# Changes in the Health Status of Kerala 1987–1997

**T. P. Kunhikannan, K. P. Aravindan**

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# Changes in the Health Status of Kerala: 1987-1997

T. P. Kunhikannan, K. P. Aravindan*

## 1. Introduction

The Kerala Sastra Sahitya Parishat (KSSP) has been striving for the past quarter-of-a-century to initiate a People's Health Movement. It had carried out various forms of intervention in the sphere of public health with the objective of improving the health status of the people in Kerala. A major intervention was the People's Health Survey conducted in 1987. The survey brought out the much discussed volume, *Health and development in rural Kerala* (Kannan, *et al*. 1991) with support from the World Health Organisation.

The study basically tried to link the socio-economic and the health status of the State. It confirmed the findings of other studies that Kerala has made remarkable advance in basic indicators of health status. An inverse relationship between the rate of mortality and socio-economic status was noted. The study further noted that the high rate of mortality in Kerala is a manifestation of its continued economic backwardness and poverty. It concluded that as long as poverty-induced diseases dominate the pattern of illness, government interventions both in the health sector as well as the non-health sectors would be required.

Major policy alterations and socio-economic changes have taken place in India and Kerala since the completion of the KSSP survey of 1987. Concurrent with the new economic policy of liberalisation there has taken place a sharp rise in private medical expenditure (Kunhikannan & Aravindan, 1996). Rise in drug prices, changes in prescription patterns, overuse and misuse of medical technologies by medical providers, etc., have all probably contributed to

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the increase. After the 73rd and the 74th amendments to the Constitution, the Kerala Govern ment has handed over the administration of Public Health Centres and Community Health Centres to the grama panchayats and block panchayats, thus increasing the potential for people's direct participation and involvement. Simultaneously, initiation of the People's Plan Campaign has opened up new possibilities for local initiative.

In this context, it is important and necessary to understand the state of morbidity and pattern of health expenditure and temporal trends on a periodic basis. We thought it appropriate to examine what changes have taken place in a decade after the first KSSP survey of 1987. This enquiry has brought us to the present study. Through this study we intend to generate data helpful to local bodies and people's organisations involved in health care.

**Method and data**

The current study is based on a morbidity and expenditure survey of households on the basis of two weeks' recall. The study design is identical to the KSSP survey done in 1987. This is so because one of the chief objectives of the present study is comparison of morbidty and health expenditure with the 1987 findings.

Grama panchayats in the State were numbered according to geographical contiguity; and 12 per cent of the panchayats was selected by systematic random sampling. In the selected panchayats the same ward and the same households that were surveyed in 1987 were resurveyed. We assumed that 20 per cent of the households surveyed in 1987 would not exist as such due to partition, migration or split up of families. Thus 12 per cent of the households was selected to collect data correctly on 10 per cent of the same households of 1987.

But in reality, we could get data from only 8.53 per cent of the households surveyed in 1987. Besides the factors mentioned above, some of the panchayats have either ceased to exist, or there was difficulty in finding some of the houses because the house numbers and delimitation of wards had changed in the interim period.This sample of 8.53 per cent of the original households constitutes a panel and is more akin to a sequential, and not a fresh cross sectional cohort. Hence it has the advantage of better statistical power. But being a cohort of households rather than a cohort of individuals it is unlikely to have the disadvantages due to changing demographic characteristics. For example, new births and deaths would have occurred in these households to offset the ageing of individuals sampled in 1987.

An added advantage is that it captures the changes (temporal trends) in socio-economic status and health indices simultaneously. Since health does not occur in a vacuum, it is felt that this would reflect changes in Kerala society during the intervening 10 years accurately. The questionnaire was modified slightly to include provision in the morbidity and mortality data for entering main symptoms and signs, which were vetted later by a panel of experts to categorise diseases accurately. By this method we were able to reduce the 'others' category to a great extent as compared to the 1987 study.

