## 1.1 Health Transition

The ten Member Countries of WHO's South-East Asia Region (Bangladesh, Bhutan, DPR Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka and Thailand) are undergoing significant social, economic and demographic changes. This includes rapid urbanization, increased industrialization, rising incomes, expanded education, and improved health care. Improved public health measures have resulted in the control of many infectious diseases, and reduction in mortality and fertility. The reduction in mortality is especially visible in the younger ages. These demographic changes have led to an aging population. Most of the noncommunicable diseases (NCDs) are a part of the degenerative diseases group and have higher prevalence in the older population. In addition, many of the lifestyle risk factors for NCDs like improper nutrition, sedentary life, alcohol and tobacco use are showing an upward trend in these countries. This has led to the emergence of NCDs as important causes of morbidity and mortality in the Region.

In 1998 alone, NCDs are estimated to have contributed almost 60% of deaths in the world and accounted for 43% of the global burden of disease. Based on current trends, by 2020, these diseases are expected to account for 73% of deaths and 60% of the disease burden. (Fig1.1)

Figure 1.1: Projected trends in the number of deaths by broad cause group in developing regions
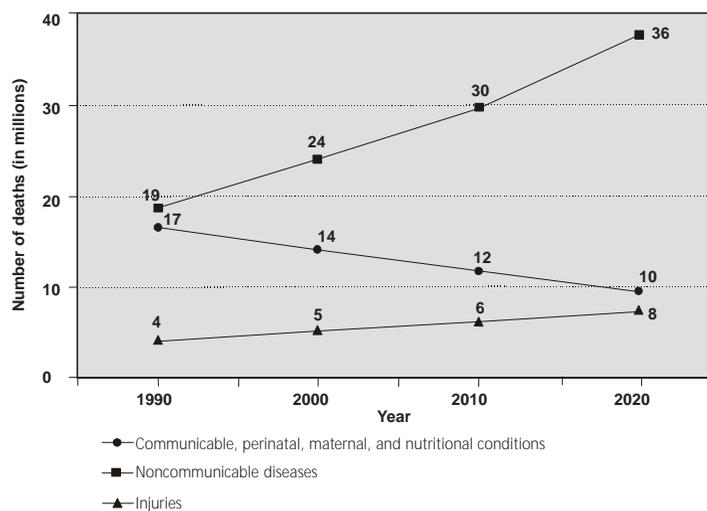
Source: The Harvard School of Public Health, *Global Burden of Disease and Injury Series, Volume1, 1996*

Four of the most common NCDs – cardiovascular disease, cancer, chronic obstructive pulmonary disease and diabetes mellitus - are linked by common preventable risk factors related to lifestyle. The most important are tobacco use, unhealthy diet and physical inactivity. The prevention of these diseases should therefore have a common focus of controlling these risk factors in an integrated manner. Addressing the major risk factors is being given the highest priority in the WHO strategy for prevention and control of noncommunicable diseases. Continuing surveillance of NCDs including levels and patterns of risk factors is of fundamental importance in planning and evaluating these preventive activities.

1.2 Mandate of WHO

The World Health Organization (WHO) has attached great importance to integrated approaches for prevention and control of NCDs. Two landmark resolutions of the World Health Assembly adopted in 1985 (WHA38.30) and in 1989 (WHA42.35) highlight the importance of promoting the prevention of cardiovascular diseases (CVD) as an example for other NCDs. This is mainly through fostering community studies aimed at joint control of risk-related NCDs and to sanction the use of intersectoral and integrated approaches to prevention. The need for strengthening NCD control programmes as part of national health development was highlighted during the 50th Session of the Regional Committee for South-East Asia in 1997. In 1998, the World Health Assembly adopted resolution WHA51.18, endorsing the proposed framework for the integrated prevention and control of NCDs.

1.3 WHO Global Strategy for the Prevention and Control of NCDs

In her Report to the 53rd World Health Assembly in May 2000, The Director-General of WHO, Dr Gro Harlem Brundtland, outlined the Global Strategy for the Prevention and Control of NCDs (WHA53.14) as follows:

Goal

The goal is to support Member States in their efforts to reduce the toll of morbidity, disability and premature mortality related to NCDs.

Objectives

The global strategy has three main objectives:

(1) To map the emerging epidemics of NCDs and to analyse the latter's social, economic, behavioural and political determinants with particular reference to poor and disadvantaged populations, in order to provide guidance for policy, legislative and financial measures related to the development of an environment supportive of control;

(2) To reduce the level of exposure of individuals and populations to the common risk factors for NCDs, namely tobacco consumption, unhealthy diet and physical inactivity, and their determinants;

(3) To strengthen health care for people with NCDs by developing norms and guidelines for cost-effective interventions, with priority given to cardiovascular diseases, cancer, diabetes and chronic respiratory diseases.

Key Components

To achieve the above objectives, the following components require the support of the global community and WHO as a whole in order to give shape to a global strategy.

(1) Surveillance is essential to quantify and track NCDs and their determinants, and it provides the foundation for advocacy, national policy and global action.

(2) Promotion of health across the life course and prevention are the most important components for reducing the burden of premature mortality and disability due to such diseases, and are seen as the most feasible approach for many Member States.

(3) Health care innovations and health sector management that address needs arising from the epidemics are essential. Equally important is the provision of cost-effective and equitable interventions for the management of established NCDs.

Role of Member States

Implementation of the global strategy at country or any other appropriate level should be planned along the lines set out below and coordinated within the context of the national strategic framework.

(1) Generating a local information base for action. Assess and monitor mortality attributable to NCDs, and the level of exposure to risk factors and their determinants in the population.

(2) Establishing a programme for promotion of health across the life course and prevention and control of NCDs.

(3) Tackling issues outside the health sector which influence prevention and control of NCDs.

(4) Ensuring health sector reforms are responsive to the challenge. Design cost-effective health care packages and draw up evidence-based guidelines for the effective management of the major NCDs.

1.4 Regional Initiatives

The need to apply an integrated approach to the control of NCDs in the Region took concrete shape during the meeting on "Planning for an integrated approach to the control of NCDs in the countries of the South-East Region" in Delhi in October 1995. In this meeting the available information was reviewed and it was concluded that NCD control activities in the Member Countries were uneven and dependent on the special efforts and interests of some individuals. Another hindrance in the efforts to control NCDs in the Region was the disease-specific approach, i.e. separate teams and departments dealing with diabetes control, cardiovascular disease control, cancer control etc. This multiplicity of approaches led to inefficient use of scarce resources as substantial efforts went into personnel, transportation, public relations etc, which are common to all programmes. Also, communities get inundated with information and usually respond with apathy. It was felt that a more effective approach would be to target common modifiable risk factors for the major diseases and launch an integrated control programme.

As an initial step towards an integrated approach to an NCD control programme (NCDCP) in the Region, it was planned to collect data related to NCDs in the Region. This is being followed up by setting up NCD surveillance networks in six countries of the Region. Three demonstration projects on community-based integrated NCD prevention have also been launched in the three largest countries of the Region (Bangladesh, India & Indonesia).

This profile was compiled with the objective of providing available information on NCDs and their risk in the Member Countries of the Region.

The information, although collected from different countries on a prescribed format, provides data, which are not complete and comparable due to significant differences in the extent and quality of data available at national level. Although in most countries there is a growing interest in NCDs, collection of appropriate information is not being undertaken or is left to individuals specifically interested in a given disease or group of diseases.

Even data that exist, in published or unpublished form, have limitations of being collected by investigators, using different methodologies and having different objectives. Most information on NCDs available in countries is hospital-based. Some that are population-based are not always epidemiologically sound to present a national database. Their comparison, therefore, is neither possible nor advisable.

While there is a large amount of published and unpublished data in each country, most of these are not accessible even at the national level. Also, there is no integrated or unified approach in data collection. Therefore, the available data have the limitation of being collected through different methodologies, thereby limiting comparisons or pooling.

Despite these limitations, this profile provides available information on major NCDs in the Region in order to generate professional and political awareness on the magnitude of the problem. One of the important objectives of this profile is to facilitate discussions on developing national and regional consensus on a minimum, feasible and sustainable approach for future collection of information on NCDs. The profile is expected to assist in developing a national and regional database on NCDs. This database could be utilized in a meaningful way for advocacy, and for evaluation of the effectiveness of community-based prevention programmes and for development of policy.

3. Method of data collection

Though there are many NCDs, data were collected on selected NCDs only. The criteria for selection were based on the fact that they should:

- be a major cause of morbidity and mortality;
- be amenable to primary prevention;
- be preventable by community-based control strategies; and
- share common risk factors with other NCDs.

Based on these criteria, it was decided to focus on cardiovascular diseases, diabetes mellitus and common cancers. Also, keeping in mind the intercountry variation, it was decided to collect information on two additional NCDs that are important for each country and satisfy the above criteria.

Principal investigators (PIs) were identified in each Member Country and were requested to collect information related to NCDs, focussing on mortality and morbidity due to these selected diseases as well as their risk factors. The list of the diseases studied by each PI is given below in Table – 3.1. The PIs were also asked to review the quality of data available and to provide sex-wise morbidity and mortality data for five-year interval age groups. The year of reference was 1998. PIs were requested to review the data available in the country since1980 and use it to estimate the number of deaths/ cases for 1998. Dummy tables were provided so that the profiles have a uniform format for easy collation later. It was expected that this data could be used to calculate

Table 3.1: Major NCDs reported by principal investigators	
Country	**Major NCDs**
Bangladesh	CVD, cancer, DM, injuries, chronic respiratory disease
Bhutan	CVD, cancer, DM, injuries, chronic respiratory disease, neuropsychiatric disorders
DPR Korea	CVD, cancer, DM, injuries
India	CVD, cancer, DM, injuries, chronic respiratory disease, substance abuse
Indonesia	CVD, cancer, DM, chronic respiratory disease, neuropsychiatric disorders
Maldives	CVD, cancer, DM, injuries, chronic respiratory disease, neuropsychatric disorders
Myanmar	CVD, cancer, DM, injuries, chronic respiratory disease, neuropsychiatric disorders
Nepal	CVD, cancer, DM, injuries, chronic respiratory disease, neuropsychiatric disorders
Sri Lanka	CVD, cancer, DM, injuries, chronic respiratory disease, neuropsychiatric disorders
Thailand	CVD, cancer, DM, injuries, chronic respiratory disease, neuropsychiatric disorders

CVD – Cardiovascular diseases   DM – Diabetes mellitus

the burden of disease in the Region using the DALYs approach. Therefore, the format sent to the PIs was in consonance with that. This activity took about seven months from October 1999 to April 2000. Data from Maldives were obtained later and pertain to 2000.

Thus, it is apparent that all the countries have made efforts to gather data on all the diseases. However, sometimes only partial data could be collected. For example, in injuries, data would be available only on road traffic accidents.

An Intercountry Consultation on Surveillance of Major Noncommunicable Diseases was held at SEARO, New Delhi in August 2000 to review each country report and to discuss the format for the regional profile. At this meeting, the strengths and weaknesses of the data from each country were discussed. Issues related to using this "limited data" for preparing a profile were also discussed.

Despite best efforts, several problems were encountered in preparing the profile. Most countries had given only hospital-based estimates. However, even if only one survey was done in that country, this source was used to estimate the number of prevalent cases rather than going by hospital estimates. This was because it is well known that the hospitals cater for only a small proportion of the actual morbidity in this Region. Also, as the source of mortality and morbidity data are different, it has often resulted in paradoxical situations were cases of death from a disease are more than the morbidity reported for that disease.

For the preparation of this regional profile, two approaches have been used. The first is just a consolidation of the reports given by each country. However, it was found that, there were wide inter-country differences in the data sources used for each country. There were problems related to the quality of data, their representativeness etc. An attempt was made to "estimate" the magnitude of the problem in each Member Country by going beyond the reported figure, as these are likely to be underestimates. For countries where the PIs have already estimated the burden we used the same data. However, for the countries where the information available was not a real estimate, due to obvious representativeness problems, the team at WHO estimated these figures. These were then compiled to arrive at the regional profile of NCDs. The method used in these cases has been described in detail in Chapter - 8. Due to the lack of adequate information this was not attempted for all diseases.

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1. *Surveillance of Major Noncommunicable Diseases in the South-East Asia Region - Report of an Intercountry Consultation. WHO/SEARO, New Delhi, February 2001 (SEA-NCD-48; available on request).*

Countries within the Region have varied sources of data regarding NCDs. In general, sources for mortality data were different from the morbidity data sources. The various sources available in each country are listed in Table 4.1.

