

3. Morbidity and Mortality

3.1 Hospital Morbidity and Mortality

In Sri Lanka, morbidity data is available only for patients seeking treatment as inpatients in government hospitals. Morbidity data of patients attending the outpatient departments of government hospitals, ayurvedic institutions and the private sector are not routinely collected. Other than the limited information collected through surveys, registers maintained by the special campaigns and programmes for control of diseases such as TB, Cancer and Leprosy and from notifications, the Indoor Morbidity and Mortality Return (IMMR) is on the whole source of morbidity data. This return is collected quarterly from all government hospitals except for Central Dispensaries and Maternity Homes. The IMMR used since 1996 is based on the 10th revision of the International Classification of Diseases (ICD).

The final diagnosis recorded in the patients' records is analysed in order to complete this Return. In the Teaching Hospitals, Provincial and some Base Hospitals, the IMMR is prepared by Medical Record Officers and the Medical Record Assistants. Registered / Assistant Medical Officers are still utilized to do the compilation of inpatient statistics in about 70 per cent of the hospitals. These officers are mainly employed to attend to patients care, and so, they perform the statistical activities as an additional duty. The absence of developed Medical Record Departments even in large hospitals has hindered the analysis of discharges for important epidemiological information such as age, sex, place of residence, etc.

The institutions noted in the footnotes of Tables 36 and 37, (except CD and MHs) did

not forward the IMMR during 2003. With regard to submission of the IMMR, a higher percent of the hospitals in the Kegalle Vavuniya, Batticaloa, Mannar, Ampara & Killinochchi DPDHS Divisions, either did not forward the IMMR or was very late in sending them.

During the year under review, 10.2 per cent of the discharges, and 22.3 per cent of the deaths in government hospitals (that reported) had not been analysed. This was pronounced in the large hospitals. The National Hospital of Sri Lanka and the Teaching Hospital Sri Jayawardenepura had analysed only 8 per cent and 56 percent of their discharges respectively. This lapse is mainly due to reasons such as incomplete patient records, shortage of statistical staff, lack of supervision at all levels, lack of facilities, patient records retained in wards for a long period and not sent in time to be analysed, etc. It is also attributed to poor commitment and data not being used for the management of the hospitals by those involved.

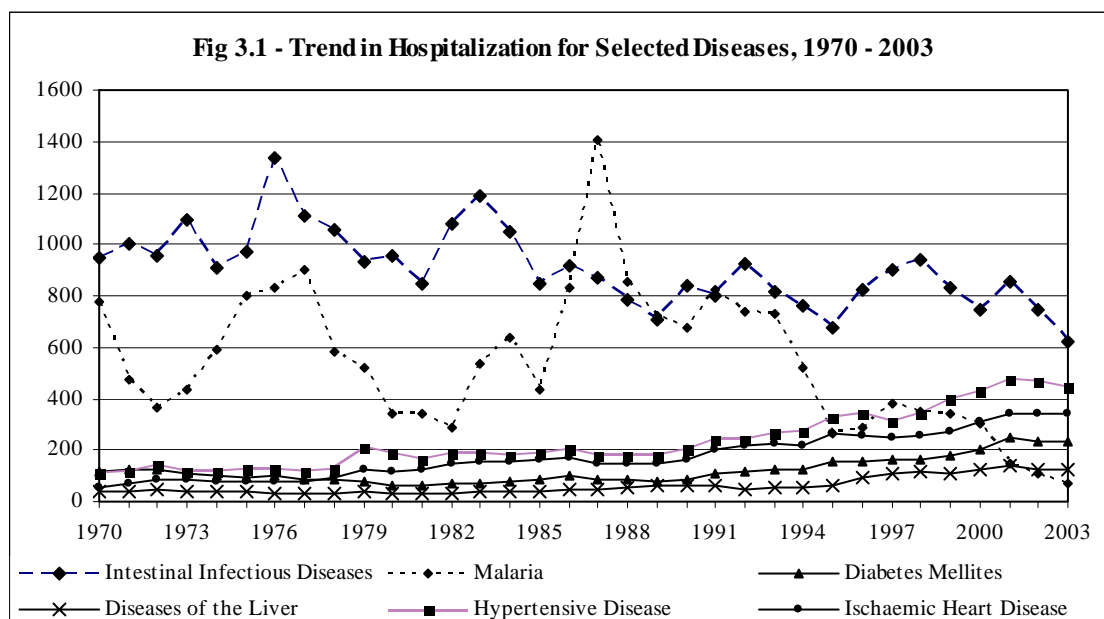
It should be noted that repeated visits, transfers and multiple admissions of the same patient for the same disease are reflected in morbidity data as additional cases. Therefore, morbidity data available in Sri Lanka should be interpreted with caution, considering the above limitations. However, data based on hospital morbidity gives an obvious indication of the morbidity pattern in the country.

