective of the survey is to study the existing methods of assessment of annual requirements of drugs, surgical consumables and laboratory chemicals in government health institutions, highlight the shortcomings and recommend improvements.

(2) OBJECTIVES

Specifically, the survey intends to:

1. Study ways of assessing the annual requirements of drugs, consumables and laboratory chemicals;
2. Study the managerial process at provincial level;
3. Study the inventory system; and
4. Study the quality assurance of drugs.

(3) METHODOLOGY

A cross sectional study was performed in the Western Province (WP), North Central Province (NCP) and Sabaragamuwa Province.

1) The number of health institutions chosen for the study is as follows:

Western Province	11
North Central Province	10
Sabaragamuwa Province	10

2) The institutions are:

Provincial Directors Office	03
Teaching Hospital (TH)	01
General Hospital (GH)	01
Base Hospital (BH)	01
District Hospital (DH)	01
Rural Hospital (RH)	01
Peripheral Unit (PU)	01
Central Dispensary and Maternity Home (CD & M H)	01

3) Samples of items chosen for the study were from the following categories and as given in the chart below.

- Pharmaceuticals
- Surgical consumables
- Laboratory items

Drugs		Special Consumables		Laboratory Chemicals and Glassware	
Essential	03	Suture Needles	01	Microscopic slides	01
Vital	02	Absorbable suture materials	02	Capillary tubes	01
Bulky	02	Non Absorbable suture materials	02	Test Tubes	01
Cold storage	02	Surgical Gloves	02	Copper Sulfate	01
Chemically unusable	01				
High variation in demand - 02		IV Cannula	01	Glucose Oxidate	01
		Needles	01	Blood Lancet	01
				Acetic Acid	01
				E D T A	01

4) Data was collected as follows.

1. Study of following documents:

Estimate books

Ledger

Inventory

Circulars pertaining to quality assurance

2. Questionnaires consisting of 7 sections

Managerial process at each institution

Criteria used for estimation process

Function of drug review committee

Out of stock situation and expired stocks of drugs

Inventory controls

Communication system

Quality assurance.

(4)   RESULTS

1) Ways of assessment of annual requirements

- The assessment of annual requirements is performed by the pharmacist and the Medical Laboratory Technologist (MLT) in TH, BH.
- The Pharmacist attends to this in the DH.
- The RMO prepares the estimate in PU, RH, CD & MH and central dispensaries.
- The Deputy Directors of Health attends to this with the clerical grades in the MOH (Medical Officer of Health) offices.

2) The criteria for estimates are:

- Previous consumption
- Disease pattern of the area
- Funds allocated
- Certain percentage is added to the estimate of previous year to accommodate the increase in demand for certain items

There is no proper method to study the disease pattern of the area. Drugs are requested based on the experience of the pharmacist.

3) Sources of data to arrive at the estimate are:

- Past estimate books
- Ledger
- Inventory book
- Quality assurance data obtained from circulars
- Deficiencies in the mode of assessment

The institutions do not receive the printed estimate books simultaneously and on time. Estimate books were not completed properly in some institutions. In such instances, they attach a request in the form of a letter or a supplementary requisition form.

When institutions are upgraded without prior information to the indenting officer, estimates become inaccurate.

(5) MANAGERIAL PROCESS

The existing managerial system in higher grade hospitals is shown below:

```
                          Director
                             |
        +--------------------+--------------------+
        |                                         |
   Pharmacists                                   MLTT
        |
   +----+----------------+
   |                     |
Out- door          In-door Pharmacists
Pharmacists Dispenser     |
   |                      |
Patients              Wards Staff
                          |
                          |
                      Patients
```
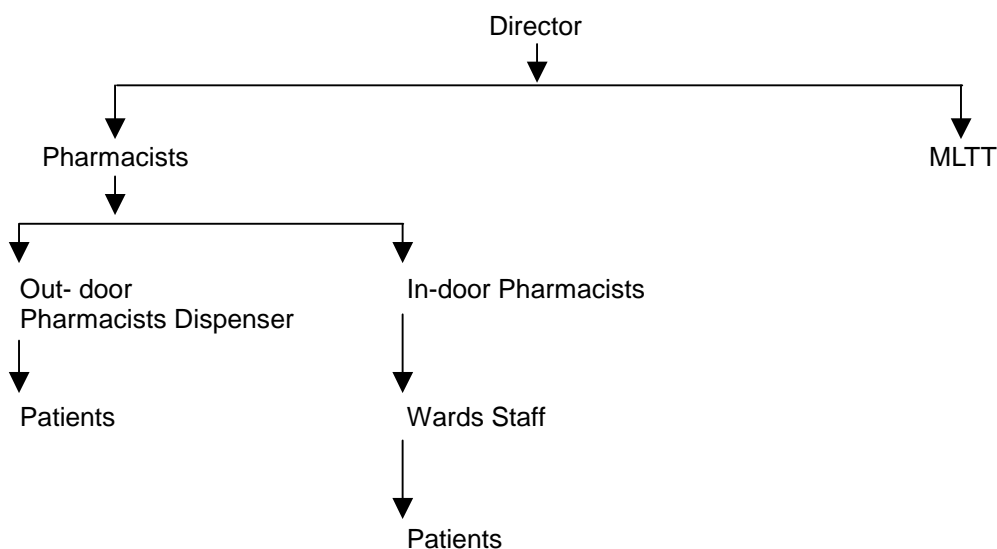
In Peripheral Units, CD and MH, the RMO is in-charge of the hospitals and the stores. There is no MLT or Pharmacist.

(6) APPROVAL OF ESTIMATES

Approval of estimates is performed by the Provincial Drug Committee/Regional Drug Committee consisting of:

- RDHS
- Divisional Pharmacists
- Divisional RMO
- Medical Consultants

Since Medical Professionals have to carry out administrative tasks in addition to professional duties, time spent by them on these duties is not adequate. The pharmacists in-charge of stores have other duties as well. Therefore, accurate management of drugs, dressings and surgical consumables is not possible.

(7) INVENTORY SYSTEM

All institutions were found to maintain records as specified in the circulars of the department. The inventory systems work through registers. Separate drug registers are maintained for bulk items at store level. Retail issues are undertaken at dispensary level. These registers are maintained by pharmacists in a Teaching Hospital, BH, DH, RMO in Pus., RH, CD. MH and CD.

In an institution where the drugstore is assigned to a pharmacist as officer in-charge, the registers are better maintained.

(8)　QUALITY ASSURANCE

This is adhered to according to Health Department circulars.

(9)　RECOMMENDATIONS

1) Printed estimate books must be sent to institutions simultaneously and on time.
2) The entries in these books must be completed according to the needs of the institution without any deficiencies.
3) Records of morbidity in the area served by the institution must be made available.
4) The personnel involved in stores management have other duties as well in some hospitals, which result in impaired performance; hence, Staff of Head Stores Management are required to be fully occupied with their work.
5) Head of institutions have to attend to curative work.

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1.6 THE PROCUREMENT PROCESS FOR DRUGS, CONSUMABLES, LAB CHEMICAL AND OTHER ITEMS FOR PUBLIC SECTOR IN SRI LANKA

To procure a particular item for an institution, the annual requirement of the institution is estimated and recorded in printed estimate books. The required estimate is arrived at by studying the estimate books of the previous year, quantity consumed for the same period, analysis of receipts, and available usable stocks and balance due on orders for the same year. Once the quantity required is determined, it is procured according to available funds. Funds are obtained from the treasury through the Ministry of Health to Medical Supplies Division. This is by an advance account to procure pharmaceuticals, consumable items and some other supplies. Non-consumable items are obtained through a capital budget. Votes are allocated by the Ministry of Finance to the provinces and the hospitals coming under the Ministry of Health to obtain their requirements of drugs, surgical and laboratory items.

The major part of the procurement is carried out through the State Pharmaceuticals Corporation (SPC). Emergency purchases are carried out by calling for direct quotations from suppliers, by purchasing directly from SPC outlets or directly from the agent. The SPC does the procurement by calling for worldwide tenders and occasionally restricted tenders. Annually the quantity procured increases, necessitating the availability of larger funds. Changing morbidity patterns and the availability of newer, effective items lead to a demand for new and costly items. To utilize the available funds effectively, the estimate has to be as accurate as possible.

Inadequate forecasting will result in poor utilization of the available funds, items running out of stock including essential and life-saving drugs, and emergency purchases which may be costly. This will affect the standard of health care. The process of procurement has to adhere to a time frame for a consistent supply of drugs. A proper inventory control system is necessary to prevent running out of items or their excessive use. Quality assurance ensures the quality, safety and efficacy of the items procured.

The objectives of the survey were to study the procurement process, procedure and mechanism to prevent the running out-of-stock of drugs at the following institutions.

- Medical Supplies Division
- State Pharmaceutical Corporation
- Family Health Bureau
- Epidemiology Unit
- HIV/AIDS Program
- Quality Assurance Laboratory
- Anti-Malaria Campaign

Purchases for the public sector by the State Pharmaceuticals Corporation (SPC) is by Government Tender Procedure. For this purpose, the Medical Supplies Division (MSD) has to send the order list, allowing a lead-time of 9-12 months. The order list contains up to 500 – 600 items. These items vary in specification, description, quantity, pack sizes and delivery date. Because of the time between assessment and delivery, drugs with a minimum of three years shelf life are required. The assessment is made on data from the previous year.

According to the order list, the SPC calls for worldwide tenders for procurement. The tenders are scheduled and evaluated. Once tender is awarded to the supplier and local agents are informed, orders are placed in two or more instalments as required by the MSD and delivered. Good quality products are procured by checking the quality.

There can be delays in procurement due to the non-availability of items or if there is no suitable offer after the invitation of tender. Once the tender is awarded there can be a delay in supplies due to (1) default by the supplier, (2) delay in re-registration, and (3) problems in quality after goods are received.

Delay in procurement leads to shortages at MSD. There are inaccurate forecasts due to orders being based on the previous years records. Furthermore, SPC requires a lead-time of 9 –12 months for delivery. Due to the long gap between assessment and usage, accurate estimation is not possible. Buffer stocks for only 3 – 6 months are allowed. Variations in national demand and inadequate funds also lead to shortages.

Adequate time and attention should be given to the procurement process. If so, there will be fewer time-consuming problems to deal with later in the supply system.

The first step towards efficient procurement is careful quantification of the items to be purchased.

Good forecasting permits economical purchasing. Careful tendering procedures, combined with an effective supplier contract are essential for the procurement of quality items. This should be done at favourable prices, with reliable delivery schedules.

Pharmaceutical expenditure can be reduced by improving selection and by competitive purchasing.

Essential drug lists should be used wherever possible when purchasing drugs. Large stocks of low priority drugs can tie up resources and may expire before they can be used. This should be avoided. Shortages of high priority drugs should be minimized as these are costly, since emergency purchases from local suppliers are always expensive.

Efficient stock control must be maintained. It can greatly improve drug availability. The purpose of quality assurance is to assure that each drug is safe, effective and acceptable. Even if high quality drugs are procured, packaging, transport, storage, and dispensing can lead to changes in quality. Correct managerial and technical procedures must be followed to maintain quality.

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1.7   STORAGE OF MEDICAL SUPPLIES

The improvement of National Health Care has always been a priority of the government. A stable supply of drugs is an essential part of healthcare. In Sri Lanka, the Medical Supplies Division (MSD) is in charge of the procurement, storage and distribution of medical supplies and equipment to the public sector health institutions of the entire country. Procurement is annual. The stored medical supplies from this focal point are distributed to the 23 Regional Medical Supplies Division (RMSD) situated throughout the country. Certain medical institutions obtain their supplies directly from MSD.

The supplies from MSD to RMSD are on a quarterly basis. Transport to the RMSD is by lorries or railway wagon. When transport is by MSD lorry, the cost of fuel and the financial claim of the staff for the trip are reimbursed by the funds from the provincial administration. The lorries belonging to the RMSD also collect supplies from the MSD. The cost of maintenance of these vehicles is borne by the provincial government. The transport of supplies from the RMSD to the end point is by RMSD lorries. Lorry is the most convenient means of transportation. For a sustained and stable supply of quality medical supplies for the welfare of the people, there should be proper storage and distribution. This survey studies the strength and weakness of the existing system with recommendations for improvements.

The objectives of the study were to:

- Ascertain the conditions of storage,
- Ascertain facilities for the storage of special items,
- Ascertain the need for future projection,
- Ascertain systems of maintenance of inventory and registers,
- Ascertain the stock verification procedure,
- Ascertain methods of test checks and audits,
- Ascertain the procedure of disposals,
- Ascertain manpower availability and requirements.

A cross sectional study was performed covering a target area consisting of the Western Province (WP), North Central Province (NCP) and Sabaragamuwa Province. Selected institutions in these three provinces were studied. Data were collected by using an interviewer-administered questionnaire. Personnel interviewed were Deputy Provincial Directors of Pharmacists, District Medical Officers, Registered Medical Officers, and Medical Laboratory Technologists.

The survey revealed that the RMSDs were easily accessible to vehicles with adequate parking facility. The storage space was adequate but physical conditions were not satisfactory. The roofing was unsatisfactory. Ventilation was inadequate to maintain optimum room temperature. There was no cool-room facility. Refrigerators and freezers were not adequate. There was no fire extinguisher. Cargo handling facilities were inadequate. Manpower was inadequate. Supplies are brought to the RMSD weekly and distributed to the relevant institution according to indents. This is performed promptly. As such there was no overstocking at the RMSD. Records were maintained properly. Transport facilities were inadequate. The number of lorries for transport was not enough and poorly maintained.

Most of the hospital stores were part of hospital buildings and not suitable as stores. They were poorly maintained and inadequate in many ways for storage. Facilities for packing goods, receiving and delivering goods such as platform, pallet trucks were deficient. Storage space was inadequate. Ventilation was inadequate. Cold storage facilities were poor. Because the building is part of the hospital, access to the stores was difficult in some institutions. There was no separate security for the stores, no separate office room for the staff, no separate telephone facility and no separate store for the surgical consumables and special items like inflammable items.

There was also a shortage of manpower including pharmacists, medical laboratory technologists, drivers, storekeepers and laborers.

The inventory and registry books were maintained properly. There were order books and request books. Books were maintained for receipts and issues. Stock verification was not regular owing to the shortage of manpower and lack of funds. Stock verification was carried out by clerical grade staff. Due to their unfamiliarity with medical items, it is a slow and laborious process, resulting in delays.

Disposal of unwanted supplies is studied by a board of survey composed of four members. Disposal is by burying, burning and crushing.

Quality assurance is performed by sending random samples for analysis. Test checks are carried out by internal audits.

Poor storage and improper handling can lead to deterioration in the quality of supplies. Such supplies become unusable and unwanted and have to be disposed of as waste. Supplies not used before the date of expiry are also ultimately disposed of, leading to economic loss.

The existing building used for storage has to be improved while new facilities have additionally to be constructed, wherever necessary. They must be maintained properly. There should be adequate cargo handling facilities. Facilities must be provided for the proper stacking of goods. There should be an adequate number of vehicles for the transport of supplies and they should be maintained properly. The hospital stores must have a separate office attached to them. The manpower shortage must be rectified by revising the existing cadre of staff, which is now outdated. Since the health system in the province depends on funds from both central government and provincial government, finances have to be managed properly.

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1.8   MEDICAL EQUIPMENT SURVEY

(1)   INTRODUCTION

Modern medical equipment has recently been introduced in large quantities to public sector healthcare institutions. Although this is welcome, the purchasing criteria/standard of equipment has not been established and the capacity of maintenance has never caught up with the trend, leading to a deteriorating service quality. This is simply shown by the fact that no national inventory of medical equipment has been made to date.

The survey is carried out to assess the actual condition of existing equipment, purchasing and the maintenance of procedures at a national and provincial level, and consequently lead to a proposal for a consistent system for planning and maintenance of medical equipment in the country.

(2)   OBJECTIVES

The objectives of the survey are:

1.   To make a national inventory, and

2.   To recommend better methods for equipment assessment, planning, procurement and maintenance.

(3)   SCOPE OF WORK

The survey is focused on:

1.   The managerial process at national and provincial levels, such as the planning policy for purchasing, procurement methodology, selection criteria, ways of assessing requirements from government hospitals and preparing specifications, inventory of equipment etc.

2.   The details of available equipment: age, condition, usage frequency, specification / capacity, source (government budget or donation), availability of technical support etc.

3.   The equipment maintenance at the provincial level: presence or lack of maintenance units, facilities available, number of staff, competency of technical staff etc.

(4)   STUDY SETTING

A list of the government medical institutions covered in the survey is given in Table 1.8.1.

Table 1.8.1   List of Government Hospitals Surveyed

	Western Province	Sabaragamuwa Province	North Central Province
Teaching/Gen. Hospital	NHSL	Ratnapura	Anuradhapura
Base Hospital	Panadura	Balangoda	Polonaruwa
District Hospital	Minuwangoda	Rabukkana	Madirigiriya
Peripheral Units	Bulathsinhala	Nivitigala	Mihintale
Rural Hospitals	Aturugiriya	Demanpitiya	Habarana
Maternal Home & Central Dispensary	Pitipana	Algama	Nuwaragala
Central Dispensary	Kolonnawa	Yatiyantota	Dabinna
Maternity Home	Kalagedihena	-	-
PDHS Office	Maligawatta	Ratnapura	Anuradhapura
DPDHS Office	Gampaha	Ratnapura	Anuradhapura
MOH	Peliyandala	Aranayaka	Dibulagala

(5)   METHODOLOGY

The methodology includes questionnaires, interviews, inspections and collection of data as appropriate.

1. Interviews with related officials, including provincial directors and deputy provincial directors of health services of the three provinces, end users of medical equipment including doctors and nurses, technical staff and other officials in charge of medical equipment procurement and management

2. Inspection of facilities related to equipment logistics and maintenance.

3. Carrying out a survey on the available medical equipment records.

(6)   FINDINGS

In all institutions surveyed, the following problems were commonly found:

1. Poor distribution of equipment

   In some places, equipment is not being used because the number of equipment available is more than what is required to carry out the desired work, while another section of the same institution is severely affected by not having the same equipment. Equipment distribution between hospitals is also not satisfactory.

2. Most of the locations are over-equipped

   This is especially true in terms of low cost and basic equipment such as instrument sterilizers, nebulisers, and suction apparatus. More than 50% of them are not being used. In some places, some new pieces of equipment are just lying idle in storage.

3. No equipment inventory

   In all institutions, no one is responsible for equipment planning and applications. All head of institutions have no idea about the quantity and quality of equipment available in their institutions.

4. Poor infrastructure facilities

More than 50% of the power sockets are not in good working conditions. Electricity supply in most of the places was not satisfactory. High voltage fluctuations, high harmonic content, and poor earthing were very common. The poor quality of power supply has considerably affected the performance of equipment. In addition, inadequate space, high room temperature, high humidity, dust etc have also affected equipment performance. Again, no one is responsible for the situation. (For instance, the annual electricity bill for the National Hospital is approximately Rs 1500 million. This is equivalent to the cost of two MRI scanners)

5. Poor end-user training system

About 70% of the end-users have not been trained on the proper usage of equipment. This is one reason for premature equipment failure. End-user training has not been recognized as an important element for suitable healthcare delivery system.

6. Poor maintenance facilities

No institution has its own equipment maintenance staff. Biomedical Engineering Services (BES) has trained a number of personnel from healthcare institutions but this has not worked out because most trainees are from the labour grades. They were not competent enough to do the job satisfactorily. Keeping competent staff at institutional level also has become extremely difficult as medical equipment maintenance is still recognized as a labour grade job by many healthcare decision makers and the salary structure is not encouraging.

7. Poor quality of equipment

Much substandard equipment was found, especially in peripheral institutions. Lack of standardization is the main reason for this situation. This has become a major burden to the system.

8. Lack of planning

There was no methodology to plan equipment requirement at either the national or provincial level.

(7)   MAIN REASONS FOR EQUIPMENT FAILURE

1.   Not making an informed decision in the purchase of equipment

Equipment is being procured without performing a need analysis and technology analysis. Healthcare decision-makers make decisions to purchase equipment without having sufficient information on what they acquire. Much inappropriate equipment is available in the health sector due to this reason. Equipment is centrally procured in bulk at present, assuming that the same level of equipment can be distributed among different levels of institutions. This cannot be accepted as the requirement significantly varies according to the size and functions of each hospital.

2   Purchase of sophisticated equipment without planning

Much sophisticated equipment is not being used or is under-utilized due to the lack of operational skills and the lack of other operational requirements such as consumables and spare parts.

3.   Extra modification or addition to equipment unforeseen

This situation is very common for high-pressure sterilizers, X-ray machines and other equipment; for such structural modification is required. (The surveyors have noticed X-ray machines lying in corridors due to the unavailability of space to install them.)

4.   Maltreatment of equipment by operational staff

This is considered as the main reason for premature equipment failure. More than 70% of end-users have not been trained in the proper usage of equipment.

5.   Poor equipment maintenance at provincial level

BES in Colombo carries out most of the maintenance activities. Although there are maintenance units at provincial level, the staff and the facilities available at present are not satisfactory. Thus, they cannot be expected to perform to the level required.

6.   High downtime due to a lack of spare parts and consumables

Most of the time the operational requirements are unforeseen at the procurement stage. Government financial procedures also contribute to this situation as it takes a long time to procure the required spare parts and consumables when required.

7.   Lack of operational and service manuals

This is commonly found in peripheral institutions.

8.   No preventive maintenance and periodic inspection procedures

This has been totally neglected in our healthcare system. At present, only breakdown maintenance is done. Preventive maintenance and periodic inspection have not been considered as important by most decision makers.

9.   Poor infrastructure facilities

This contributes to premature equipment failure in the system. Poor electrical supply, high humidity, high ambient temperature and a salty and dusty environment are the main reasons for this situation.

(8)   PROBLEMS EXPERIENCED

- Lack of assistance from institutions to conduct the survey. Healthcare administrators and end-users have still not understood the importance of having a better equipment management system and they do not have a clear idea about the cost of making medical equipment available at proper working conditions.

- Strikes. One of the staff categories was always on strike during the survey period. This has led to serious problems and unnecessary delays in completing the programme, as assistance by this staff category was extremely important to collect equipment-related information.

- Inaccessibility. This is especially true in operating theatres, ICUs and special care units.

- Lack of information. There is no proper way to record equipment-related information at institutional level.

- Time constraint. Time given for the survey was hardly sufficient to collect all the information required as the information is not freely available at institutions.

- Resources constraints. Relevant information could not be collected by persons who have not experienced working with medical equipment.

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This section was prepared by Mr. S. A. J. Karunathilake, Division of Biomedical Engineering Services, MoH.

1.9 CO-OPERATION, MONITORING AND EVALUATION OF THE MEDICAL SUPPLY SYSTEM AMONG CENTRAL PURCHASING AUTHORITES

(1) INTRODUCTION

It has been observed that, due to the lack of coordination among central purchasing authorities, a large amount of resources are being wasted following the duplication of items being purchased. In certain instances, it has been found that certain life-saving items are out of stock in some institutions, whilst large quantities are stored without being used in others.

The quality and type of items imported by the institutions also vary and, as such, the prescribers and users are confused in selecting the correct items.

A number of high-tech expensive equipment has been purchased by certain Provincial Councils, but these remain idle due to the lack of qualified personnel to operate them. It is also observed that, in certain instances, poor quality items from cheap sources have been purchased and are idle due to minor technical problems - solely due to the fact that basic requirements such as maintenance agreements have not been signed.

All these clearly indicate that a well coordinated supply system should be developed so that the end user would get maximum benefit out of the available but limited resources.

(2) OBJECTIVES OF SURVEY

The objectives of the survey are as follows:

To identify the existing weaknesses and inefficiencies, resulting in a wastage of funds; and

To draw up recommendations on how to develop an efficient and economical procurement system for the central purchasing organization and for institutions involved in the purchasing of medical supplies.

(3) SITUATION ANALYSIS

A situation analysis was conducted in the following sectors:
1. Medical Supply Division (MSD)
2. Family Health Bureau (FHB)
3. Anti-Malaria Campaign (AMC)
4. Epidemiological Unit
5. Bio-Engineering Services (BES)
6. Health Institutions under Provincial councils

1. Situation Analysis at MSD

MSD is the main organization which supplies the following items to all state health institutions after being purchased by the State Pharmaceutical Corporation (SPC): (1) Pharmaceuticals, (2) Dressings,

(3) X-ray Films and Chemical, (4) Contrast Media, (5) Special Drugs, (6) Surgical Consumables & Non-Consumables, (7) Dental Items, (8) Laboratory Chemicals and Glassware, (9) Narcotic Drugs, and (10) Printed Forms.