Table 4.1: Source of NCD-related data in SEAR countries			
Mortality	**Medical certification of death** India Maldives Myanmar Sri Lanka Thailand	**Cause of death surveys** DPR Korea India Indonesia	**Hospital data** All countries
Morbidity	**Disease registries** India (cancer) Indonesia (cancer) Thailand (injury, cancer) Sri Lanka (cancer)	**Special surveys** Bangladesh DPR Korea India Indonesia Maldives Myanmar Sri Lanka	**Hospital reports** All countries
Risk factor data	**Regular surveys** Indonesia Thailand	**Special surveys** Bangladesh India Maldives Sri Lanka Thailand	**No information obtained** Bhutan DPR Korea Myanmar Nepal

4.1 Mortality

Medical Certification of Cause of Death: This is a potentially important source of good quality data on NCDs available in the Region. Only five countries: India, Maldives, Myanmar, Sri Lanka and Thailand reported data from medical certification of death. Overall, only 13.5% of all deaths in India were medically certified in 1994. Most of these were in urban areas. In Myanmar, the system exists in the urban areas, but the quality of certification needs improvement. Senility was commonly used without mentioning any specific cause. In Sri Lanka, about 30%-35% of deaths occur in hospitals and are certified by medical practitioners. From the data available from the Bureau of Health Planning and Policy in Thailand, about 61% of deaths seem to be certified.

None of the other countries have reported any system of medical certification of cause of death. In Bhutan, a system of medical certification is being started.

The data from medical certification in the Region have their limitations. The first is in terms of coverage of total deaths leading to the second problem of its representativeness. The third shortcoming pertains to the quality of medical certification and, finally, the delay in publication of this data by the governments.

Surveys on Cause of Death: Data using this method have been reported from DPR Korea, India and Indonesia. In DPR Korea doctors carry out regular household morbidity and mortality surveys. This is done in certain selected districts every year. During these surveys, causes of death are also verified. In India, the Survey of Causes of Death is initiated by the Office of the Registrar-General and covers rural areas only. Paramedical personnel classify the cause of death based on broad symptoms and conditions, anatomical site involved and duration of the complaint. The medical officer attached to the primary health centre (PHC) further scrutinizes this in regard to causes of death. At present the scheme is in operation in about 1000 PHCs. The selection of villages is done purposively depending upon the availability of medical personnel. With effect from January 1999, the Rural Survey of Causes of Death has been integrated with the Sample Registration Scheme. Thus, it will now cover both rural and urban areas. In Indonesia, this forms a part of SKRT (National Household Health Survey), which has now been integrated with Susenas. This includes cause of death ascertainment by verbal autopsy for deaths occurring during the past year. The accuracy of the cause of death ascertained by this method with hospital records has been found to be from 32% to 75%.

Hospital-based information: This seems to be the most easily available source of data in the Region. However, it does not cover the private sector and is limited to government-run institutions only. As information on the proportion of patients seeking treatment in either sector is not known, the data have only limited value. The hospitals that provide the data could be restricted to district hospitals or above in some countries, while in other countries it could include sub-district hospitals as well. While in most countries data was compiled on a regular monthly basis from all the covered hospitals, in Indonesia, it was being done on a sampling basis every three months. While the data are compiled at the national level, the publication of this information is usually delayed by a couple of years in most countries.

4.2 Morbidity Data

Hospital-based reporting system: This is based on the same system described above. As in most diseases, new cases and old cases are not separated, it is difficult to conclude whether the cases enumerated are prevalent or incident cases. The possibility of the same patient being included in more than one health institution also exists.

Disease Registries: They are an important source of information for NCDs. However, their use in this Region is limited to a few countries and that too for selected diseases only. In India, cancer is the only disease for which hospital-based and population-based registries exist. In Indonesia, there is a hospital-based cancer registry in 13 cities. A population-based cancer registry exists in Semarang municipality. In Sri Lanka as well, a hospital-based cancer registry is in place. In Thailand, several population-based cancer registries and a hospital-based registry for injuries are functioning.

Special Surveys: In some countries of the Region, this method provides the most valid information on disease morbidity. The best examples are DPR Korea, India and Indonesia where most of the diseases have been surveyed. In other countries, this has been limited to a few diseases only. In Bangladesh, this was the source of information on morbidity related to diabetes mellitus and cardiovascular diseases. In Myanmar, some select diseases including cardiovascular diseases, road traffic accidents, and cancers have been the subject of special surveys. This is also true for Sri Lanka, especially for diabetes mellitus. Most often these surveys are due to individual initiatives and do not reflect national policies.

4.3 Risk Factors

In none of the countries risk factor data are being systemically collected. The exceptions to the rule are Indonesia and Thailand, where, as a part of the regular health surveys undertaken every few years, information on smoking, and some other NCD risk factors is collected. In many countries in the Region, no information was availabe on the risk factors. In other countries, data are available from ad hoc surveys conducted by institutions and individuals.

Bangladesh

1. Socio-demographic Profile

The socio-demographic indicators show that Bangladesh is in an early stage of demographic transition (Table 5.1). The proportion of the population 65 years and above is only 3.2%; life expectancy is 58 years. Almost one-fourth of the population lives in urban areas.

Table 5.1: Socio-demographic profile			
Indicator		**Year**	**Value**
Total population (thousands)[1]		1998	124,000
Crude death rate per 1000 population [2]		1995-2000	9.6
Life expectancy at birth in years[2]	Total	1995-2000	58.1
	Male		58.1
	Female		58.2
Incidence of low birth weight (%)[2]		1990	50.0
Proportion (%) of population in urban areas [2]		1999	24.0
Proportion (%) of population ≥ 65 years[3]		2000	3.2
Adult literacy rate (%) [2]	Total	1997	39.4
	Male		50.5
	Female		27.8
Per capita GNP (US$)[2]		1999	370
Per capita out of pocket annual expenditure on health (international $)[4]		1997	38.0
Per capita annual public expenditure on health (international $)[4]		1997	32.0

Sources:
1. *Bangladesh country report on surveillance of major noncommunicable diseases, WHO/SEARO, New Delhi, 2000.*
2. *WHO/SEARO. Evidence for health policy. Basic indicators 2000, New Delhi, 2001.*
3. *UN, World Population Prospects, the 1998 revision.*
4. *World Health Organization, World Health Report 2000, Geneva.*

2. Mortality and Morbidity Profile, 1998

The mortality and morbidity profiles are shown in Tables 5.2. & 5.3. The mortality data are based on hospital deaths and cover only 1.4% of all the deaths in the country. There does not appear to be any other source of information on causes of death that could be reasonably representative of all deaths. Therefore, the proportional case fatality rates given below may not reflect the actual situation. The data from hospitals indicate that about 27% of the deaths were due to selected NCDs. The data on morbidity

are also based on the attendance in outpatient and inpatient departments of various government hospitals. The only exceptions were rheumatic heart disease (RHD) and diabetes, estimates of which were based on community surveys.

Table 5.2: Reported NCD mortality profile, 1998			
Diseases	**Number of deaths** (% of all deaths)		**Comments**
All cancers	NR		The data cover only hospital deaths which comprise 1.4% of all deaths. This has been taken into account for estimating % of all deaths.
Cardiovascular diseases	2,086	(12.5)	
Ischaemic heart disease	400	(2.4)	
Rheumatic heart disease	NR		
Stroke	604	(3.6)	
Other heart diseases	1,082	(6.5)	
Diabetes mellitus	43	(1.0)	
Injuries	1,802	(10.8)	
Road traffic accidents	328	(2.0)	
Other injuries	NR		
Poisonings	1,474	(8.8)	
Suicides	NR		
Homicides	NR		
Chronic respiratory disease	497	(3.0)	
Neuro-psychiatric disorders	NR		
Total	**4,428**	**(27.3)**	

NR – Not reported.

Table 5.3: Reported NCD morbidity profile, 1998		
Diseases	**Number of cases**	**Comments**
All cancers	5,134	Data from apex cancer hospital only
Cardiovascular diseases		
Ischaemic heart diseases	2,387	Regional hospital data
Rheumatic heart disease	500,000	Survey
Stroke	224	Regional hospital data
Other heart diseases	296,272	District and sub-district hospital data
Diabetes mellitus	2,700,000	Estimate based on ad-hoc surveys
Injuries	2,762,376	District and sub-district hospital data
Road traffic accidents	Not reported separately	
Other injuries	Not reported separately	
Poisonings	309,409	District and sub-district hospital data
Suicides	NR	
Chronic respiratory disease	1,304,249	District and sub-district hospital data
Neuro-psychiatric disorders	33,865	District and sub-district hospital data

NR – Not reported.

Sources:

1. *Bangladesh Bureau of Statistics Health and Demographic Survey, May 1994. Govt. of Bangladesh.*
2. *Haque KMHS, et al. Epidemiology of rheumatic fever and rheumatic heart disease. Observations in 15,798 children of rural and urban areas. 1992, 31-35.*
3. *Jalil MQ, Rouf MA, Pandey K, et al. Disease profile of cardiovascular patients: a hospital based study, 1993 – 95, in press.*
4. *Rouf MA. Magnitude of the problems of streptococcal sore throat in Bangladesh. Editorial, Bangladesh Journal of Pathology, 1996, 11.*

Bhutan

1. Socio-demographic Profile

Life expectancy in Bhutan is over 60 years with 4.0 % of the population living beyond 64 years. Bhutan seems to be entering the phase of demographic transition. However, it is to be noted that only 7% of the country's population lives in urban areas (Table 5.4).

Table 5.4: Socio-demographic profile			
Indicator		**Year**	**Value**
Total population[1]		1998	637,777
Crude death rate per 1000 population[2]		1995-2000	9.0
Life expectancy at birth in years[2]	Total	1995-2000	60.7
	Male		59.5
	Female		62.0
Incidence of low birth weight (%)[2]		1990	23.0
Proportion (%) of population in urban areas[2]		1999	6.9
Proportion (%) of population $\geq$ 65 years[3]		2000	4.0
Adult literacy rate (%)[2]	Total	1997	44.3
	Male		58.1
	Female		30.3
Per capita GNP (US$)[2]		1999	510.0
Per capita out of pocket annual expenditure on health (international $)[4]		1997	44.0
Per capita annual public expenditure on health (international $)[4]		1997	38.0

Sources:
1. *Bhutan country Report on surveillance of major noncommunicable diseases, WHO/SEARO, New Delhi, 2000.*
2. *WHO/SEARO. Evidence for health policy. Basic indicators 2000, New Delhi, 2001.*
3. *UN, World Population Prospects, the 1998 revision.*
4. *World Health Organization, World Health Report 2000, Geneva.*

2. Mortality and Morbidity Profile, 1998

The cause of death data are available from hospital deaths, covering about 10% of all deaths. Based on this source, it is seen that 35% of all deaths are due to the major NCDs. The morbidity data are available only from hospital attendance (Tables 5.5 and 5.6).

Table 5.5: Reported NCD mortality profile, 1998

Diseases	Number of deaths (% of all deaths)		Comments
All cancers	44	(8.3)	Based on hospital deaths only covering about 10% of all deaths. This has been taken into account for estimating % of all deaths.
Cardiovascular diseases	78	(14.8)	
Ischaemic heart disease	9	(1.7)	
Rheumatic heart disease	17	(3.2)	
Stroke	23	(4.4)	
Other heart diseases	29	(5.5)	
Diabetes mellitus	7	(1.3)	
Injuries	49	(9.3)	
Road traffic accidents	40		
Other injuries	Included in above		
Poisonings	9		
Suicides	NR		
Homicides	NR		
Chronic respiratory disease	8	(1.5)	
Neuro-psychiatric disorders	NR		
Total	**186**	**(35.2)**	

NR – Not reported.

Table 5.6: Reported NCD morbidity profile, 1998

Diseases	Number of cases	Comments
All cancers	591	The data are from hospital based reporting system covering district and sub-district hospitals.
Cardiovascular diseases	9,948	
Ischaemic heart diseases	332	
Rheumatic heart disease	1,051	
Stroke	88	
Other heart diseases	8,477	
Diabetes mellitus	2,430	
Injuries	39,184	
Road traffic accidents	NR	
Other injuries	NR	
Poisonings	NR	
Suicides	NR	
Chronic respiratory disease	10,405	
Neuro-psychiatric disorders	NR	

NR – Not reported.

Sources:
1. *Annual Health Bulletin: Department of Health Services 1998.*
2. *A brief report on the functions of information unit: 2000.*
3. *Age specific mortality report for 1998: Submitted by the District Health Supervisory Officers and Superintendents of 19 hospitals.*
4. *Activities implemented in Bhutan: 6-month assignment report of consultant psychiatrist, 4th March 1996 – 31 August 1996.*
5. *Cause specific mortality submitted by district medical officers and superintendents of 19 hospitals.*

6. Information on major NCDs submitted by district medical officers and superintendents.
7. Monthly return of morbidity diagnosis (hospital): For aggregating data with ICD–10 assigned to items of old form.
8. Population: Statistical Book CSO 2000.
9. Personal communication with head of departments: Psychiatry Obstetrics & Gynaecology, Surgery, ENT, Paediatrics, Orthopaedics, all ward in charges and all district medical officers.
10. Report on national baseline data on diabetes, 2000.

DPR Korea

1. Socio-demographic Profile

DPR Korea is next only to Sri Lanka in having high life expectancy in this Region. Also, about 60% of the population is urban-based. It is the only country in the Region that has reported universal literacy among both the sexes (Table 5.7).