3.1.1 Inpatient Morbidity

Table 19 gives trends in hospital morbidity by broad disease groups of the ICD for the period 1980 – 2003.

A clear, decreasing trend is seen in hospitalization due to diseases of the blood and blood-forming organs and disorders involving the immune mechanism.

Non-communicable diseases that emerge with the transition in the demographic profile



and increased life expectancy are on the increase. This is reflected by the increasing trend in hospitalization for diseases such as neoplasms, diseases of the circulatory system, diseases of the genitourinary system, diseases of the digestive system, diseases of the musculoskeletal system and diseases of the nervous system. In fact the number of visits to hospitals to get treatment for the diseases of the digestive system, circulatory system and genitourinary system has almost doubled during the period 1980-2003. Another noteworthy feature is that the patients getting treatment for diseases of the eye and adnexa has also doubled during the last twenty years

A substantial increase is seen in hospitalization for injury and poisoning. It has increased from 1,732 cases per 100,000 population in 1980 to 3,372 in 2003.

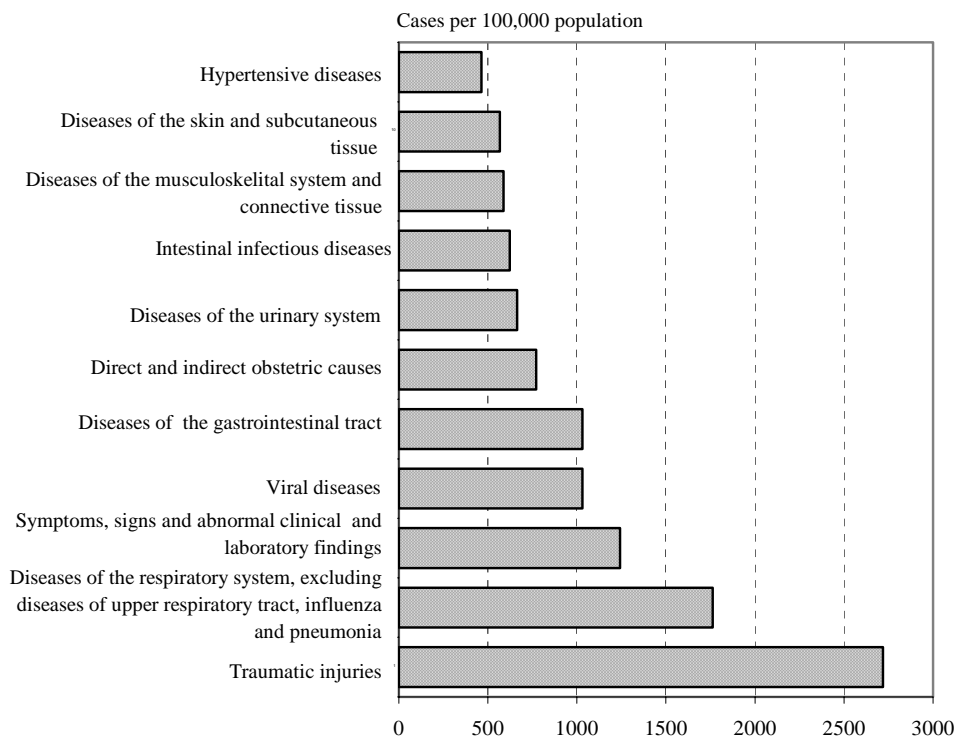
An increasing trend in hospitalization is evident since 1985 for disorders in the perinatal period and also for diseases related to pregnancy, childbirth and the puerperium. In addition to that, congenital malformations deformations and chromosomal abnormalities have also doubled during the 20 years period. The prevalence of infectious and parasitic diseases and also respiratory diseases has reduced compared with 1970's, but still fluctuates at a very high level. During 2003,

there were 1,855 and 2,353 cases hospitalized respectively.