In the procurement of drugs by SPC, worldwide tenders are floated according to the tender procedures laid down by the Sri Lanka government. It is mandatory that tenders be awarded only for the products (devices and drugs) that are registered with the Drug Regulatory Authority of Sri Lanka.

Once purchased by the SPC, supplies are sent to MSD, which acts as a Central store for the state health sector institutions. These supplies are distributed on a quarterly basis so that all institutions would have adequate medical supplies for the use of patients.

All expenses incurred by the SPC are reimbursed with a service charge of 10% of the C&F value of goods. The main problem faced by the MSD is either the supplies going out of stock or stocks running low due to a delay in supply by SPC. This becomes a vicious cycle and the institutions are compelled to purchase medical supplies at a higher cost when supplies run out at the institutions.

Sri Lanka consists of 25 regions and each region has a Regional Medical Supplies Division (RMSD). Regional health institutions procure their requirements from these RMSDs. However, the facilities available to store vaccines and cool-room items are not adequate at these RMSDs. Teaching hospitals (18 in number) which come under the Central Government and specialized campaigns receive their supplies directly from the MSD.

MSD imports 600 drugs for the use of state institutions, of which 234 are essential drugs and 43 are life-saving drugs.

Table 1.9.1   Population Growth and Allocation for Medical Supplies, 1991-2001

Year	Population (In Millions)	Allocation for Drugs (Rs)
1991	17,276,000	800,000,000.00
1992	17,486,000	970,000,000.00
1993	17,613,000	1,000,000,000.00
1994	17,529,000	1,643,468,000.00
1995	18,025,000	2,014,000,000.00
1996	18,202,629	2,000,000,000.00
1997	18,384,655	2,400,000,000.00
1998	18,568,502	2,600,000,000.00
1999	18,784,157	2,700,000,000.00
2000	18,515,000	5,963,000,000.00
2001	18,732,000	4,700,000,000.00

2. Situation Analysis at Family Health Bureau (FHB)

FHB is the central organization responsible for planning, coordinating, directing, monitoring and evaluating Maternal and Child Health (MCH) and Family Planning Programmes (FP) in Sri Lanka.

Maternal care includes Antenatal, Intranatal and Postnatal care. Infant and Child care includes providing immunization against 7 common childhood diseases, namely, Tuberculosis, Polio, Diphtheria, Whooping Cough, Tetanus, Measles and Rubella, and monitoring the growth and psychological development and control of Diarrhoeal and Respiratory diseases.

The FHB is involved in the procurement and distribution of contraceptive equipment and supplies needed for the delivery of MCH/FP activities.

It should be noted that all these items are supplied by International Non-Governmental Organizations on a donation basis.

3. Situation Analysis at Anti-Malarial Campaign (AMC)

After decentralization in 1989, the AMC is involved in the formulation of a National Malaria Policy, monitoring of the countrywide Malaria situation, provision of technical guidance to Provincial Malaria Control Programmes, Inter-Provincial coordination and training and research activities in Malaria control. Implementation of programmes is the responsibility of Provincial Directors of Health Services.

The drugs used for treatment of Malaria in Sri Lanka are Chloroquine (tablets), Primaquine (tablets) and Fansidar (tablets). It is noted that Tab. Chloroquine and Tab. Primaquine, which are imported through the MSD, are also being purchased by the AMC, duplicating the process of supply.

4. Situation Analysis at Epidemiological Unit

The Epidemiology unit is responsible for the control of vaccine-preventable diseases, Diarrhoeal diseases, Acute Respiratory infections, Dengue Fever, Dengue Haemorrhagic Fever, Japanese Encephalitis, and Emerging and Re-Emerging diseases that do not come under specialized campaigns. Regional Epidemiologists (RE) are appointed to coordinate these activities at regional level.

Oral Polio Vaccine, Diphtheria Tetanus + Pertussis Vaccine, Diphtheria + Tetanus Vaccine, Tetanus Toxoid, Bacillus Calmat Guanine Vaccine, Measles Vaccine, Rubella Vaccine, Japanese Encephalitis Vaccine, Adult tetanus + Diphtheria Vaccine and Measles + Rubella Vaccine are donated by Non-Governmental Organizations for the implementation of the Immunization programme.

However, it is observed that the MSD purchases Tetanus Toxid, Anti-Rabies Vaccine (ARV) and Anti-Rabies Serum (ARS).

5. Situation Analysis at Bio-Engineering Services (BES)

BES was involved in the purchase and supply of large equipment to State Health Institutions in Sri Lanka. Most of the officers are technically qualified and are being supervised by groups of engineers who are knowledgeable in repairing and maintaining these equipment. However, with the decentralization, in 1990, provinces were empowered to purchase major equipment, and allocation was granted accordingly. Since then the BSE has become the sole supplier of major equipment to institutions that are under the central government (i.e.,18 Teaching Hospitals and the specialized campaigns).

This situation has created major problems in purchasing, supplying, monitoring and maintaining high-tech and sophisticated equipment. This is due to the fact that Provinces lack the expertise in evaluating such equipment prior to purchase.

There is also no national equipment policy that identifies the types of equipment suitable for different levels of institutions. The outcome of this is that hospital Administrators and Consultants tend to use their influence to purchase equipment to suit their individual needs. Thus, the development of a national equipment policy is a priority.

6.   Situation Analysis at Health Institutions Under Provincial Councils

In Sri Lanka, with the devolution of power in 1990, after which health too became a devolved subject, other than for the 18 Teaching Hospitals, Specialized Campaigns and 13 selected Hospitals, all other health institutions came under the administration of the Provincial authorities.

There are 8 Provincial Directors of Health Services and 25 Deputy Provincial Directors of Health Services who are in charge of Provincial Health institutions.

Though the supply of drugs is the responsibility of the Central government to all Health Institutions in the country, the Provincial Councils have been given the authority to obtain requirements of Medical equipment, and Laboratory apparatus and devices from any private source following tender procedures laid down. This has led to the following problems:

- Uniformity cannot be maintained
- Low quality items being purchased due to lack of knowledge
- Consideration not being given to the signing of service contracts
- Non-availability of qualified staff to utilize this equipment
- Idle/non-functioning equipment due to minor defects
- Non-functioning due to lack of costly kits/chemicals
- Non-utilization due to lack of basic needs such as recommended electricity supply, air conditioning etc.

(4)   RECOMMENDATIONS

1. Policy decisions should be taken to ensure that all items (drugs and devices) imported either by the government or NGOs should be imported through the MSD or BES.

2. All items imported should be registered with the CDDA in compliance with the Cosmetics, Devices & Drugs Act, No. 27, of 1980.

3. Specialized sectors should have better inter-sectoral coordination.

4. All supplies should be distributed in a uniform system so that duplication and mal-distribution do not take place.

5. There should be a Type plan for drugstores for various levels which should be followed by health institutions in the construction of new drugstores. Special emphasis should be given to include cool rooms in all drugstores to be constructed so that cold chain and the quality of drugs could be maintained.

6. Guidelines on donations should be drawn up.

7. The formation of "Equipment Committees" at the centre that could develop protocols on equipment, and which should be in various grades of health institutions, is recommended.

8. As far as possible, Provincial Councils should be encouraged to obtain high-tech equipment through the BES. Where Provincial Councils insist on their own tender boards for purchasing equipment it is advisable to obtain the services of qualified Bio-Medical Engineers from BES to serve on their evaluation boards.

9. A regional BES centre should be opened in all Provinces and Teaching Hospitals, which should have a close liaison with the BES.

10. Provincial and Central Government authorities should coordinate with each other to ensure services of high-tech equipment are shared rather than purchased separately for each and every institution.

11. The habit of supplying equipment to wards of Consultants, depending on their influence with the political leadership or the administration, should be discouraged.

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This section was prepared by Dr. U.A. Mendis, DDG Laboratory Service, MoH.

1.10   MENTAL HEALTH IN SRI LANKA

(1)   INTRODUCTION

Five to ten percent of people in Sri Lanka are known to suffer from mental disorders needing clinical investigation. Psychosis, mood disorders, dementia, anxiety disorders, somatoform disorders, substance abuse, stress disorders and adjustment disorders are some common conditions seen in clinical practice.

The health, social and economic impact due to mental disorders is considerable both to the individual and to society, but this is largely hidden and is unknown to many.

The demographic changes that Sri Lanka is undergoing will result in an increase in the absolute number of young adults and the elderly population. These groups are particularly vulnerable to the development of serious mental illness such as mood disorders, psychosis and dementia.

The ongoing social changes are not only likely to increase mental health problems but also enhance the expectation of people, resulting in their seeking mental health care in greater numbers. High incidence of suicidal behaviour, alcohol problems, chronic mental disabilities and stress-related mental health problems associated with social upheaval pose a considerable challenge to the mental health services in Sri Lanka.

In spite of considerable improvements over the years, the mental health services, with ingrained practices that were established in the nineteenth century, are slow to change to meet modern day requirements and demands. The priority and emphasis placed on Mental Health services is low in the health agenda. The people's attitude towards mental health development is non-responsive at most levels.

The Mental Hospitals continue to play a very significant role in providing mental health services, consuming more than 80% of resources allocated to mental health services. The mental health units attached to other hospitals serve a large population throughout the country but resources allocated to these facilities are relatively low. Services provided by others, especially the non-governmental agencies are increasing but coordination among different types of services remains unsatisfactory.

The present range of mental health services, service delivery models, facilities, personnel, funding, organization of services and priority setting process seem to be inadequate to meet the present and emerging mental health needs of the community.

There are serious inequities in the distribution of facilities and access to mental health services. Most services are presently concentrated in Colombo and other urban areas leaving the rest of the country devoid of adequate services. The range of interventions, services and facilities presently available are inadequate to meet the emerging needs of the people. Community services, psychological interventions, social care, and special services for elderly, children, disabled and offenders are minimal.

Lack of a national health programme, absence of an effective leadership, inadequacies in the organizational structure, and inadequacies in funding and financial administration could be identified as some of the reasons for hampering the development of mental health services. Therefore, there is an urgent need to develop a National Mental Health Programme, and necessary infrastructure with adequate resources, as an essential step in the development of mental health services to the emerging mental health needs in the country.

(2)   MENTAL HEALTH CARE/SITUATION AT A GLANCE

- There are approximately 29 qualified psychiatrists to serve an island-wide population of 19.5 million. Fourteen (14) of them are in the vicinity of Colombo.

- There is not a single practising clinical psychologist in government facilities, including 3 mental hospitals, in the vicinity of Colombo.

- Most qualified Counsellors are proficient in fields such as family counselling and marriage counselling, but training for dealing with problems related to mental illness is lacking.

- There are no rehabilitation centers or halfway houses for persons recovering from mental disorders.

- There is very little coordination between psychiatrists, general practitioners, counsellors and social workers.

- The integration of mental health care with primary health care is still in the realm of theory.

- Hospital facilities for in-patients are totally inadequate. At Angoda mental hospital - the premier mental hospital in Sri Lanka - there are 1200 beds for an average of 1700 patients.

- Many recovered patients remain in mental hospitals as they are rejected by their families and have nowhere else to go.

- The mental hospital Mulleriyawa is 200% overcrowded. Unit II of the hospital has nearly 1000 chronic, long-standing female psychiatric patients. These patients are abandoned by their families.

- The suicide rate in Sri Lanka is the highest in the world (49 per 100,000). An average of 10 known suicides take place each day, mainly among the age group of 18 - 25 years.

- The rate of alcohol consumption - 3 liters per capita - is the highest in the world; no statistics on drug abuse is available but projected statistics show approximately 150,000 drug abusers in Colombo.

- The revision of the National Mental Health Plan has been pending for 18 years and the final draft has been prepared but yet to be enacted in Parliament.

- Mental health education is missing from the school curriculum.

- Social stigma and fear of mental illness, stemming from ignorance, is widespread in both urban and rural areas. Superstitions and myths about mental illness abound, leading to ostracism of the mentally ill and their families.

- Research conducted in Sri Lanka shows that in about 20% of patients in General Hospital, 20%-24% of patients consult a family practitioner and 5%-10% of the adult population suffers from significant psychological disorders.

- An estimated 70,000 Sri Lankans suffer from schizophrenia and this figure is projected to increase with the increased numbers in the young adult age groups that are most prone to this illness.

- It is estimated that 5%-10% of the population over 65 years suffers from dementia. This number will also increase as the population in the dependent age group expands due to a longer life span.

- Domestic violence towards women is seen in 20%-70% of persons seeking asylum and police intervention; child abuse is escalating in domestic and work settings, among street children and in the commercial sex industry.

- Absenteeism and the loss of production, due to mental health problems associated with stress, and expenses involved in caring for people suffering from mental illness, run into billions of rupees.

- There are two mental hospitals to serve the whole country, 8 psychiatric wards in hospitals, 7 psychiatric clinics and 4 university psychiatric units.

- An estimated 32 psychiatrists are mainly based in facilities in the vicinity of Colombo; there are 4 psychologists for the entire country, 6 psychiatric social workers and 20 trained psychiatric nursing staff.

- No state rehabilitation centers exist. There are 4 NGO-managed day care centres and 1 operated at home with residential facilities.

Every effort has been made by concerned NGOs to encourage the health authorities to take positive steps to improve the present unsatisfactory conditions pertaining to mental health care, and the rehabilitation into society of persons recovering from mental illness. It would appear to be the role and responsibility of the NGOs to take the initiative to promote mental health and well-being among the most disadvantaged sector of the population.

(3)   NATIONAL MENTAL HEALTH PROGRAMME

General Objective of the National Mental Health Programme

The general objective is to facilitate and promote the development of cost effective, accessible and acceptable quality mental health services available in an equitable manner.

Guiding Principles of the National Mental Health Programme

- The government, while providing a range of mental health services, will continue to facilitate and coordinate the services provided by other agencies and non-governmental organizations.
- Medical and non-medical mental health professionals will provide the mental health services through a range of facilities available.
- Mental health services will be planned according to the needs of the population and availability of resources at provincial, district and divisional levels.
- Secondary and tertiary care services will be delivered through specialized mental health services, while the primary care services will be delivered through the general health services.

Strategies of the National Mental Health Programme

To achieve the general objective of the National Mental Health Programme, the following strategies will be employed:

1. Promoting mental health - The aim of Mental Health promotion is to enhance the realization of the individual potential, to optimize psychological well-being, to develop satisfying social relationships and a positive response to adversity/changes and to fulfilling personal expectations.

2. Raising awareness - The aim of this strategy is to provide individuals and the community with information and knowledge about various aspects of mental health including the common disorders. Such awareness may be useful in preventing/recognizing mental disorders early, seeking treatment and benefiting from available services.

3. Providing curative services - Curative services include assessment, clinical care and counselling both in institutional and community settings. These services will be made responsive towards the needs of the people including children and elderly suffering from a range of mental disorders.

4. Providing social care - Social care will include various forms of assistance including rehabilitation, income support and residential support.

5. Ensuring standards - This will include standards for clinical responsibility and administrative responsibility. The New Mental Health Act will also be dealt with under this component.

6. Developing human resources - Based on projected manpower needs, these include general health professionals (medical doctors, nurses, and family health workers) and mental health professional (specialists in mental health, training of medical officers to serve in the capacity of MO Mental health in base hospitals and outreach clinics, training of mental health nurses at post-graduate level, training of Occupational therapists, Clinical psychologists and Social workers).

7. Development and research - steps will be taken to establish a National Institute of Mental Health. This institute is expected to take the leadership in all areas of mental health development nationally including research, model clinical care, and model organization of services and training of all categories of mental health professionals.

Implementation of the National Mental Health Programme

The programme will be implemented over a period of five years in a phased manner as a special project.

1. PHASE 1 - 2001 to 2003
    *   Establish the necessary organizational structures, i.e., National and Provincial mental health directorates and budgetary provisions
    *   Fill all vacancies and provide the necessary infrastructure to existing units in order to initiate a comprehensive district/provincial service
    *   Establish one other facility in each province and provide minimum staff
    *   Initiate all training programmes
    *   Establish the National Institute of Mental Health - NIMH
    *   Initiate promotional and awareness raising programmes
    *   Establish forensic and special services

2. PHASE 2 - 2004 TO 2006
    *   Establish facilities in all districts in order to provide a comprehensive service
    *   Expand the training programmes
    *   Expand the activities of the NIMH
    *   Consolidate all above activities

All aspects of the project including administration, organization, training, financing, implementation and monitoring will be the responsibility of the National Mental Health Directorate.

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Dr R Haniffa/April 2003.

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This section was prepared by Dr. Roi Perera, Director of Mulleriyawa Teaching Hospital.

1.11 KAP SURVEY

(1) INTRODUCTION

This study was undertaken with the prime objective of exploring the health seeking behaviour of patients encompassing all sources of treatment available in the country.

For the major component of the study, the household survey, a multi-stage, stratified sampling method was adopted covering the three sectors of the country, namely urban, rural and estate sectors.

A Focus Group Discussion was conducted, for the northern and eastern provinces which were not covered by the household survey. Focus group discussions were also conducted for the fishing community, urban slums, rural community and estate community with the objective of gaining an in-depth understanding of behavioural pattern and attitudes of these underprivileged communities.

The study has revealed that although there seems to be a considerable expansion of the private allopathic sector, in seeking care for chronic illnesses and particularly for inpatient care, patients more often use the public allopathic system.

On the one hand, unaffordability of private care appears to be a major reason for this tendency. Utilization of private care (pure private care as well the private care provided by public providers) appears to be substantially higher in the urban sector and amongst high-income brackets.

On the other hand, patients seem to be more satisfied with the inpatient care compared to outpatient care at public allopathic medical institutions. However, patients are forced to bear a large proportion of the cost of treatment even when they seek care from public medical institutions, irrespective of the type of care or illness.

In fact, patients in peripheral locations are worst affected with high travel cost in seeking care from better-equipped medical institutions in the city centres. Furthermore, drug shortages and fewer facilities at the public medical institutions in such localities appear to have led the patients to bear a part of the cost of medical care in the form of purchasing drugs and coming back for medical tests.

The direct and indirect costs to the patients of the public health system are high enough that many, especially those who belong to low income brackets, cannot afford it, and need to cope by borrowing. As it was revealed by reference to some other studies, the high incidence of illness among all sectors of the community and, therefore, the exploration of the best possible care for the sick, seem to have brought the patients to bear a portion of cost of treatment even in the case of public care.

This study has shown some of the major obstacles to the use of the public health system. However, with the time limitation, only some aspects of these issues could be addressed and explored in this study.

(2)   BACKGROUND

The investment on Health Services in Sri Lanka has continued to increase since independence and many goals have been achieved through the free health services provided by government. At present, the health indicators for Sri Lanka are the best among those of South East Asian countries and some are comparable with those for developed countries. The country has achieved universal coverage of immunization through its extended programme of immunization; maternal-child health and family planning coverage are very much improved through the Primary Health Care (PHC) services. The main contributory factors for the success of the PHC approach are the high level of female literacy and autonomy, as a result of free education in the country.

The country is experiencing a demographic transition. Sri Lanka has the fastest aging population of the world and, at present, the population over 65 years of age is nearly 12%, and predicted to nearly double at 22% by the year 2020.

Epidemiological transition of the country is more significant as many communicable diseases are showing a downward trend. However, non-communicable diseases are showing an upward trend. Incidences of diabetes mellitus, hypertension, heart diseases, nutritional disorders, occupational diseases and accidental injuries are on the increase. Periodical epidemics of certain communicable diseases such as dengue fever and Japanese encephalitis are also reported. There are re-emerging diseases like tuberculosis in the country.

Although the government provides free health services with acceptable quality, some of the issues identified are yet to be addressed, as follows:

- Inequalities and shortages in basic services with under utilization of facilities in rural hospitals and severe pressure on facilities in urban hospitals;

- Inequalities in resource allocations to meet the increasing demand on technological applications in health care services;

- Individuals are paying for nearly 50% of the cost of their treatment out of their earnings, in spite of free health services;

- The health problems caused as a result of the civil war in the country during the last two decades;

- The health problems associated with special population groups such as families of Middle East employees and Free Trade Zone employees.

General Objective

Following is the general objective of the study: "To determine the users' perspective on the current health service's responsiveness, accessibility, demand, quality of care and cost as well as the preference among service providers and the reasons for such preferences".

Specific Objectives

Specific objectives of the study are as follows:

1. To determine the level of responsiveness of health services towards the client/consumer.

2. To assess the demand and the accessibility of different services required by client/consumer for current health problems.

3. To assess the expectation and feelings of people regarding the services and quality of care that they receive from government health institutions.

4. To describe the health seeking behaviour of people and factors influencing such behaviour.

5. To assess the decision making process within households that influence health seeking and the implications of this process for vulnerable groups (e.g. children, women, elderly).

6. To study the cost of illness to the individual/family and to assess the feasibility of different methods of financing.

7. To assess the availability, affordability and preference for special care services required by special population groups.

8. To assess the "bypassing practices" of people and the magnitude of the problem.

Study Area

The knowledge, attitudes and practices of the people of Sri Lanka were assessed carefully and interpreted to show the opinion of a cross-section of the community. A representative sample of households in Sri Lanka was selected in order to get precise answers to specific objectives of the study. Seventeen districts were taken to implement the KAP household survey.

Six focus group discussions were held to generate qualitative data from special population groups in order to support the KAP survey.

Sampling

The sample is a multi-stage, stratified probability sample representative of the entire country, excluding northern and eastern provinces. The country has been stratified into districts on the basis of socio-economic and ecological criteria. Each district was further stratified into three strata: urban, rural and estate sectors. The number of stages of the design and the primary sampling units (PSUs) vary according to sectors.

The PSUs were mostly selected from a specially organized framework consisting of wards and Grama Niladhari divisions organized by districts, sector and within a sector geographically. This organization provided a better basis for stratification as it is arranged on a geographical basis.

Data Collection

Data collection was done through two methodological approaches: structured interviews and focus groups

1) Structured interview with questionnaire (translated into Sinhala and Tamil for field administration)

- Section one - Covers the background information of the household and its members

- Section two - This section was administered only for household members who had reported having an illness during the month prior to the day of visit of enumerators

- Section three - Refers to the coping mechanism of the household in relation to illness covered in section two

- Section four - Addressed some selected aspects of responsiveness, which was administered to all households

2) Focus group meetings for the following groups:

1. City slum dwellers in Kirillapone, Colombo

2. North and East residents summoned to Colombo

3. Fishing community at Tangalle

4. Remote rural community at Sooriyawewa

5. Up country plantation community at Bandarawela

6. Low country plantation community at Avissawella

Each group had 10 - 15 participants. The consultants personally visited and conducted the focus group meetings. The participants were given enough time to get to know the consultants and the discussions were initiated under the specific objectives given in Section 2 of this chapter. All the discussions were recorded and transcribed.

(3)   HEALTH SEEKING BEHAVIOUR

The household survey was conducted amongst 2745 households with a response rate of 92%.

Table 1.11.1   Distribution of sample by sector

Sector	Number of Households	%	Number of Interviewees	%	% of Males	% of Females
Urban	564	20.5	2,500	21.5	48	52
Rural	1,894	69.0	7,980	68.5	49	51
Estate	287	10.5	1,164	10.0	51	49
Total	2,745	100.0	11,644	100.0	49	51

Health seeking behaviour for this survey has been classified as follows:

1. INFORMAL TREATMENT

   1.1   Self-treatment

   1.2   Ritual treatment

   1.3   No treatment

2. FORMAL TREATMENT

   2.1   Public allopathic treatment

   2.2   Private allopathic treatment

   2.3   Ayurvedic (public and private) treatment

   2.4   Other - Homeopathy/Acupuncture/Pharmacist/Other (Unspecified).

Table 1.11.2   Prevalence of illness by type of illness and sector

Acute Illness	Urban 2500	Rural 7980	Estate 1164	Total 11644
No. of patients	162	535	51	748
Prevalence	6.5	6.7	4.4	6.4
As a % of patients in the sector	37.5%	40.2%	26.6%	38.2%

No. of days sick	822	2144	161	3127
Average no. of days sick	5.1	4.0	3.2	4.2
Chronic illness				
No. of patients	266	791	133	1190
Prevalence	10.6	9.9	11.4	10.2
As a % of patients in the sector	61.6%	59.4%	69.3%	60.8%
Total no. of patients*	432	1332	192	1956
Prevalence	17.3	16.7	16.5	16.8
As a % of the total no. of patients in national sample	22.1%	68.1%	9.8%	100%

* Including 18 patients with both acute and chronic illnesses

- There were 1956 patients with some kind of illness during the recall period of one month.
- 748 (38.2%) of patients suffered acute illness and the rest, 1190 (60.8%), had chronic illness.
- Though the urban sector reported the highest prevalence rate of 17.3%, a very significant difference cannot be observed between the three sectors.