Table 5.7: Socio-demographic profile			
Indicator		**Year**	**Value**
Total population (thousands)[1]		1998	23,702
Crude death rate per 1000 population[2]		1995-2000	5.4
Life expectancy at birth in years[2]	Total	1995-2000	72.2
	Male		68.9
	Female		75.1
Incidence of low birth weight (%)[2]		1990	23.0
Proportion (%) of population in urban areas[2]		1999	60.0
Proportion (%) of population ≥ 65 years[3]		2000	5.3
Adult literacy rate (%)[2]	Total	1997	100.0
	Male		100.0
	Female		100.0
Per capita GNP (US$)[2]		1999	479.0
Per capita out of pocket annual expenditure on health (international $)[4]		1997	6.0
Per capita annual public expenditure on health (international $)[4]		1997	33.0

Sources:
1. *DPR Korea country report on surveillance of major noncommunicable diseases, WHO/SEARO, New Delhi, 2000.*
2. *WHO/SEARO. Evidence for health policy. Basic indicators 2000, New Delhi, 2001.*
3. *UN, World Population Prospects, the 1998 revision.*
4. *World Health Organization, World Health Report 2000, Geneva.*

2. Mortality and Morbidity Profile, 1998

The data on mortality and morbidity due to NCDs were based on a household survey of the population of two districts in Pyongyang region and in some rural counties (Tables 5.8 and Table 5.9). Verbal autopsy is conducted on deaths occurring during the last one year by home visits to ascertain the cause of death. It showed that only 17% of deaths could be attributed to the selected NCDs. Morbidity data are also based on screening by doctors. Those found positive on screening are subjected to further medical tests. The validity of estimates depends on the screening method, diagnostic tools and criteria used, which were not described in the report.

Table 5.8: Reported NCD mortality profile, 1998

Diseases	Number of deaths (% of all deaths)		Comments
All cancers	10,429	(8.0)	Based on household survey in two districts of Pyongyang and in some rural counties.
Cardiovascular diseases	10,737	(8.2)	
Ischaemic heart disease	2,773	(2.1)	
Rheumatic heart disease	616	(0.5)	
Stroke	7,111	(5.4)	
Other heart diseases	237	(0.2)	
Diabetes mellitus	355	(0.3)	
Injuries	758	(0.6)	
Road traffic accidents	NR		
Other injuries	NR		
Poisonings	NR		
Suicides	NR		
Homicides	NR		
Chronic respiratory disease	NR		
Neuro-psychiatric disorders	NR		
Total	**22,279**	**(17.1)**	

NR – Not reported.

Table 5.9: Reported NCD morbidity profile, 1998

Diseases	Number of cases	Comments
All cancers	32,472	Based on household survey in two districts of Pyongyang and in some rural counties.
Cardiovascular diseases	424,740	
Ischaemic heart diseases	59,255	
Rheumatic heart disease	127,280	
Stroke	45,745	
Other heart diseases	192,460	
Diabetes mellitus	16,497	
Injuries	1,066,590	
Road traffic accidents	Not reported separately	
Other injuries	Not reported separately	
Poisonings	NR	
Suicides	NR	
Chronic respiratory disease	NR	
Neuro-psychiatric disorders	NR	

NR – Not reported.

Source: *Household survey in two districts of DPR Korea.*

India

1. Socio-demographic Profile

India accounts for almost two-thirds of the Region's population. With life expectancy in the 60s and with increasing urbanization, India is faced with the double burden of communicable and noncommunicable diseases (Table 5.10).

Table 5.10: Socio-demographic profile			
Indicator		**Year**	**Value**
Total population (thousands)[1]		1998	982,000
Crude death rate per 1000 population[2]		1995-2000	8.9
Life expectancy at birth in years[2]	Total	1995-2000	62.6
	Male		62.3
	Female		62.9
Incidence of low birth weight (%)[2]		1990	30.0
Proportion (%) of population in urban areas[2]		1999	28.1
Proportion (%) of population ≥ 65 years[3]		2000	5.0
Adult literacy rate (%)[2]	Total	1997	54.9
	Male		66.5
	Female		42.5
Per capita GNP (US$)[2]		1999	450.0
Per capita out of pocket annual expenditure on health (international $)[4]		1997	71.0
Per capita annual public expenditure on health (international $)[4]		1997	11.0

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2. Mortality and Morbidity Profile, 1998

The data on cause of death are mainly from two sources. These are the medical certification of deaths in urban areas and survey of causes of deaths in rural areas. While the certification of deaths cover only about 15% of all deaths in the country, the survey of causes of death is based on lay reporting. Based on these data, it was estimated that about 32% of all deaths could be due to the selected NCDs. The source of data on morbidity was mainly from ad hoc surveys carried out by various individuals and institutions except for cancer, which was based on registry data. The available information was used to derive national estimates. These estimates are higher compared to the ones given earlier.

Table 5.11: Reported NCD mortality profile, 1998

Diseases	Number of deaths (% of all deaths)		Comments
All cancers	292,557	(3.4)	The data are derived from medical certification of deaths, primarily covering the urban areas and lay reporting-based rural survey of causes of deaths. For diabetes, estimate is based on hospital data.
Cardiovascular disease	1,117,994	(13.0)	
Ischaemic heart disease	423,600		
Rheumatic heart disease	57,272		
Stroke	102,620		
Other heart diseases	53,502		
Diabetes mellitus	21,000	(0.2)	
Injuries	749,983	(8.7)	
Road traffic accidents	85,003		
Other injuries	528,486		
Poisonings	Included in above		
Suicides	91,324		
Homicides	45,170		
Chronic respiratory disease	577,837	(6.7)	
Neuro-psychiatric disorders	NR		
Total	**2,759,371**	**(32.0)**	

NR – Not reported.

Table 5.12: Reported NCD morbidity profile, 1998

Diseases	Number of cases	Comments
All cancers	593,803 (incident)	The estimates are based on compilation of results of ad-hoc surveys by different investigators at different times in different parts of the country except for cancer which is from cancer registries. The data on injuries are from police records.
Cardiovascular diseases	NR	
Ischaemic heart diseases	25,000,000	
Rheumatic heart disease	1,882,987	
Stroke	1,083,500	
Other heart diseases	NR	
Diabetes mellitus	28,702,100	
Injuries	6,900,000	
Road traffic accidents	900,000	
Other injuries	6,000,000	
Poisonings	NR	
Suicides	NR	
Chronic respiratory disease	65,000,000	
Neuro-psychiatric disorders	110,660,782	Includes only substance abuse as revealed by surveys

NR – Not reported.

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Indonesia

1. Socio-demographic Profile

Indonesia is the second most populous country in the Region. Almost two-fifths of its population lives in urban areas. This, coupled with high life expectancy makes it susceptible to an increasing burden of NCDs (Table 5.13).

Table 5.13: Socio-demographic profile			
Indicator		**Year**	**Value**
Total population (thousands)[1]		1998	209,000
Crude death rate per 1000 population[2]		1995-2000	7.5
Life expectancy at birth in years[2]	Total	1995-2000	65.1
	Male		67.0
	Female		63.3
Incidence of low birth weight (%)[2]		1990	11.0
Proportion (%) of population in urban areas[2]		1999	39.9
Proportion (%) of population $\geq$ 65 years[3]		2000	4.7
Adult literacy rate (%)[2]	Total	1997	85.1
	Male		90.6
	Female		76.6
Per capita GNP (US$)[2]		1999	580.0
Per capita out of pocket annual expenditure on health (international $)[4]		1997	26.0
Per capita annual public expenditure on health (international $)[4]		1997	21.0

Sources:
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2. Morbidity and Mortality Profile, 1998

The data on cause of death are based on a national-level household survey by doctors using a verbal autopsy tool and hence is likely to be representative of the country. Cardiovascular diseases were the main cause of death accounting for nearly one-fourth of all deaths. Stroke appeared to be the most important cardiovascular cause of death. The national-level estimates of morbidity were made by the National Institute of Health Research and Development based on available information. This included ad hoc surveys, national-level surveys, health information system etc (Tables 5.14 and 5.15).

Table 5.14: Reported NCD mortality profile, 1998

Diseases	Number of deaths (% of all deaths)		Comments
All cancers	102,137	(6.6)	Based on cause of death ascertainment by doctors at household level by verbal autopsy.
Cardiovascular disease	357,967	(23.2)	
Ischaemic heart disease	119,936	(7.8)	
Rheumatic heart disease	11,004	(0.7)	
Stroke	158,611	(10.3)	
Other heart diseases	68,416	(4.4)	
Diabetes mellitus	18,000	(1.2)	
Injuries	NR		
Road traffic accidents	48,070	(3.0)	
Other injuries	NR		
Poisonings	NR		
Suicides	NR		
Homicides	NR		
Chronic respiratory disease	59,923	(3.9)	
Neuro-psychiatric disorders	23,658	(1.5)	
Total	**609,755**	**(39.4)**	

NR – Not reported.

Table 5.15: Reported NCD morbidity profile, 1998

Diseases	Number of cases	Comments
All cancers	236,488 (incident)	The source of information was based on regular and ad-hoc surveys in different parts of the country,except for cancer which is based on the cancer registry.
Cardiovascular diseases	1,479,104	
Ischaemic heart diseases	366,587	
Rheumatic heart disease	68,775	
Stroke	488,774	
Other heart diseases	454,968	
Diabetes mellitus	4,639,000	
Injuries	627,000	
Road traffic accidents	NR	
Other injuries	NR	
Poisonings	NR	
Suicides	NR	
Chronic respiratory disease	81,379	
Neuro-psychiatric disorders	1,624,920	

NR – Not reported.

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Maldives

1. Socio-demographic Profile

Maldives is the smallest country in this Region. The life expectancy is 72.6 years and more than one-fourth of the population lives in urban areas. The country has also achieved a high per capita GNP (Table 5.16).

Table 5.16: Socio-demographic profile			
Indicator		**Year**	**Value**
Total population[1]		2000	270,101
Crude death rate per 1000 population[1]		2000	4.0
Life expectancy at birth in years[1]	Total	1999	72.6
	Male		72.1
	Female		73.2
Incidence of low birth weight (%)[2]		2001	17.6
Proportion (%) of population in urban areas[3]		2000	27.4
Proportion (%) of population $\geq$ 65 years[3]		2000	3.7
Adult literacy rate (%)[4]	Total	1997	95.8
	Male		95.8
	Female		95.7
Percapita GNP (US$)[4]		1999	1,160.0
Per capita out of pocket annual expenditure on health (international $)[5]		1997	90.0
Per capita annual public expenditure on health (international $)[5]		1997	159.0

Sources:
1. *Maldives Health Report 2001.*
2. *Multiple Indicator Cluster Survey 2001.*
3. *Statistical Yearbook of Maldives 2001.*
4. *WHO/SEARO, Evidence for health policy, Basic indicators 2000, New Delhi, 2001.*
5. *World Health Organization, World Health Report 2000, Geneva.*

2. Mortality and Morbidity Profile, 2000

The data on mortality in Maldives is derived from vital registration and medical certification of cause of death which is near universal. More than one-fourth of the deaths occur in the capital, Male. Almost half of the deaths are attributable to the selected NCDs. The morbidity data are from the inpatient records of the only tertiary hospital in the country except for diabetes which is based on screening of pilgrims (Tables 5.17 and 5.18).

Table 5.17: Reported NCD mortality profile, 2000

Diseases	Number of deaths (% of all deaths)		Comments
All cancers	57	(5.5)	The data are from death reports of
Cardiovascular diseases	256	(24.8)	the hospitals, health centres and
Ischaemic heart diseases	14		island level health workers. These
Rheumatic heart disease	0		cover all the deaths in the country.
Stroke	52		
Other heart diseases	190		
Diabetes mellitus	32	(3.1)	
Injuries	32	(3.1)	
Road traffic accident	NR		
Other Injuries	NR		
Poisning	NR		
Suicide	NR		
Homicide	NR		
Chronic respiratory disease	68	(6.6)	
Neuro-psychiatric disorders	50	(4.8)	
Total	**495**	**(48.0)**	

NR – Not reported.

Table 5.18: Reported NCD morbidity profile, 2000

Diseases	Number of cases	Comments
All cancers	75	The data are from the in patient
Cardiovascular diseases	712	records of the only tertiary hospital
Ischaemic heart diseases	224	in the country. The estimate of
Rheumatic heart disease	12	diabetes is based on a survey.
Stroke	100	
Other heart diseases	376	
Diabetes mellitus	7,000	
Injuries	639	
Road traffic accidents	NR	
Other injuries	NR	
Poisonings	NR	
Suicides	NR	
Homicides	NR	
Chronic respiratory disease	474	
Neuro-psychiatric disorders	184	

NR – Not reported.

Sources:
1. *Vital Registration System 2001.*
2. *Maldives Health Report 2001.*
3. *Multiple Indicater Cluster Survey 2001.*

Myanmar

1. Socio-demographic Profile

Life expectancy in Myanmar is 60 years. With an ageing population (about 5% of the population is above 65 years) and 27% of the population residing in urban areas, it is likely to see an increasing problem of NCDs in the near future (Table 5.19).