The number of patients seeking treatment for mental disorders has increased over the years. During 1970, there had been 177 cases per 100,000 population taken treatment for mental disorders compared with 262 and 211 per 100,000 population in 1995 and 2003. This increase is mainly attributed to demographic changes. Other contributory factors for the increase of mental illnesses are migration, alcohol, war and other forms of violence and stress. It is estimated that about 25 per cent of mental illnesses are alcohol related disorders. The number of cases treated for mental disorders in government hospitals by districts during 2003 is given in Table 28.

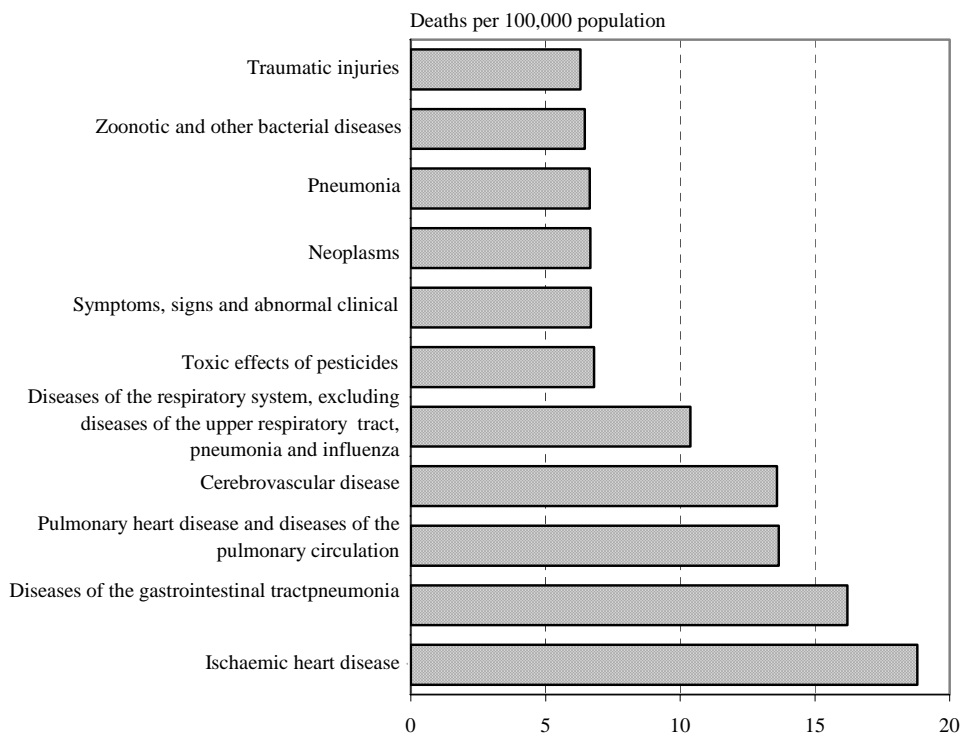
The number of cases with no specific diagnosis that are grouped as symptoms signs and abnormal clinical & laboratory findings varied between 1,078 and 1,242 per 100,000 population during the period 1980 to 2003. In spite of the effort taken to improve the quality of the final diagnosis and cause of death given by the doctors in the patient records, morbidity and mortality attributed to symptoms and signs still remain as a leading cause of both hospitalization and hospital deaths. The admission criteria not being properly followed, poor commitment and lack of supervision of the persons involved and also

Fig 3.2 - Leading Causes of Hospitalization, 2003



Excludes single spontaneous delivery, false labour and those admitted and discharged before delivery.

Fig 3.2 - Leading Causes of Hospital Deaths, 2003



Source : Medical Statistics Unit

the delay in writing the final diagnosis on discharge of patients have mainly contributed to this situation. During 2003, the proportion of discharges attributed to symptoms and signs accounted for 7.6 per cent of the analysed discharges (Table 21).

Table 20 shows trends for a few important diseases. A steady decline in the prevalence of vaccine-preventable diseases is clearly visible except for measles. There was an outbreak of measles during 1999 and is discussed in detail in Chapter 5.1 section 5.1.5.2.2.

A dramatic increase in the number of cases hospitalized for diabetes mellitus is observed. The main contributing factors to this situation are urbanization, changes in life style, and aging of population. Admission for diabetes has increased from 66 per 100,000 population in 1980 to 231 in 2003. During the year 2003 there were 44,49 inpatients visits to get treatment for diabetes.

An increased number of asthma cases are admitted each year to the government hospitals. The rate per 100,000 population for asthma during 2003 was 921. During 2003, 177,392 asthma patients were treated.