Table 1.11.3   Ten leading diseases by sector

Disease	Percentage of Patients							
	Urban		Rural		Estate		Total	
	%	Rank	%	Rank	%	Rank	%	Rank
Influenza	17.8	1	19.8	1	7.1	5	18.0	1
Hypertension	15.6	3	12.5	3	15.9	2	13.6	2
Arthritis	5.8	5	12.7	2	8.8	4	10.8	3
Asthma	8.5	4	8.6	4	18.2	1	9.5	4
Diabetes	17.2	2	6.5	5			8.4	5
Heart Failure	5.6	6	6.1	6	11.8	3	6.5	6
Viral Fever	5.3	7	5.2	7			4.7	7
Accidents	4.0	8	4.9	8	5.3	6	4.7	7
Mental Illness	2.1	9	3.8	9			3.2	9
Acute Respiratory Tract Infection			2.6	10	3.5	8	2.4	10
Stroke					2.9	10		
Cancer	1.9	10						
Cataracts					4.7	7		
Food Poisoning					3.5	8		

Note: The general disease pattern of the total sample within the three sectors indicates that the urban sector also has almost the same disease pattern as the other sectors except the tenth disease (acute respiratory tract infection).

Table 1.11.4   Source of treatment by type of illness

	Source of Treatment	Acute Illness	Chronic Illness	Total
1	INFORMAL TREATMENT: % of patients (N=1897)			
1.1	Self-treatment			
	Self-treatment and recovered	8.87	0.17	3.53
	Self-treatment, not recovered and formal treatment	36.43	16.07	23.93
	Self-treatment, not recovered but no formal treatment	2.18	1.12	1.53
	Sub total	47.48	17.35	28.99
1.2	Ritual treatment	6.96	11.51	9.75
1.3	No treatment	2.73	3.01	2.90
2	FORMAL TREATMENT: % of visits (N= 1746)			
	Total no. of visits = 3187			
2.1	Public allopathic			
	Public Inpatient care	16.3	20.4	19.2
	Public outpatient care	39.0	44.0	42.5
	Sub total 1	55.4	64.4	61.8
2.2	Private allopathic treatment			
	Private outpatient care	24.2	15.6	18.1
	Private Inpatient care	1.5	1.3	1.4
	Private care from a public doctor	9.5	6.1	7.1
	Private care at a channelling centre	3.2	6.6	5.6
	Sub total 2	38.5	29.7	32.2
2.3	Ayurvedic (Public & private) treatment			
	Public outpatient care	1.0	1.4	1.3
	Public Inpatient care	0.2	0.9	0.7
	Private outpatient care	3.6	2.9	3.1
	Private Inpatient care	0.1	0.1	0.1
	Sub total 3	4.9	5.3	5.1
2.4	Other			
	Homeopathy	0.0	0.1	0.1
	Acupuncture	0.1	0.0	0.0
	Pharmacist	0.5	0.2	0.3
	Other (unspecified)	0.6	0.4	0.5
	Sub total 4	1.3	0.7	0.8
	TOTAL	100.0	100.0	100.0

Note:
- 28.99% of patients of the total number of 1897 (although 1956 respondents reported illness, due to incompleteness/inconsistency of response, only 1897 were taken for analysis on health seeking behaviour) patients sought self-treatment as the first remedial measure for illness.
- Tendency for seeking self-treatment is higher for acute illness than chronic illness.
- 2.18% patients with acute illness and 1.12% of patients with chronic illness had not yet moved toward formal treatment at the time of field investigation.
- The two main diseases from which patients recovered by self-treatment were Influenza (77%) and Viral fever (11%).
- 61.8% of all visits for formal treatment have been made for public allopathic treatment.
- 32.2% of all visits for formal treatment have been made for private allopathic treatment.
- Only 5.1% of visits have been made for Ayurvedic treatment with 4.9% for acute illness and 5.3% for chronic illness.
- Allopathic treatment at public outpatient departments was the main source of treatment with 39% for acute and 44% for chronic illness (42% of all visits).

Table 1.11.5   Five leading diseases for public outpatient care by visit

Disease	% of Visits for Each Disease				
	1st Visit	2nd Visit	3rd Visit	4th Visit	5th Visit
Acute diseases					
Influenza	46.1	32.1	18.5	22.2	30.8
Viral fever	15.2	7.1	3.7		
Accident	8.4	19.6	25.9	27.8	23.1
Acute respiratory tract infection	7.9	14.3	33.3	27.8	23.1
Diarrhoea	4.7				
Scabies		7.1	7.4	11.1	15.4
Dental caries				5.6	
Ringworm infection					7.7
Chronic diseases					
Hypertension	22.6	26.2	26.9	23.9	26.7
Arthritis	20.3	16.8	14.7	19.5	17.8
Asthma	19.5	21.0	20.5	19.5	24.4
Diabetes	11.5	5.6			
Heart failure	8.3	9.8	10.9	9.7	10.0
Mental illness			6.4		5.6
Cataracts				7.1	

Bypassing Phenomenon

Even if there is a tendency towards public allopathic treatment with the aggravation of illness, visits are not necessarily made to the closest public medical institution. As Table 11.1.6 shows for acute illness, almost 62% of urban patients have bypassed the closest public western medical institution. As it was mentioned earlier, some of these visits could have been made for private treatment sources. In the rural sector and the estate sector, bypassing proportions of the first visit are relatively lower than that of the urban sector with 48% and 45.5%, respectively. In general, 51% of all patients have bypassed the closest public western medical institution. For the second and third visits, this proportion stands at 53.8% and 52.7%, respectively. However, in the urban sector all the patients have bypassed the closest public western medical institution. Whilst this proportion has dropped from 48% for the first visit to 44.2% for the rural sector, the bypassing trend of the estate sector patients has jumped from 45.5% for the first visit to 60% for the third visit.

Table 1.11.6   Bypassing the closest public medical institution for acute illness by sector

Response	Urban	Rural	Estate	Total
1st Visit				
Not bypassed	38.1	52.0	54.5	49.0
Bypassed	61.9	48.0	45.5	51.0
Total	100	100	100	100
2nd Visit				
Not bypassed	0.0	53.7	50.0	46.2
Bypassed	100	46.3	50.0	53.8
Total	100	100	100	100
3rd Visit				
Not bypassed	0.0	58.8	40.0	47.3
Bypassed	100	44.2	60.0	52.7

Response	Urban	Rural	Estate	Total
Total	**100**	**100**	**100**	**100**

In the case of chronic illness, although no significant difference can be observed in terms of the proportion of bypassed patients, there seems to be a high tendency towards bypassing for the later visits. Whilst 48.1% of patients have bypassed the closest public western medical institution for the first visit, this figure has moved up to 57.6% for the third visit. But unlike the tendency for acute illness, 16.7% of urban patients have sought treatment from the closest public western medical institution for the third visit. For the second visit this proportion stands at 23.4%. Moreover, the bypassed proportion for the first visit in the urban sector (60.9%) is slightly lower than that for acute illness (61.9%). This indicates that, for chronic illnesses, patients in the urban sector have either relatively more faith in public treatment or fear the prohibitive cost of private care.

In the rural sector, unlike the tendency for acute illness, the bypassing proportion is larger with second and third visits. It has moved up from 45.1% for the first visit to 55.8% for the third visit. It maybe that, for chronic illness such as hypertension, asthma and heart failure, tertiary level hospitals are better equipped and supplied than the closest primary or secondary level hospitals in the rural population.

Meanwhile, a similar bypassing pattern can be observed for the estate sector for whom this proportion has increased from 40.8% for the first visit to 48.8% for the third visit. The availability of only primary care, even at the estate sector public hospitals, could be a prime reason for the acceleration of bypassing in the estate sector for latter visits.

Table 1.11.7   **Bypassing the closest public medical institution for chronic illness by sector**

Response	Urban	Rural	Estate	Total
1st Visit				
Not bypassed	39.1	54.9	59.2	51.9
Bypassed	60.9	45.1	40.8	48.1
Total	**100**	**100**	**100**	**100**
2nd Visit				
Not bypassed	23.4	48.4	48.1	44.8
Bypassed	76.6	51.6	51.9	55.2
Total	**100**	**100**	**100**	**100**
3rd Visit				
Not bypassed	16.7	44.2	48.6	42.4
Bypassed	83.3	55.8	48.6	57.6
Total	**100**	**100**	**100**	**100**

Table 1.11.8   **Reasons for bypassing the closest public medical institution by type of illness and sector**

Reason	Urban	Rural	Estate	Total
For acute illness:				
Since it's a crowded place	25.8	9.9	5.9	14.0
Since it doesn't have proper facilities	22.7	22.7	23.5	22.8
Since the government doctor pays				
proper attention in private practice	21.6	27.7	29.4	26.1
Other reasons	29.9	39.7	41.2	37.1
Total	100.0	100.0	100.0	100.0
For chronic illness:				
Since it's a crowded place	18.6	10.1	8.5	12.1
Since it doesn't have proper facilities	29.7	37.0	51.1	36.3
Since the government doctor pays				
proper attention in private practice	24.1	16.0	14.9	18.0
Other reasons	27.6	37.0	25.5	33.6
Total	100.0	100.1	100.0	100.0

For chronic illness, as indicated above, the unavailability of proper facilities has emerged as the main reason for bypassing with 36.3% of responses. For the urban, rural and estate sector, this proportion stands at 29.7%, 37% and 51.1%, respectively. As pointed out earlier, the highest percentage of responses for this reason in the estate sector is quite clear i.e. poor facilities at the estate hospitals and the closest primary level medical institutions. With more emphasis on this reason, the relative significance of the other two main reasons, "crowded place" and "proper attention in private practice" has become less for chronic illness with only 12.1% for the former and 18% for the latter. However, only in the urban sector is there a relatively high response rate (24.1%) reported for the latter: i.e., proper attention given by the public doctor in private practice. As a final note on bypassing, it is worth mentioning that obviously the cost of travel of the bypassed patients has been reported as much higher than the others (Table 1.11.9). In the estate sector, with poor access to other sources of treatment, a bypassed patient had to spend twice as much as the other patients for travelling. Whilst a bypassed patient had spent Rs. 150 for travelling, for the others it was only Rs.75. For the urban sector, these figures stand at Rs. 58 and Rs.38. These figures are reported for the rural sector with a relatively low difference as Rs. 82 and Rs.67, respectively.

Table 1.11.9   Bypassing the closest public hospital : cost of travel

Cost of travel for	Urban	Rural	Estate
a. Those who bypassed	58	82	150
b. Others	38	67	75

Direct Cost of Formal Treatment

For formal treatment, the total cost of treatment was estimated for each source of treatment with three components, namely:

2.2.1   Cost of travel

2.2.2   Cost of medical care

2.2.3   Cost of supplementary, nutritional and special food.

1) Cost of Travel

This included three components:

- Travel cost to patient
- Travel cost to person/s accompanying the patient
- Travel cost of visiting patient

Table 1.11.10   Average cost of travelling per visit by source of treatment.

	Source of Treatment	Patient	Accompanying Person (s)	Visiting Inpatients	Total
1	Public allopathic				
	Public Inpatient care	151	61	279	491
	Public outpatient care	56	36	0	92
	Subtotal 1	85	44	86	215
2	Private allopathic				
	Private outpatient care	50	26	0	76
	Private Inpatient care	265	122	37	424
	Private care from a public doctor	59	37	0	97
	Private care at a channelling centre	76	91	0	167
	Subtotal 2	61	43	1	105
3	Ayurvedic (Public & private) treatment				
	Public outpatient care	272	120	0	392
	Public Inpatient care	155	156	424	735
	Private outpatient care	117	113	0	230
	Private Inpatient care	600	100	67	767
	Subtotal 3	170	120	59	349
4	Other	67	4	0	71
	Average cost per visit	83	47	60	190

Note:
- On average a household spent Rs 190 per visit, for travelling to seek treatment for a sick household member.
- Across the three main sectors of treatment, the highest cost is for Ayurvedic treatment (Rs 349), followed by public allopathic treatment (Rs 219) and private allopathic (Rs 105). The most probable reason for this high cost could be the availability of few Ayurvedic hospitals within the country and thus patients have to travel long distances to reach them.
- The lowest travel cost was for private outpatient care (Rs 76). This is due to the fact that most private clinics are located in close proximity to patients as compared to public medical institutions.
- Households had to spend a substantially large travel cost to receive public (Rs 491) and private (Rs 424) inpatient allopathic treatment.
- The urban sector has reported the lowest travel costs for almost all sources of treatment (except public outpatient), due to the fact that there is more available services with better and easier access.

2) Direct Cost of Medical Care

The cost of medical care consists of two basic subcomponents

Direct medical expenses - cost of drugs prescribed by the doctor for both public and private patients, doctor's fee, medical examination, hospital charges.

Other expenses - cost of making an appointment with a doctor, payment for minor employees, relatives, friends or outsiders to obtain a number for the clinic.

Table 1.11.11   Average cost of medical care per visit by source of treatment

	Source of Treatment	Direct Medical Expenses*	Other Expenses	Total
1	Public allopathic treatment			
	Public Inpatient care	330	39	368
	Public outpatient care	125	8	133
	Subtotal 1	188	18	206
2	Private allopathic treatment			
	Private outpatient care	505	7	512
	Private Inpatient care	20,016	26	20,043
	Private care from a public doctor	320	7	327
	Private care at a channelling centre	1,413	17	1,430
	Subtotal 2	1,079	9	1,089
3	Ayurvedic (Public & private) treatment			
	Public outpatient care	107	3	110
	Public Inpatient care	10	150	160
	Private outpatient care	599	3	602
	Private Inpatient care	3,567	0	3,567
	Subtotal 3	455	23	478
4	Other	259	35	294
	Average cost per visit	458	16	474

* Cost of medical investigation, drugs, fees, hospital charges etc.
- Average household has spent Rs 474 per visit for medical care.
- The highest cost for medical care is reported for private allopathic treatment (Rs 1,089); the lowest cost was for public allopathic treatment (Rs 206).
- Within the private allopathic sector, the highest cost was for private inpatient care (Rs 20,043), followed by private care from a public doctor at a channelling centre (Rs 1,430).
- Lowest cost of medical care is from Ayurvedic outpatient care (Rs110), followed by public allopathic outpatient care (Rs 133).
- For public allopathic inpatient care, the patient had to bear a cost of Rs330 per admission. This indicates that, although public medical services are free of charge, patients have to bear a substantial cost for the purchase of drugs and medical tests at private laboratories.
- The urban sector has reported the highest average cost of medical care (Rs 919), followed by rural sector (Rs 383) and estate sector (Rs 375).
- For public allopathic care, the highest cost is reported for the estate sector (Rs 294), and the lowest for the urban sector (Rs 119). A probable reason for this difference could be the existence of drug shortages in most peripheral medical institutions.

3)   Cost of Supplementary, Nutritional and Special Food

The cost of supplementary, nutritional and special food is made up of two subcomponents:

- Self-determined CSNS, and
- CSNS prescribed by doctor.

Other expenses include the cost of the provision of food for inpatients/cost of food consumed when making a visit to the medical center.

Table 1.11.12   Average cost of supplementary, nutritional and special food and other expenses per visit by source of treatment

	Source of treatment	Supplementary, Nutritional & Special Food		Other Expenses	Total
		Self-determined	Prescribed by doctor		
1	Public allopathic treatment				
	Public Inpatient care	134	73	101	308
	Public outpatient care	20	8	6	34
	Subtotal 1	55	28	35	119
2	Private allopathic treatment				
	Private outpatient care	27	23	2	51
	Private Inpatient care	111	53	0	163
	Private care from a public doctor	26	31	6	64
	Private care at a channelling centre	43	152	12	207
	Subtotal 2	32	49	5	86
3	Ayurvedic (Public & private) treatment				
	Public outpatient care	0	4	0	4
	Public Inpatient care	48	0	48	95
	Private outpatient care	62	7	13	82
	Private Inpatient care	533	500	0	1,033
	Su total 3	54	15	14	83
4	Other	100	10	0	110
	Average cost per visit	49	33	25	107

- On average, a household has spent Rs 107 for the provision of CSNS and other expenses. Rs 49 has been spent for self-determined CSNS.

- Highest cost was in the public allopathic system (Rs 119) and the lowest cost was in the Ayurvedic system (Rs 83).

Cost of Informal Treatment

Table 1.11.13   Average cost of ritual treatment and self-treatment per patient by type of illness and sector

Type of Illness	Urban Sector	Rural Sector	Estate Sector	Total
Ritual treatment				
Acute illness	53	60	0	55
Chronic illness	134	110	75	112
Cost per patient	103	90	56	90
Self-treatment				
Acute illness	1.36	4.89	2.14	3.93
Chronic illness	0.00	3.75	2.12	2.71
Cost per patient	0.52	4.21	2.13	3.19

Note:
- On average a household spent Rs 90 to receive ritual treatment and Rs 3.19 per patient for self-treatment.
- The highest cost for ritual treatment was borne by the urban sector (Rs 103) and the highest cost for self-treatment was borne by the rural sector (Rs 4.21).

Total Direct Cost of Treatment

Table 1.11.14   Average cost of treatment per visit and per patient by type of treatment and by type of cost

	Source of Treatment	Travel Cost	Cost of Medical Care	Supplementary, Nutritional & Special Food	Total
1	INFORMAL TREATMENT (cost per patient)				
1.1	Self-treatment				3.19
1.2	Ritual treatment				90
	Subtotal				92.74
2	FORMAL TREATMENT (cost per visit)				
2.1	Public allopathic treatment				
	Public Inpatient care	491	368	308	1167
	Public outpatient care	92	133	34	259
	Subtotal 1	215	206	118	540
2.2	Private allopathic treatment				
	Private outpatient care	76	512	51	639
	Private Inpatient care	424	20042	163	20629
	Private care from a public doctor	97	327	63	487
	Private care at a channelling centre	167	1430	207	1804
	Subtotal 2	105	1088	85	1279
2.3	Ayurvedic (Public & private) treatment				
	Public outpatient care	392	109	4	505
	Public Inpatient care	735	159	95	989
	Private outpatient care	230	601	81	914
	Private Inpatient care	767	3566	1033	5366
	Subtotal 3	349	478	83	910
2.4	Other	71	294	110	475
2.5	Average cost per visit	190	474	107	771
2.6	Average cost per patient	338	843	191	1371
3	FORMAL & INFORMAL TREATMENT				

	Source of Treatment	Travel Cost	Cost of Medical Care	Supplementary, Nutritional & Special Food	Total
	Average cost per patient				1347

Note:

On average a household spent Rs 92.74 per patient to seek informal care and Rs 771 per visit to seek formal care during the recall period of one month. When formal and informal treatment is taken into account, a household spent Rs 1347 per patient for a period of one month. This indicates that, from the total cost of treatment, only 7% has been spent for informal treatment.

Of the total cost per visit, 25% (Rs 100) has been spent on travelling, 61% (Rs 474) for medical care and 14% (Rs 107) attributed for CSNS and other unspecified expenses.

(4)   COPING MECHANISM

Table 1.11.15 shows some aspects of the coping mechanism of households in the event of an illness of a household member.

Table 1.11.15   Coping mechanism

Item	Urban	Rural	Estate	Total
% of households for which the Cost of illness was intolerable	9%	16%	30%	16%
% of households				
a. Not borrowed	78%	78%	51%	75%
b. Borrowed from relatives	7%	9%	32%	10%
c. Borrowed from friends	6%	7%	16%	7%

Note:

- 16% of households indicated that the cost of illness was intolerable for them. The highest percentage for which the cost of illness was intolerable was in the estate sector (30%). The lowest percentage was in the urban sector (9%).
- 25% had borrowed money from relatives or friends or both.

(5)   RESPONSIVENESS

Enhancing the responsiveness of the health system to the legitimate expectations of the population is an important intrinsic goal of the health system of a country. Responsiveness has two major components: The first is described as the "respect for persons", and it captures aspects of the interaction of individuals with the health system that often has an ethical dimension. This includes dignity, autonomy and confidentiality of information. The second component is "client orientation" and it includes several dimensions of consumer satisfaction that are not a function of health improvement. This category includes prompt attention, basic amenities, access to social support networks and finally choice. The important elements of responsiveness are explained more below.

Dignity. Dignity describes the patient being shown respect by the health care workers and having physical examinations conducted so that the privacy of the patient is respected.

Confidentiality of information.   It involves not only having the patient's medical history kept confidential, but also conducting conversations with health care providers in private so that other people do not overhear and learn what the patient does not want others to know.

Choice. It is the ability of the patient to choose his/her doctor, nurse or other health care provider and the ability to go to another place for health care if he/she wishes to.

Prompt attention. Prompt attention provides information about the distance and travel time from the patient's home to the health care provider, getting immediate care in emergencies, having short waiting times for appointments and consultations and getting tests done quickly and finally having short waiting lists for elective surgeries.

Social Support. Social support has been identified as the fifth element in health system responsiveness. Being allowed the provision of food and other gifts by relatives and freedom given for religious practices is included in this element.

Communication. It involves having the health care provider listen to the patient, having the provider explain things so that the patient can understand and having time to ask questions.

Autonomy. It describes the ability the patient has to get involved in deciding on his/her care or treatment and having the health care provider ask the patient's permission before starting any treatment or tests.

Surrounding and environment. Having enough space, seating and fresh air in the waiting room, having a clean facility and having healthy and edible food are described under surrounding and environment.

The study was designed to measure the level of responsiveness of some of these elements.

In order to assess the degree of selected elements of responsiveness of the health system, a few aspects of responsiveness were included in the survey questionnaire. They were prompt attention, communication, autonomy, confidentiality of information, surroundings and environment and dignity. The questions asked were:

1. Overall, how would you rate your experience of getting *prompt attention* at the health services in the last 30 days?
2. Overall, how would you rate your experience of how well health care providers communicate with you in the last 30 days?
3. Overall, how would you rate your experience of getting involved in making decisions about your treatment as much as you wanted in the last 30 days?
4. Overall, how would you rate your experience of the way the health services kept information about you confidential in the last 30 days?
5. Overall, how would you rate the quality of the surroundings, for example space, seating, fresh air and cleanliness, of the health service you visited in the last 30 days?
6. Overall, how would you rate your experience of being treated with dignity at the health services in the last 12 months?

An attempt is made to develop a score to measure the opinion of respondents over these six elements of responsiveness that was measured during the survey.

A point score was assigned to each level of responsiveness, as given below, and a total score for each element was calculated, and plotted on a graph in order to present the findings.

Very good = 5
Good = 4
Moderate = 3
Bad = 2
Very bad = 1

In order to develop a composite score, the total score obtained was converted to a percentage when the denominator was the maximum possible score. The results are given in a bar chart and are self-explanatory.
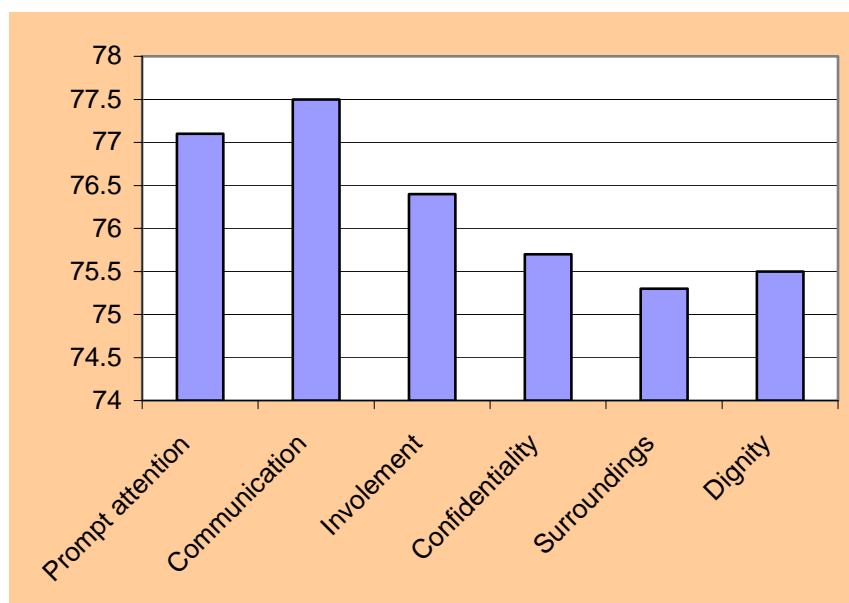
Figure 1.11.1   Scores of Responsiveness

The six dependent variables namely Prompt attention, Communication, Involvement in making decisions, Confidentiality, Surroundings and Dignity were tested against six independent variables: Gender, Age, Marital Status, Education, Occupation and Geographical setting (Urban, Rural and Estate).