Table 5.19: Socio-demographic profile			
Indicator		**Year**	**Value**
Total population (thousands)[1]		1998	47,250
Crude death rate per 1000 population[2]		1995-2000	9.3
Life expectancy at birth in years[2]	Total	1995-2000	60.1
	Male		58.5
	Female		61.8
Incidence of low birth weight (%)[2]		1990	23.5
Proportion (%) of population in urban areas[2]		1999	27.3
Proportion (%) of population $\geq$ 65 years[3]		2000	4.8
Adult literacy rate (%)[2]	Total	1997	83.7
	Male		88.5
	Female		78.9
Per capita GNP (US$)[2]		1999	NR
Per capita out of pocket annual expenditure on health (international $)[4]		1997	69.0
Per capita annual public expenditure on health (international $)[4]		1997	10.0

Sources:
1. *Myanmar country report on surveillance of major noncommunicable diseases. WHO/SEARO, New Delhi, 2000.*
2. *WHO/SEARO. Evidence for health policy. Basic indicators 2000, New Delhi, 2001.*
3. *UN, World Population Prospects, the 1998 revision.*
4. *World Health Organization, World Health Report 2000, Geneva.*

2. Mortality and Morbidity Profile, 1998

The morbidity and mortality profile is based on the health information system. This appears to cover a minor proportion of the mortality and morbidity in the country. Almost 42% of the deaths were attributable to NCDs with CVDs and neuro-psychiatric disorders being the main causes (Tables 5.20 and 5.21).

Table 5.20: Reported NCD mortality profile, 1998

Diseases	Number of deaths (% of all deaths)		Comments
All cancers	741	(2.9)	The source of information is the health information system. These are available only from hospitals and urban areas.
Cardiovascular diseases	3,224	(12.7)	
Ischaemic heart disease	412	(1.6)	
Rheumatic heart disease	NR		
Stroke	1,454	(5.7)	
Other heart diseases	1,358	(5.4)	
Diabetes mellitus	123	(0.5)	
Injuries	2,524	(10.0)	
Road traffic accidents	NR		
Other injuries	NR		
Poisonings	NR		
Suicides	NR		
Homicides	NR		
Chronic respiratory disease	700	(2.8)	
Neuro-psychiatric disorders	3,279	(12.9)	
Total above selected NCDs	**10,591**	**(41.8)**	

NR – Not reported.

Table 5.21: Reported NCD morbidity profile, 1998

Diseases	Number of cases	Comments
All cancers	11,236	Based on information supplied by the Department of Health Planning, the focal unit for health information in Myanmar, except for IHD which is based on a sub-national survey.
Cardiovascular diseases	32,473	
Ischaemic heart diseases	4,651	
Rheumatic heart disease	NR	
Stroke	5,007	
Other heart diseases	22,815	
Diabetes mellitus	1,468	
Injuries	125,158	
Road traffic accidents	NR	
Other injuries	NR	
Poisonings	NR	
Suicides	NR	
Chronic respiratory disease	21,470	
Neuro-psychiatric disorders*	38,674	

NR – Not reported.

* *Neuro-psychiatric disorders: Around 1% of all the hospital admissions were due to this condition. The important conditions were mood disorders (35%), schizophrenia (21%) and alcohol dependency (20%)*

Sources:
1. *Annual Statistical Report, Yangon General Hospital.*
2. *Annual Report, Health Management Information System, Department of Health Planning 1998.*
3. *Cancer Registry Report 1998, Yangon General Hospital.*
4. *Health in Myanmar 1999, Ministry of Health, Myanmar.*

5. Hospital Administrative Statistical Report (not published yet) 1998, Department of Health Planning.
6. In-patient Register 1999, General Psychiatric Hospital.
7. In-patient and Out-patient Register,Cardiac Unit, Yangon General Hospital.
8. In-patient Register Traumatology Unit, Yangon General Hospital.
9. Population Census 1983, Population Department.
10. Aung, Myo Thet Htoon, Thein Ngwe, Nyan Tun and May Mon Kyaw. Prevalence of cradiovascular diseases in rural area of Hmawbi and urban Yangon city. Asia Pacific Journal of Public Health 1992/1993 vol. 6 No. 4,188–194.
11. Programme Report for 1994–1995, Accident prevention, disability prevention and rehabilitation project, Yangon.
12. Report of Cardiovascular Disease Control Project.
13. Report on implementation of WHO collaborative programme in Myanmar for the period of 1 January 1998 to 31 December 1999, Accident Prevention Project.
14. Report on Diseases Under National Surveillance, Central Epidemiology Unit, Department of Health, Yangon.
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Nepal

1. Socio-demographic Profile

Life expectancy is around 57 years and only about 12% of the population lives in urban areas (Table 5.22). Coupled with the and low literacy rate (38%), and low GNP (US$ 220), changes occurring in lifestyle will have an effect on the burden of NCDs in future. This provides an opportunity for timely preventive action.

Table 5.22: Socio-demographic profile			
Indicator		**Year**	**Value**
Total population (thousands) [1]		1998	21,000
Crude death rate per 1000 population [2]		1995-2000	10.9
Life expectancy at birth in years [2]	Total	1995-2000	57.3
	Male		57.6
	Female		57.1
Incidence of low birth weight (%) [2]		1990	25.4
Proportion (%) of population in urban areas [2]		1999	11.6
Proportion (%) of population $\geq$ 65 years [3]		2000	3.6
Adult literacy rate (%) [2]	Total	1997	38.1
	Male		55.8
	Female		20.6
Per capita GNP (US$) [2]		1999	220
Per capita out of pocket annual expenditure on health (international $) [4]		1997	30
Per capita annual public expenditure on health (international $) [4]		1997	11

Sources:
1. *Nepal country report on surveillance of major noncommunicable diseases, WHO/SEARO, New Delhi, 2000.*
2. *WHO/SEARO. Evidence for health policy. Basic indicators 2000, New Delhi, 2001.*
3. *UN, World Population Prospects, the 1998 revision.*
4. *World Health Organization, World Health Report 2000, Geneva.*

2. Mortality and Morbidity Profile, 1998

The mortality data were based on reporting by health facilities (sub- health posts upwards). NCDs were estimated to be responsible for only 6.7% of all deaths. While this did not include injuries and diabetes, COPD seemed to account for more than half of NCD deaths. The data on morbidity were based on the public sector hospital admissions and are likely to be an underestimate. Better quality of data for mortality as compared to morbidity has resulted in a piquant situation where the number of deaths are more than the number of cases (Table 5.23 and 5.24).

Table 5.23: Reported NCD mortality profile, 1998

Diseases	Number of deaths (% of all deaths)		Comments
All Cancers	2,038	(0.8)	Estimates are based on mortality data of hospitals and other institutions including health posts and sub-health posts. Coverage of total deaths by these is not reported and therefore this could not be taken into account for estimating % of all deaths.
Cardiovascular diseases	4,842	(1.9)	
Ischaemic heart disease	9		
Rheumatic heart disease	14		
Stroke	22		
Other heart diseases	NR		
Diabetes mellitus	NR		
Injuries	NR		
Road traffic accidents	NR		
Other injuries	NR		
Poisonings	NR		
Suicides	NR		
Homicides	NR		
Chronic respiratory disease	10,194	(4.0)	
Neuro-psychiatric disorders	NR		
Total	**17,074**	**(6.7)**	

NR – Not reported.

Table 5.24: Reported NCD morbidity profile, 1998

Diseases	Number of cases	Comments
All cancers	534	Hospital-based information only.
Cardiovascular diseases	919	
Ischaemic heart diseases	46	
Rheumatic heart disease	133	
Stroke	128	
Other heart diseases	612	
Diabetes mellitus	214	
Injuries	4,453	
Road traffic accidents	NR	
Other injuries	NR	
Poisonings	NR	
Suicides	NR	
Chronic respiratory disease	4,320	
Neuro-psychiatric disorders	1,434	

NR – Not reported.

Sources:
1. *Status of health in Nepal, 1991. Resource Center for Primary Health Care Nepal and South-South Solidarity India.*
2. *Annual Report, Ministry of Health, Department of Health Services 1997/1998.*
3. *BPKMCH Hospital Based Cancer Prevalence Survey 1994.*
4. *Report of BPKM Cancer Hospital, Kathmandu, May-November 1999.*
5. *Report of T.U. Teaching Hospital, Kathmandu, May-November 1999.*
6. *Report of Bir Hospital, Kathmandu, 1999*

Sri Lanka

1. Socio-demographic Profile

Sri Lanka presents a picture of low mortality, high life expectancy, high literacy and high per capita GNP. This makes it vulnerable to the emerging epidemic of NCDs (Table 5.25).

Table 5.25: Socio-demographic profile			
Indicator		**Year**	**Value**
Total population (thousands)[1]		1998	18,700
Crude death rate per 1000 population[2]		1995-2000	5.7
Life expectancy at birth in years[2]	Total	1995-2000	73.1
	Male		70.9
	Female		75.4
Incidence of low birth weight (%)[2]		1990	17.8
Proportion (%) of population in urban areas[2]		1999	23.2
Proportion (%) of population $\geq$ 65 years[3]		2000	6.7
Adult literacy rate (%)[2]	Total	1997	90.8
	Male		94.0
	Female		87.8
Per capita GNP (US$)[2]		1999	820.0
Per capita out of pocket annual expenditure on health (international $)[4]		1997	40.0
Per capita annual public expenditure on health (international $)[4]		1997	35.0

Sources:
1. *Sri Lanka country report on surveillance of major noncommunicable diseases, WHO/SEARO, New Delhi, 2000.*
2. *WHO/SEARO. Evidence for health policy. Basic indicators 2000, New Delhi, 2001.*
3. *UN, World Population Prospects, the 1998 revision.*
4. *World Health Organization, World Health Report 2000, Geneva.*

2. Mortality and Morbidity Profile , 1998

The mortality data are based on medical certification of death, which covers about 35% of all deaths. NCDs seem to account for 48% of all deaths of which injuries account for a high 19%. Cardiovascular diseases account for 20% of all deaths, with other non-specific heart diseases taking a major toll of lives. The morbidity data are public-hospital based only and are therefore not reflective of the real extent of the problem. The only exception is diabetes mellitus, where the estimate is based on surveys (Tables 5.26 and 5.27).

Table 5.26: Reported NCD mortality profile, 1998

Diseases	Number of deaths (% of all deaths)		Comments
All cancers	6,441	(5.6)	Estimates based on the Registrar-General's data from medical certification of causes of death covering about 35% of all deaths.
Cardiovascular diseases	22,943	(20.1)	
Ischaemic heart disease	4,695	(4.1)	
Rheumatic heart disease	81	(0.1)	
Stroke	3,323	(2.9)	
Other heart diseases	14,844	(13.0)	
Diabetes mellitus	1,707	(1.5)	
Injuries	21,666	(19.0)	
Road traffic accidents	NR		
Other injuries	NR		
Poisonings	NR		
Suicides	NR		
Homicides	NR		
Chronic respiratory disease	1,893	(1.6)	
Neuro-psychiatric disorders	638	(0.5)	
Total	**55,288**	**(48.3)**	

NR – Not reported.

Table 5.27: Reported NCD morbidity profile, 1998

Diseases	Number of cases	Comments
All cancers	39,091	Hospital-based information except for diabetes mellitus which is based on surveys.
Cardiovascular diseases	155,076	
Ischaemic heart diseases	44,942	
Rheumatic heart disease	2,720	
Stroke	16,406	
Other heart diseases	91,908	
Diabetes mellitus	1,500,000	
Injuries	446,646	
Road traffic accidents	NR	
Other injuries	NR	
Poisonings	NR	
Suicides	NR	
Chronic respiratory disease	292,956	
Neuro-psychiatric disorders	44,386	

NR – Not reported.