The increase in the number of cases diagnosed as septicaemia, a condition with a high case fatality rate is noteworthy.

Hospitalization for diseases of the liver shows a substantial increase. During years 2000 to 2003, 84 per cent of the cases treated for liver diseases were related to alcoholism.

Malaria, an age-old disease, still dominates the disease pattern of Sri Lanka. Hospitalization for malaria has decreased from 800 cases per 100,000 population in 1975 to 262 in 1995. Although there was an increase in hospitalization for malaria since 1996 the situation has improved during the last three years.

3.1.1.1 Leading Causes of Hospitalization

Table 21 gives the leading causes of hospitalization of the country and Table 22 indicates the district profile of the same. Table 23 presents trends in leading causes of hospitalization during the period 1995-2003.

There is no change in the ten leading causes of hospitalization selected for 2003, compared with 2002, except for the change in the rank position of few diseases.

Since 1995, traumatic injuries have remained the leading cause of hospitalization, with an increased proportionate morbidity each year. Diseases of the respiratory system ranked as the second leading cause.

There is a decrease in viral diseases during 2002. Viral diseases, which was the 3rd leading cause in 2002 has become the 4th leading cause in 2003.

Intestinal infectious diseases are still an important cause of hospitalization. It ranked as the eighth leading cause of hospitalization and accounted for 3.8 per cent of the analysed discharges in 2003. Intestinal infectious diseases are a major cause of hospitalization in all districts except Colombo, Matara and Vavuniya.

During 2003, diseases of the gastrointestinal tract remained as the fifth leading cause of hospitalization. It was a major cause of hospitalization in all districts except Mullativu.

Hospitalization due to direct and indirect obstetric causes have remain as the sixth leading cause in 2003, as for the year 2002, but accounted for 4.7 per cent of the discharges in 2003, which is higher than the year 2002.

During 2003, there is a further reduction in the rate per 100,000 population hospitalized for malaria (Table 20).

Information on leading cause of hospitalization by district is given in Table 22. Traumatic injuries is the main leading cause of hospitalization in all the districts except Kilinochchi, Mullativu and Batticaloa. For most of the districts disease of the respiratory system ranked as the second or third major cause of hospitalization. Viral diseases and disease of the gastro intestinal tract have the rank order of 3 and 4 in 17 and 21 districts respectively. Direct and indirect obstetric causes, intestinal infectious diseases, disease of the urinary system also fell among the first ten leading causes in most of the districts. Malaria has ranked as the fourth leading cause in Kilinochchi and Mullaitivu district, and ranked as the eight leading cause in Batticaloa district. These are the only districts which have malaria in the first ten leading causes

During 2003, snake bites ranked as the eight and ninth leading cause of hospitalization in Mullaitivu and Kilinochchi districts respectively. It ranked within the first fifteen leading causes of hospitalization in Hambantota, Mannar, Moneragala, Anuradhapura, Kurunegala and Polonnaruwa districts. During the year under review, 36,648 cases of snake bites were treated in government hospitals. Similarly Mullativu and Kilinochchi have poisoning and toxic effects as the 5th and 10th leading cause of hospitalization.

Diseases of the female genitourinary system and neoplasms and diseases of the eye and adnexa ranked as the eighth and the third leading cause of hospitalization respectively in the Colombo district, probably due to the presence of the two Maternity Hospitals, the Cancer Institute and the Eye hospital in this district. Hypertensive diseases, diseases of the upper respiratory tract ranked within the first ten leading causes of hospitalization in few districts.

3.1.2 Outpatient Morbidity

Data on outpatient attendance analysed by diseases are not collected routinely. Outpatient morbidity data obtained from surveys carried out in the past compared with inpatient morbidity data, indicates that there is not much of a difference except in regard to:-

- Patients with complications of childbirth and puerperium are not channelled through the outpatient department.
- Diseases of the musculoskeletal system and connective tissue are more common among outpatients.
- Injury and poisoning are less important as a cause of outpatient morbidity.