The bi-variant analysis carried out failed to prove a statistically significant relationship between those variables that were subjected to cross analysis.

(6)   FOCUS GROUP DISCUSSION

As a part of the KAP survey, several "Focus Group Discussions" (FGDs) with special population groups were held to identify their issues and concerns related to the existing health services.

Objective of the FGD

The objective of the FGD is to assess the availability, affordability and preference for basic health care services required by special population groups: estates, urban slums, remote rural areas and communities affected by the civil war.

Methodology

The following special groups were identified for the focus group discussions. These groups were selected upon agreement with the JICA study team.

Urban Slum Community	Colombo
Fishing Community	Tangalle
Rural Community	Sooriyawewa
Estate Community - Upcountry	Bandarawela
Estate Community - Lowcountry	Avissawella
Community affected by the civil war	Jaffna

The focus group discussions were conducted according to a pre-identified set of guidelines to look at the main health related issues and problems, health seeking behaviour, current practices, available community health services and the suggestions and opinions of participants on the improvement of existing health services.

A focal point in each community group was identified and a group of 8-10 participants from both sexes were invited to a common place for the discussion. A member of the JICA study team conducted discussions after developing good rapport and explaining the objectives of the study.

Discussions were recorded with the permission of participants after explaining the confidentiality policy. The interviewer guided the discussions within the scope of the study objectives.

All three languages were used whenever necessary, with the assistance of translators.

Findings of the Focus Group Discussions

The six selected communities were not comparable and had problems specific to their community; hence, discussions were analyzed separately to highlight those specific problems.

Expectations and attitudes of different groups about the existing health facilities and services varied. Most groups had some issues in common i.e. desired improvements to the health care system in the northern provinces and rehabilitation of infrastructure and staffing in the eastern provinces.

Common issues: Most groups were

- satisfied with the inward patient care available to them;
- dissatisfied with the ambulatory care provided by the government hospitals;
- satisfied with and appreciative of the services provided by the Public Health Midwives;
- unhappy about the services provided by Public Health Inspectors (PHI), and participants were of the opinion that there is plenty of room to improve and increase the performance of the government hospitals thereby improving patient satisfaction. Urgent and essential changes to improve the existing services were mentioned:
  - allocation of more time for consultations,
  - proper explanations regarding the illness and prescribed medication / drugs,
  - introduction of a better clinic appointment system,
  - provision of basic laboratory facilities at all government curative care institutions,
- need for PHIs to conduct more preventive programmes and community-based screening programmes.

The FGD discovered that the Ayurvedic treatment and other traditional healing systems were not very popular among the groups; in fact, the uses of such treatment methods by the participants were on the decline.

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This section was prepared by MG Consultants (Pvt.)Ltd. (No. 66/4, Havelock Road, Colombo) in cooperation with University of Colombo and MoH. The questionnaire for the household survey was prepared by Dr. Nimal Attanayake (University of Colombo) and was further developed in consultation with the JICA Master Plan Study Team and a team of officials from the MOH. Professor R.O. Thattil designed the sampling framework for the household survey. The survey and the entering of the data was administered by MG Consultants and Dr. Nimal Attanayake cleaned the raw data, particularly data on health seeking behavior and household cost components. A series of focus group discussions were coordinated and facilitated by Dr. Sunil Attanayake (MoH).

CHAPTER 2

SURVEYS ON COMMUNITY EMPOWERMENT AND CLIENT SATISFACTION

2 SURVEYS ON COMMUNITY EMPOWERMENT AND CLIENT SATISFACTION

2.1 SITUATION ANALYSIS WITH SPECIAL REFERENCE TO VULNERABLE GROUPS

(1) INTRODUCTION

This report details the situation analysis of the status of health with special reference to vulnerable groups, under the Master Plan study for strengthening Health Systems in Sri Lanka. The aim of this situation analysis is to get an overview of several dimensions in the health sector such as health status, mortality levels and trends, health needs, health care delivery systems, health financing and manpower and resource utilization in relation to vulnerable groups and communities in specific geographical areas (marginalised groups).

Sri Lanka has achieved a remarkable health status without striking economic growth. A spectacular shift from high to low mortality transition in Sri Lanka reflects its achievement in human development, health services and health care systems. However, there is less performance and inequity distribution in the health delivery systems and health services, and disparities in the prevalence of diseases when particularly vulnerable groups and specific geographical areas are concerned.

Though mortality rates have improved during the last few decades, the level of mortality has not been uniform across the various strata of the population and some differentials have changed over the period.

The estate sector has the highest mortality levels, especially infant and child mortality, throughout the past decades. The high maternal mortality in the estate sector needs particularly to be investigated in depth to formulate better policies to reduce the level.

Besides the existing health care system, special health care and quality of services necessitate improving further health conditions, particularly to meet the demands related to older population. As life expectancy increases more in future, the oldest population will increase in number relatively and this group of people will become vulnerable to a series of ailments and require special attention, treatment and health care. Special health services such as geriatrics wards and beds, mobile health services, periodic health screening, help services, day care centres could help meet the growing demand.

Sri Lanka has the opportunity to improve the health conditions as measured by infant, child and maternal mortality and achieve longer life expectancy. In order to achieve further improvements in the health sector, there is no doubt that the formulation and implementation of better health policies and equitable and quality services would be required in future and this would enable completion of the mortality transition by this decade.

Sri Lanka has advanced much in the control of infectious diseases and also shown early signs of increased prevalence of chronic diseases. Education and poverty have played a vital role in the formation of poor health and present diseases scenarios among the vulnerable groups such as the community in the estate sector, fishing community, rural community and slum and shanties. However, their ailments, health seeking behaviour and confounding socio- economic and cultural factors need to be further analysed because there is a dearth of studies on those vulnerable groups.

The poor incomes of the marginalised forces them to use public health care services and repeated visits are a hindrance to them as they cannot stay away from work many times a week or a month. This

suggests that there is an irregular system of use of primary health care system by the marginalised groups which has to be further investigated.

Latrines are important to the health of the vulnerable or marginalised groups. All the marginalised groups encounter difficulties in the construction and maintenance of latrines. The latrines in rural, estate and slum areas are dirty, and the common use by many families or a large number of people in a single housing unit makes proper maintenance very hard, if not impossible.

Though Sri Lanka has a better health status of infants, nutritional deficiencies of various types are common within its population, especially in the vulnerable groups. There is an inverse relationship between the increased expenditure on war and nutrition and low expenditure on nutrition. Therefore, the war-affected areas have severe malnutrition problems which should be further investigated. The influence of government in the nutritional status of a nation is associated with many more factors such as proper planning and the implementation of economic development programs, employment and the continuous efforts in poverty alleviation. The displacements due to war, drought and flood affect the economic status of all affected and more so the marginalised people.

To strengthen the health sector in the future will require more attention to the. urban slum and shanties community, estate community, fishing community and youths, both in terms of specific health actions and human development activities.

(2)   BACKGROUND

In the global context, Sri Lanka is unique in achieving remarkable success in the health sector with only an economic growth between 4%-5% in the last 30 years (about average in South Asia). A spectacular shift from high to low mortality transition in Sri Lanka, which has been recorded since 1946 despite its moderate per capita income, reflects its achievements in health services and health care systems. Since independence, successive governments in Sri Lanka have committed to provide free promotional, preventive, curative and rehabilitative medical care through a government network of facilities to all people. Therefore, in the South Asian context, Sri Lanka had achieved an impressively high life expectancy at birth, i.e. 73.1, lowest infant and maternal mortality rates (15.7 and .2 per 1000 live births respectively in 1996) and child mortality rate (.9 per thousand children in 1996). Although the remarkable achievements in the health sector are recorded in the country as a whole, there are inequities and lesser performance of health delivery systems in some parts of the country as well as in the cases of vulnerable groups, such as infants and children, women especially of reproductive age, elderly, families of migrant workers, youths and adolescents, disabled persons and families of single and no parents, who reside in specific geographic areas such as remote rural communities, fishing communities in coastal areas, estate communities, areas affected by ethnic conflict, communities in urban slum areas and village expansion colonies. Those vulnerable groups suffer worse health problems, less utilization of health services, under-nutrition and malnutrition due to social alienation, poverty, distance to care facilities and poor health seeking behaviour. Hence, it is necessary to understand the trends and current situations of health status, health services and needs in Sri Lanka to identify pockets in the health sector, in order to formulate better policies and programmes to further uplift the well-being of the people.

The aim of this situation analysis is to get an overview of several dimensions in the health sector such as health status, mortality levels and trends, disease prevalence, health needs, health care delivery systems, health financing, and manpower and resource utilization in relation to vulnerable groups and communities in specific geographical areas.

Table 2.1.1   Health Indicators in South Asia, 1970-1999

Country	Life Expectancy	People not Expected to survive to age 60	IMR		Under 5 Mortality		Maternal Mortality	No. of Physicians
			per 1000 live births		per 1000 live births		Per 100,000 Live births	per 100,000 population
	1970 and 1999	1999*	1970 and 1999		1970 and 1999		1980-99	1990-1999
Bangladesh	44.2 58.9	35	145	58	239	89	440	20
Bhutan	42.2 61.5	34	156	80	267	107	380	16
India	49.1 62.9	30	127	70	202	98	410	48
Nepal	42.1 58.1	39	165	75	250	104	540	04
Pakistan	49.2 59.6	27	117	84	181	112	340	57
Sri Lanka	64.5 73.1	15	65	17	100	19	22	37

Source: World Bank Report, 1998/99; UNDP- Human Development Report, 1999

Note :   * % as of total population in 1997

Table 2.1.2   Some Key Mortality Indicators in Sri Lanka, 1931-1995

Period Quinquennium	Crude Death Rate (CDR)	% change in CDR	Infant Mortality Rate (IMR)	% change in IMR	Maternal Mortality Rate (MMR)	% change in MMR
1936-1940	21.4	-13.0	160.2	-12.6	19.2	-8.6
1941-1945	19.9	-7.0	131.1	-18.2	14.6	-24.0
1946-1950	14.3	-28.1	100.5	-23.6	9.3	-36.3
1951-1955	11.2	-21.7	74.8	-25.6	4.7	-46.2
1956-1960	9.5	-15.2	62.6	-16.0	3.6	-26.0
1961-1965	8.4	-11.6	54.2	-13.7	2.6	-42.3
1966-1970	7.9	-6.0	50.5	-6.6	1.7	-34.6
1971-1975	8.2	+ 3.8	46.6	-7.9	1.2	-7.1
1976-1980	6.9	-15.9	39.2	-16.3	0.8	-38.5
1981-1985	6.2	-10.1	28.0	-28.6	0.5	-37.5
1986-1990	6.0	- 4. 8	20.3	-27.5	0.4	-20.0
1991-1995	5.5	-8.3	17.0	-16.3	0.3	-25.0

Source: Department of Registrar General, Vital Statistics for various years

The overall CDR was considerably high in the 1930s and 1940s. The decline in CDR is particularly marked between 1946 – 1950 when it dipped by 39%. IMR declined from 141 per 1000 LB, in 1946, to 101 per 1000 LB in 1947 (a decline of 28%).   MMR declined from 15.5 per 1000 LB, in 1946, to 10.6 per 1000 LB in 1947(a decline of 32%).
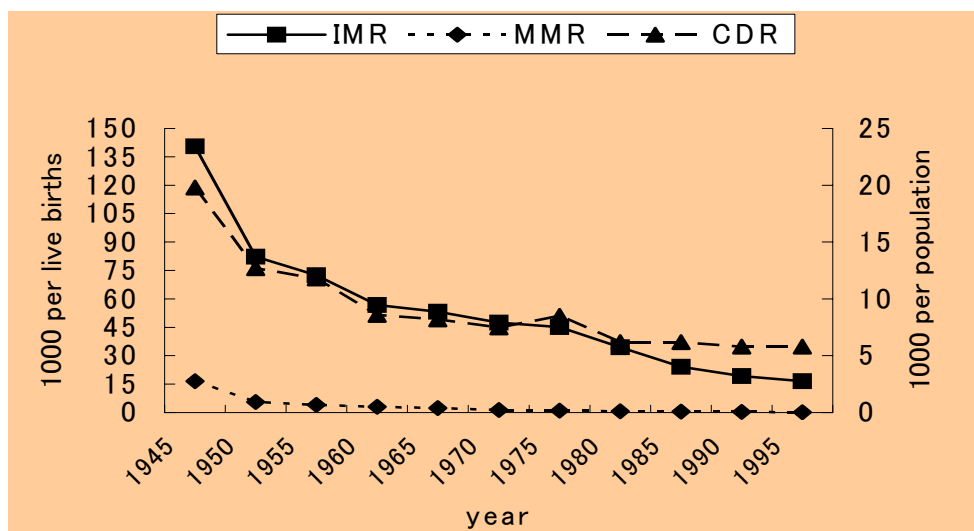
Figure 2.1.1   Trends of CDR, IMR and MMR, Sri Lanka, 1945-95
Source: Registrar Generals Reports for various years

During the period 1950-95, CDR accounted for a 60% reduction from 12.7, in 1950, to 5.5, in 1995. During the period 1950–95, IMR recorded a 79% reduction from 75 per 1000 LB, in 1950, to 16 per 1000 LB, in 1995. During the period 195095, MMR recorded a 96% reduction from 5.6 per 1000 LB, in 1950, to 0.2 per 1000 LB, in 1995.

Table 2.1.3   Expectation of Life at Birth by Sex, 1946-2001

Year	Tot Total	Male	Female	Excess of Female Expectation Over Male Expectation
1946	42.2	43.9	41.6	-2.3
1953	58.2	58.8	57.5	-1.3
1962	61.7	61.9	61.4	-0.5
1971	65.5	64.2	66.7	+2.5
1981	69.9	67.7	72.1	+4.4
1991	72.5	69.5	74.2	+4.7
1996*	73.7	70.6	75.3	+4.7
2001*	73.9	70.8	75.5	+4.7

Source: Department of Census and Statistics, Life tables, 1946-1991
Note :   *Projected based on UN Method assuming log of increment is constant.

Longevity has increased substantially for both males and females over 6 decades since 1946. A steady increase in female life expectancy has taken place, since the 1960s, over male life expectancy.
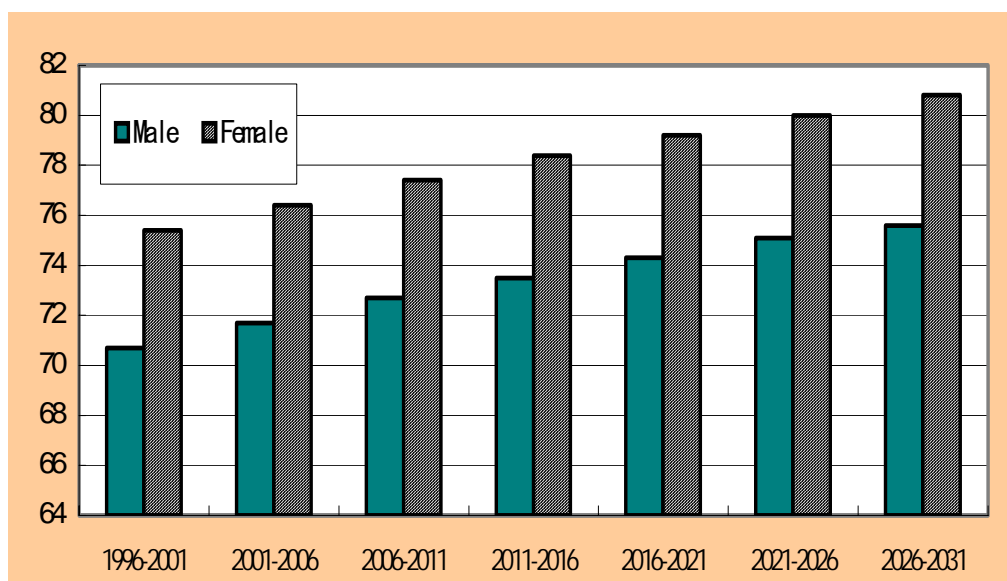
Figure 2.1.2   Projected Life Expectation at Birth by Sex, 1996-2031

Source: De Silva, 1993, Department of Census and Statistics

The Dept. of Census & Statistics has projected that male life expectancy at birth will increase to 75.6 yrs, by 2026-31, whilst female life expectancy at birth will increase to 80.8 during the same period.

(3)   REGIONAL DISPARITY OF MORTALITY CONDITIONS

Although Sri Lanka's national infant, child and maternal mortality rates are considerably low, there are several regional disparities that policy makers should pay much attention to. In order to avoid the report of place of occurrence of infant deaths and the error of calculation of conventional infant death rate (one calendar year infant deaths divided by the same year live births which is not real exposure at risk), the average infant death rate (based on the lexis diagram) is calculated for the DS division of usual place of residence.

INFANT MORTALITY (IMR)

A few DS divisions in Vavuniya, Mannar, Anuradhapura, Trincomalee, Polonnaruwa Kurunegala, Ratnapura, Kegalle, Matara, Galle, Badulla and Nuwara Eliya districts have higher average infant mortality rates (IMR above 25 per thousand live births) than the other DS divisions (Figure XX). Among these divisions, Ratnapura DS division in Ratnapura district recorded the highest average infant mortality rate at 105.3 per 1000 live births, for the 1994-96 period. The factors for this high rate of IMR are yet to be fully investigated because there are no specific factors attributable for this striking rate. Moreover, Matara DS in Matara district (93.8 per 1000 live births), Nuwaragam Palatha East (98.3) in Anuradhapura, Badulla (73.4) in Badulla, Thamankaduwa (60.8) in Polonnaruwa, Kandy four gravets (63.5) in Kandy, Galle four gravets (53.4) in Galle, Kegalle (56.1) in Kegalle and Chilaw (51.6) in Puttalam district also recorded more than 50 infant deaths per 1000 live births during 1994-96. In brief, as revealed from Figure XX, forty eight (48) DS divisions recorded average infant mortality rates higher than the national figure.

UNDER-FIVE CHILD MORTALITY (U5CD)

The under-five child mortality (U5CD) rates also varied across the DS divisions and districts respectively in 1996. The regional disparity in the U5CD is considerably varied from 1.8 per 1000 live births (Yatinuwara in Kandy district) to 389 per 1000 live births (Koralepatthu west in Batticaloa district). Seventy-two DS divisions recorded U5CD rates higher than the national figure (21 per 1000 live births in 1996).

MATERNAL MORTALITY RATIO (MMR)

Although Sri Lanka recorded a remarkable low level of maternal mortality rate of .2 per 1000 live births in 1996, there are marked regional disparities across districts. Kilinochchi recorded the highest MMR (1.3 per thousand live births) followed by Ampara (1.1), Mannar (1.0) Nuwara Eliya (.7), Polonnaruwa (.5 per 1000) and Batticaloa (.5 per 1000) whilst the lowest recorded, in Kegalle, Kurunegala, Matara and Colombo at .1 per thousand live births.

(4)   HEALTH STATUS OF SPECIFIC VULNERABLE GROUPS AND GEOGRAPHICAL AREAS

INFANTS AND CHILDREN

Though the improvement of mortality conditions had been achieved during the last six decades, the level of mortality has not been uniform across the various strata of the population. This is caused by multiple interrelated factors.

The estates where the Indian Tamils live have the highest mortality levels, especially infant and child mortality, throughout the decades.
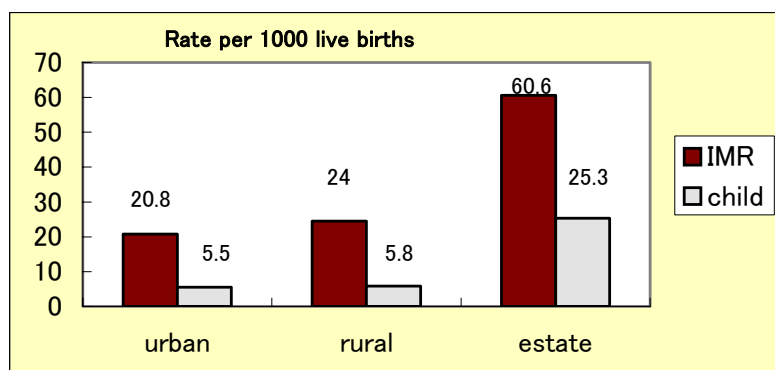
Figure 2.1.3   Infant and Child Mortality by Residence, 1993
Source: Department of Census and Statistics, 1995, DHS, 1993

GENDER

The changing sex differential in mortality is another interesting feature in the health sector of Sri Lanka. In most countries with reliable death statistics, females generally have lower death rates than males, which is reflected in higher female life expectancy. However, until 1963 Sri Lanka, along with India and

Pakistan, was referred to as a notable exception, with higher female death rates and a higher male life expectancy. However, since 1963, this pattern of higher male life expectancy has reversed, as shown in Table XX, and female life expectancy now exceeds male life expectancy by nearly 5 years.

The changing pattern of sex differentials of mortality has been an important factor to increase the female share in the total population, especially since the 1960s. However, until the 1960s, the high age-specific female death rate in all ages and lower life expectancy have been attributed to a high sex ratio in the total population. Since the 1960s, less female infant mortality, less female age-specific mortality and the gain of female life expectancy has been undoubtedly attributed to a dwindling sex ratio. The sex ratio dipped from 113.5 in 1901 to 104 in 1981 and it further declined to 104 in 1981. Thus the relative share of females increased more than males, particularly during the last three decades. The real effect of mortality gain on sex imbalance requires further investigation.

ELDERLY

The pronounced gain in longevity, with accompanying fertility reduction, resulted in an increase of the elderly population in Sri Lanka. The share of older population (aged 60+) has increased from 5.4% in 1946 to 8.1% in 1991, and will be an unprecedented level of 22% by 2031 (Siddhisena, 2002; Siddhisena and Ratnayake, 1998). The reduction of mortality which resulted in gaining longevity has led to the determination of particularly a "old-old-aged" (75+) population (Myers, 1983). As seen in Table XX, the proportion of "old-old aged" (75+) will increase substantially from 1981 to 2031 (21% to 29% respectively), relative to the population in the age group old-aged (60-74). Thus, this increase of elderly people particularly the "old-old population" in the long term, that is expected mainly due to further gains in longevity, will create several socio-economic and health implications for society as a whole.

Particularly because of women's longer life expectancy, more females than males are among the old population, especially in the oldest old in the future (Table XX). The sex ratio of the elderly population (60+) decreases from 113, in 1981, to 91, in 2031, whilst it decreases in the "old-old population" from 107 (9181) to 85, by 2031. All these factors clearly show that the elderly population, and particularly the "old-old" population in Sri Lanka, will become a vulnerable segment, which will need family support and care and geriatric health needs that will be of serious concern to the policy makers and society as a whole in the coming decades. As life expectancy increases more in the future, the oldest population will increase relatively and this group of people will become vulnerable to a series of ailments (e.g., dementia) and require special attention, treatment and health care.

Table 2.1.4   Elderly Population (aged 60+) by Age-Sex Structure

Year	Elderly Population aged 60+ ('000)	Percentage		Sex ratio		
		60-74	75+	60+	60-74	75+
1981	986	78.9	21.1	112.9	114.5	107.1
1991	1,399	78.7	21.3	106.0	105.4	108.4
2001	1,907	76.2	23.8	99.8	99.1	102.3
2011	2,742	76.2	23.8	95.0	94.9	95.1
2021	3,980	76.3	23.7	91.3	92.0	89.4
2031	5,062	70.6	29.4	90.7	93.4	84.6

Source :   Data from 1946-1981 are from Dept. of Census and Statistics,   Census Reports;
Note :   * Projected population from De Silva, 1993

Table 2.1.5   Share of Self- Reported Health Problems
(% of respondents who report positively)

Health problem Reported	Seneviratne & Fernando	Balasuriya & Nugegoda	Fernando & Seneviratne	Lokubalasooriya	Balasuriya
	1993	1993	1993	1999	2001
Arthritis/ Rheumatism	36	4 (osteo arthritis)	32	44.6	62 (incl. backache)
High blood pressure	14	34	22	25	17.6
Heart problems	13	4.7 (IHD)	14	15.8	5
Lung disease/ Asthma	14	-	14	7.7	15
Diabetes mellitus	6.7	11.4	-	9.5	7
Cancer	0.8	-	-	0.5	-
Stroke/paralysis	4.3	2	-	2.1	7
Tuberculosis	0.3	-	-	0.33	-

Source: Rohini de Alwis Seneviratne, 2002

(5)   DETERMINANTS OF SPATIAL VARIATION IN DISEASE PREVALENCE

Sri Lanka is regarded as a country which has advanced much in the control of infectious diseases and shown early signs of increased prevalence of chronic diseases. The data on leading causes of hospitalisation, for 1996, reveal the continuing importance of infectious diseases, while the two leading causes of hospital deaths occur in the category of chronic diseases. However, there is a clear difference in the spatial variation of this prevalence scenario as shown by district and provincial data (Department of Health Services, 2000). A variety of factors contribute to this pattern of spatial variation and most of them are established as causative, but a full explanation of the direct causal relationship is yet to be fully understood.   The four selected determinants are discussed in brief under the sub-topics of poverty, literacy, gender and mobility.