The sample of 1996 households was compared to the entire sample of the 1987 survey. A legitimate concern was whether the new sample was fully representative of the 1987 households

especially for data like morbidity. For example it could be argued that the 1996 sample was biased towards more affluent socio-economic groups and hence to lower morbidity. In order to verify this aspect, we took out the original (1987) data sheets for the identical households that were resurveyed in 1996, and analysed them for selected parameters. This is shown in the charts and tables to follow as the sub-sample representing the 1987 survey.

Volunteers were trained in seven centres, one centre for two districts, in one-day training camps. Each survey team was planned to consist of three persons of which at least one was to be a woman. This target was, however, not achieved fully. The entire survey was done within a period of one week.

### *Analysis*

In the analysing of data, the main modification introduced pertained to socio-economic classification. The principle of classification was the same as that followed in the 1987 study (Kannan *et al* 1991, pp. 26-30), the only difference introduced in 1996 being adjustment of income categories to account for inflation calculated at a compound rate of 10 per cent per year. The cut off levels for categorising income into three groups in 1996 was Rs. 236, Rs. 448, and Rs. 590 per capita as compared to Rs. 100, Rs. 190, and Rs. 250 in 1987.

### *Validation of the sample*

The validity of the sample can be ascertained by comparison of the demographic mix with that obtained in the population and in the previous sample. All the districts in the State were represented in proportion to the population. Females constituted 1,025 persons per 1,000 males, a figure close to the sex ratio reported in the decennial Census data. Comparison by religion and caste with the previous sample is shown in Table 1.1.

**Table 1.1 Comparison of sample characteristics: 1987 and 1996**

| **Sample characteristics** | **1987 (%)** | **1996 (%)** |
|---|---|---|
| *Religion* | | |
| Hindu | 56.9 | 56.6 |
| Christian | 21.5 | 21.7 |
| Muslim | 20.9 | 21.0 |
| Others | 0.4 | 0.7 |
| *Caste* | | |
| Scheduled Castes | 9.8 | 9.9 |
| Scheduled Tribes | 2.1 | 1.4 |

## 2. Demographic and Socio-economic Status

Demographic data from the survey should be read with caution. The sample of about 5,000 persons is too small to generate enough number of events - births and deaths - to enable us to make meaningful comparisons with either the previous survey or other studies made in recent times. Nevertheless, we have computed event rates from this survey as follows.

**Table 2.1 Vital events in rural Kerala**

| Event rate | 1987 | 1996 |
|---|---|---|
| Crude Death Rate | 6.7 | 7.8 |
| Crude Birth Rate | 22.3 | 18.0 |

The increase in CDR by about 1.1 does not warrant any concern in view of the rapid increase in the proportion of the elderly in the State. We have to remember that the cohort of households that we are studying have aged by 10 years - a factor which may also explain the increase observed in CDR. Death rate in the State remains at around 6 per 1000. Does this mean that our sample has a higher death rate than the average for the State? Since the sample size is too small, any conclusion, either way, may be erroneous.

Birth rates have come down by more than 4 per 1000 population. This is in keeping with the general decreasing trend in birth rate in the State as a whole. Current estimates put the Crude Birth Rate in the State at 17.7 (Population Research Centre, University of Kerala, Thiruvananthapuram and International Institute for Population Studies, 1995; National Family Health Survey, MCH and Family Planning 1992-'93, Bombay). Our estimate comes close to this figure. The total number of births in the 1996 survey was too few to permit computation of infant mortality rates.

We had computed standardised birth and death rates for the whole State on the data from the 1987 KSSP survey. We found that both birth and death rates decline with improvement in living conditions as captured by social classes (V. Raman Kutty, *et al*, 1993; pp. 372-386). Such an exercise is not possible with the 1996 survey because of the small numbers involved. In the 1996 sample, 10.4 per cent of subjects was above the age of 60 years, 8.25 per cent being persons above the age of 65 years. This is to be expected, given that the cohorts of the households have aged by 10 years since 1987. Of the total deaths reported, 65.7 per cent occurred in people aged above 60 years, and 34.28 per cent among those aged above 65 years.