Table 3.1 displays the findings of a survey carried out during 1995¹ to study the morbidity pattern of the outpatient department in Teaching Hospitals at Colombo South and Ragama, selecting 1000 patients in each hospital. In this study, the diseases were classified into 17 broad disease groups of the International Classification of Health Problems in Primary Health Care. Approximately, a third of the patients were below 15 years of age. More females (61.6%), attended the outpatient department. There was no major gender difference seen in the disease pattern, except for a higher percentage of males reporting for injuries and wounds and more females for diseases of the musculoskeletal system. It was observed that approximately 91 per cent of the outpatients belong to six out of seventeen broad disease groups, a majority presenting with symptoms and signs related to diseases of the respiratory system and the musculoskeletal system. The disease pattern reflected by this study is similar to the pattern of the outpatient morbidity studies carried out during 1971² and 1987³, except that injuries has become more important in the more recent study, having ranked as the fourth leading cause of outdoor morbidity.

Table 3.1 Leading Causes of Outdoor Morbidity

Broad Disease Groups	Total		Male		Female	
	No.	%	No.	%	No.	%
Diseases of the respiratory system	899	45.0	358	46.6	541	43.9
Diseases of the musculoskeletal system	288	14.4	88	11.5	200	16.2
Infectious and parasitic diseases	207	10.4	67	8.7	140	11.4
Injury and wounds	165	8.3	97	12.6	68	5.5
Diseases of the digestive system	144	7.2	60	7.8	84	6.8
Diseases of skin and subcutaneous tissue	114	5.7	98	12.8	199	16.2
Others	183	9.2				
All causes	2000	100.0	768	100.0	1232	100.0

Source: 'Cost analysis of patients management in an out patient department' 1996

The 'One-day General Practice Morbidity Survey in Sri Lanka⁴ conducted during 1996 revealed the following information.

- The average daily workload of General Practitioners was 74 patients and the estimated total number of general practice consultations amount to 12.7 million per year.
- Children younger than 12 years accounted for 32.1 per cent of general practice consultations and the proportion of the elderly in the consulting population was also significantly higher.
- The distribution by age and sex showed that the proportion of males and females consulting in the different age groups was similar in all age groups other than that of children under 12 years, in which more male children had been taken to the doctor, and among adults 20-50 years, where the sex distribution was reversed.
- A majority of the consultations was for initial visits (72.5 per cent) rather than for follow-up visits, which indicates that the demand for care is mainly for acute illnesses.
- With regards to problems managed, respiratory diseases and general and unspecified preceded the others. Pregnancy, child bearing and family planning accounted for 3.9 per cent of all problems managed.
- Psychological problems accounted for only 1.9 per cent. Surveys on psychiatric

morbidity worldwide have shown that psychological problems, which account for about a third of all general practice consultations, are often missed by family physicians. It has been shown that failure to detect psychological illnesses is due to such patients presenting to doctors with only physical symptoms.

- In addition to the acute illnesses, three chronic diseases asthma, hypertension and diabetes mellitus were within the top twelve.

3.1.3 Hospital Mortality

It is estimated that only 30-40 per cent of registered deaths occur in government hospitals. This proportion is higher for deaths related to puerperal causes, heart diseases, respiratory diseases, etc. The leading causes of hospital mortality of the country, the districts and the trends are given in Tables 24, 25 and 26 respectively.

In 2003, ischaemic heart diseases, diseases of gastrointestinal tract, Pulmonary heart disease-and-diseases of the pulmonary circulation and cerebrovascular diseases, ranked as the first few leading causes of hospital deaths. These diseases accounted for about 40 per cent of analysed deaths. Additionally these diseases together with the diseases of the respiratory system have become one of the ten leading causes for most of the districts.

Diseases of the gastrointestinal tract has ranked as the second leading cause of death since 1997. In 2003, it was the leading cause

of death in districts of Gampaha and Puttalam. Alcoholic liver disease accounted for 64 per cent of the gastrointestinal deaths in 2003.

Neoplasms ranked as the fifth or the sixth leading cause of death since 1993, but it is the eighth leading cause in 2003. It also ranked within the first ten leading causes of death in Kalutara, Kandy, Galle, Hambantota, Batticaloa, Anuradhapura, Baddula, Moneragale, Ratnapura and Kegalle districts. A higher death rate associated with neoplasm in Kandy and Galle districts is a result of cancer patients being transferred to the Teaching Hospitals in Kandy and Karapitiya, which have advanced facilities for the treatment of neoplasms.