Poverty

Poverty and its relationship to health and disease prevalence are well discussed in social sciences, in general, and in medical geography, in particular, in relation both to the developing world and the developed world. Caldwell (1993), Nordstrom (1988) and Waxler-Morrison (1988) have explained that the direct relationship between poverty and health in Sri Lanka is not as evident as in other developing countries. However, the mortality and morbidity associated with all types of infectious diseases are considered to be high among the poorest group of people, who are mainly employed as daily paid labourers in the urban and suburban areas. This situation arises due to poor housing and poor nutrition, coupled with alcoholism and drug addiction. The comparatively high incidence of tuberculosis, viral hepatitis and dengue in the districts of Colombo, Gampaha, Kalutara and Kandy, which are the most urbanised, is a confirmation to this fact, though no definitive conclusions can be made on the relationship between socio-economic factor and high prevalence (Table 1.2.6).

Table 2.1.6   **The Ranking of the Three Major Notifiable Diseases in the Four Most Populated Districts of the Wet Zone of Sri Lanka, 1996 and 2000**

District	Tuberculosis		Viral hepatitis		Dengue	
	1996	**2000**	**1996**	**2000**	**1996**	**2000**
Colombo	2	2	1	5	1	1
Gampaha	1	1	2	9	4	3
Kalutara	7	4	11	11	5	8
Kandy	3	3	6	2	6	6

Source: Annual Health Bulletin, 1996 and 2000.

LITERACY

Education has played a vital role in the formation of the present disease scenario of Sri Lanka, mainly through the general increase in literacy. The universally free education and adult education, which was supported by the extensive health education programmes of the 1950s and 1960s, have enabled most adults to acquire knowledge of reading and writing. This developed a keen interest in reading newspapers, and the tradition of publishing much health-related pieces of information in the daily newspapers has contributed to the rapid dissemination of advice on health.

Table 2.1.7   **Attainment of Education by Sector, 1996/1997 (% of population aged 5 years and above)**

Sector	Primary and above	Secondary and above	Post secondary
Urban	94.1	66.7	29.6
Rural	92.1	56.7	20.5
Estate	76.1	20.2	2.1
All sectors	91.4	56.2	20.7

Source: Central Bank of Sri Lanka, 1999

GENDER

In general, the women of the farming families stay subservient to the husband, as explained in the literature from Farmer (1957) to Baker (1998) and studied in detail by Lund from 1989 to 1993, but at times of crisis they perform very valuable tasks as wives and mothers.   Within this limited space of freedom, the independence to decide and refer a child to a proper health care system rests mostly with women in Sri Lanka.   However, there may be a selection of female doctors by women for their strictly private health problems but, in all the other cases, they have adjusted well to have no prejudice. This has led to great success in pre- and post-natal care, immunisation, oral rehydration therapy and vaccination programmes, which record an average of 80% attendance.

Gender as a resource in home remedy, traditional medicine and the practise of some ritual-based treatments contributes greatly to the health of the farmers, with women acting as sources of information, collectors of herbs, cooks and applicators.

MOBILITY

The increased mobility of modern populations either internally or internationally has been recognised as an important factor in disease diffusion by Meade (1988), Mayer (1999) and many others. The two regions vary much in terms of mobility and accessibility. The dry zone areas are still in the process of developing infrastructure and suffer from a lack of the required number of all-season roads or transport facilities, which results in non-attendance or delayed attendance of health facilities.

The increased incidence of commuting to work, long distance travel to home villages and pilgrimages have been cited by the health authorities of Sri Lanka as the cause of rapid dissemination of cholera, dengue, respiratory infections and influenza epidemics. The irrigation canals have been associated with the spread of cholera and malaria in the dry zone and the spread of malaria into marginal areas of the wet zone, and the wet zone has been associated with long route mobility, as Meade (1988) has discovered in Malaysia. The major routes of mobility in Sri Lanka operate along five road arteries, radiating from Colombo, and media reports indicate an association between the occurrence of epidemics of infectious diseases and the towns and linear settlements served by these major routes, though this contention is yet to be confirmed by a proper research programme. The spread of the 1998 cholera epidemic was mapped by the researcher, on the basis of reports of the Divisional Health Service and National Television, which strongly favoured a possible connection between the long distance express bus service and the diffusion of cholera during that time.

(6)   EVOLUTION OF THE PRESENT DISEASE PREVALENCE SCENARIO

Table XX shows the evolution of disease prevalence over a period of 21 years in Sri Lanka, based on government health service data. The data indicate a reduction in the prevalence of infectious diseases and an increase in chronic diseases. Intestinal infections (747 cases per 100,000 population) and malaria (304 cases per 100,000 population) are recorded as the two most important infectious diseases. This corresponds with the disease situation of poor developing countries in which poor sanitation and water supply, low calorie diet and endemic diseases record a high prevalence. The significance of the high rate of abortion (788 cases per 100,000 population in 2000) cannot be properly explained, due to a lack of detailed explanations given in the data source. The increase in the chronic diseases is related to changes in diet and life style in the upper income groups by the researchers. Though Sri Lanka has managed to establish a better health status than most of the other developing countries, it is still in the firm grip of the diseases of the poor.

Table 2.1.8   **The Hospital In-patient Morbidity, 1975 and 2000, in Sri Lanka (prevalence per 100,000)**

Disease group	1975	2000
Intestinal infections	970	747
Abortions[1]	829	788
Malaria	800	304
Anaemia	430	99
Helminthiasis	231	10
Nutritional deficiencies	198	16
Hypertension	122	428
Tuberculosis	114	61
Diabetes mellitus	96	205
Ischaemic heart disease	76	313
Diseases of the liver	39	122

Source: Department of Health Services, Annual Health Bulletin, 2000
Note: Rate per 100,000 females of the reproductive age group.

Some diseases, such as tuberculosis, viral hepatitis and shigellosis, particularly prevailed in urban areas but the occurrence of other major, tropical, infectious diseases were brought under control, with the exception of malaria, which remained a serious threat, especially to the farming population of the dry zone.   The mortality associated with infectious diseases was reduced to a minimum but the morbidity remained high and continuous throughout this period, which has become a puzzle to be solved. It is the general belief that the general poverty of the nation and its populace prevent further advances in the area of the prevention of the occurrence and high prevalence of infectious diseases.

Table 2.1.9   **The Ten Major Notifiable Diseases in Sri Lanka, 1996**

Notifiable disease	Cases	Rank of Prevalence	Prevalence /100,000	Deaths	Rank of deaths
Malaria	52,406	1	291	47	6
Shigellosis	19,267	2	107	57	5
Tuberculosis	9,515	3	53	507	1
Typhoid fever	9,313	4	52	19	8
Viral hepatitis	7,029	5	39	19	8
Food poisoning	3,030	6	17	2	9
Leptospirosis	1,906	7	11	75	4
Dengue Haemorrhagic fever	508	8	3	37	7
Viral encephalitis	399	9	2	105	2
Rabies	198	10	1	80	3

Source: Dept. of Health Services, Annual Health Bulletin (1996)

Malaria continues to be a major disease in the dry zone and intermediate zone areas, which cannot be explained by a single factor of importance.   However, the waves of farmer migration and occurrence of dry years have some close association to the rise and fall of total reported cases.
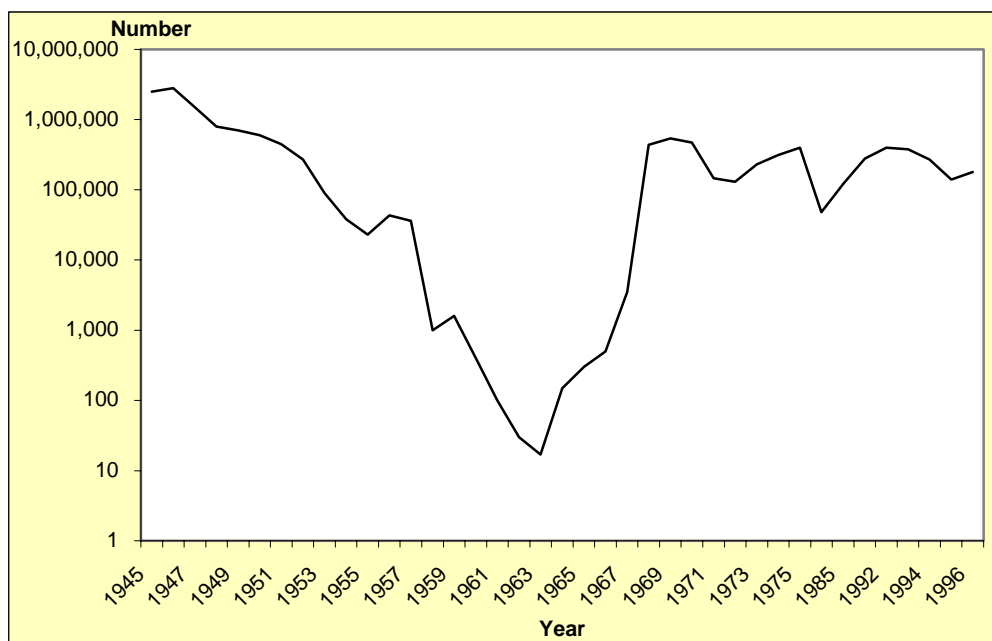
Figure 2.1.4   Malaria in Sri Lanka 1945 – 1996.
 (Source: Anti malaria campaign and Annual Health Bulletin)

A simple graphic model (Seneviratne, 2001) to indicate the status of resettled people (Resettled people in the Mahaweli System C), who are a marginalised group, is presented here to show the relationship between poverty and health and the effect of the endemicity of malaria. The data are taken from the major macro sources available in Sri Lanka. The national averages show the low prevalence of malaria, moderate prevalence of bacterial diseases and high prevalence of viral diseases. The low prevalence of malaria in the national data can be attributed to its control by the prevention disease prevalence of a resettled area, though the resettled areas may never equal the national averages, as their endemicity is different from the wet zone. Anuradhapura district data indicate slow changing services and the heavy use of repellents.   The home villages have the lowest levels of the prevalence of malaria, which are less than 4 per 100,000 (Figure XX).

The national averages show a low prevalence of Malaria, moderate prevalence of Bacterial diseases and a high prevalence of Viral diseases.

Dry zone areas (Anuradapura and System C) show an increase in the prevalence of Urinary tract infections, which is not evident in National figures.
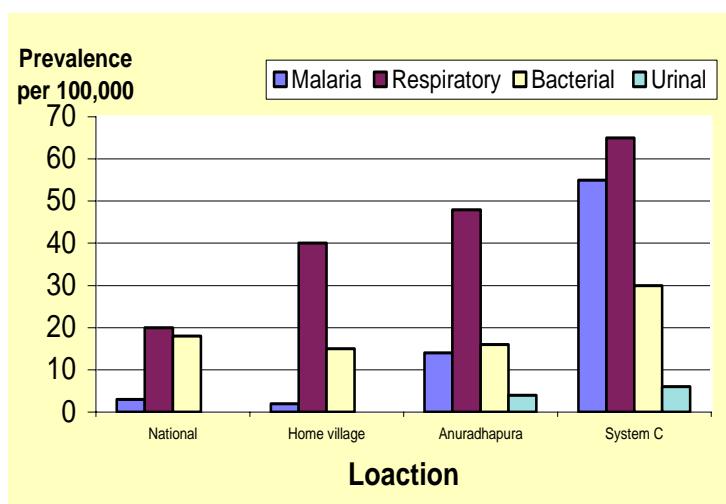
Figure 2.1.5   **Graphical Representation of the Prevalence of Infectious Diseases**
Source: Annual Health Bulletin, 1996 and Survey Data

(7) REGIONAL VARIATION IN DISEASE PREVALENCE: THE WET ZONE – DRY ZONE DISPARITY

A primary aspect of the spatial variation in disease prevalence is the marked regional disparity between the densely populated wet zone and the sparsely populated dry zone. The primary factor of disparity arises from the high prevalence of endemic malaria in the dry zone, which separates it from the wet zone which, in turn, has established a definitive control over endemic diseases and epidemics and is in a transition to a stage of the emergence of chronic diseases.

The high prevalence of infectious diseases in the dry zone is associated with the high prevalence of malaria and poor accessibility to health facilities. The highest number of malaria incidence is reported from the Anuradhapura and Vavuniya districts, which are dotted with more than 2000 abandoned reservoirs known as tanks. In the beginning of the rainy season, these reservoirs become shallow water pools and escalate the breeding of mosquitoes until washed by the subsequent heavy rains in the last weeks of November and in the beginning of December. This corresponds well with the reported increase of malaria in the late December and early January period as recognised by many researchers in the early days of resettlement and in the Mahaweli Development Programme.

The high prevalence of tuberculosis corresponds well with the areas of highest population density, where the poor urban labour group is concentrated. The excessively high incidence of typhoid in the Jaffna district is commonly associated with the continuous pilgrimage to South India by Tamil people and trade between the two areas, but the reality is yet to be fully understood. The prevalence of viral hepatitis is concentrated in the areas parallel to two major transportation routes to the highland and the northern parts of Sri Lanka, respectively.

(8) HEALTH CARE NEEDS

The health care needs of the general population can be divided into two major sectors. Firstly, there is need for primary health care and the maintenance of a sanitary environment. Secondly, the needs of the special groups have to be considered in any health service network. The primary health care network is composed of an array of complex providers from the Edura (faith healer) to the western trained nurse and the many illegal and unauthorised operators. Table XX is an attempt to show this basic network, which is present in the rural and urban areas of Sri Lanka and utilised by all, notwithstanding their educational, ethnic or religious beliefs. However, the literate refuse to accept the use of various healing methods.

Table 2.1.10   Primary Health Care Providers and Utilization at System C, 1999
                          (a resettled area)

Provider	Percent use
Western Public Hospital and western public dispensary	8
Western Public Hospital and private traditional medicine	44
Western Public Hospital and private pharmacy	14
Private Traditional medicine only	11
Western Public Hospital and western private practice	7
Western pharmacy only	4
Western specialist hospital (public)	4
Western Public Hospital and edura (faith healer)	2
Western Public Hospital and western private clinic	2
Western Public Hospital and Ayurveda hospital	2
Western Public Hospital and Ayurveda dispensary	1
Homeopathy	1
Ath beth (home remedies)	100*

Source :   Seneviratne (2002)
Note :   * all the respondents used Ath Beth with all types of medicine

The health care needs of the marginalised/vulnerable groups are easily identified, but they may not be fulfilled until their living environment is changed for the better. The primary health care need of this group of people may not be curative but preventive. However, the Ministry of Health's expenditure on safe water and sanitation is negligible in comparison to hospital services. This is because of the existence of many other political and administrative arms for the establishment and maintenance of the living environment, which have subdued the importance of the aspect of health. The health aspect of water supply in Sri Lanka is heavily neglected and the quality of the pipe-borne water is so low that it cannot be drunk directly from the tap with any assurance of safety. The middle and upper classes use either boiled and cooled water or bottled water. Tourists and other foreign visitors to the country are advised not to drink from the tap (researchers in their office room have a water heater to boil water, though they work in one of the prestigious institutions of Sri Lanka). The situation of the marginalised groups is, therefore, clearly understood as they use common water supply points and have no economic capability to drink boiled and cooled water. This is a national management failure in which the provision of safe drinking water is disregarded. The ways in which this problem of water for the marginalised groups should be investigated in full should be take into account self-reliance and self-support.

Sanitary latrines are another area of importance associated with the health needs of the marginalised groups. All the marginalised groups have encountered difficulties in the construction and maintenance of latrines. The latrines in rural, estate and slum areas are unhygienic and the common use by many families or large number of people in a single housing unit prevents their proper maintenance. Poor

migrant workers and travellers in the urban areas have to use extremely dirty latrines, due to the lack of regular water supply in them. The pay toilets in the Main Bus stand is an example as these are heavily used both by travellers and the poor residents of the area. The street people used the roadside, pedestrian bridges and railway lines as their latrine regularly, during a six months observation period at Colombo and Kandy. This type of habit may arise from poverty and illiteracy.

The marginalised groups are more vulnerable to malnutrition and under-nutrition than the rest of the population. This is mainly due to their low literacy, instability in residence, occupational instability, and addiction to drugs and alcohol. These factors form and contribute to the basic, underlying and immediate causes of malnutrition and are affected or controlled by literacy, age and gender (Siddhisena and Seneviratne, 2002).

Table 2.1.11   Nutrition Expenditure

Year	Total government expenditure (Rs. Millions)	Total nutrition spending (Rs. Millions)	Percentage of the total expenditure
1981	26,468	1,575	6
1984	45,448	1,728	4
1987	65,534	2,071	3
1990	98,158	7,369	8
1993	143,129	9,092	6
1996	218,998	7,962	4

Source: Ministry of Health, 1976-

The data on expenditure on nutrition indicate an irregular pattern and inappropriate balance with total government expenditure (Table XX). There is a fair relationship between the increased expenditure on war and nutrition as the high activity periods of the war indicate low expenditure on nutrition. However, the role of government in the nutritional status of a nation is associated with many more factors, such as proper planning, the implementation of economic development programs and a continuous effort in poverty alleviation.

There are many avenues for the marginalised groups to use in the reduction of the effects of nutritional problems. The free programs on immunisation, food supplement and ante and postnatal care are some of the programs run by the government and are supported heavily by local and foreign aid groups. The data indicate heavy use of these programs by the marginalised groups, but the coverage is still not satisfactory. This is an area for further investigation.

Table 2.1.12   Nutritional Status of Children
(under 5 years of age [3-59 months], 2000)

Background characteristics	Height for age (stunted)	Weight for height (wasted)	Weight for age (under weight)	Number of children (n)
Sex				
Male	11.9	15.1	29.0	1,355
Female	15.3	12.6	29.8	1,221
Child's age in months				
03 – 05	3.9	1.3	0.7	155
06 – 11	5.7	10.3	20.2	284

12 - 23	16.2	18.2	28.8	534
24 – 35	12.4	13.3	34.0	564
36 – 47	13.4	13.9	30.7	539
48 - 59	19.1	15.9	37.9	500
Sector				
Colombo metro	7.4	10.1	18.2	350
Other urban	8.6	6.3	21.3	197
Rural	12.8	15.9	30.8	1,753
Estate	33.8	11.8	44.1	276
Total	13.5	14.0	29.4	2,576

Source: Department of Census and Statistics, 2001, Sri Lanka Demographic and Health Survey, 2000

Though Sri Lanka has a better health status than most of the other countries in the developing world, nutritional deficiencies of various types are common within its population, especially in the vulnerable groups.

The daily wage of the urban labourer is inadequate to support a family and they reduce food quality and quantity. Likewise, in the farming community the effects of landlessness, drought, and flood reduce the wages of the farm labourers to a level that affects their food quality and intake. The hunger and overcrowding present in conflict situations result in a similar reduction in food quality and quantity among refugees.

Table 2.1.13   Percent Distribution of Children 0-36 Months Old Below – 2 SD of the Median of the NCHS/WHO Reference Population by Place of Residence

Place of residence	Wt/Age	Ht/Age	Wt/Ht
Refugee camp	56.4	43.6	22.0
Displaced (in village)	36.1	27.7	16.0
Not displaced	35.7	27.8	18.4
All sectors	40.0	31.4	18.9

Source :   Sivarajah, 1993

Table 2.1.14   Percent Distribution of Children 0–36 Months Old Below -2 SD of the Median of the NCHS/WHO Reference Population by Duration of Displacement

Period of displacement (in Months)	Wt/Age	Ht/Age	Wt/Ht
Not displaced	36.1	28.0	18.6
< 6	33.3	27.9	9.8
6 to 11	42.8	26.0	19.1
12 to 23	59.0	46.8	24.3
24+	61.5	52.3	26.6
Total population	40.0	31.4	18.9

Source: Sivarajah, 1993

Table 2.1.15   Comparison of Nutritional Status of Children in Percent (1)
Weight for Age (chronic malnutrition-underweight)

	*1975/76	#1987	#1993	2000$

Sri Lanka	42.0	38.1	37.7	29.4
Jaffna District	32.5	n.a	40.0	43.1

Table 2.1.15   Comparison of Nutritional Status of Children in Percent (2)
Height for Age (chronic malnutrition – stunted)

	*1975/76	#1987	#1993	2000
Sri Lanka	34.7	27.5	23.8	13.5
Jaffna District	28.4	n.a	31.4	n.a

Table 2.1.15   Comparison of Nutritional Status of Children in Percent (3)
Weight for Height (acute malnutrition-wasted)

	*1975/76	#1987	#1993	2000
Sri Lanka	6.6	12.9	15.5	14.0
Jaffna District	3.7	n.a	18.9	n.a

Source :   Sivarajah, 1993 and Dept. Census and Statistics,2001,DHS,2000

Note :   * percent weight for age < 75% of N>A>S> Reference population
          # percent below -2 SD of the median of NCHS/WHO reference population

Table 2.1.16   Serum Vitamin A Concentration by Province
Mean, Median and Percentage Below 20 ug/dl

Province	Mean			Median			Percentage below 20ug/dl
	Total	Male	Female	Total	Male	Female	
Western	28.1	28.5	27.7	27.6	28.3	27.1	24.3
Central	23.3	24.2	22.4	22.7	23.2	21.0	22.3
Southern	29.2	28.7	29.7	28.4	27.8	29.0	42.5
North Western	21.7	22.3	20.9	20.8	21.0	20.7	46.3
North central	17.8	17.3	18.5	18.8	18.6	18.8	57.3
Uva	23.9	23.3	24.5	23.7	22.8	24.9	35.0
Sabaragamuwa	20.9	21.0	20.7	19.5	19.9	19.2	51.3
Total	24.7	24.8	24.7	24.0	23.5	24.2	36.3

Source :   Ministry of Health and Indigenous Medicine, 1998

Table 2.1.17   Prevalence (in %) of Symptoms of Vitamin A and B
Deficiency in Jaffna District

	*1975/76	1993
Bitot's spots	0.4	12.1
Night blindness	0.6	0.6
Toad skin	n.a	1.8
Angular stomatitis	n.a	9.1

Source: Sivarajah, 1993

(9)   CONCLUSION

There is a lesser performance and an inequity distribution in the health delivery systems and health services, and disparities in the prevalence of diseases when particularly vulnerable groups and specific geographical areas are concerned.

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This section was prepared by the sub-contracted team consisting of Dr. K.A.P. Siddhisena (Ph.D.), University of Colombo and Dr. H.M.M.B.Seneviratne (Ph.D.).

CHAPTER 3

SURVEYS ON
HUMAN RESOURCE
DEVELOPMENT

3 SURVEYS ON HUMAN RESOURCES DEVELOPMENT

3.1 DISTRIBUTION AND UTILIZATION OF HUMAN RESOURCES IN THE PUBLIC HEALTH SECTOR

(1) INTRODUCTION

The development, distribution and effective utilization of human resources are important issues in the public health sector.

The changing demographic and epidemiological patterns demand human resources backup for the improvement of services to the public. Another important factor is the private sector which today competes with the public sector, especially in the tertiary curative care services. Thus, there is an urgent need for an initiative to review human resource development policies by health authorities.

In this study, many aspects of HRD (Human Resource Development) were scrutinized. These included the numbers of selected categories of health workers, recruitment criteria, quality of training, distribution and effective utilization, to name a few.

The overall objective was to critically review human resource development in relation to equitable distribution, current constraints, deployment criteria, the ideal mix of categories and optimal productivity.

Methods adopted in this work were that some major categories of employees which included medical officers, nursing officers of all grades, public health inspectors, paramedical grades, biomedical engineers and foremen were taken as the sample.