Common causes of mortality from the survey are stated in Table 2.2. Compared to the 1987 situation, we note that cardiovascular events continue to be the leading cause of death. Accidents have moved from rank 4 to 3, and suicides from 5 to 4. These seem to be indicative of the trend in the State. Degenerative and chronic diseases and accidents are the leading causes of death in the State. The increasing prominence of suicide as a cause of death is disturbing. It is to be noted that cardiovascular events, cerebro-vascular events, and accidents are to a large extent preventable. However, the case of suicides needs to be close examined.

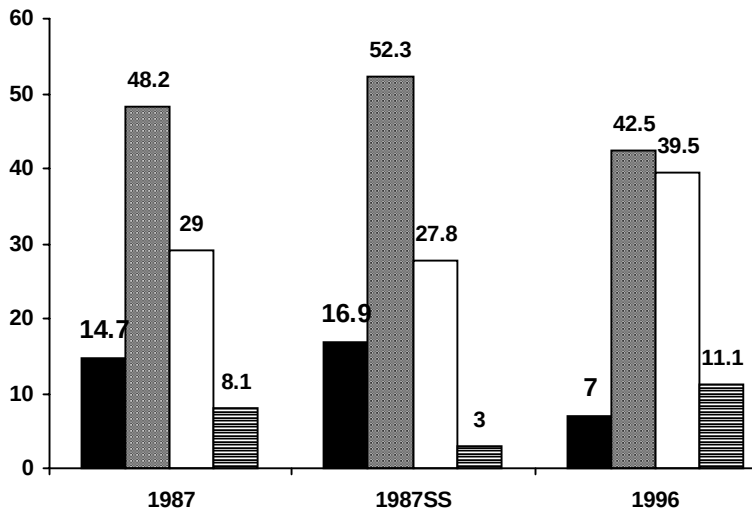
**Table 2.2 Some common causes of mortality in Kerala: From the KSSP surveys in 1987 & 1996**

| Cause of death | 1987 rank | % | 1996 rank | % |
|---|---|---|---|---|
| Heart attack | 1 | 10.4 | 1 | 14.28 |
| Cerebral Thrombosis | 7 | 2.4 | 1 | 14.28 |
| Cancer | 2 | 7.4 | 2 | 8.57 |
| Accidents | 4 | 3.6 | 3 | 5.7 |
| Suicides | 5 | 3.0 | 4 | 2.8 |

**Socio-economic status (SES), infrastructure, and other amenities**

The change in the socio-economic status of the population between the two surveys is found in Figure 2.1.

**Figure 2.1 Change in socio-economic status: 1987-1996**




The proportion of the 'poor' (SES 1 and 2) declined from 63 per cent to less than half the population (49.5 per cent). The proportion of the poorest class decreased from 14.7 per cent to 7 per cent. Figures for the sub-sample (1987 ss) come very close to the 1987 rates for the whole sample. Significant improvements are noted in housing (Figure 2.2) and sanitation (Table 2.3). The proportion of thatched houses decreased from 32 per cent to 14 per cent with corresponding increase in the proportion of houses with tiled or concrete roofing. The practice of open defecation declined from 51.4 per cent to 27.6 per cent; 69.9 per cent of the houses possessed latrines in 1996 as compared to 48.3 per cent in 1987.