Pesticide poisoning has remained as the fifth or the sixth leading cause of death during the period 1993-1998 and as the seventh leading cause of death until 2002. During 2003, pesticide poisoning accounted for 4.5 per cent of the deaths and ranked as the 6th leading causes of death. *Organo-phosphate and carbamate* insecticides were the commonest groups of chemicals involved in poisoning, accounting for almost 54 per cent of the pesticide poisonings. Pesticide poisoning was the second leading cause of mortality in Mannar and Polonnaruwa districts, and third leading cause in Matale and Mullaitivu districts. Besides it was one of the leading cause of death in many agricultural districts such as Kurunegala, Matara, Badulla, Monragalle, Kegalle and Nuwara Eliya. Deaths by poisoning due to poisons other than pesticides, too, were an important cause of hospital deaths. It was a leading cause of death in many districts (Table 25). Pneumonia, zoonotic and other bacterial diseases are among the ten leading causes of 15 and 14 districts respectively. Zoonitic and other bacterial diseases is the first leading cause in Mullaitivu and third leading causes in Trincomalle.

Disorders related to short gestation, low birth weight, slow fetal growth and fetal

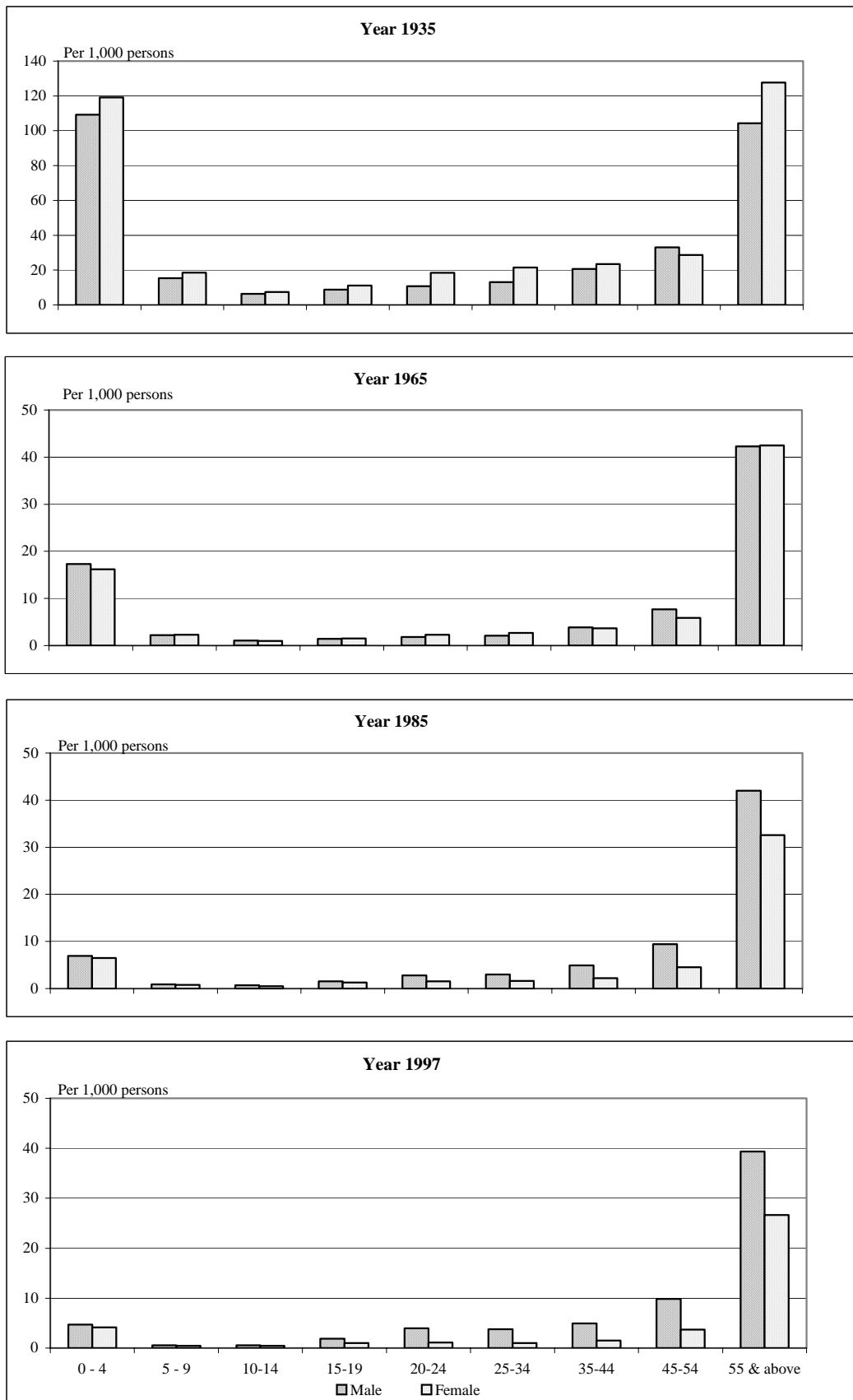
malnutrition ranked as the third leading cause of mortality in Polonnaruwa district. This is the sixth leading cause in Jaffna and Ampara districts. Malaria is the third leading cause of mortality in Mullaitivu for year 2003, but was the first leading cause in 2002. Diseases of the urinary system is the first leading cause of mortality in Vavuniya and second leading cause in Anuradhapura. Kilinochchi and Mullaitivu districts which experienced snake bites as the 9th and 8th leading causes of hospitalization, have this cause as the 5th and 7th rank in the leading causes of hospital deaths.