The availability of duty lists/job description, registers, circulars, gazette notifications, management manuals, and material related to policy and principles available in the Ministry of Health with regard to HRD were studied. A pre-tested checklist was used for this purpose.

For many categories, the above were available. There is an ongoing process of reviewing some of the material. For some, however, other material has to be developed as either there are no sufficient detailed documents or there is a total unavailability of such material.

Structured interviews were conducted with major categories of staff individually, as well as groups to obtain their views on HRD issues. This exercise provided an opportunity to the interviewers to assess their knowledge about the material essential for their day-to-day work and their real use. Many did not have a clear sense about material they should know by heart. Few who are involved in activities related to their profession were aware of such material and of what is being done in the way of improvements.

Another problem they have was the lack of a forum to express their ideas. On the few occasions that a forum is staged, they were either not encouraged to be active or their views were ignored.

Policy makers and the planners should seriously look into these matters as there are new trends in demographic and epidemiological patterns. The system cannot be content and complacent about past achievements as the aspirations of the people and their needs have now changed. First and foremost, importance should be given to an advocacy towards the top political leadership in this regard. With their involvement, along with the private sector and others, a policy should be established to fulfil the requirements of HRD for the health sector.

(2) RESULTS AND DISCUSSION

Cadre

A cadre for all categories is available, but the numbers for nursing staff in many institutions and geographical locations are less than that of cadre. There are many problems with regard to cadre: the current output of certain cadres are inadequate; for a given geographical region the cadre is full but there is mal-distribution within the region; new institutions have been created but the old ones are without cadre consideration.

Recruitment Procedures

Laid down procedures are available for all categories under study. There is a minimal educational qualification for all categories other than professionals. The applicants are subjected to an examination and interviews conducted by the MoH, followed by a medical examination. The selected candidates are enrolled into selected institutions to undergo basic training for a specified period. At the end of training, the successful candidates are recruited by the MoH and deployed throughout the country. The problems in this regard are the number of recognized institutions. The number of trained personnel is not adequate, there are no available institutions to train personnel in certain categories (i.e., Bio-Engineering Services), and there is a difficulty in recruiting people to work in remote and undesirable areas.

Appointment Criteria

Appointment criteria are available for all categories.

Duty List and/or Job Descriptions

Job descriptions are available for most categories, but they are not available for some grade medical officers and engineers. To cite an example: If a medical officer is working in the OPD, he/she has no specific duties but must follow the senior officers. This is applicable to in-patient department as well, including specialist grades. All categories have to maintain diaries to be submitted for supervisory scrutiny.

Post Basic Training

This is available for Medical Officers and Nurses. The Postgraduate Institute of Medicine, University of Colombo, acts as the main training institute for medical officers.

Criteria for Promotion

This is available for most categories. There is an Efficiency Bar Examination and other strategies adopted. Promotions are delayed at times due to administrative procedures.

Procedures for Transfers

An employee working at an institution for four years is eligible for transfer. There is no problem for officers attached to the line ministry to move around but there are problems for those attached to provincial ministries.

<u>Performance Appraisal</u>

Performance appraisal is minimal or totally absent. Supervision and Monitoring in the health sector is a major lapse in human resource development.

<u>Results of the Individual and Group Discussions</u>

- Many of the cadres were unrealistic. There is an excessive number in some institutes and an acute shortage in others.
- Many of the recruitment criteria should be revised. (There is no clear idea about the recruitment or retirement process.)
- Training facilities should be increased and sufficient tutors and other personnel should be provided. (Post basic training does not provide enough opportunities for all.)
- Diaries are not properly maintained due to the lack of proper or regular assessment at many levels.
- Transfers should be carried out according to the available mechanism. No one shall be expected to stay in one place beyond a recommended period. (Many are not happy about promotions and transfers.)
- There is an absence of supervision of subordinate categories by supervising officers.
- Many categories do not have a forum to express grievances or productive ideas.
- Overall, personnel were not happy. Job satisfaction was minimal.

(3) RECOMMENDATIONS

- Though the recruitment criteria for major health staff categories follow a logical sequence, a sub-specialty need-based approach is not taken. Therefore, a strategy for this purpose should be installed. For certain categories, recruitment criteria should be revised according to service needs.

- For postgraduate training for medical officers, candidates should be allowed to select their own stream of sub-specialties of significance. The Sri Lanka Medical Council should have a continuous system of formal assessment with regard to new developments in medicine, and the needs of the country to train/re-train doctors.

- Post basic training curricula for nurses and public health midwives should be revised according to the new developments. Facilities available for this purpose should be further enhanced. Following training, the staff should be given adequate and appropriate incentives to continually motivate them.

- Deployment of the appropriate staff, specialties and sub-specialties, with the acceptable level of mix and geographical distribution is recommended to enhance equity of health care services throughout the country.

- All major staff categories should be given a basic training on management concepts to improve the quantity and the quality of services provided.

- Promotions and increments should be given according to the performance of the official. The 'seniority' factor should be given a low priority in this regard. Some prominence should be given for 'extra curricular' activities in giving promotions and incentives, etc.

- Transfer schemes, especially for the categories under the provincial councils, should be reassessed and whatever procedures adopted thereafter should be strictly adhered to.

- Supervisory and monitoring mechanisms should be designed and conducted in a regular and planned manner.

- A scheme of performance appraisal should be introduced, beginning with top managers.

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This section was prepared by Dr. Ajith Fonseka, Director of International Health, MoH.

3.2 SITUATION ANALYSIS OF PARAMEDICAL TRAINING

(1)   INTRODUCTION

The Ministry of Health (MoH) is responsible for the training of paramedical personnel, required for carrying out health services provided by the Ministry of Health. Various categories of paramedical personnel are currently being trained for the state health institutions. Training courses are conducted at many centres located throughout the country. The facilities available for training are different from place to place and from category to category. The numbers recruited for training, in each category, differ from year to year. Virtually no training is given, in the Ministry of Health, to paramedical personnel to be employed in the private sector. However, private health institutions are increasing in number and there is a tendency for the paramedical staff trained by the Ministry of Health to enter the private sector. The pension scheme available for public sector employees and the bonded situation ensure the retention of paramedical personnel within the public sector. Certain categories of health personnel are trained at the government training institutions for the Armed Forces and the plantation sector.

The expansion of training requires laying down standards and reviewing licensing procedures. The private sector at the moment does not possess the capabilities to conduct training courses in various spheres of paramedical training. Hence, the Ministry of Health, to a larger extent, can provide guidance to the private sector to commence training if they so desire. The universities can also play a major role in producing certain categories of paramedical personnel.

The availability of skilled paramedical personnel in adequate numbers is crucial for the efficient provision of health services by the public or private health institutions. Good training will also enable trained staff to go abroad if they so desire to earn higher salaries. Hence, it is of paramount importance to organize the paramedical staff training. As an initial step, a situation analysis needs to be conducted to assess the current programme, the facilities available in the MoH and to assess the views of students, teachers, staff in service and supervisory staff. This would facilitate the making of recommendations to improve paramedical training in the Ministry of Health. Hence, this assignment was undertaken to accomplish the above tasks.

(2)   OBJECTIVES

General Objective

In general, the study aims to present the situation regarding paramedical basic training programmes undertaken by the Ministry of Health.

Specific Objectives

The specific objectives of the study are:

1.   To list the categories of basic training programmes undertaken by the MoH;
2.   To describe the training programmes conducted;
3.   To review the adequacy of resources for training;
4.   To assess the views of present students on the quality of training;
5.   To assess the views of recent, past students regarding the suitability of training for performing job functions; and
6.   To describe the views of supervisory staff at different levels regarding the quality of job performance of trained staff.

(3)   METHODOLOGY

Data Collection

The methods used to collect information were:
1.   Desk study
2.   Consultative meetings
3.   Focus group discussions with
     - Students
     - Personnel currently in service
     - Tutors
     - Supervisors
4.   Observations
5.   Questionnaire Administration

1)   Desk Study

Desk Study was undertaken to collate information regarding the categories trained and to obtain details regarding training programmes conducted by the MoH. This was undertaken with the former and present Deputy Director-General, Education Training & Research (DDG, ET&R). Files, reports, documented information and publications maintained in the office of DDG (E.T& R) were also used to complete the desk study.

2)   Consultative Meeting

These meetings were held to discuss the information collected in the desk study and to discuss deficiencies in the training programmes. Formats were also developed to collect information on:

- Adequacy of facilities in training institutions
- Perception of students regarding the training
- Perception of those presently in service
- Perception of supervisory staff

3)   Focus Group Discussions (FGD)

Focus group discussions were held with students, tutors, those who have recently passed the training programmes and are currently employed, and medical specialists in hospitals in Colombo

and outstations. The FGDs were held at the schools of nursing, at different training schools, at certain hospitals, universities, DDHS offices and in the office of DDG (E T&R).

4) Observations

Certain institutions were visited to assist in completion of the questionnaire and to observe the institutions. The questionnaire for nurses training schools was discussed at the Principals meeting held at the Badulla Nurses Training School.

5) Questionnaire Administration

The questionnaire developed to collect information regarding each training programme was first pre-tested and sent by post to the persons in charge of each training programme. Guidelines were also sent to them, which facilitated the completion of the questionnaire.

Study Period

The study was conducted from July 2002 - September 2002.

(4)   RESULTS

Given below are results of all components of the study.

Categories of Paramedical Personnel for which the Ministry of Health is Responsible for Training

The Ministry of Health is responsible for training 23 categories of paramedical staff currently. A list is given below.

Table 3.2.1   Categories of Paramedical Personnel, Duration and Location of Training

Category	Duration	Centre/Location of Training
1. Nurse	3 years	Nurses training school: Colombo, Kandy, Galle, Ratnapura, Kurunegala, Badulla, Jaffna,Batticaloa, Anuradhapura, Sri Jayawardanepura, Kandana, Mulleriyawa, Anuradhapura (military) (13 centres)
2. Public Health Inspector	18 months	NIHS Kalutara Provincial training centres: Kurunegala/ Kadugannawa/Galle/Batticaloa/Jaffna
3. Medical Laboratory Technologist	2 years	MLT school Colombo - MRI MLT training centre NIHS - Kalutara MLT school teaching hospital Peradeniya
4. Pharmacist	2 years	Department of Pharmacology, Faculty of Medicine, University of Colombo/pharmacist training programme, NIHS Kalutara
5. Cardiographer	1 year	School of Cardiography, Cardiology Unit, National Hospital Sri Lanka (NHSL)
6. Ophthalmic Technologist	2 years	Training centre - eye hospital, Colombo
7. Electro- Encephalographer	9 months	Training Centre Institute of Neurology, NHSL
8. Radiographer - Diagnostic/Therapeutic	2 years	Radiography School NHSL
9. Dental Technician	2 years	Faculty of Dental Science, University of Peradeniya
10. Physiotherapist	2 years	Physiotherapy and Occupational Therapy School, Colombo
11. Occupational Therapist	2 years	Physiotherapy and Occupational Therapy School, Colombo
Category	Duration	Centre/location of training
12. School Dental Therapist	2 years	School of Dental Therapy, Maharagama
13. Microscopist (Public Health Laboratory Technician)	15 months	NIHS Kalutara/Anti-Malaria Campaign/Anti-Leprosy Campaign/anti-T.B. Campaign/Anti-Filariasis Campaign/STD-AIDS control programme
14. Entomological Assistant	2 years	Medical Research Institute/Anti-Malaria campaign/Anti-Filariasis Campaign
15. Orthopaedic Technician	18 months	NHSL Colombo
16. Speech And Language Therapist	2 years	University of Kelaniya
17. Assistant Medical Officers	3 years	NIHS Kalutara
18. Dispenser	12 months	NIHS - Kalutara/Ragama teaching hospital/NHSL/Kandy teaching hospital/eye hospital/Matara General Hospital/Kurunegala teaching hospital
19. Public Health Field Assistant	1 year	NIHS - Kalutara (theory) Anti-Malaria Campaign/Anti-Filariasis Campaign (practicals)
20. Public Health Midwife (Part I)	1 year	Nurses training schools -Colombo/Kandy/Galle/Ratnapura/Kurunegala/Badulla/Jaffna/ Batticaloa/Anuradhapura/Kandana
20. Public Health Midwife (Part II)	6 months	NIHS, Kalutara Provincial training centres: Kurunegala/Kadugannawa/Galle/Batticaloa/Jaffna PHM training centre - MoH Selected MoH offices
21. Medical Physicist	2 years	PGIA(Post Graduate Institute of Agriculture), University of Peradeniya
22. Hospital Attendant	3 months	Selected teaching, provincial and base hospitals
23. Audiology Technician	6 months	Teaching hospital Kandy, NHSL, selected centre

Description of Training Programmes Organized by the Ministry of Health

The 23 categories of paramedical trainees are trained in different locations. The number of training programmes carried out for different categories vary. Certain training programmes are carried out in more than one centre (Table 3.2.1).

1) Location of Training Programmes

1. Training of nurses is the biggest basic training programme undertaken by the MoH. The basic nursing training programme is carried out in 11 training centres throughout the island. There is a separate School of Nursing for Psychiatric training. Students following the basic training programme are sent here from each nurses training school on a roster basis. There is a separate school of nursing for service personnel. Though nurses training schools (NTS) are mainly for basic training of nurses, Part I of the midwifery programme is also done at the NTSs except at Sri Jayewardenepura (SJP), which functions as a model school donated by JICA.

2. PHI training is carried out at the National Institute of Health Sciences (NIHS) and at 5 provincial training centres, which are in charge of provincial health authorities. NIHS is the premier preventive health training institution where Public Health personnel are being trained, i.e., PHII, PHMM part II, Microscopists and Public Health Field Assistants. Part II midwifery training is carried out in the provincial training centres, in addition to certain selected Medical Officer of Health (MOH) areas.

3. MLT training is carried out in 3 centres, namely, Medical Research Institute (MRI), Colombo, NIHS Kalutara, and MLT School, Peradeniya. The MRI is the centre of excellence of the Health Ministry to carry out research and biomedical research and investigations. MLT School is located in a separate section of this institution, where separate tutorial staff are available.

4. Pharmacy training programme is being conducted at NIHS Kalutara, and Faculty of Medicine, University of Colombo.

5. University of Peradeniya, Faculty of Dental Services, provides training for Dental Technicians. University of Kelaniya, Disability Studies Unit, provides training for Language and Speech Therapists.   Eye Hospital and Neurology Unit of the National Hospital, Sri Lanka (NHSL), provide training for Ophthalmic Technologists (OTs) and EEG Technicians respectively. They have minimum room facilities.

6. The Cardiography school is located at the cardiology unit of the NHSL.

7. Physiotherapy and Occupational therapy is done in the school situated close to the NHSL.

2) Persons in Charge of Training Programmes & Education Providers

Though there is a Principal and tutors in charge for most training programmes, i.e., every nursing school, the physiotherapy school, the school of radiography, there is no such responsible person in charge of training for most of the other basic paramedical courses. In this case, senior staff members of the particular category or related professionals provide training, in addition to providing clinical activities. For instance, ophthalmic technologists are trained at the eye hospital. A Consultant Eye Surgeon of the Eye Hospital takes charge of the training. Three senior ophthalmic technologists act as tutors, though they do not have that designation. They, however, do not like to be full-time tutors.

3) Persons Doing Administration

Nurses training schools and the other training programmes located in the hospitals are administrated by the Director of the closest teaching hospital or Provincial General Hospital. However, in Anuradhapura and Sri Jayewardenepura (since the closest General Hospital does not belong to the line ministry) these schools are administered by the Director of Nursing Education of the Ministry of Health.

4) The Duration of Training

Different paramedical training programmes have different training periods. It varies from 3 years in the case of nurses training to 3 months training for hospital attendants.

5) The Number of Students Recruited - Supply

There is a variation in the numbers recruited from category to category and from year to year in the same category. The largest number of recruits are for nurses training. Although the trend has been to recruit one batch of students per year, in the year 2001 two batches, each bigger than the batch recruited in previous years, have been recruited for nurses training. For other categories, the variation in the number recruited is not very much over the years.

At Sri Jayawardanepura NTS, according to an agreement with the Japanese Government, only 100 are recruited: 50% recruited by the SJP hospital and 50% by the Health Department. Some categories have not been recruited in certain years, e.g., MLT intake is not regular. In 2001, no students were recruited for the MLT course.

Table 3.2.2   Number of Students Recruited (supply) by Category and Year

Category of Profession or Occupation Group	Centre/Location of Training	No. Recruited					
		2002*	2001	2000	1999	1998	1997
1. Nurses	1. Nurses Training School Colombo	116	269	126	269	234	
	2. Nurses Training School Kandy	216	362	121	266	248	
	3. Nurses Training School Galle	163	271	122	196	126	
	4. Nurses Training School Ratnapura	204	217	95	176	138	
	5. Nurses Training School Kurunegala	225	244	113	228	187	
	6. Nurses Training School Badulla	205	186	108	170	125	
	7. Nurses Training School Jaffna	0	75	0	180	0	
	8. Nurses Training School Batticaloa	90	79	59	140	78	
	9. Nurses Training School A'pura	90	125	92	159	127	
	10. Nurses Training School Sri J'pura	0	100	100	100	0	
	11. Nurses Training School Kandana	121	162	74	191	143	
	12. Nurses Training School Mulleriyawa	0	0	0	0	0	
	13. Nurses Training Sch. A'pura (Military)	0	100	0	0	0	
2. Public Health Inspectors	1. NIHS Kalutara				55		
	2. Provincial Training Centre Kurunegala		58				
	3. Provin. Training Centre Kadugannawa						
	4. Provincial Training Centre Galle			84	78		
	5. Provincial Training Centre Batticaloa						
	6. Provincial Training Centre Jaffna						
3. Medical Laboratory Technologists	1. MLT School Colombo - MRI	50	0	50	50	0	
	2. MLT Training Centre NIHS-Kalutara	40	0	45	45	0	
	3. MLT School Teach. Hos. Peradeniya	50	0	50	50	0	
4. Pharmacists	1. Dept. of Pharm. F/M Univ of Colombo	45	0	45	77	0	
	2. Pharmacist Training Programme NIHS	48	0	46	45	0	
5. Cardiographers	1. School of Cardy., Cardiology Unit	30	-	29	0	53	
6. Ophthalmic Technologists	1. Training Centre - Eye Hos. Colombo		15	20	20	0	
7. Electro- Encephalographers	1. Training Centre-Institute of Neurology	9		9	0	5	
8. Radiographers- Diagnostic/ Therapeutic	1. Radiography School, NHSL Colombo	30	0	45	80	0	
9. Dental Technicians	1. F/ Dental Science, Univ. of Peradeniya		18	0	12	0	
10. Physiotherapists	1. Phy. & Occup. Therapy School	26	0	0	44	0	54
11. Occupational Therapists	1. Phy. & Occup. Therapy School	6	-	-	09	-	15
12. School Dental Therapists	1. School of Den. Therapy Maharagama						
13. Microscopists (P.H. Laboratory Technicians)	1. NIHS Kalutara	60			66		65
	Anti-Malaria Campaign						
	Anti-Leprosy Campaign						
	Anti-T.B. Campaign						
	Anti-Filariasis Campaign						
	STD/AIDS Control Programme						
14. Entomological Assistants	1. Medical Research Institute	8	0	10	0	0	
	Anti-Malaria Campaign						
	Anti-Filariasis Campaign						
15. Orthopaedic Technicians	1. NHSL Colombo						
16. Speech and Language Therapists	1. University of Kelaniya	6	6	6	6	0	
17. Assistant Medical Officers	1. NIHS Kalutara	0	25	0	50	0	
18. Dispensers	1. Ragama TH	0	0	70	0	0	
	2. NHSL						
	3. Kandy TH						
	4. Eye Hospital						
	5. Matara GH						
	6. Kurunegala TH						
19. Public Health Field Assistants	1. NIHS Kalutara (Theory)					170	

Category of Profession or Occupation Group	Centre/Location of Training	No. Recruited					
		2002*	2001	2000	1999	1998	1997
	AMC (Practicals)						
	AFC (Practicals)						
20. Public Health Midwives Part I	1. Nurses Training School Colombo	0	0	0	92	99	
	2. Nurses Training School Kandy						
	3. Nurses Training School Galle						
	4. Nurses Training School Ratnapura						
	5. Nurses Training School Kurunegala						
	6. Nurses Training School Badulla	0	43	0	36	0	
	7. Nurses Training School Jaffna			12		36	
	8. Nurses Training School Batticaloa	0	0	130	0	133	
	9. Nurses Training School Anuradhapura						
	11. Nurses Training School Kandana		46				
Part II	1. NIHS Kalutara						
	2. Provincial Training Centre Kurunegala		54		92	92	
	3. Provincial Training Centre Kadugannawa						
	4. Provincial Training Centre Galle						
	5. Provincial Training Centre Batticaloa						
	6. Provincial Training Centre Jaffna						
	7. DPDHS Office						
21. Medical Physicists							
22. Hospital Attendants							
23. Audiology Technicians							

* For nurses in terms of 2001 B

6) Recruitment Calendar

There is no fixed time in the year for commencement of training programmes. Students are enrolled for the training in an ad-hoc manner. The month of recruitment differs from year to year. Schools are not well informed in advance about the date and number of students that are sent. The recruitment calendar is irregular for all categories of basic training.

7) Attrition Rates

There is a fairly high attrition rate in the number enrolled for training in relation to the number recruited.

Table 3.2.3   Attrition Rates

Category of Profession or Occupation Group	Centre/Location of Training	Attrition Rate - %				
		2002*	2001	2000	1999	1998
1. Nurses	1. Nurses Training School Colombo	5	4.08	1.58	27.5	5.1
	2. Nurses Training School Kandy	7	17	9	23.6	11.2
	3. Nurses Training School Galle	7	43	9	17.3	80.7
	4. Nurses Training School Ratnapura	23.0	59.9	31.5	44.8	
	5. Nurses Training School Kurunegala	0	45	10.6	25	37
	6. Nurses Training School Badulla	12.6	24.0	28.7	32.5	
	7. Nurses Training School Jaffna		48		51.1	
	8. Nurses Training School Batticaloa	0	77	42.3	42.8	10.2
	9. Nurses Training School A'pura	5	20	7.6	15.9	5.5
	10 Nurses Training School Sri J'pura		9	8	10	-
	11. Nurses Training School Kandana	9	11.7	16.2	35	16.0
	12. Nurses Training School Mulleriyawa					
	13. Nurses Training Sch. A'pura (Military)		0			
2. Public Health Inspectors	1. NIHS Kalutara			0		
	2. Provincial Training Centre Kurunegala					
	3. Provincial Training Centre Kadugannawa		31.0			
	4. Provincial Training Centre Galle					
	5. Provincial Training Centre Batticaloa					
	6. Provincial Training Centre Jaffna					
3. Medical Laboratory Technologists	1. MLT School Colombo - MRI	26		28	2	
	2. MLT Training Centre NIHS-Kalutara	20		11.1	15.5	
	3. MLT School Teaching Hos. Peradeniya	20		20	12	
4. Pharmacists	1. Dept. of Pharm. F/M Univ of Colombo	0		31.0	16.9	
	2. Pharmacist Training Programme, NIHS	50	0	8.88	15.5	0
5. Cardiographers	1. School of Cardy., Cardiology Unit	23.3		0	0	4
6. Ophthalmic Technologists	1. Training Centre - Eye Hos. Colombo		20	30	25	
7. Electro Encephalographers	1. Training Centre - Institute of Neurology	0		0		
8. Radiographers - Diagnostic/Therapeutic	1. Radiography School NHSL Colombo	23		17.7	15	
9. Dental Technicians	1. F/ Dental Science, Univ. of Peradeniya		33		0	
10. Physiotherapists	1. Phy. & Occup. Therapy School	19	0		16	9.2
11. Occupational Therapists	1. Phy. & Occup. Therapy School	16			11	20
12. School Dental Therapists	1. School of Dental Therapy Maharagama					
13. Microscopists	1. NIHS Kalutara	50				
(P H Laboratory Technicians)	2. Anti-Malaria Campaign					
	3. Anti-Leprosy Campaign					
	4. Anti-T.B. Campaign					
	5. Anti-Filariasis Campaign					
	6. STD/AIDS Control Programme					
14. Entomological Assistants	1. Medical Research Institute	12.5	0	60		
	Anti-Malaria Campaign					
	Anti-Filariasis Campaign					
15. Orthopaedic Technicians	1. NHSL Colombo					
16. Speech and Language Therapists	1. University of Kelaniya	0	0	0	0	
17. Assistant Medical Officers	1. NIHS Kalutara					
18. Dispensers	1. Ragama TH			0		
	2. NHSL					
	3. Kandy TH					
	4. Eye Hospital					
	5. Matara GH					
	6. Kurunegala TH					
19. Public Health Field Assistants	1. NIHS Kalutara -Theory					

Category of Profession or Occupation Group	Centre/Location of Training	Attrition Rate - %				
		2002*	2001	2000	1999	1998
	2. AFC (Practicals)					
	3. AMC (Practicals)					
20. Public Health Midwives Part I	1. Nurses Training School Colombo				2.17	2.02
	2. Nurses Training School Kandy					
	3. Nurses Training School Galle					
	4. Nurses Training School Ratnapura					
	5. Nurses Training School Kurunegala					
	6. Nurses Training School Badulla		0		19.4	
	7. Nurses Training School Jaffna			0		13.8
	8. Nurses Training School Batticaloa			20.7		21.8
	9. Nurses Training School Anuradhapura					
	10. Nurses Training School Sri J'pura					
	11. Nurses Training School Kandana		17.3			
Part II	1. NIHS, Kalutara					
	2. Provincial Training Centre Kurunegala		1.85		0	0
	3. Provincial Training Centre Kadugannawa					
	4. Provincial Training Centre Galle					
	5. Provincial Training Centre Batticaloa					
	6. Provincial Training Centre Jaffna					
	7. PHM Training Centre - MoH					
21. Medical Physicists						
22. Hospital Attendants						
23. Audiology Technicians						

* For nurses in terms of 2001 B

8) Recruitment Criteria

The MoH administers a selection test and an advanced level examination that applicants have to pass before they are able to participate in the training programmes. Of course, the conditions vary depending upon the professional/occupational category.