**Figure 2.2 Housing: Type of Roof: 1987 and 1996 (%)**

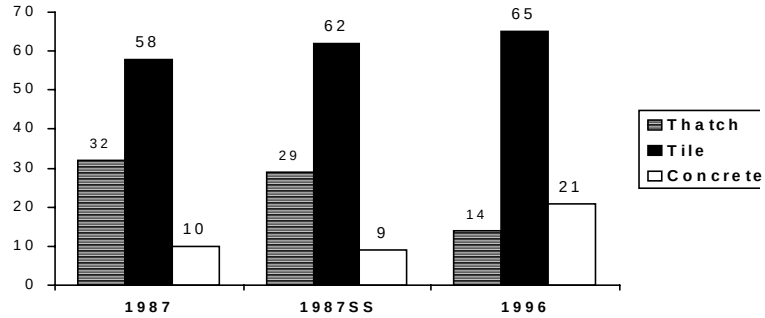



**Table 2.3 Householdss according to sanitary facilites**

| Type of sanitation | 1987 (%) | 1987 SS (%) | 1996 (%) |
|---|---|---|---|
| Sanitary latrine | 34.1 | 31.2 | 52.9 |
| Other latrine | 14.2 | 17.7 | 17.0 |
| Open defecation | 51.4 | 51.1 | 27.6 |
| Missing | 0.3 | 0 | 2.5 |

During the period, safe water availability (from own well and house taps) rose from 57.4 per cent to 69.3 per cent, mainly as a result of more families constructing wells (Table 2.4). The sub-sample of the same households in 1987 (shown as 1987 SS) is found to be broadly similar to the whole data of 1987. The present status for availability of some of the hosehold ameneties is shown in Table 2.5

**Table 2.4 Households according to drinking water source**

| Drinking water source | 1987 (%) | 1987 SS (%) | 1996 (%) |
|---|---|---|---|
| Own well | 53.8 | 53.9 | 65.1 |
| Public well | 27.2 | 29.2 | 17.6 |
| Public tap | 8.5 | 7.9 | 7.5 |
| House tap | 3.6 | 4.2 | 4.2 |
| Others/missing | 6.9 | 4.7 | 5.7 |

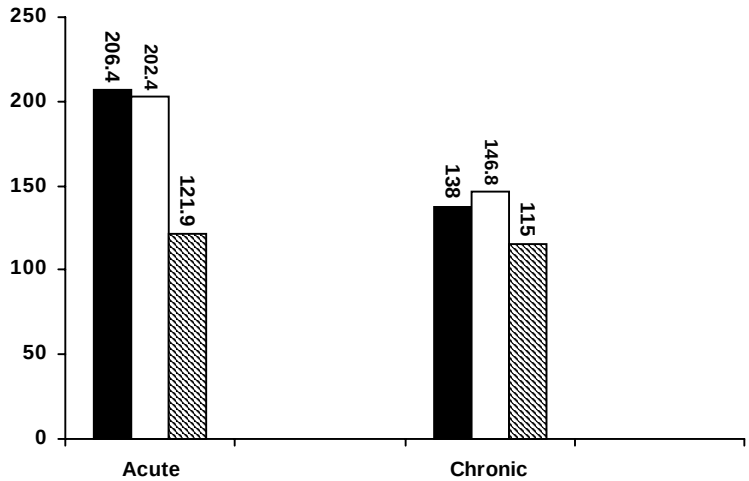
**Table 2.5 Other indicators, 1996**

| Indicator | % of households |
|---|---|
| Electricity | 63.8 |
| Newspaper | 31.7 |
| Magazine | 24.8 |
| TV | 8.5 |
| Radio | 74.5 |

## 3. Total morbidity

The morbidity rate for acute diseases was 121.86 and for chronic diseases was 114.98 per 1000 population. This denotes the prevalence of diseases during the 14 days preceding the date of interview. Since the incidence of acute diseases fluctuates with seasons of the year, the rates may be higher or lower in other months. July is one of the 'seasons for hospital'; it also produces the highest incidence of acute diseases. The current figure for acute diseases is only 59 per cent of the corresponding figure for 1987 survey. There is 41 per cent reduction in the acute morbidity load. The reduction in chronic disease load is to the extent of 16.7 per cent (114.98 in 1997 as against 138.02 in 1987). The values in the 1987 sub-sample are remarkably close to the whole sample, thereby validating the current study (Figure 3.1).