Sources:
1. *Report on a survey to estimate the completeness of birth and death registration in Sri Lanka – 1980. Department of Census and Statistics Sri Lanka. 1984, 1–8.*
2. *A study of the extent of under registration of births and deaths in Ceylon 1967 Department of Census and Statistics Sri Lanka. 1970, 1–10.*
3. *Athukorale TMSD, Jayawardena MIFP. Lipid Patterns and dietary habits of healthy subjects living in urban, suburban and rural areas. Ceylon Medical Journal 1991, 36: 9–16.*
4. *Dhanapala S. Prevalence, risk factors awareness and treatment status of hypertensives in the district of Matale. MD Community Medicine Thesis (unpublished) Postgraduate Institute of Medicine, University of Colombo 1997.*

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7. Fenando DJS, Siribaddana SH, De Silva DR, Perera SD. The prevalence of obesity and other coronary risk factors in a suburban Sri Lankan community. Asia Pacific Journal of Clinical Nutrition 1991.
8. Gaminiratna KHW. Trends in causes of death in Sri Lanka 1971–1979. Research Paper Series 1. Population Information Centre, Ministry of Plan Implementation Colombo Sri Lanka 1984, 2–7, 21-23.
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11. Illangasekara VLU, Nugegoda DB, Perera LS. Prevalence of diabetes mellitus and impaired glucose tolerance in a rural Sri Lanka community. Ceylon Medical Journal 1993, 38 (2): 123–126.
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13. Ministry of Health Sri Lanka Annual Health Bulletin 1993.
14. Ministry of Health Sri Lanka Annual Health Bulletin 1997.
15. Mendis S. Cardiovascular research in Sri Lanka. Review and bibliography 1905, 998: 16–34.
16. Mendis S. A clinical study of risk factors of coronary heart disease. Proceedings of the Kandy Society of Medicine 1986, 7: 19–20.
17. Mendis S, Ekanayake EMTKB. Prevalence of CHD and cardiovascular risk factors in middle aged males in a defined population. Sri Lanka International Journal of Cardiology 1994, 45: 135–142.
18. Mendis S.Determinants of ischaemic heart disease in Sri Lankans. The 17th Bibile Memorial Oration Proceedings of the Kandy Society of Medicine 1996, 18: 69–94.
19. Mendis S, Shepherd J, Packard CJ, Graffney D. Restriction fraction length polymorphism in the apoB gene in relation to coronary heart disease in a South Asian population. Clinic Chimica Acta 1991, 196: 107–118.
20. Mendis S, Naser MACKA. Proceedings of the Sri Lanka Association for Advancement of Science 1996.
21. Mohideen MR, Hettiarachchi J. Utilisation of family health workers for screening for hypertension in a rural community in Sri Lanka.Ceylon Medical Journal 1985,30: 97–101.
22. Mendis S, Ransinghe P, Dharmasena BD. Prevalence of hypertension in Sri Lanka – a large population study in the Central province. Ceylon Medical Journal 1987, 32: 121–127.
23. Mohideen MR, Amarsinghe M, Abeykoon B, Abeyratan DM, Anurakumara LHI. Epidemiology of hypertension in Galle. 105th Annual Academic Sessions of the Sri Lanka Medical Association 25.
24. Mendis S. Non insulin dependant diabetes mellitus: prevalence and predisposing factors in Sri Lankans. Journal of the Ceylon College of Physicians 1993, 26: 32–35.
25. Peiris TRJ. An evaluation of medical certification of cause of death at the General Hospital Colombo South during the year 1998, 16–34.
26. Sivarajah N, Sivagainasunderam C, Ponnambalam G. Death registration in the Jaffna division. Jaffna Medical Journal xxii 1 & 2; 19–24.
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Thailand

1. Socio-demographic Profile

Thailand has the highest per capita GNP in the Region. It has also achieved high levels of literacy and life expectancy (Table 5.8). The country is thus likely to face a major burden of NCDs.

Table 5.28: Socio-demographic profile			
Indicator		**Year**	**Value**
Total population (thousands) [1]		1998	61,000
Crude death rate per 1000 population [2]		1998	5.2
Life expectancy at birth in years [2]	Total	1995-2000	68.8
	Male		65.8
	Female		72.0
Incidence of low birth weight (%) [2]		1990	8.1
Proportion (%) of population in urban areas [2]		1999	21.2
Proportion (%) of population > 65 years [3]		2000	5.8
Adult literacy rate (%) [2]	Total	1997	94.7
	Male		96.7
	Female		92.8
Per capita GNP (US$) [2]		1999	1,960.0
Per capita out of pocket annual expenditure on health (international $) [4]		1997	214.0
Per capita annual public expenditure on health (international $) [4]		1997	108.0

Sources:
1. *Thailand country report on surveillance of major noncommunicable diseases, WHO/SEARO, New Delhi, 2000.*
2. *WHO/SEARO. Evidence for health policy. Basic indicators 2000, New Delhi, 2001.*
3. *Ministry of Public Health, Thailand. Public Health Statistics A.D. 1998.*
4. *World Health Organization, World Health Report 2000, Geneva.*

2. Mortality and Morbidity Profile, 1998

The mortality data are from the death registration system that is near universal. All the NCDs put together account for about 37% of all deaths. CVDs were responsible for about one-third of these deaths. Other heart diseases account for most of the morbidity and mortality due to CVDs. Cancers account for 7% of all the deaths (Tables 5.29 and 5.30). The morbidity profile is based on hospital data except for diabetes, for which the estimate is based on surveys. Though the report specified the source of cancer data as hospital-based, a cancer registry also exists in Thailand. The estimates based on this data for 1993 were 32,801 cases among males and 30,904 cases among females. Thus, the estimates based on hospital reports seem to be similar to the registry data.

Table 5.29: Reported NCD mortality profile, 1998

Diseases	Number of deaths (% of all deaths)		Comments
All cancers	30,121	(9.5)	The source is the Death Registration System. The system of classification is by systems (like diseases of circulatory system). Therefore, there may be differences in case definition as compared to other countries.
Cardiovascular diseases	54,207	(17.1)	
Ischaemic heart disease	2,266		
Rheumatic heart disease	274		
Stroke	4,427		
Other heart diseases	37,457		
Diabetes mellitus	4,885	(1.5)	
Injuries	31,202	(9.8)	
Road traffic accidents	8,165		
Other injuries	NR		
Poisonings	179		
Suicides	5,096		
Homicides	3,734		
Chronic respiratory disease	2,627	(0.8)	
Neuro-psychiatric disorders	10,068	(3.2)	
Total	**153,365**	**(41.9)**	

NR – Not reported.

Table 5.30: Reported NCD morbidity profile, 1998

Diseases	Number of cases	Comments
All cancers	34,759	The data is based on hospital-based information only except for diabetes which is based on survey. The cancer data, though hospital-based seems to be similar to the cancer registry data.
Cardiovascular diseases	151,637	
Ischaemic heart diseases	33,269	
Rheumatic heart disease	11,412	
Stroke	43,446	
Other heart diseases	63,510	
Diabetes mellitus	1,380,000	
Injuries	NR	
Road traffic accidents	200,419	
Other injuries	NR	
Poisonings	33,305	
Suicides	8,298	
Chronic respiratory disease	167,832	
Neuro-psychiatric disorders	60,106	

NR – Not reported.

7. *Medical Institute of Accident and Disaster, Department of Medical Services, Ministry of Public Health, Thailand.*

8. *National Commission on NCD Prevention and Control, 1995 Situation of non–communicable diseases in Thailand 1995 and the trends for solving measures, Department of Medical Services, Ministry of Public Health, Thailand.*

9. *Thailand Public Health Research Institute, National Health Foundation and Bureau of Health Policy and Planning, 1998 National health examination survey, Ministry of Public Health, Thailand.*

10. *Deerasamee S, et al. Cancer in Thailand Vol. II, 1992-94. IARC Technical Report No. 34, Lyon 1999.*

None of the Member Countries in the Region except Indonesia and Thailand, have a regular system of collection of data related to risk factors of NCDs. Most country reports did not provide sufficient information on risk factors. Therefore, for this report, other data sources have been used and indicated in the list of references given for each country. For the countries not listed below, the information was not available. Data on tobacco use have been compiled for all SEAR countries separately.

India

The data is based on the review of different studies done in the 1990s in various parts of the country. The table below presents the range of prevalence in the rural and urban areas. Collation of data poses the problem of different criteria for diagnosis used in different studies as well as different age groups. The prevalence rates quoted below are for adults only, though they may have different age ranges.

Table 6.1: Prevalence of various risk factors for NCDs			
Risk Factor	**Definition**	**Prevalence (%) in urban areas**	**Prevalence (%) in rural areas**
Hypertension	$\geq$ 160/95 mmHg	10-15 (4)*	3-8 (4)
Hypertension	$\geq$ 140/90 mm Hg	20-30 (6)	15-25 (4)
Overweight	BMI $\geq$ 25	20-40 (2)	10 (1)
Hypercholesterolemia	$\geq$ 220 mg/dl	20 (1)	10 (1)
Sedentary physical activity	varied	50-60 (6)	8-30 (3)

* Figures in parentheses show the number of studies on which the range is based.

The data on tobacco and alcohol use were estimated in the second National Family Health Survey in 1998-99. Among males above 15 years, the prevalence of ever smokers was 33.1% and current smokers was 29.4%. The use of oral forms of tobacco was prevalent among 28.3% of them and 16.7% consumed alcohol. Among females in the same age group, ever smokers were 2.8% and current smokers were 2.5%. Of these 12.4% used oral forms of tobacco and 2.2% consumed alcohol.

Indonesia

The data are based on small, isolated studies. The prevalence of obesity among males based on BMI was 2-3% and among females between 7% and 10%. The prevalence of hypercholesterolemia (>250 mg/dl) was in the range of 11% to 18%. The prevalence of current smoking among the population above 10 years of age was around 50%

among males and 3% among females. Only 19% of males and 9% of females exercised at least once a week.

Sri Lanka

In Sri Lanka as well, the data source is mainly ad hoc surveys/studies done at different times. The mean serum cholesterol levels seem to vary between 5.1 mmol to 5.6 mmol/l in the four studies done. One study showed that only 16% of the subjects had optimal HDL levels. The mean triglyceride level among Sri Lankan males was 1.8 mmol/l and median value of lipoprotein (a) was 0.06 g/l. The dietary fat consumption is approximately 80-90 grams and the main source is coconuts. The best estimate for hypertension was derived from a study by Dhanapala (1997) based on representative community-based sample from one of the country's 24 districts. Using the WHO definition of hypertension, the prevalence was 16.8% in urban areas and 8% in the rural areas. The prevalence of diabetes among both urban and rural population aged 25 years and above in one district in 1996 was found to be 9.2% (M – 9.4%; F – 7.2%). The prevalence of obesity (BMI> 25) was between 15%-18%. Almost 85% to 95% of leisure time physical activity by subjects could be considered as light.

Thailand

The report of the National Examination Health Survey undertaken by the National Health Foundation, Bureau of Health Policy and Planning, MOPH during 1996-97, covers various parameters. These included an average BMI 22.4±4.4, systolic blood pressure 116.6±18.7, and diastolic blood pressure 71.6±12.9. Data on waist and hip circumference were also reported.

A total of 8.7% of those surveyed had high systolic blood pressure (BP), and 6.8% had high diastolic BP. Prevalence of hypertension in the urban population was higher (13.3%) compared to the rural population screened (10.2%). Most parameters screened were reported to be higher from the Bangkok and Central region, and lowest from the North Eastern region. Total cholesterol levels were 194.6±49.6 in the total population, with Bangkok reporting the highest – 212.6±60.1 and the North East a low of 159.3±37.4 in rural areas and 191.6±43 in urban areas. The average mean of fasting blood glucose was 97.3±28.2 in Bangkok, and 87.6 ± 24.5 in the North East. It was lowest, 85.7±23.1, in the Southern region.

High levels of fasting blood glucose (≥126mg%) were seen in 4.4% of the population, with 5.6% in the urban areas, and high cholesterol of ≥300 mg% in 1.4% of the population, with 3.4% in the urban areas.

A total of 40.3% women were examined for cervical cancer. In Bangkok, this figure was as high as 61.6%, and the lowest was 34.42% in the Central region. Of the total women examined, 3.7% had a report of abnormal findings. Self-palpation of breast was reported by 34.3 % of women, with the highest percentage in Bangkok (50.6%).

3.7% of women from the urban areas and 2.6% from the rural areas reported an abnormal result of breast self-examination.

Tobacco use

Use of tobacco is widely prevalent in the Region. It is well recognized as a risk factor for NCDs, and several countries have initiated programmes aimed at prevention and / or control of tobacco use. Table 6.2 shows the prevalence and control strategies against tobacco in the SEAR countries. The data in this table are based on reports on Tobacco Country Profiles submitted by identified PIs.

The prevalence of smoking was high among males in the Region and varied between 25% to 60%. In general, prevalence of smoking among females in the Region was lower. The annual per capita consumption of cigarette/bidi/cheroot was high (> 1000 sticks) in DPR Korea, India, Indonesia, Maldives and Myanmar. Data were not available from Bhutan. Except in DPR Korea and Thailand, where it is mainly cigarette based, tobacco is consumed in varied forms in the Region. This includes bidis, kreteks, pan masala, betel nut chewing, hookah etc. This makes measurement of tobacco use in the Region more difficult and necessitates a much more comprehensive approach. There is limited data available on these forms of tobacco use and their risk potential for cardiovascular diseases. However, their role in cancers (especially oral and lung) has been proven.

All countries have initiated some tobacco control measures. It mainly comprises of a ban on advertisement in the mass media, prohibition of smoking in public places and restriction of sale of tobacco products to minors. Other measures include carrying of warnings and high tariffs on tobacco products.