9) Certification of Training

At present, candidates who successfully complete the 3-year basic course in nursing are given a certificate of competency by the Ministry of Health. However, the members of the profession are trying to change this to at least a Diploma certificate. Other paramedical categories trained by the Department of Health are also given certificates of competency by the Ministry of Health.

10) Medium of Training

Most of the paramedical courses are conducted in English, e.g., Cardiography, Radiography, and Ophthalmic Technology (OT). Nurses, PHI & PHM training are done in Sinhala except in Jaffna and Batticaloa where the Tamil language is used for training. A circular was issued by DDG (E.T & R), in 1999, that stated that, from the year 2000, the nursing course should be conducted in English. Steps have been taken to teach English language to tutors, with funds provided by the World Health Organization (WHO).

11) Orientation Courses

Though orientation courses in English are available for undergraduate trainees, no orientation course in English is available for other paramedical staff even though the courses are conducted in English. English teaching is carried out during the formal training period, which interferes with the quality of training programme.

12) Payment of an allowance during Training

The training for all categories of paramedical personnel is not only provided free of charge, but all the trainees are also given an allowance during their training period. This, however, keeps them bonded to serve the government for a specific period of time according to the category.

13) Funds for Training

Funds are provided from the Health Ministry's consolidated fund for basic training. The Ministry of Health transfers funds for the training of Pharmacists to the University of Colombo through the Sri Lanka Medical College Council.

14) Registration for Practice

Sri Lanka Medical Council is responsible for Registration of Doctors, Dentists, Nurses, and AMOs. However, nurses are in the process of establishing the Sri Lankan Nursing Council for their own registration. Legislation has been passed.

Paramedical categories like MLTs, Pharmacists, Physiotherapists, Radiographers, Dieticians, and Nutritionists need to be registered in the Sri Lanka Medical College Council (SLMCC) initially. Subsequently, they are registered at the Sri Lanka Medical Council. However, there is no board to approve the suitability of training programmes for registration. Standards are not established; nor is there an accreditation system. Doctors need to renew their registration every 5 years (ex. 1995, 2000 etc.) by paying a fee. No other criterion, such as a point scheme, is adopted for renewing licences. There is no renewing system at all for paramedical staff.

Adequacy of Resources for Training

1) Buildings

There are 13 schools for Nurses training. Other than Sri Jayawardanepura Nursing School which was specially planned for training nurses with adequate classroom space, library space, hostels, kitchen etc, others have inadequate building facilities.

MLT schools are relatively better provided with regard to buildings. The centres are at NIHS and MRI, and the other is a separate school in Peradeniya, attached to the teaching hospital.

Pharmacist students at the Colombo Medical Faculty have only a lecture room in the faculty.

Maintenance of buildings is unsatisfactory.

2) Facilities

Only minimal facilities are available for all training programmes except at NTS Sri Jayawardanepura.

3) Equipment

With regard to teaching equipment, a minimum number of overhead projectors and Magi boards are available at most facilities in most centres. Only NTS Sri Jayawardanepura has a multimedia projector. With regard to laboratory equipment, Peradeniya MLT school has adequate equipment. Other training centres do not have adequate required equipment. Cardiographers and radiographers do not have ECG machines or x-ray machines for the school. Nursing schools have adequate equipment but the situation can be improved.

Supplies are inadequate in most instances.

Maintenance of equipment is unsatisfactory.

4) Manpower

Principals are available but, due to non-appointment, many schools have only acting principals. There is a severe shortage of tutors at all levels. The competence of tutors in training is also insufficient. Lack of supporting staff is also a major problem. Since administrative matters are handled by the Directors of the respective institutions to which the training facility is attached, they are often neglected as it is not the Directors' prime duty (particularly financial matters and repairs to the schools).

5) Quality of Training

1. Availability of curriculum and other teaching aids

Certain programmes do not have a curriculum. All nurses schools have a common curriculum. The present one in use was published in 1999 and was developed in 1994. Modern teaching learning strategies are not included. Although nursing procedures have changed, these are not updated. A lifelong learning culture is not emphasized.

2. Library facilities

Although the nursing training schools have adequate library facilities, not all paramedical facilities have.

3. Clinical training facilities

Most categories of paramedical staff require competencies in a clinical setting. Of the 11 NTSs, 3 NTSs are situated away from the hospital setting. The students are transported by buses to hospitals from these NTSs.

Most of the paramedical training centres are situated close to a hospital, although other facilities are not satisfactory, e.g., no adequate laboratory facilities.

4. Monitoring supervision of learning and evaluation

Evaluation forms and Student Practical Experience Books are some records used to ensure supervision.

5. Calendar of events in training schools

    Dates for exams are fixed in an ad-hoc manner. Students do not know well in advance the dates of the examinations. This is a major problem students planning their own personal lives..

6. Counselling and Support Services

    Tutors provide counselling services to students, but this needs much improvement.

Current Training Programmes Not Adequate to Meet the Service Demand

There is a shortage of paramedical staff in the institutions. Therefore, their functions are carried out by other staff, e.g., when a cardiographer is not available a nurse is trained to do his job, thus losing credibility of results. Also the quality of services provided may be low. In the case of nurses, because of their limited number, they have to cover for each other often. Even if the capacities of training institutions are increased, it will take a considerable time before the required numbers are taken in.

However, although the existing facilities are not adequate for training the required number immediately, it is seen that sometimes even the existing facilities are not optimally used to reduce the gap between supply and demand. There is no regular intake and no policy for recruitment, amongst other things.

Alternate training programmes are not planned to cater to the immediate service needs of the department as a temporary measure. It would be interesting to investigate further the competencies that should be developed among the different categories to carry out their present job functions, and whether all competencies are necessary for all settings. If an auxiliary person is recruited with fewer competencies, after a short training course, that person may be able to do certain activities, e.g., certain activities of a staff nurse who is trained for 3 years. The shortage can be handled without affecting the services until such time that existing facilities become adequate for training the required number. If these auxiliaries obtain the necessary qualifications later, they may be absorbed into the other category with a short course of further training.

Though trainees are bonded for a certain period this is not properly implemented. Therefore, many leave the country after training. Training is expensive. The exodus of trained staff may not be economical for the country.

Views of Present and Recent Past Trainees Regarding Quality and Suitability of Training

Trainees of every category were of the opinion that the training that they received was satisfactory. However, almost every category was of the opinion that the time allocated for the training was not adequate. Most of the trainees did not know the objectives of the programme they are attending. Therefore, it was difficult for them to assess the programme in terms of the job functions.

The trainees felt that the same subject handled by different teachers is taught differently in terms of content. Current practice is different from what is demonstrated in the laboratory. Uniform messages are not given. Sometimes they are even penalised at exams. Although nurses have 80 hours of library time in the curriculum, in actual practice this is not available. Although at first the trainees thought that strict rules and regulations were not good (some even left the training programmes), later they realized that rules and regulations were beneficial for them.

Counselling and support services were necessary for students. The trainees felt that they get it from tutors and vice versa. However, there were instances where students have committed suicide. Closer monitoring, guidance and recreation facilities were identified as very necessary, by the students, during the training period.

Regarding recruitment, students felt that adequate awareness about the job opportunities in paramedical services, the criteria for recruitment, job function of the categories etc. are not provided at the correct time to enable them to make proper applications. This leads to problems during the training period because it is then that they realize that they could have joined a better category of occupational group with the qualifications that they possessed.

Pre -training orientation in English and in life skills would be very useful for them to continue the paramedical training with enthusiasm and to become more effective. Trainees who have only one year training face many difficulties since English is used during the course. The initial part of the course is not understood and they have very little time to do the proper course and get the experience. They feel that in certain programmes with a 2 year's training period, nearly 1 year is first spent learning only English. They feel that they are discriminated even though they were recruited by the same method for the Health Ministry.

Trainees like outside examiners to come for their evaluations since it reduces bias. However, the tutors felt that staff from the same schools should perform the evaluations. The outside examiners were of the opinion that their work suffers when they have to go to other schools to conduct evaluations.

Trainees are not aware how they will be deployed afterwards. The criteria are not laid down. This was the main problem for students in their final year.

Recent past trainees and those presently employed felt that the training they got was adequate for the functions that they have to perform. In fact, some said that some of the theories they learned were not used in actual practice.

Supervisor Perception of Paramedical Training and Performance

Consultants in general were of the opinion that the psychomotor skills of the paramedical personnel and nurses were adequate to perform their functions, e.g., skill in giving intravenous injections was very good. However, the services provided were not always up to the expected standards. Critical thinking was not very good. Attitudes were not positive. Consultants thought that they were not confident enough. They emphasized that attitudes towards patients, communications skills, and ethical considerations should be emphasized much more in training. Even without supervision by the doctors and consultants, nurses should be able to provide care to the clients in a professional way on their own. Certain things are done only if they are asked for. Nurses need pushing and constant supervision.

They should take more responsibility and be independent. The nurse-patient/relative relationship should be much stronger. Particularly on discharge, a nurse should provide necessary information to the client on an individual basis without any discrimination. Now it is done mechanically; there seems to be no human touch.

Attitude problems sometimes can lead to negligence, which may be very serious in the long run, e.g., mixing investigation reports of patients is not infrequent. Increased workload is given as an excuse. However, prioritizing the important activities is a skill that should be inculcated among the health staff.

Handing over or taking over of patients should be given high priority.   The doctor-nurse relationship is satisfactory. However, nurses do not accompany doctors during ward rounds even when they are not involved in any other activity.

Nurses in paediatric wards need competence in managing asthmatics who use different kinds of nebulisers. Certain procedures have not been taught during basic training.

It is difficult to comment on the training of MLTs. However, investigation reports that do not tally with the clinical picture are seen very often. Increased workload is given as an excuse. Consultants thought that their only interest is in earning more money for themselves, rather than the best interest of patients.

X rays are taken well by Radiographers according to the consultants. In emergencies they are prompt.

Physiotherapists are not adequate in number. They do not attend regularly to the patients. Competencies are good but, perhaps, space is insufficient for them to perform their duties well. Some were of the view that their attitudes are not very positive, they do not realize that they have an important role in the treatment of the patients. Even in the private sector this is the attitude of the Physiotherapists. Consultants in specialized units, where physiotherapists are assigned to the unit, thought that the physiotherapists are good. However, consultants in the general ward did not think so.

Speech Therapists are not adequate in number; though appointed they are not available daily. Their competencies are good but a lack of space to perform their functions may be a problem.

(5)   RECOMMENDATIONS

The following recommendations are made based on an analysis of all the components of the study results.

Capacity of Nursing and Paramedical Training Institutions

The capacity of nursing and paramedical training institutions should be increased in terms of quantity, since there is a shortage of nursing and paramedical staff in service. This requirement, however, is only until the cadre is filled. Hence, if this is not a priority, at least a temporary measure to meet the service demand should be identified and implemented, e.g., to create a category of staff that is less specialized, i.e., auxiliaries. Later they may be absorbed to the nursing category, if recruited with the necessary qualifications. Duty hours may be increased.

Capacity of Nurses Training Schools and Paramedical Training Institutions should also be Increased in Terms of Quality

1. Physical facilities - Classroom, skill laboratory, library building
2. Equipment for teaching and laboratories
3. Supplies for teaching and laboratories, and library books
4. Human resource - Principals, tutors, supporting staff, librarians, photocopy operators etc.
5. Welfare facilities
6. Rules and regulations in the NTSs
7. Teaching Technology
8. Management of training activities

Teaching Technology should be Developed

1. Competency-based curricula should be developed together with appropriate teaching methodologies. Library time should be allocated in the curriculum and self-learning should be emphasized.
2. Mechanisms to improve attitudes and critical thinking.
3. Trainer and trainee guides should be developed.

Paramedical Training Programme

Paramedical training programmes, scattered at various locations and without proper administration, should be brought under one umbrella where many activities can be combined, e.g., a single administrator can be responsible for ensuring regular supplies necessary for teaching and for other technical and financial matters. A library can be common. Hostel facilities, canteen facilities, recreational facilities can be common. A paramedical training institution properly planned close to NHSL and/or other major hospital, for providing necessary clinical practice, can be very useful. At least, physiotherapy, occupational therapy, radiography, cardiography, electro-encephalography, ophthalmic technology can be combined.

Curricula for All Training Programmes

It is necessary to develop curricula for all training programmes. A central level multidisciplinary group should approve the curriculum so that it is fair for all categories of training, in terms of duration competencies necessary for job functions and the required skill mix. The study suggests the formation of a National Advisory Council on Human Resource Production to facilitate correct recruitment, determine duration of training and develop competencies.

Tutors Need to be Motivated and Made Competent

1. Tutor posts should be made more attractive. Cadre positions in the schools should be identified and tutors should be appointed.
2. A better salary structure should be provided for tutors to motivate them. Different schemes of promotion within the tutor category, with a point scheme for promotions etc., should be developed.
3. All tutors need to be given formal training on teaching before being appointed as tutors.
4. Opportunities for continuous updating of their knowledge should be made available. A mechanism should be developed so that there is self-determination for a life-long learning culture.
5. Sharing information through discussion, by having regular meetings of tutors from various institutions, needs to be arranged.

Necessary Supporting Staff

Necessary supporting staff should be appointed. Librarians and library assistants should be appointed to each nurses training school and to a common paramedical school.

Improving Library Facilities

Library facilities, especially in the paramedical schools, should be improved. Arrangements should be made to ensure that the library is kept open during students' free time.

Formulate Policy for Recruitment

The following should be taken into consideration in formulating policy for recruitment:
1. Entry-qualified students should be able to follow the course (to be collaborated with MoE)
2. Numbers to be recruited according to vacancies and availability of facilities

3. Frequency and calendar of recruitment. - once a year or once in 2 years, then a plan can be developed. A calendar could be prepared so that schools are ready for receiving a new batch of students.

4. Attrition rate and its causes. A multidisciplinary body consisting of members from the Ministry of Higher Education and the Ministry of Health should be involved in the process.

Action should be taken to Reduce Attrition Rates

1. Pre-application information about the job functions, duration of training, salary scale etc. should be given, maybe as a brochure or by another suitable method.

2. Pre-training orientation for selected students, e.g., on life skills, English, computer sciences, counselling, job functions, etc.

3. To eliminate those who would get admitted to university before recruitment. Coordination mechanism to be set up with Ministry of Education to reduce the time period between A/L results and enrolling for university. Recruitment to paramedical training should be done after selection for university or at least at the same time, with different cut off marks and adequate information about paramedical training.

Quality Assurance in Training of Paramedical Personnel

Steps should to be taken to initiate quality assurance in the training of paramedical personnel. Although there is a system for the registration of categories practicing health care delivery, proper criteria are not identified to ensure quality. Standards should be established for training facilities, curricula, apprenticeship, accreditation, staff etc.

NTS

NTSs should have a closer collaboration with hospitals. A clerk from hospital should be detailed to NTS at least 3 days a week.

University Education

University education may be considered for nursing and paramedical staff, with the award of a Diploma. However, continuous care by the Health Ministry is very important.

Regional Centres for Repair and Maintenance of Teaching Equipment

Regional centres for the repair and maintenance of teaching equipment should be set up.

Management Capabilities

Management capabilities should be strengthened.

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This section was prepared by Dr. Hiranthi de Silva, Director of Training, MoH

3.3 CONTINUING EDUCATION PROGRAMMES OF PARAMEDICAL STAFF AND MOTIVATION MECHANISMS OF HEALTH WORKERS

PART A

(1) INTRODUCTION

Continuing education is defined as all the learning experiences a health worker gets after the initial training. It is concerned with a wide range of competencies and skills of the health worker, directly relevant to the provision of health care and leading to improvement in the health status of the community. Even though continuing education opportunities were given to some identified categories of staff, the department of health services is yet to develop a comprehensive continuing education plan.

A descriptive study was undertaken to assess the continuing education programmes of the paramedical staff with the following objectives. The study assessed continuing education among ten categories of paramedical staff using study instruments such as questionnaires, interviews and observations. The study was carried out using a convenient sampling amount.

(2) OBJECTIVES

The survey objectives are as follows:

1. To assess the overall opportunities the paramedical staff receive during their service period in regard to in-service training, supervision, on-the-job training, distance education, library facilities, printed material and conferences;

2. To assess the perception of paramedical staff in regard to the effectiveness of the continuing education programmes conducted;

3. To assess the facilities available for continuing education; and

4. To assess the perception of supervising officers of paramedical staff in regard to continuing education.

(3) METHODOLOGY

The following methodologies were used to assess the continuing education programmes:

1. Programmes for paramedical staff were assessed by using self-administered questionnaires guided by the interviewer.

2. Supervisors were interviewed by using a structured questionnaire.

3. Structured interviews were used to interview officers in charge of institutions, Deputy Provincial Directors of health services and district level programme officers.

4.   Perusal of records to ascertain the information given.

5.   Observation of facilities available.

Table 3.3.1   Number of Paramedical Staff and Supervising Staff Interviewed

Category	No	Supervising category	No
Public Health Inspectors	17	Supervising Public Health Inspectors	4
Public Health Midwives	57	Supervising Public Health Midwives	7
Field Assistants	11	Supervising Field Assistants	2
Staff Nursing Officers	31	Ward Sisters	5
Physiotherapists	08	Supervising Physiotherapist	4
Medical Laboratory Technologists	23	Supervising Med. Lab. Technologist	4
Microscopists	08	Supervising Microscopist	1
Radiographers	11	Supervising Radiographers	4
Cardiographers	07	Supervising Cardiographers	4
Pharmacists	24	Supervising Pharmacists	4
		Public Health Nursing Sisters	4
		Matrons	3
		Medical Officer MCH	1
		Regional epidemiologist	1
		Reg. Supervising Public Health Nursing Sister	1
		Regional Malaria Officer	1
		Divisional Pharmacist	1
		Officer in charge of institutions	7
		Deputy Provincial directors	2

The Study Team did not go into details regarding the effectiveness of the continuing programme by assessing their current work performance.

The study was conducted in the following districts: Polonnaruwa, Ampara, Ratnapura and Gampaha.

(4)   RESULTS

In-service Training

1.   Regularity - Regular monthly in-service training at the institutional level for field PHM were conducted only in Polonnaruwa district and DPDHS Dehiattakandiya. In-service training for all other categories was not regular. Cardiographers and Physiotherapists did not receive any training during the last 3 years.

2.   Place of in-service training - PHM, SNO and PHI have most of their in-service training at institutional and district level. Other paramedical staffs were conducted at central and provincial level.

3.   Usefulness of the in-service training - Almost all paramedical staff thought that the in-service training they underwent was useful and relevant.

4.   Follow-up of in-service training- This was poor. Only 27% claimed that they had follow-up after training.

5. Suggestions for improvement of future training

    - Place of training - PHM, PHI, SNO, and Microscopists stated a preference for in-service training at Institutional level. Others preferred central and provincial level training.

    - Resources - should be from outside the institution.

    - Training methodologies - Demonstrations, field visits and practical training.

    - In-service training plan - All supervisors claimed that they do not prepare in-service training plans or conduct regular training.

    - Sources of funding for in-service training - All supervisors claimed that they do not have a regular allocation for in-service training and this was a major constraint.

    - Resources available for in-service training - Most supervisors, except PHNS and ward sisters, claimed that they have not received any training on educational science. They suggest that it will be helpful to have staff trained in educational science for in-service training at institutional and district level.

    - Suggestion for improvement - Need for financial allocations to improve physical facilities at the institutional level, for improvement of in-service training.

Supervision

1. Frequency of supervision - Only half of the paramedical staff received supervision over the last 12 months. Institutional PHM and SNO claimed that they were receiving supervision very frequently during ward rounds of ward sisters. Physiotherapists, MLTT and Cardiographers have not received any supervision during the last 12 months.
2. Effectiveness - Almost all the paramedicals who had supervision claimed that they had received feedback, improved their skills, and services were improved after supervision.
3. Supervision plans and skills of supervision - supervision plans were available only with supervisors of field PHM, i.e., PHNS and SPHM.
4. Reasons for not conducting supervision - The reasons given by supervising officers of MLT, Pharmacists, Physiotherapists, Microscopists, Cardiographers and radiographers were that they have not been properly appointed to those posts, with proper duty lists. Another common reason given was they were too busy.
5. Nature of supervision - supervisors were more concerned with the achievement of performance targets than developing the supervisee. Most supervisors other than PHNS and SPHM do not keep regular records of supervisees.

On-the-job Training

1. Availability - Only few SNO, institutional PHM and Field Assistants had on-the-job training.
2. Reasons for not conducting on-the-job training - The most common reason given was that they are not called for and not organized at institutional level.
3. Reasons for not conducting on-the-job training by supervisors - The commonest response was they were not aware about it. They claimed that they trained their subordinates during supervision.

Distance Education

1. Availability - All respondents claimed that they have not received any distance education training opportunities.
2. Future Participation - All paramedical staff are willing to participate in distance education programmes.
3. Subject areas - Most preferred subject areas are subjects related to the job, Efficiency Bar and computer training.
4. Methods - Most preferred method is by post.
5. Reasons for not organizing at institutional level - All superiors claimed that they do not have experience and training, and funds are not available.

Library Facilities

1. Availability - Library facilities were available only in Base Hospital Polonnaruwa, General Hospital Ratnapura and Base Hospital Ampara, District Hospital Hingurakgoda and DDHS Ampara. Books available in libraries were poor.
2. Availability of relevant materials in the libraries - Novels and general reading material were available in most of the libraries. Most of the paramedical staff claimed that relevant books and other printed material were not available.
3. Need - All paramedical staff said that they need library facilities. Almost all said that they need materials on relevant subjects. English, computer and other management skills are the other subjects they suggested.

Printed Materials

1. Availability - Only one-third of paramedical staff have received printed materials during the last 12 months. PHI, FA, Microscopists, Cardiographers, Radiographers and Pharmacists have not received any printed material over the last 12 months.
2. Distribution - Distribution of, even, the available printed material was not regular.
3. Production of printed material - All the supervisors and District level programme managers claimed that they do not have funds nor any experience in the production of printed material.

Conferences

1. Number of conferences attended - Only half of paramedical staff attended conferences during the past 12 months. Field PHM and PHI attended regular conferences on a monthly basis.
2. Usefulness - Most claimed that they knew objectives of the monthly conferences and there were service improvements following them.

General Improvements of the Continuing Education Programmes

Most claimed that they need regular in-service training, a regular supply of printed materials and other facilities for learning.

Views of Supervisors

1. Training - Most supervisors other than PHNS, SPHM, Ward Sisters and matrons have not had any formal training on supervision, training need assessment and educational science. All supervisors claimed that they need further knowledge on training, needs assessment and education science.

2. Other facilities - Financial constraints and inadequate transport facilities are the other main problems encountered.

3. Training needs assessment - All training done by supervisors were based on performance problems and training needs assessment was not done before the programme.

District and Institutional Level Training

1. Trained staff - there are no trained trainers at institutional and district level to conduct training. Programme officers who have had no experience in educational science conducted all training programmes. All institutional and district managers suggested separate staff for training.