**Fig 3.1 Morbidity rates in 1996 and 1987**




The apparent reduction in overall morbidity may be explained in three ways: (i) actual reduction in morbidity in the population; (ii) change in disease perception of people; (iii) errors in estimation of events (either in 1987 or in 1996). Part of the higher rate of acute morbidity in 1987 may perhaps be explained by an epidemic. This accounts for the high rate of fever, cough, body ache, and diarrhoea. The reduction in acute and chronic diseases is explained by a combination of the above factors; it could not be accounted for by any single cause. The probability of an actual reduction in the incidence of disease can be corroborated by the reduction in communicable diseases over a decade. In 1987, 67.44 per cent of the overall morbidity was due to communicable diseases. The proportion declined to 57.93 per cent in 1996. As a result, the proportion of morbidity due to non-communicable diseases increased to 42.07 per cent in 1996 from 32.56 per cent in 1987. Though there was a change in the proportions, the overall load has recorded a decline. The current figures for total morbidity and the proportions of acute and chronic diseases highlight a significant change - the emergence of non-communicable diseases as the important public health problem. The changing lifestyle, increasing life expectancy, better access to health care, and socio-economic changes – all have contributed to this epidemiological transition.

The fall in the overall morbidity to levels lower than in 1987 is in line with the findings of similar studies carried out in the State. Studies by Panikar *et al*. have reported the disease load in the community from three districts of Kerala. They observed decline both in acute and chronic diseases; the fall was so steep that theirs constitute only 64.75 per cent in the case of acute diseases and 51.13 per cent in the cases of chronic diseases of the levels observed in the KSSP study. Another survey carried out by Ittiyamma provides an estimate closer to that of the KSSP findings. According to this investigation conducted in a PHC comprising coastal and non-coastal areas in its jurisdiction, the figures ranged from 108.2 to 110.95 per 1000 population for acute diseases and 117.25 to 153.14 for chronic diseases. Considering the various reports produced since 1974 (National Sample Survey Organization-NSSO) we find that the KSSP estimates (1987) on acute morbidity stand out. Such wide variation in reported morbidity leads us to consider investigator bias as an explanation. It may be borne in mind that different functionaries with differing educational backgrounds and expertise carried out these studies. KSSP relied on volunteers on both the occasions and the teams were not identical. Panikar used paid investigators with college-level education, and Ittiyamma carried out the study using Anganwadi workers as investigators (Table 3.1).

**Table 3.1 Morbidity load/ 1000 population from different studies in Kerala**

| Disease | 1996 KSSP | 1995 Panikar | 1998 Ittiyamma PHC1 | 1998 Ittiyamma PHC 2 | 1987 KSSP | 1974 NSS |
|---|---|---|---|---|---|---|
| Acute | 121.86 | 78.9 | 108.2 | 110.95 | 206.39 | 71.21 |
| Chronic | 114.6 | 58.6 | 117.25 | 153.14 | 138.02 | 83.68 |

PHC1 = Malayinkil PHC2 = Pulluvila

**Class and gender**

***Socio-economic class and morbidity***

The morbidity rates for the different classes in the two surveys are given in Table 3.2.

**Table 3.2 Morbidity rates by socio-economic class**

| SES | Acute morbidity | | | Chronic morbidity | | |
|---|---|---|---|---|---|---|
| | 1987 | 1996 | % decrease | 1987 | 1996 | % decrease |
| I | 239.8 | 149.7 | 37.6 | 152.7 | 98.6 | 35.4 |
| II | 188.3 | 118.9 | 36.9 | 138.6 | 112.3 | 19.0 |
| III | 189.5 | 119.2 | 37.1 | 135.9 | 120.3 | 11.5 |
| IV | 162.5 | 94.4 | 41.9 | 128.6 | 116.5 | 9.4 |

It is observed that the pattern of acute morbidity in 1996 remains the same as in 1987. The rates of decline in the different social groups have also been similar. Decline in chronic morbidity has not been as substantial as in acute diseases. An interesting gradient is found in

the degree of decline, the highest being in SES I, and the lowest in SES IV. This is most likely a reflection of (i) marked decline in infectious diseases which were highly prevalent among the poor; and (ii) a slight increase in diseases such as hypertension and diabetes which are found more among the rich.