Table 6.2: Tobacco use in SEAR countries

Country	Prevalence of Smoking	Cigarette consumption*	Other forms of tobacco consumption	Tobacco control measures
Bangladesh	54% males 24% females	239 + 285 (1999) (Cig. & bidis)	Bidis, chewing tobacco, cigars, snuff and pipe tobacco	Health warnings on cigarette packages and in advertisements. Advertisement of cigarettes and bidis is banned on Radio & TV. Ban on sales of cigarettes to children.
Bhutan	No data available	No data available	Bidis, chewing tobacco. No tobacco manufactured in Bhutan, only imported	Legislation, restriction through health education. Establishment of smoke-free districts.
DPR Korea	42%	1016 (1990-92) Cig. Only		Smoking is prohibited in restaurants, shops and railway waiting rooms. Restrictions through health-education.
India	29% males 3% females	147+1297 (1990-92) Cig. & bidis	Bidis, chewing tobacco, pan masala, snuff, hookka, chutta, dhumti	Tobacco ads banned in State controlled electronic media. Ads on cable TV channels banned. Health warnings on cigarettes and pan masala. Ban on sale to minors. Legslisation. Ban on smoking in public places imposed in six states.
Indonesia	60% males 7% females	1405 (1993-97) Cig. Only	Kretek (clove), klobot	Tobacco control measures organised by NGOs. The only restrictions on tobacco advertising on TV are that no person can be shown smoking and no cigarette can be shown. Health education introduced - "Stop Smoking Programme".

Country	Prevalence of Smoking	Cigarette consumption*	Other forms of tobacco consumption	Tobacco control measures
Maldives	37 % males 15 % females	2154	Guduguda, hookah, cigar, pipe, bidis, chewing tobacco	Ban on ads. Sale of tobacco to children under 16 years is prohibited.
Myanmar	42 % males 21 % females	2000 - 3000 17.5 (1993) Cig & cheroots	Cheroots, cigars, hand roll corn tusks and chewing tobacco	High tariffs for tobacco imports. Smoking restricted in hospitals and theatres. Health education activities carried out..
Nepal	48 % males 29 % females	626 (2000)	Bidis, khaini/jarda	Tobacco products carry health warnings. Ban on smoking in health care institutions, in public transport, cinema halls, domestic flights and flights from neighbouring countries. Health education activities carried out.
Sri Lanka	25% males 2% females	366 (1999) Cig. only	Bidis, cigars, betel-quid, chewing tobacco	Health warnings must appear on cigarette packets in three languages. Total ban on all forms of tobacco advertising, promotion and sponsorship.
Thailand	44% males 3% females	795 (2000)		In 1986, the Thai Anti-smoking Campaign Project was executed by NGOs. Tobacco advertising banned by Tobacco Product Control Act, 1992. Sale of tobacco products to children under 18 years banned.

* Number of cigarettes consumed per adult (>15 years), annual average.
Source: Country and UNDP reports.

These estimates are based on the figures given in the country reports. Wherever the data are insufficient or absent, no attempt has been made to estimate them or project them. All Member Countries were asked to prepare the profiles for cancers, heart diseases and diabetes mellitus. In the tables below, the compiled estimates for selected diseases are shown. Comparison between countries is not valid, as the source of information as well as definitions used may be different. These tables only highlight the vast differences in the reported morbidity and mortality in the Region and the urgent need to rectify this situation.

Cancer

Cancer morbidity data are mainly hospital based except for registry data from India, Indonesia and Thailand. Also, the reported cases/deaths from these countries are estimates based on available data. The completeness of hospital data for other countries depends on the accessibility and utilization of services. The data are from the public sector only, and does not include the morbidity and mortality seen in the private sector. The scale of under reporting would depend upon how active the private sector is in that country. The scenario in the Region varies between countries with a vibrant private sector and those with a non-existent private sector.

	Table 7.1: Reported morbidity and mortality due to cancers in SEAR countries, 1998			
Country	**Morbidity**		**Mortality**	
	Source of data	**Number of cases**	**Source of data**	**Number of deaths**
Bangladesh	Apex Cancer Hospital	5,134	NR	NR
Bhutan	District hospitals	591	District hospitals	44
DPR Korea	Estimate from District Survey	32,472	Estimate from a distict survey	10,429
India	Registry (incidence)	593,803	National level HH survey & death certification	292,557
Indonesia	Registry (incidence)	236,488	Estimate from National level HH Survey	102,137
Maldives	IGM Hospital	75	Death certification	57
Myanmar	Yangon General Hospital	11,236	Health Information System	741
Nepal	Hospital based	534	Health Information System	2,038
Sri Lanka	Hospital based	39,091	Death Certification	6,441
Thailand	Hospital based	34,759	Death Registration	30,121

NR – Not reported, HH – Household.

The age and sex specific profile of incident cancer cases in the Region based on the reports from India, Indonesia and Sri Lanka, is shown in Table – 7.2. It shows that about 57% of the cases occur among males compared to 43% among females. About two-third of those affected are over 50 years old. Among females, the increase in incidence occurs earlier, at 30-39 years. This could be due to cervical cancer accounting for about a third of all cancer cases among females in the Region.

Table 7.2: Age and sex distribution of incident cancer cases in SEAR countries, 1998			
Age (years)	Males	Females	Total
< 9	2.7	1.4	2.1
10-19	2.3	2.1	2.2
20-29	3.3	6.1	4.5
30-39	6.0	17.7	11.0
40-49	12.4	23.3	17.1
50-59	26.3	23.4	25.1
60-69	36.6	18.8	29.0
70-79	10.4	7.2	9.0
Total	100.0	100.0	100.0

Note: Based on data from India, Indonesia and Sri Lanka. Among all incident cancer cases, 57.3% are in males and 42.7% among females.

As is evident from Table 7.3, more females than males die of cancer. It could be due to the nature of malignancies or to differences in the health care utilization, i.e., females seeking care less often and in more advanced stages.

Table 7.3: Age and sex distribution (%) of cancer deaths in the SEAR countries, 1998			
Age (years)	Males	Females	Total
< 9	1.4	0.9	1.1
10-19	1.8	1.6	1.7
20-29	3.8	5.3	4.6
30-39	8.1	16.7	12.8
40-49	15.6	21.4	18.8
50-59	26.0	20.7	23.1
60-69	34.1	28.6	31.1
70-79	8.9	4.6	6.6
80-89	0.3	0.2	0.2
Total	100.0	100.0	100.0

Note: Based on data from India, Indonesia, Thailand and Sri Lanka. Among all cancer deaths 45.2% occurred in males and 54.8% in females.

Country-specific distribution of cancers:

Bangladesh

Of all cancers, 62.4% affected males and 37.6 % females. The common cancers among males were that of bronchus/lung (28%), larynx (7.5%) and oesophagus (6%). Among females, 19% of all cancers were due to cancer cervix while 17% were due to breast cancers. Almost 13% of cancers in women were related to bronchus/lung.

Bhutan

Gender-wise information on cancer was not provided in the country report. Cancer of the cervix accounted for 25% of the total number of reported cancers. Cancer breast accounted for 3.9% of cases and cancers of the respiratory tract (trachea/bronchus/lung) accounted for 2.2% of cancers treated in hospitals.

DPR Korea

Cancer breast was the most common malignancy followed by cancer stomach. Gender-wise prevalence was not reported.

India

The common cancers among males were: pharynx and larynx (13%), leukemias and lymphomas (12%), urino-genital organs (11%), oral cavity (10%) and lung (9%). The common cancers among females were cancer cervix (24%) and breast (20%).

Indonesia

The most common cancer among males was lung cancer accounting for 19.2% of cases. Among females, the common cancers were those of the cervix (25.3%) and breast (18.4%).

Myanmar

Available information shows that among males the most common cancers were cancer of lung (25%), larynx (8%), and oesophagus (7.3%). In females, common cancers were cancer cervix (27.5%), breast (26.4%) and lung (10.2%).

Nepal

The sex-wise distribution of types of cancer was not available. Lung cancer accounted for 8.2% of all cancer cases, while cancer of cervix accounted for 6.3% and breast cancer for 6% of all cancer cases.

Thailand

The common cancers among males were liver (25%) and lung (17%). Among females, cervical cancer accounted for 17.6%, breast for 11.9% and lung for 8.4% of cases.

Ischaemic Heart Disease

The reported morbidity and mortality due to IHD is shown in Table 7.4. The estimate from India is very high as compared to other countries as the diagnosis is based on clinical criteria and ECG changes. This would include, therefore, asymptomatic cases as well. Hospital based estimates would only include symptomatic individuals whose diagnosis was confirmed at the hospital. The assignment of cause of death as IHD in countries that base their diagnosis on lay reporting has questionable validity.

Table 7.4: Morbidity and mortality due to IHD in SEAR countries, 1998				
Country	**Morbidity**		**Mortality**	
	Source of data	Number of cases	Source of data	Number of deaths
Bangladesh	Regional hospitals	2,387	Hospital based	400
Bhutan	District hospital	332	District hospitals	9
DPR Korea	Estimate from a district survey	59,255	District survey	2,773
India	Estimate from ad hoc surveys	25,000,000	Death certification & national level rural household survey	423,600
Indonesia	Estimate from ad hoc surveys	366,587	National household survey	119,936
Maldives	IGM hospital	224	Death certification	14
Myanmar	Estimate from a subnational survey	4,651	Health information system	412
Nepal	Hospital based	46	Hospital based	9
Sri Lanka	Hospital based	44,942	Death certification	4,695
Thailand	Hospital based	33,269	Death registration	2,266

NR – Not reported.

Stroke

Morbidity and mortality data were available from all countries in the Region as shown in Table 7.5. Hospital-based information on morbidity due to stroke is likely to be an underestimation because many acute stroke patients may die before they are brought to hospital. Even prevalence surveys will not include them. None of the countries had a stroke registry or a reliable way to measure the incidence of stroke. Therefore, in all countries, stroke is likely to have been underestimated. The mortality data are likely to be more reliable. However, the household survey using lay reporting or verbal autopsy tool may also result in an invalid estimate of the problem.

Table 7.5: Estimated morbidity and mortality due to stroke in SEAR countries, 1998

Country	Morbidity		Mortality	
	Source of data	Number of cases	Source of data	Number of deaths
Bangladesh	Regional hospital	224	Hospital based	604
Bhutan	District hospitals	88	District hospital	23
DPR Korea	Estimate from a district survey	45,745	Estimate from a district survey	7,111
India	Estimate from ad hoc surveys	1,083,500	Death certification & national rural household survey	102,620
Indonesia	Estimate from ad hoc surveys	488,774	National level household survey	158,611
Maldives	IGM hospital	100	Death certification	52
Myanmar	Health information system	5, 007	Health information system	1,454
Nepal	Hospital based	128	Hospital based	22
Sri Lanka	Hospital based	16,406	Death certification	3,323
Thailand	Hospital based	43,446	Death registration	4,427

NR – Not reported.

The age and sex specific distribution of cardiovascular mortality is shown in table 7.6. There is a steep increase in the deaths after 40 years of age. The deaths in the younger age group (< 20 years) are mainly due to congenital heart disease and rheumatic heart disease.

Table 7.6: Age and sex distribution (%) of cardiovascular deaths in SEAR countries, 1998

Age (years)	Males	Females	Total
< 9	2.9	3.1	3.0
10-19	5.0	5.2	5.1
20-29	5.8	7.8	6.7
30-39	8.6	8.4	8.5
40-49	15.6	14.6	15.2
50-59	20.8	20.6	20.7
60-69	30.7	29.4	30.1
70-79	10.5	10.9	10.6
80-89	0.0	0.0	0.0
Total	**100.0**	**100.0**	**100.0**

Note: *Based on data from India, Indonesia, Sri Lanka and Thailand. Among all cardiovascular deaths 57.3% occurred in males and 42.7% in females.*

Diabetes Mellitus

The morbidity data on diabetes are mainly derived from prevalence surveys conducted in different countries. Most of these surveys have been on a small scale in selected population groups. There are no national or even sub-national level surveys with a large sample size covering different sub-population groups like rural/urban. Only Myanmar, Nepal and Thailand have reported hospital-based data. Mortality data on diabetes are very difficult to collect as diabetes does not directly cause many deaths and is, therefore, not reported as an immediate cause of death. However, it is an important contributory cause of death in many cases.

Country	Morbidity		Mortality	
	Source of data	Estimated number of cases	Source of data	Estimated number of deaths
Bangladesh	Ad hoc surveys	2,700,000	Regional hospital	43
Bhutan	Ad hoc surveys	2,430	District hospitals	7
DPR Korea	Estimate from a district survey	16,479	Estimate from a district survey	355
India	Estimate from ad hoc surveys	28,702,100	Estimate based on hospital data	21,000
Indonesia	Estimate from ad hoc survey	4,639,000	Estimate from national level HH survey	18,000
Maldives	Screening survey among pilgrims	7,000	Death certification	32
Myanmar	Health information iystem	1,468	Health information system	123
Nepal	Hospital based	214	NR	NR
Sri Lanka	Ad hoc surveys	1,500,000	Death certification	1,707
Thailand	Estimate from survey	1,380,000	Death registration	4,885

Table 7.7: Morbidity and mortality due to diabetes in SEAR countries, 1998

NR – Not reported, HH – Household.

Chronic Respiratory Disease

Chronic respiratory disease is an important tobacco-related condition. In general, this includes chronic obstructive airway disease (emphysema, chronic bronchitis) and bronchial asthma. However, it is possible that this definition has not been strictly maintained in data from all countries. All the countries except DPR Korea had reported data about this disease. Only the estimates from India and Indonesia were based on population surveys, though they were small-scale surveys. Other countries reported hospital-based data.