3.2 Mortality (Registered Deaths)

Registration of births and deaths was made compulsory in 1897. Several studies done on death registration have indicated that many deaths are not registered, particularly in rural areas. In Sri Lanka, Non-Medical Registrars mainly perform registration of deaths. About 80 per cent of the Registrars are of this category. The cause of death given by the Non-Medical Registrars may not be accurate as desired. This is evident by the large number ascribed to symptoms, signs and ill-defined conditions. What is disturbing is the relatively large number of such causes of death among the urban deaths, which are predominantly medically confirmed or at least medically examined.

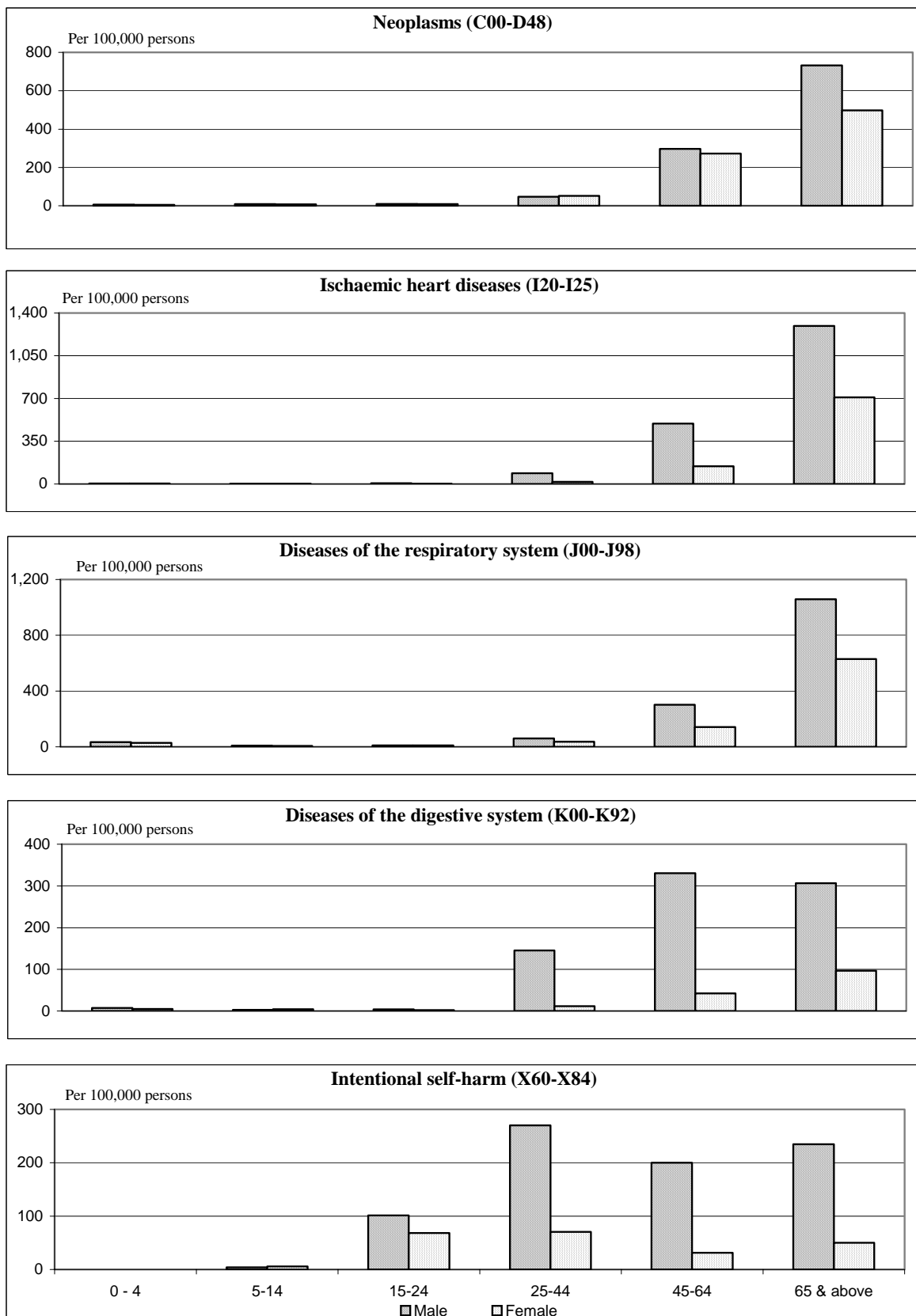
A study was done in 1986, on the accuracy of the cause of death recorded by the Medical Registrar in death certificates of the General Hospital Colombo⁵. This study revealed that the cause of death was correctly recorded only in about 38 per cent of the death certificates. Symptoms, signs and ill-defined conditions were recorded in 49 per cent of the certificates and the use of abbreviations and writing the immediate cause and the antecedent cause in the wrong place was seen in the remaining certificates. It is noteworthy that due to the inaccuracies in recording the cause of death in the death certificates, some deaths related to