**Gender difference in total morbidity**

Acute morbidity among males was 124.84 per 1000 population. The corresponding rate for women was 131.82. The difference is not statistically significant. For chronic diseases the prevalence rate among men was 142.72 and among women 102.92. The difference in this case is, however, statistically significant. The rate among women observed in the study is found to be at variance with the higher rates reported from other studies. It could be a case of underestimation in the present study, since most of the interviewers were men. The respondents too were mostly males. Such a situation could have introduced an obvious bias against reporting of female sickness in the survey. Further, as we have higher proportion of women in the elderly age groups, it is likely that the prevalence rates of morbidity among them to be high. In the 1987 KSSP study, each investigation team comprised at least one woman.

## 4. Morbidity Pattern

What constitute acute illnesses? The disease pattern more or less remains the same as that of 1987. Nearly 60 per cent of the total acute morbidity is contributed by communicable diseases. The corresponding proportion in 1987 was two-thirds. Though there has taken place a significant decline in total morbidity, the proportion contributed by non-communicable diseases is found to have increased, thanks to the reduction in communicable diseases. Increasing proportion of non-communicable diseases is thus an indicator of the health transition taking place in the State.

**Acute communicable diseases**

***Water-borne diseases***

Water-borne diseases have recorded a dramatic fall during this period. The overall category that includes diarrhoeal disease, jaundice, and typhoid constituted 25.08 per cent of the disease load in 1987 while the corresponding figure for 1996 is just 2.26 per cent. This is a reduction of the order of 90 per cent. Usually, children are prone to water-borne diseases. The proportion of children of less than 10 years is, in the present study, just 11.85 per cent, while from the general population estimates we should expect around 18-19 per cent. To what extent may the observed reduction in diarrhoeal diseases be attributed to this fall in the child population? Definitely 90 per cent reduction cannot be explained due solely in terms of this demographic factor. Other possible explanations could be: reduction in the incidence of diseases due to (a) improved sanitation and water supply; (b) growth of education and improvement in health case practices; (c) overall socio-economic development, and (d) investigator bias.

The practice of open defecation declined from 51.4 per cent to 27.6 per cent and the use of sanitary toilets in Kerala improved from 34.1 per cent to 52.9 per cent during 1987-1996. If this evidence is taken as an indicator of development the reduction may be attributed significantly to this factor. Apart from this the improvement in immunisation coverage, especially that of measles, might have also contributed to the reduction. Similarly the improvement in nutritional status of children, and the increased rates of breast-feeding (as supported by the National Fertility and Health Survey) may also explain the reduction, at least, in part.

**Table 4.1 Water-borne diseases in Kerala: Prevalence rate per 1000 from various studies**

| Disease | 1987* | 1996* | 1998 phc1** | 1998 phc2** |
|---|---|---|---|---|
| Diarrhoea | 22 | 1.5 | 2.34 | 9.04 |
| Typhoid | 0.28 | 0.655 | — | — |
| Jaundice | 2.8 | 0.655 | 0.639 | 1.06 |

* KSSP ** Ittiyamma

Diarrhoeal diseases have recorded a reduction in the reports of the Directorate of Health

Services. In 1994, 786,201 cases were reported. In 1997, the corresponding figure was just 582, 537. As per records of Directorate of Health Services, the reduction in morbidity is 26 per cent. The mortality reduction is found to have been dramatic during this period. The prevalence of water-borne diseases in the two selected PHCs was 2.08 per cent (in Malayinkil) and 10.1 per cent (in Pulluvila). These rates are comparable to those of the present study. The higher prevalence of diarrhoeal disease in coastal PHC may be explained in the context of its backwardness and poor health facilities.