Table 7.8: Morbidity and mortality due to chronic respiratory disease in SEAR countries, 1998				
Country	**Morbidity**		**Mortality**	
	Source of data	**Number of cases**	**Source of data**	**Number of deaths**
Bangladesh	Hospital based sub district level	1,304,249	Hospital based	497
Bhutan	District hospital	10,405	District hospital	8
DPR Korea	NR	NR	NR	NR
India	Estimate from ad hoc Surveys	65,000,000	Estimate from death certification & national level rural household survey	577,837
Indonesia	Estimate from ad hoc surveys	81,379	Estimate from national level household survey	59,923
Maldives	IGM hospital	474	Death certification	68
Myanmar	Health information system	21,470	Hospital information system	700
Nepal	Hospital based	4,320	Health information system	10,194
Sri Lanka	Hospital based	292,956	Medical certification	1,893
Thailand	Hospital based	167,832	Death certification	2,627

NR – Not reported.

Injuries

Injuries include intentional and unintentional injuries. However, all countries have not provided estimates of different types of injuries and two have not reported data on injuries. The estimate of morbidity due to injuries is hampered by lack of knowledge of the severity of injuries. However, the mortality data are likely to be valid as experience shows that even lay reporting-based diagnosis has a high validity.

Table 7.9: Morbidity and mortality due to injuries in SEAR countries, 1998				
Country	**Morbidity**		**Mortality**	
	Source of data	**Number of cases**	**Source of data**	**Number of deaths**
Bangladesh	Hospital above sub-district level	2,762,376	Hospital based	1,802
Bhutan	District hospital	39,184	District hospitals	44
DPR Korea	District level survey	1,066,590	Estimate from district survey	758
India	Estimate from ad hoc surveys	6,900,000	Estimate from death certification & national level rural household survey	749,983
Indonesia	Estimate based on ad hoc surveys	627,000	National level household survey (RTAs only)	48,070
Maldives	IGM hospital	639	Death certification	32
Myanmar	Health information system	125,158	Health information system	2,524
Nepal	Hospital based	4,453	Hospital based	NR
Sri Lanka	Hospital based	446,646	Death certification	21,666
Thailand	Hospital based	242,022	Hospital based	31,202

NR – Not reported.

Share of NCDs in all causes of mortality in the Region

The share of NCDs in all the deaths occurring in SEAR vary from about 7% in Nepal to 48% in Maldives and Sri Lanka. However, it should be noted that for all countries except Nepal, with the data available, either a national estimate was possible or adjustment could be made for incomplete coverage of mortality data. For Nepal, this was not possible. The mortality information is hospital based, while the denominator is all estimated deaths in the country. On an average, based on the reported information, roughly one-third of all the deaths in the Region can be attributed to the selected NCDs mentioned above. In general, cardiovascular diseases caused from about 12% to 25% of all deaths, making it the major killer among NCDs. Injuries in Sri Lanka and neuropsychiatric disorders in Myanmar were the only other two diseases which assumed equal importance in the Member Countries.

The World Health Report 2000 estimates that about 52% of all deaths in the Region can be attributed to NCDs. This is in contrast to the above finding. The reasons for the difference could be the difference in the year of study. Many countries prepared the estimate for 1998 using data from the early nineties. This may have resulted in an under-estimation of the share of NCDs in deaths. Also, the above estimates are based on only selected NCDs. In addition, the country reports are limited to the data available without making any attempt at extrapolations or estimations.

Table 7.10: Reported share (%) of selected NCDs in total deaths in SEAR countries, 1998								
Country	Source of Information	CVD	Cancer	DM	Injuries	CRD	Neuro-psychiatric disorders	All NCDs
Bangladesh	Hospital deaths	12.5	NR	1.0	10.8	3.0	NR	27.3
Bhutan	Hospital deaths	14.8	8.3	1.3	9.3	1.5	NR	35.2
DPR Korea	District level HH survey	8.2	8.0	0.3	0.6	NR	NR	17.1
India	Medical certification & national level HH survey	13	3.4	0.2	8.7	6.7	NR	32.0
Indonesia	HH survey national level	23.2	6.6	1.2	3	3.9	1.5	39.4
Maldives	Vital registration	24.8	5.5	3.1	3.1	6.6	4.8	48.0
Myanmar	HMIS	12.7	2.9	0.5	10	2.8	12.9	41.8
Nepal	HMIS	1.9	0.8	NR	NR	4	NR	6.7
Sri Lanka	Death certification	20.1	5.6	1.5	19	1.6	0.5	48.3
Thailand	Death registration	17.1	9.5	1.5	9.8	0.8	3.2	41.9

CRD – Chronic respiratory disease.
NR – Not reported.
HH – Household.
HMIS – Health Management Information System.

Demographic profile of the Region.

The total population of the Region is around 1.5 billion. Those below 15 years account for 32.7% of the total whereas the population above 65 years accounts for 4.2%.

Table 8.1: Age and sex distribution (%) of population in SEAR countries, 1998			
Age (years)	Males	Females	Total
< 1	2.2	2.1	2.2
1-4	9.0	8.8	8.9
5-9	12.2	12.0	12.1
10-14	12.0	11.6	11.8
15-19	10.4	9.8	10.1
20-24	9.2	9.4	9.3
25-29	8.2	8.7	8.4
30-34	7.2	8.0	7.6
35-39	6.5	6.4	6.5
40-44	5.5	5.5	5.5
45-49	4.5	4.3	4.4
50-54	3.7	3.6	3.6
55-59	2.8	2.8	2.8
60-64	2.5	2.7	2.6
65-69	1.7	1.9	1.8
70-74	1.2	1.3	1.3
75-79	0.7	0.7	0.7
80-84	0.3	0.3	0.3
85+	0.1	0.1	0.1
Total	100 (51.4%)	100 (48.6%)	100

Note: *Based on the population of all countries in the Region except DPR Korea.*

Of the total deaths in the Region, about 28% are estimated to occur in the under-five age group. The age group 10-14 years account for the lowest proportion of deaths in a five-year interval (Table 8.2).

Disease-specific estimates

The available data in some countries did not allow a national estimate to be made for these diseases. However, in order to arrive at a regional estimate, available data were used to project estimates for the countries with inadequate data. It was felt that the Region has similar socio-cultural and demographic characteristics for these projections

Table 8.2: Age and sex distribution(%) of deaths in SEAR countries, 1998			
Age (years)	Males	Females	Total
< 1	19.9	19.9	19.9
1-4	6.2	9.5	7.7
5-9	3.0	3.8	3.4
10-14	1.9	2.1	2.0
15-19	2.0	2.3	2.2
20-24	2.3	3.1	2.7
25-29	2.5	2.8	2.6
30-34	2.6	2.8	2.7
35-39	3.0	2.4	2.7
40-44	3.6	2.6	3.1
45-49	4.0	2.7	3.4
50-54	5.1	3.7	4.4
55-59	5.3	4.5	5.0
60-64	8.0	7.3	7.7
65-69	7.6	7.0	7.3
70-74	8.8	8.3	8.6
75-79	7.3	7.8	7.5
80-84	3.7	3.8	3.8
85+	3.1	3.6	3.3
Total	100 (52.9%)	100 (47.1%)	100

Note: *Based on data from Bhutan, India, Indonesia, Myanmar, Nepal and Sri Lanka.*

to be reasonably close to the actual figures. This approach was used only for diabetes and cancer.

Diabetes mellitus

The prevalence data on diabetes were available from seven countries in the Region. The sources of information were surveys covering relatively small population groups. For the purpose of projection to the countries with no representative data, the data from the seven countries were used. While the countries share a similar socio-cultural characteristics, there may be differences in the lifestyle, age structure etc. Therefore, these are rough estimations. However, as the data show, there is a remarkable consistency in the prevalence estimates except for Sri Lanka (very high) and DPR Korea (very low). The estimated figures may be useful for planning further studies and control strategies in Member Countries.

After projecting the data from the above seven countries to three countries (Bhutan, Myanmar, Nepal), it was estimated that the Region had about 40.9 million cases of diabetes. For this estimation, the weighted average prevalence of the countries with available data was used. Two other approaches were also used. First, as the data showed that two countries in the Region have either high (Sri Lanka) or very low (DPR

Table 8.3: Estimated prevalence of diabetes mellitus in SEAR, 1998		
Country	Population ('000)	Estimated cases of diabetes mellitus
Bangladesh	124,000	2,700,000
DPR Korea	23,700	16,497
India	982,200	28,702,100
Indonesia	209,000	4,639,000
Maldives	282	7,000
Sri Lanka	18,700	1,500,000
Thailand	61,000	1,380,000
Total of above countries	1,418,882	38,944,597
Estimated cases from countries with no representative data *	70,250	1,928,178
Estimated total cases in the Region	1,489,132	40,872,775

Based on prevalence estimate derived from the above seven countries.

Korea) prevalence, a revised estimate was made excluding these two countries, which came to 40.8 million. Secondly, the Indian prevalence estimate for the three countries from where data was not available, was used as it was felt that culturally and socio-demographically, India was the closest to these countries. This gave an estimate of 41.0 million cases. Thus, all the three methodologies gave a very similar estimate.

In the Diabetes Atlas 2000, published by the International Diabetes Federation (IDF), it was estimated that in 2000 (report of IDF includes India, Bangladesh, Mauritius and Sri Lanka in the SEA Region of IDF) an estimated 35 million cases of diabetes would be prevalent. The differences are in the year of estimate and the countries included. If we take only India, Bangladesh and Sri Lanka (WHO/SEAR countries included in the IDF report), then the comparison of the two estimates is shown in Table 8.4 below. Though the total estimate appears to be similar, the country specific estimates show a variation.

Table 8.4: Comparison of estimates of prevalence of diabetes mellitus of derived by IDF and the present report		
Country	IDF	WHO-SEARO
Bangladesh	1,759,700	2,700,000
India	32,674,400	28,702,100
Sri Lanka	335,400	1,250,000
Total	34,769,500	32,902,100

Source: *Diabetes Atlas 2000, International Diabetes Federation*

Cancer

The crude incidence and mortality rates and estimated number of incident cases and deaths due to cancer are presented for 1998 in Tables 8.5 and 8.6 respectively.

The crude incidence rate from cancer registries in India and Thailand are almost similar. In the Indonesian report, an estimate of 236,488 incident cases of cancer has been made. However, the report also gives an annual age standardised incidence rate of 58.9 per 100,000 for males and 91.7 per 100,000 for females from Semarang Municipality Registry. The rate from Sri Lanka was lower based on hospital registries only. The number of cases in Sri Lanka reported in Table 5.27 are hospital admissions. The incidence data used for this section are based on cancer registry information from 1990 adjusted for coverage and growth in population. As the data are available from only four countries, its projection to the other countries is less valid. However, with this limitation, if we assume the same

Table 8.5: Crude incidence of cancer in SEAR countries, 1998			
Country	Total population ('000)	Incidence rate/100,000	Estimated incident cases
India	982,200	60.5	593,803
Indonesia	209,000	113.1	236,488
Sri Lanka	18,700	41.6	7,784
Thailand	61,000	57.0	34,759
Total of above countries	1,270,900	68.7	872,834
Estimated total cancer cases in SEAR based on above estimate*	1,489,132	68.7	1,022,736

* Based on incidence estimate derived from the above seven countries.

crude incidence rate, the estimated number of incident cases in the Region would be about one million per year.

The data on mortality rates due to cancer were available from five countries. These are mainly from death certification or household surveys on cause of death. The crude mortality rates varied between 30 per 100,000 to 49 per 100,000. The weighted mean mortality rate was 34 per 100,000. Applying this mean estimate to the population of the Region (1.5 billion) gives an estimate of about 0.5 million cancer deaths in SEAR per year. Keeping in mind the limitation of the method of ascertainment of causes of death in the Region, this is also likely to be an underestimate.

Table 8.6: Crude mortality rates of cancer in SEAR countries, 1998			
Country	Total population ('000)	Cancer death rate/ 100,000 population	Cancer deaths
DPR Korea	23,700	44.0	10,429
India	982,200	29.8	292,557
Indonesia	209,000	48.9	102137
Sri Lanka	18,700	34.4	6,441
Thailand	61,000	49.4	30,121
Estimated cancer deaths in the above countries	1,294,600	34.1	441,685
Estimated total cancer deaths in SEAR	1,489,132	34.1	507,794

Globocan cancer data for different countries in the Region is shown below (Table 8.7). The estimates were that about 1.3 million cases of cancer and 0.8 million cancer deaths would occur every year in the Region.