Fig 3.4 - Age and Sex Specific Death Rates, 1935 - 1997



Source : Registrar General's Department

Fig 3.5 - Age and Sex Specific Death Rates for Selected Diseases, 1997



Source : Registrar General's Department

pregnancy and deaths within 42 days of termination of pregnancy are not counted as maternal deaths.

3.2.1 Trends in Mortality

The mortality pattern in Sri Lanka is in a transitional stage. It appears to be changing from a pattern seen in developing countries to a pattern in developed countries. The trends in mortality indicate a decrease in deaths resulting from infectious and parasitic diseases, diseases of the nervous system and sense organs and of the respiratory system, whereas a substantial increase in the death rates associated with diseases of the circulatory system and injury and poisoning is evident.

3.2.2 Leading Causes of Mortality

Table 29 gives the age specific mortality rates by broad disease groups of the ICD (tenth revision) and Table 30 gives the five leading causes of death by age groups for the year 1997. The cause of death is only available up to 1997 in R.G's Department

Perinatal disorders were the leading cause of death during infancy. Immaturity was the main contributory factor. Diseases of the respiratory system and circulatory system ranked within the first five leading causes of death in all age groups.

It is significant that external causes of injury and poisoning are the leading cause of death in all ages except in infancy, and above

50 years of age. During 1997, external causes were responsible for 74 per cent and 40 per cent of the deaths in the age groups 15-24 and 25-49 years respectively.

3.2.3 Sex Differentials in Mortality

The mortality rates in the past have been higher for females than for males from 1900 till about 1960. The male and female death rates equalized and remained so until 1965, after which the male mortality rate became higher. This trend continues with the difference gradually increasing (Table 31).

The male and female death rates for 1997 were 7.8 and 4.5 per 1,000 population respectively. This shows that male death rate exceeded the female death rate by approximately 3.4 deaths per 1,000 population. In 1997, the male mortality rates of age groups 0-4, 20-24 and above show a comparatively high rate than females. The changes in the economy, much associated with social violence, weakening in occupational safety measures, growing psychological stress related to uncertainties and also the effects of the war, may have resulted in widening the gap between male and female death rates in these age groups.

The age and sex-specific mortality rates for selected diseases during 1996 are shown in Table 32. Gender difference is pronounced in causes such as ischaemic heart disease, diseases of the gastrointestinal tract, diseases of the respiratory system and in deaths resulting from external causes of injury and poisoning.

¹ Cost analysis of patient management in an outpatient department – Dr D.L de Lenarole

² Health manpower study – 1971 (based on one day census of outpatient)

³ A survey on morbidity patterns and drug requirements at primary health care level (conducted in 3 regions for 6 months in 1987)

⁴ De Silva N and Mendis K. One-day general practice morbidity survey in Sri Lanka. *Family Practice* 1998; 15: 323-331

⁵ Medical certificates of cause of death in GH Colombo, 1987 – Dr.Ravindra Fernando