2. Planning of in-service training programmes - All district level programmes and deputy provincial directors agreed they do not have a training plan. Main reason given was that they have not considered it as an important area but all of them agreed that the staff need training.

3. Training needs assessment - This was not done before training and almost all the training was directed to overcome performance problems.

4. Funds - Non-availability was a major reason for not having training programmes. Separate budgetary allocation was suggested for training.

5. Supervisory grades - Suggested creating special grade supervisory posts for MLT, Radiographers, Physiotherapists, Cardiographers and Microscopists at least at the provincial level for the supervision of training.

6. Conference facilities - Most institutions surveyed did not have adequate conference facilities and audiovisual equipment.

7. Residential facilities - Most of the institutional and district managers claimed that, in some instances, the staff are reluctant to attend training programmes conducted at provincial and central level because residential facilities were not provided.

(5)   RECOMMENDATIONS

General Recommendations

1. To develop a master plan for continuing education, covering all paramedical staff. Annual training calendar to be developed based on the master plan.

2. Funds to be provided through a separate training vote for in-service training, for all paramedical staff, by the central and provincial ministries of health.

3. Formal management training to be given to all supervising paramedical staff, for supervision, human resource development, training needs assessment and educational science.

4. Provincial training centres to be provided with proper facilities. Cadre provisions, conference facilities, audiovisual equipment and residential facilities to be included in the plan.

5. All districts to develop a district training unit with staff who have undergone formal training on education science to undertake regular needs assessment, coordinate in-service training at the district level and follow up of training. Initially, cadre training, PHI tutor and PHN tutor posts to be created at the district level.

6. Conference facilities with basic audiovisual equipment to be provided to all institutions and districts.
7. To provide regular, formal and in-service training on educational science at Provincial / Central level.
8. Provincial special grade posts to be created for MLT, Physiotherapists, Cardiographers, Microscopists and Radiographers to coordinate training and supervision.
9. Networking of all training institutions and training units to share resources and expertise.

Recommendation for In-service Training

1. To conduct training needs assessment of all paramedical staff regularly.
2. Equal opportunities to be given to all paramedical staff.
3. Regular follow up of training to be conducted and feedback to be given to district level programme officers and supervisors.
4. In-service training to be decentralized as far as possible, up to institutional level. However, some categories, such as MLT, Pharmacists, Physiotherapists and Cardiographers need Provincial/Central level training since they are insufficient numbers.
5. Institutional PHM to be included when conducting in-service training for field PHM.

Recommendations for Supervision

1. To conduct regular supervision of all paramedical staff.
2. To train all the supervisors who have not undergone training on supervision.
3. Formal appointments to be given to all the supervisors so they have proper authority to supervise.
4. Supervisors to be released from other work so they can concentrate on development of their subordinates.

Recommendations on On-the-job Training

1. All the supervisors to be given training on "on-the-job training."
2. Motivate supervisors to do more on-the-job training to develop the skills of their subordinates.

Recommendations on Distance Education

1. Motivate authorities at the Central and Provincial level to initiate distance education programmes.
2. To train a core group at Central and Provincial level to conduct distance education programmes.

Recommendations on Library Facilities

1. To develop library facilities in every institution.
2. To provide adequate funds in a separate vote for improvement of library facilities and printed materials.
3. Needs of all the paramedical staff to be considered when ordering books and other printed material.

Recommendations on Printed Material

1. Distribution of printed material to be regularized. Both staff working in hospitals and field to be considered when distributing printed material.

2. Provincial and District level supervisors and programme managers to be trained in development of and printing of materials.

3. To allocate sufficient funds for production of printed materials. Printing of regular magazine like "Sapatha" for the use of paramedical staff.

Recommendations on Conferences

1. To conduct regular conferences and meetings to review work performances and update knowledge for all paramedical staff.

PART B

(1) INTRODUCTION

At present, one can observe changes taking place which command new knowledge and skills for quality service delivery. For example, in disease trends, patient management techniques, drugs used for treatment, laboratory investigations carried out, etc. Further, the expectations of clients too have changed. Population dynamics reveal that the structure of the population too is changing. Thus continuing education programmes are a must for all categories of health care workers. The continuing education programmes must meet the present demands and motivate the health care providers. Many strategies though available at present are failing to motivate care givers to the expected levels. As valid and reliable data on existing motivating mechanisms are not available, there is a need to collect such data.

The present study was undertaken to know more about continuing education and motivating mechanisms to enable the experts to prepare a master plan for the health sector, which will include mechanisms and strategies to overcome the deficiencies identified and to ensure continuity in the existing health care delivery system.

(2) OBJECTIVES

General Objectives

In general, this study intends to assess the motivation techniques utilized for improving quality of service delivery of staff.

Specific Objectives

Specifically, the study aims:

1. To identify the already existing mechanisms for improving quality of services delivery by health staff;

2. To determine the effectiveness of existing mechanisms for motivation in terms of attitude on service delivery; and

3. To critically review the effects of monitoring and supervision at different levels in motivating the staff.

(3)   METHODOLOGY

1. Type of study   : Descriptive study

2. Population   : Staff attached to selected Divisional Director of Health Services Areas and selected staff from the hospitals in the same district.

3. Sampling   : A convenient amount of sample was selected

4. Sample size   : Not calculated based on scientific criteria

5. Data Collection   : Questionnaire, Focus Groups Discussion, Perusal of reports of Supervisors

(4)   RESULTS

1. Motivation factors identified by the respondents were Salary, Promotion, Paid leave, Unpaid leave, Training, Scholarship, Work satisfaction, Performing a recognized and respectable service and Availability of pensions.

2. It is interesting to note that they requested for opportunity to improve their knowledge and skills through continuing education. Provision of incentives, recognition of their service, scholarship, regular supervision and salary increase were ranked higher. Common wisdom is that salary hike is the most important motivating factor for government servants, but the respondents ranked salary increase in 6th place among 8 options given for selection.

3. Some respondents who are near the retirement age, but have not gotten opportunities for continuing education scholarships etc stated that they perform their work happily, because they believe it brings merit to them and their next birth will be a happy one.

(5)   PLANNING IMPLICATIONS

Needs for a drastic change in the manner the continuing education programmes are planned and implemented and strategies for motivating staff have been clearly seen. Taking these into consideration, the following recommendations are made:

1. Prepare the master plan for continuing education at Ministry level.

2. Provide resources for continuing education.

3. Continue the government loan schemes for government servants.

4. Provide support for preparation of health learning materials especially to training centre / trainers.

5. Provide opportunities for development competencies for conducting simple research.

6. Assist conducting simple research related to the problems at work place.

7. Ensure support for staff members at times of difficulties (official and personal).

8. Establish mechanism to recognize and appreciate "good work" of staff.

9. Provide opportunities to display special skills and capabilities of staff.

10. Assess workload of different categories of staff at regular intervals and decide cadre requirements.

11. Regular monitoring and supervision should be carried out and feedback given to supervisees too.

One has to foresee many implications. Among them allocation of resources to cover the needs of all provinces and ensuring quality activities conducted may be difficult tasks for planners and administrators.

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This section was prepared by Dr. S. D. de Silva, Director of NIHS, MoH and Dr. Sarath Amunugama.

3.4 HEALTH MANAGEMENT INFORMATION SYSTEM FOR MATERNAL AND CHILD HEALTH/FAMILY PLANNING

(1) INTRODUCTION

The health information system in Sri Lanka dates back to the early 1940s. At that time certain health and health-related information in respect of MCH/FP activities was collected by the Ministry of Health (MoH). During the mid-fifties improvements were made to further strengthen the information system and a separate Medical Statistical Unit (MSU) was established within the MoH to undertake the collection and processing of health data. This division was responsible for collecting health data from all medical institutions and health units within the country.

In addition, the most specialized units implementing preventive health programmes (Family Health Bureau, Epidemiology Unit, Malaria Control Programme, National Sexually Transmitted Disease Control Programme, National Cancer Control Programme, Respiratory Disease Programme, Leprosy Control Programme etc.) have developed their own health information systems to monitor progress of implementation. The health information system has been periodically reviewed and revised.

An information system to collect family planning data was introduced in the early 70s with the Family Health Bureau (FHB) given the responsibility for data collection, processing and analysis. Following a revision of the MCH information system in 1985, collection, processing and analysis of MCH data was also entrusted to the FHB.

(2) INSTITUTIONAL FRAMEWORK FOR PROVIDING MATERNAL AND CHILD CARE

Sri Lanka has a well-developed health infrastructure with a capacity to provide a comprehensive health service throughout the country. In 1989, the country's administration was decentralized, with devolution of administrative powers to 8 provincial councils.

- Each province has a Provincial Director of Health Service (PDHS) who is responsible for the provision of health care within the province.

- The PDHS is supported by a Deputy Provincial Director of Health Service (DPDHS) who is in charge of a health region/district.

- The DPDHS is supported by a team comprising a Medical Officer of Health for Maternal and Child Care (MO/MCH), a Regional Epidemiologist (RE), 2-3 Health Education Officers, a statistical officer (SSO) and a Programme Planning Officer (PPO).

Each health region/district is further subdivided in to 7 to 15 health divisions with each division being managed by a Divisional Director of Health Services (DDHS), also referred to as Medical Officer of Health (MOH). Each health division has a network of medical institutions and *health units* that provide institutional and clinic-based maternal health, child health and family planning services.

These *"health units"* (clearly defined geographical areas congruent with administrative districts of the country) are managed by a DDHS/MOH and are supported by a team of public health personnel comprising Public Health Nursing Sisters (PHNS), Public Health Inspectors (PHI), Supervising Public Health Midwives (SPHM) and Public Health Midwives (PHM).

Maternal, child health and family planning services are provided through the network of health units and medical institutions comprising hospitals with specialist services, district hospitals, peripheral units,

rural hospitals, central dispensaries and maternity homes. The institutional network is closely linked to the health unit system that is primarily responsible for providing the preventive, and promotive aspects of health care to the people. Currently there are about 258 health unit areas with populations ranging from 40,000 to 60,000. Each health unit area is subdivided into PHM areas, which constitute the smallest working unit in the government system. Currently, there are approximately 5500 PHM areas.

The PHM is the "front line" health worker providing domiciliary MCH/FP services in the community. Each OHM has a well-defined area consisting of a population ranging from 2000 to 4000. Through systematic home visits, she provides care to pregnant women, infants and preschool children within her area. She also provides family planning services which includes counselling and provision of contraceptives (pills and condoms) to couples in the reproductive age and regular follow up of family planning users. In addition, she provides necessary education and advice to adolescents on reproductive health when needed and educates women on the importance of early screening for reproductive organ malignancies, thus motivating them to attend the "Well Woman Clinics" in the MOH area. She also assists routinely at the area MCH/FP clinics, which are conducted fortnightly, thereby linking the community with the formal institutional health system. Her activities are supported by a system of record keeping which enables her to plan and monitor her routine activities.

The Public Health Inspector (PHI) works within a defined area (range), having a population of 8000 to 12,000. His primary function is the prevention and control of communicable diseases, promotion of environmental and occupational health and the organization of school health activities within the area.

The Public Health Nursing Sister (PHNS) mainly plays a supervisory role and is responsible to the MOH for implementation of MCH activities within the division. She also assists at the field health clinics that provide MCH/FP services. She is assisted by the Supervising Public Health Midwife (SPHM) who also undertakes regular supervision and provides necessary guidance toarea PHMs.

At the national level, the Family Health Bureau (FHB) is the central organization of the Ministry of Health and is responsible for planning, coordinating and providing necessary technical assistance and direction for MCH/FP activities. The FHB is also responsible for monitoring the implementation of MCH/FP activities within the country. Since ICPD of 1994, there has been a shift in the emphasis to reproductive health (RH). In the implementation of the RH programmes, the FHB plays the central role of maintaining a close link with the National Cancer Control Programme (NCCP) and the National STD/AIDS Control Programme (NSACP).

(3)   MCH/FP INFORMATION SYSTEM

Data is collected on domiciliary and clinic activities, which are routinely submitted to the first level of management, namely, the MOH office. For this purpose, a recording and reporting system has been developed and is currently in use throughout the country. Currently, MCH/FP data is collected routinely from:

- All medical institutions where MCH/FP services are provided.
- All MCH/FP clinic centres.
- All public health staff engaged in MCH/FP activities - PHM/PHNS/SPHNS
- In addition to data from MCH/FP clinics, data is also collected from Well Women Clinics (WWC).

The more important MCH/FP data collected from each source is listed below.

Data Collected by Public Health Midwife (PHM)

This information is collected monthly and transmitted to the MOH of the area on the health form: PHM Monthly Statement/H 524.

- Data on target populations within the PHM area - Eligible couples, pregnant women, infants under care, family planning acceptors and current family planning users
- Antenatal and postnatal visits made to mothers within the area
- Total deliveries within the area and the number receiving trained and untrained assistance at delivery
- Live births, stillbirths and abortions within the area
- Infants and preschoolers visited at home
- Infants and preschoolers weighed by PHM at weighing post
- Infant and maternal deaths
- Family planning acceptors recruited by PHM, current users of modern contraceptive methods and contraceptives distributed by PHM (orals and condoms)

MCH/FP Clinics and Well Woman Clinics

- Clinic attendance of pregnant women, infants and preschoolers and more important activities performed at clinics like samples of blood taken from pregnant mothers for VDRL testing, immunizations given, weights of infants and preschoolers.
- Family planning acceptors and information on FP services provided at clinic.
- Family planning new acceptors by method - information is also collected about certain social indicators of new acceptors like age, ethnicity, religion, education level, number of living children and age of last child.
- Clinic attendance and activities performed at WWC.

The information in respect of MCH/FP clinics and WWC are furnished quarterly to the area MOH on the "Quarterly MCH Clinic Return/H 527" and the "Well Woman Clinic Return".

Data in respect of Family Planning Acceptors are forwarded monthly to the regional MO/MCH and FHB in the "Family Planning Monthly Return/H 1200".

Supervisory Staff

Data is collected monthly at the MOH level activities performed by PHNS and SPHM.

1) Public Health Nursing Sister (PHNS)

- Supervisory activities conducted for the month
- Clinic activities performed during the month
- School health activities performed during the month
- Investigation of infant deaths/still births
- Home visits during the month

2) Supervising Public Health Midwife (SPHM)

- Supervisions conducted for the month
- Local conferences attended during the month.
- Home visited during the month
- Other special activities undertaken during the month

The above information is transmitted to the MOH monthly by the PHNS and SPHM in the health form "PHNS Monthly Statement of Work (Format A)" and "SPHM Monthly Statement of Work (Format B)" respectively. This information is thereafter forwarded to the region and centre (FHB) using "Format C".

Medical Institutions

The same procedure, described under MCH clinic centres, operates at the clinics conducted in medical institutions.

The medical institutions also collect data on deliveries, inpatients and outpatients treated at the institutions and also morbidity and mortality statistics from within the institution. These statistics are forwarded quarterly to the Medical Statistical Unit.

In addition to the above, a *new return* ("Quarterly Reproductive Health Return") was developed to collect data on certain activities related to reproductive health from institutions with specialists (Obstetricians and Gynaecologists). This needs to be tested out on a trial basis before it will be introduced into the National Medical Information System (MIS).

An attempt was made to collect relevant data from the private health sector. However this has yet to be put into operation.

(4)   AVAILABLE DATA COLLECTION SYSTEMS

The important sources of data are:

Records Used Routinely by Public Health Staff in the Fieldwork

- Mothers card and pregnant mothers record
- Eligible couples register
- Pregnant mothers register
- Birth and Immunization register
- Family planning monthly register/return

The PHM maintains the above records and registers at her office. These are available to supervisory officers at the time of supervision.

Records Maintained at Clinics (MCH/FP and WWC)

- Clinic attendance register
- Clinic summary
- Immunization register
- Family planning monthly register/return
- Well woman clinic register

The above registers are maintained at all clinics where MCH/FP and WWC services are provided.

Records Maintained in Hospitals

- Ward admission register
- Delivery register
- Operation theatre register
- Ward summary sheet
- Family planning monthly register/return

Data/Information Collected through Special Surveys/Studies

Data and information were collection from the Demographic and Health Survey (DHS).

Data Collected through Maternal and Prenatal Death Investigations

(5)   DATA ANALYSIS AND FEEDBACK

The data collected through the MIS is processed and analysed based on a given set of indicators at all management levels.

- At central level - FHB, Medical Statistical Unit, Epidemiology Unit
- Regional level - MO/MCH/SSO
- MOH level - MOH/PHNS

Ffeedback is therefore provided to all concerned.

The FHB has been publishing national data on family planning acceptors since the inception of the programme in 1968. With the introduction of the revised information system in 1986, national data on maternal and child health was also included in their "Annual Report on Family Health".

(6)   MONITORING IMPLEMENTATION

The implementation of the MCH/FP activities are regularly monitored at the different levels and the following mechanisms are used to monitor implementation.

- Central level - MO/MCH review/ Maternal and perinatal death review
- District level - Quarterly district reviews
- MOH level - At Monthly conferences

Regular meetings are held both at the centre and regions/districts to review progress of activities.

(7)   UTILIZATION OF DATA

The data collected through the different health information channels, after necessary processing and analysis, is used to monitor the progress of activities and assess program performance at different levels (individual, divisional, regional and central). Any deficiency and gaps are identified and appropriate corrective measures are taken to overcome the identified shortcomings. Thereafter, necessary follow-up is made to ensure implementation of the recommended action during supervisory visits and at subsequent reviews.

This information is also used at both regional and central level when formulating annual health plans.

(8)   APPRAISAL SYSTEMS FOR PUBLIC HEALTH STAFF

Routine appraisal of public health staff is currently weak, although an inbuilt system is available for periodic appraisal of work performance in certain categories.

## (9)   STRENGTHS AND WEAKNESSES OF THE SYSTEM

1. A uniform MIS has been in place throughout the country for a period of over 4 decades. It has become an integral part of the MCH/FP programme and all preventive health staff adhere to the instructions provided through the program.

2. An inbuilt system using health data has been developed over the years, providing opportunities for periodic monitoring at different levels of management.

3. Programme managers, supervisory staff and Public Health Midwives have been trained in the use of data for assessing programmes/work performance, so that any shortcomings could be identified and corrective action taken

4. Although the MIS has been functioning for a long period, regular monitoring and the use of available information remains inadequate. Supervision is a problem in most areas due to the shortage of supervisory categories of staff such asPHNS and SPHMs.

5. Continuous availability of printed forms is absolutely vital for proper functioning of an information system. Shortages of forms have been a major impediment for the effective implementation of MIS in most MOH areas.

6. Lack of computer facilities for MO/MCH, for processing MCH/FP data, has been a constraint in most health regions/districts. Currently, they rely on shared computer facilities available at the DPDHS office to process data. As a result, the MO/MCH is unable to generate the required output tables early and provide timely feedback to the MOHs in the division. This is an area that needs support if the MIS is to be utilized for more effective management of programmes at the periphery.

(10) SOME CORE INDICATORS USED FOR MONITORING / ASSESSING PERFORMANCE AT DIFFERENT LEVELS AND THEIR SOURCES

1. Maternal mortality and their main causes (From Maternal Death investigation)

2. Stillbirth/Perinatal mortality rate (From RGO/HMIS)

3. Incidence of low birth weight (From Hospital statistics)

4. Prevalence of teenage pregnancies (From HMIS)

5. Prevalence of iron deficiency anaemia during pregnancy (From special studies)

6. Antenatal care - Process/Outcome indicators (From HMIS)

   - % of pregnant women receiving antenatal care
   - % of women registered for ANC care by PHM - Before 12 weeks and after 22 weeks
   - % of pregnant women attending - local antenatal clinics and antenatal clinics in institutions with specialist (Obstetricians)
   - % of pregnant women screened for syphilis at ANC

7.   Intranatal care - Process/Outcome indicators (From HMIS)
   - % of births attended by trained health personnel
   - % of births in - Government and Private medical institutions
   - % home deliveries - conducted by trained and untrained personnel

8.   Outcome of delivery (From HMIS)
   - Live births - % vaginal, forceps/vacuum extractions and Caesarean sections
   - Still births - number investigated
   - Abortions - number after registration for ANC

9.   Postnatal care - Proportion receiving care during first 10 days (From HMIS)

10. Maternal deaths reported and number investigated (From HMIS, Maternal death notification)

11. Perinatal mortality and their main causes (From Perinatal Death Register)

12. % of infants registered by the area PHM within 10 days of delivery (From HMIS)

13. Proportion of infants and preschoolers weighed at weighing posts and clinics (From HMIS)

FLOW OF INFORMATION

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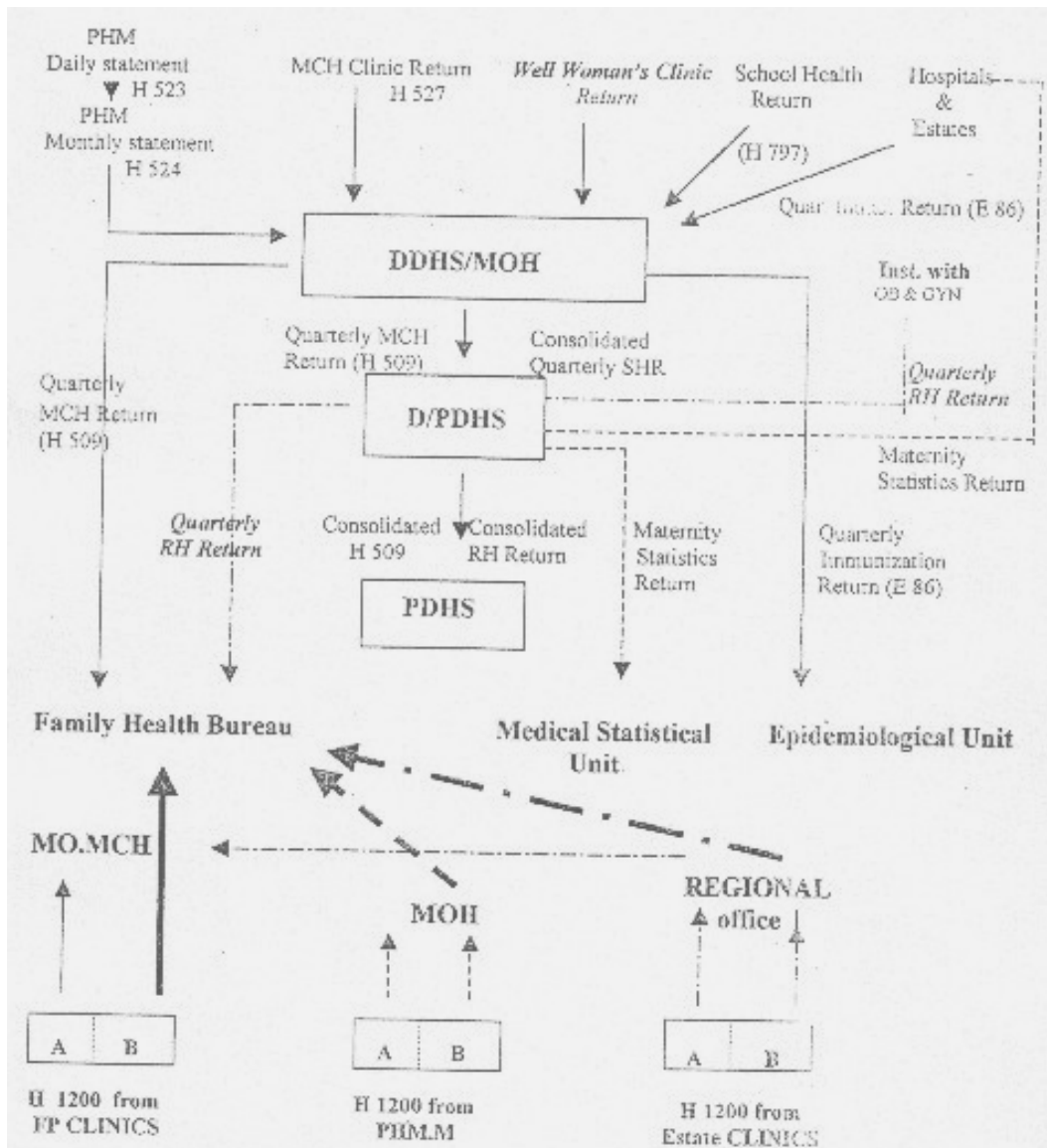
This section was carried out by Dr. N. W. Vidyasagara (9/1, Sunethra Lane, Colombo 5/Tel.583020) and Dr. Kusum. P. Wickramasuriya.

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