The estimates for cancer morbidity in the Region are mainly based on registry data from a few countries. Almost all the registries are in urban areas. Data from the only Indian rural registry at Barshi, shows that the morbidity rates are consistently lower for rural areas. As a majority of the population lives in rural areas in the Region, this needs a closer look. In the Globocan data, incidence rates were only from four countries in

Table 8.7: Estimated number of cases and deaths due to cancer in SEAR countries				
Country	Number of cases	Number of deaths	ASR (W) − males	ASR (W) − females
Bangladesh	84,074	53,710	60.5	104.4
Bhutan	1,542	1,010	106.6	112.0
DPR Korea	37,616	23,716	271.8	130.1
India	813,600	543,606	99.0	104.4
Indonesia	171,312	111,854	97.2	106.8
Maldives	NR	NR	NR	NR
Myanmar	45,625	31,575	139.0	117.8
Nepal	16,930	11,047	106.6	112.0
Sri Lanka	18,142	11,366	99.0	104.4
Thailand	69,777	49,962	144.54	117.9
Total	1,258,618	837,846	—	—

ASR (W) – Age standardised (world population) incidence rate per 100,000
    Globocan data for the year 2000

the Region - India, Indonesia, Myanmar and Thailand. For the other countries, either the average India rates were used or average regional rates were used. For DPR Korea, the rates of Japan were used, which were much higher than in the other countries in SEAR. In general, Globocan estimated a higher number of cases and deaths for all the countries.

Other NCDs

For other diseases like CVD, a projection was not attempted as the source of information and the definitions used were very varied. Combining them for arriving at estimates was not epidemiologically sound.

It is evident that NCDs constitute a major public health problem in the Region. While planning and implementing the integrated control of NCDs, it is essential to assess the available capacity to deal with the problem. Standardised data on capacity for NCD control were collected through the health ministries of Member Countries in 2001.

Official Policy & Plan

Of the ten countries in the Region, six did not have an official policy in the area of NCDs. Four countries (DPR Korea, Maldives, Nepal, Thailand) have an official NCD policy, formulated in the mid-nineties. Thailand has an NCD Prevention and Control (NCDPC) Plan for many years now and Maldives is on the verge of implementing the plan. While countries may not have a plan for NCDs as a whole, they have separate plans for priority NCDs. The details are given in Table 9.1. Cancer received the maximum attention in SEAR countries. Among CVDs, hypertension and IHD were the focus for control in SEAR except in DPR Korea where stroke was emphasized more. Tobacco control is also receiving considerable attention in the Region.

Data Sources

All countries had included NCDs in the annual health reporting system especially for morbidity, except DPR Korea, Maldives and Thailand. Risk-factor related information was not a part of the routine reporting system in SEAR countries. Four countries (Bhutan, Indonesia, Maldives and Nepal) reportedly did not have a surveillance system for NCDs. Three countries (Bangladesh, Maldives, Nepal) did not have a population-based system for death certification. Cancer registries were present in all countries except Bhutan. While they were hospital-based in these countries, India, Indonesia and Thailand had population-based registries as well. Bangladesh, DPR Korea, India, Indonesia and Thailand were carrying out regular representative surveys on all NCDs and their risk factors. Bhutan and Sri Lanka had not conducted any surveys on NCDs and their risk factors in the last five years.

Organizational Structure and Finance

A separate unit/ department for NCDs existed in four countries (DPR Korea, India, Sri Lanka and Thailand). Bhutan, India, Indonesia, Sri Lanka and Thailand had a separate budget allocated for NCDPC within their health budget. Hypertension and diabetes had national guidelines for management and prevention in most countries. Also, guidelines for bronchial asthma and common cancers were available in several countries. Except for Bangladesh and India, NCDPC were integrated into the primary health care

system. Most countries reported that hypertension and diabetes could be diagnosed/ monitored at the PHC level. The diagnosis of cancer was not possible at the PHC level in most countries except in DPR Korea and Indonesia (cervical cancer only). Bhutan, DPR Korea and Thailand had a system for providing community-based care (home health care) for people with terminal illness or disabilities.

The current status of implementation of NCD prevention and control programmes in SEAR countries is shown in Table 9.1. Only Thailand and Maldives seem to have an integrated NCD control plan in the Region. Most of the vertical NCD programmes in the Member Countries were initiated in the last decade.

Table 9.1: Current status of implementation of NCD prevention and control programmes in SEAR Countries					
Countries	Tobacco control	CVD	Cancer	Diabetes	Integrated control of NCDs
Bangladesh			1982	1978	
Bhutan					
DPR Korea		2000		2000	
India	2000		1975		
Indonesia		1989	1995		
Maldives					2001
Myanmar	1982	1982	1996	1993	
Nepal		1999	1998		
Sri Lanka	1999		2000	2000	
Thailand	1988	1988	1988	1988	1993

Note: *Shaded areas indicate existence of a plan and the year of implementation.*

10. Summary

1. Member Countries in the Region are in various stages of demographic and epidemiological transition.

2. The data sources on NCDs in the Region are very heterogeneous making comparison between countries difficult.

3. Morbidity data are predominantly hospital based which is likely to underestimate the problem. Ad hoc surveys are the other important source of information. However, these have problems of representativeness, methodological differences etc.

4. Regular NCD surveillance does not exist in the Region except for cancer registries in three countries.

5. Mortality data is based on medical certification and surveys. The coverage of medical certification is poor and the validity of verbal autopsy for NCDs needs further investigation. However, in general, the quality of mortality data is better compared to morbidity data.

6. According to the country reports, the share of selected NCDs in the total deaths in the Region varied from about 7% in Nepal to 48% in Sri Lanka in 1998. On an average, based on the reported information, roughly one-third of all deaths in the Region can be attributed to the selected NCDs covered by the profile.

7. In general, cardiovascular diseases caused from 12% to 25% of all deaths, making it the major killer among NCDs. Injuries in Sri Lanka and neuropsychiatric disorders in Myanmar were the only other two analysed groups of disorders, which had assumed equal importance in the respective countries.

8. Based on available evidence, it was estimated that there are about 41 million cases of diabetes mellitus in the Region.

9. It was also estimated that the number of incident cancer cases in the Region would be about 1 million and cancer would account for about half a million deaths every year.

10. Many of the estimates given in this profile are lower than the estimates from other agencies. While the profile uses data available in the Region, other agencies have often used data from outside SEAR for projections and estimations.

11. There is very little information related to the prevalence of major risk factors of NCDs in the Region. Indonesia and Thailand have instituted a system for regular collection of information on selected risk factors. Such information is essential to plan intervention programmes.

12. The programmes for prevention and control of NCDs in the Region are vertical, disease specific and are not considered as a high priority. However, a majority of Member Countries have realised the need for strengthening and integrating these programmes.

NCDs are not recognized as a high public health priority in a majority of SEAR countries, which are still confronted with the heavy burden of infectious diseases and poor maternal and child health. One of the important reasons for the low priority given to NCDs is the scarcity of reliable information on NCDs at the national level. This profile draws attention to the burden of selected NCDs in SEAR as perceived by Principal Investigators and attempts to generate rough estimates based on country reports.

Global projections indicate that NCDs may reach epidemic proportions in developing countries in the next two decades. Hence, there is a need to intensify efforts in the Region to strengthen programmes for the prevention and control of NCDs. This will require reliable information to be easily available and accessible at national and regional levels. Such information is essential for advocacy, policy development and programme monitoring and evaluation. Although there is increasing interest in Member Countries in the prevention and control of NCDs, it should be acknowledged that the available data on NCDs and their risk factors are far from being adequate at this stage.

As a step towards strengthening the information base for NCD programme development, SEARO collated data on selected NCDs available in the Member Countries. These data are presented in this NCD profile, which may facilitate debate on approaches that need to be adopted locally in order to improve the quality of information on NCDs. In particular, it is hoped that the profile will alert policy-makers and public health managers to the need of improving data collection methods, strengthening national capacity for data collection and management as well as communication and utilization of NCD-related information.

The profile also attempts to facilitate exchange of information and networking of institutions involved in the collection of NCD data and to contribute to the ongoing discussion on methodological prerequisites of collecting valid and comparable NCD data. Collection and communication of standardized core information on NCDs and their risk factors is required for developing valid comparisons within and between countries and also for following trends within Member Countries, at regional and global levels. The profile should also help in reviewing the current status of the NCD information system in the Region and contribute to its strengthening.

Acknowledgements

ASR(W)	_	Age Standardised Rate (World)
BMI	_	Body Mass Index
CRD	_	Chronic Respiratory Disease
CVD	_	Cardio-vascular Disease
DALYs	_	Disability Adjusted Life Years
DM	_	Diabetes Mellitus
GNP	_	Gross National Product
GIT	_	Gastro-Intestinal Tract
HDL	_	High Density Lipoprotein
HMIS	_	Health Management Information System
IDF	_	International Diabetes Federation
IHD	_	Ischaemic Heart Disease
NCD	_	Noncommunicable Diseases
NCDPC	_	Noncommunicable Disease Prevention and Control
PI	_	Principal Investigators
PHC	_	Primary Health Centre
RHD	_	Rheumatic Heart Disease
RTA	_	Road Traffic Accidents
SEAR	_	South-East Asia Region
SEARO	_	South-East Asia Regional Office
SKRT	_	National Household Health Survey (Indonesia)
UNDCP	_	United Nations Drug Control Programme
WHO	_	World Health Organization
WHA	_	World Health Assembly

Adult literacy rate (%): is the percentage of persons aged 15 years and above who can read and write. The application of the definition is subject to qualifiers in each country and at each census. (UN,1993 Demographic Yearbook)

Age Standardized Rate (World) is the summary measure of a rate that a population would have if it had a standard age structure. It is calculated by first estimating the age specific incidence rates and then applying it to the standard population. The most frequently used standardized population is the World Standard population.

Crude death rate (per 1000 population): is the annual number of deaths occurring per thousand mid-year population (UN, 1993 Demographic Yearbook).

Life expectancy at birth (years): is the number of years newborn children would live if subject to the mortality risks prevailing for a cross-section of the population at the time of their birth (UNICEF, The State of the World's Children 1997)

Low birth weight newborns (%): is the number of live born babies with birth weight less than 2500 grams as a percentage of the total number of live born babies weighed, with the measurement being taken preferably within the first hours of life, before significant postnatal weight loss has occurred. (WHO, Implementation of Strategies for Health for all by the year 2000, third Monitoring of Progress, Common Framework)

Per capita total health expenditure (international dollars): is the average amount in international dollars spent per person on health in the country.

Total Population (thousands): is the mid-year estimate of the total population of a country of area as prepared by the population division of the United Nations based on their methodology for estimations and projections to provide a consistent series of demographic parameters for every country of the world. (UN, world Population Prospects, The 1994 Revision)

Urban Population (%): is the percentage of persons living in urban areas. Urban is defined according to national census definitions. The definitions for countries of the South-East Asia Region are presented below:

> **Bangladesh**: Places having a municipality (Pourashava), a town committee (Shahar committee) or a cantonment board.

> **India**: Towns (places with municipal corporation, municipal area committee, town committee, notified area committee or cantonment board); also all places having 50000 or more inhabitants, a density of not less than 1000 persons per square mile or 390 per square kilometer, pronounced urban characteristics and at least three-fourths of the adult male population employed in pursuits other than agriculture.

> **Indonesia**: Municipalities, regency capitals and other places with urban characteristics.

> **Maldives**: Male, the capital

> **Nepa**l: Localities of 9000 or more inhabitants.

> **Sri Lanka**: Municipalities, urban councils and towns.

> **Thailand**: Municipal areas.

Recommendations of the Intercountry Consultation on Surveillance of Major Noncommunicable Diseases in the South-East Asia Region, held from 2-4 August, 2000 in New Delhi

1. Programme Development

(a) Member Countries should develop a national integrated NCD surveillance and control programme since such a programme is either non-existent or is fragmented and vertical.

(b) National focal points/agencies on surveillance of NCDs and their risk factors should be identified and supported by MoH.

(c) Detailed methodology for core NCD surveillance in SEAR should be developed by WHO.

(d) WHO should identify/support development of a regional centre of expertise for developing NCD surveillance in the Region.

(e) WHO should take a lead role in supporting Member Countries in advocacy activities in NCD prevention and control.

(f) An intersectoral approach and coordination between health and health related divisions both within and outside governments should be encouraged for NCD prevention and control activities.

2. Regional Profile

(a) Based on the available information, a profile of NCDs in SEAR should be developed and widely utilized for advocacy on NCD prevention and control.

(b) The process of collection, analysis and utilization of critical data on NCDs in SEAR should be improved and standardized.

3. Surveillance System

(a) A regional strategy and plan of action for surveillance of NCDs in SEAR should be developed.

(b) WHO should assist Member Countries in developing/strengthening national systems for NCD surveillance.

(c) WHO should provide simple but detailed guidelines on the development of an NCD surveillance system in the Member Countries and support capacity building and

training for such a system.

(d) Surveillance of major NCDs should be selective and accompanied by surveillance of risk factors including socioeconomic determinants.

(e) NCD surveillance should be incorporated into the national system of disease surveillance.

(f) WHO should support development of a regional network of NCD surveillance.

4. Intervention

(a) A model project on integrated community-based intervention should be developed and implemented in selected Member Countries.

(b) Simple, inexpensive and reliable methodology and a set of tools for monitoring and evaluation of ongoing and planned NCD intervention programmes should be developed.

5. Other Recommendations

WHO should:

(a) Develop guidelines for secondary and tertiary prevention and good practice for major NCDs.

(b) Develop guidelines for screening of high-risk groups.

(c) Promote and support high quality research on public health aspects of major NCDs.