**Table 4.2 Diarrhoeal diseases in the State (as per DHS records)**

| Year | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|
| Cases | 786201 | 700974 | 675848 | 582537 |
| Death | 65 | 61 | 119 | 45 |

**Fever**

Fever includes all diseases like viral fevers, upper and lower respiratory tract infections, simple cough and runny nose. This is quite common. Generally, all age groups are exposed to the risk of infection though the extreme age groups are affected more. The proportion of people who escape infection altogether in any age group would be too small and most of them would be in their 20s. The disability produced by the disease need not be uniform for all types of fever. As we have not collected data separately for mild, moderate or severe disease episodes, our analysis is for 'fever' in general. At any point in time, 6.7 per cent to 7.9 per cent of our population suffers from this disorder. The load has decreased over the years from 11.8 per cent in 1987. The 1996 figure is in agreement with the results of the PHC survey by Ittiyamma - 38.81 and 78.95 in the two PHCs representing coastal and non-coastal areas, between which morbidity tends to vary widely.

The prevalence rates of fevers may vary with the occurrence of epidemics or with endemic situations. As the two KSSP surveys, 1987 and 1996, were carried out during the same month – July – the chances for variation due to such reasons are less though not ruled out. We have already found that the higher level of morbidity in 1987 could probably be due to a viral epidemic that broke out during the period of the survey. The small increase in pneumonia noted in Table 4.3 need not be taken to be significant in the sense that it could be due to chance variations.

**Table 4.3 Prevalence of fevers (all forms) in Kerala: 1987 & 1996**

| Disease | 1987 | 1996 |
|---|---|---|
| Pneumonia | 0.55 | 0.87 |
| Fever & cold | 118.5 | 67.95 |

Higher prevalence rate of fevers and acute respiratory infections (ARI) among out-patients (OP) is evident from the OP attendance of PHCs. Nearly 30-40 per cent of all OP attendance in PHC and other peripheral institutions are solely due to fevers and / or respiratory infections. Table 4.4 shows the trend of ARI in Kerala during 1994-'97. The data show that

disease load has remained more or less the same during the period. These figures could well be underestimates of the total number of events of the State.

**Table 4.4 Trend of acute respiratory infections (ARI) and Pneumonia in Kerala**

| Year | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|
| ARI case | 3020084 | 3189579 | 3680295 | 3623312 |
| Death | 92 | 150 | 145 | 197 |
| Pneumonia | 19275 | 18455 | 23180 | 21254 |
| Death | 28 | 28 | 25 | 31 |

Source: DHS; Measles, Mumps, Tetanus, Malaria, and Filaria

Measles has recorded a decline over the years as shown in Table 4.5. This reduction corresponds to increase in the immunisation coverage achieved over the years. Measles has come down to less than two-thirds of its 1987 level though in absolute terms the extent of reduction was not large.

**Table 4.5 Measles, Mumps, Tetanus & Filaria 1987 & 1996 (per 1000 population)**

| Disease | 1987 | 1996 |
|---|---|---|
| Measles | 0.36 | 0.22 |
| Mumps | 0.49 | — |
| Tetanus | 0.17 | — |
| Filaria | 0.14 | — |

However, stray occurrence of measles is reported from some pockets where immunisation coverage is not high.

Mumps used to occur in epidemic form in schoolchildren. But in the present study no case was reported. The decline in the occurrence of Tetanus corresponds with increased coverage of immunisation among children and among antenatal women. Filaria situation in the community is not reflected in these data. This is because only filaria as an acute condition has been investigated in our survey. Acute manifestation of filariasis (acute lymphangitis) has virtually disappeared; however, one cannot be sure that the level of infection in the population has come down to zero. It may also be mentioned that there is a little bit of hesitation on the part of subjects to divulge their condition.

***Tuberculosis as acute disease***

The present study brings out some instances where tuberculosis has been reported among the acute complaints. The rate per 1000 population was 0.8. This rate is obviously lower than the official figure of tuberculosis prevalence for the State (i.e., 1.32 per 1000 population). Tuberculosis as a chronic disease would reflect the situation more reliably. Acute manifestation of or consultation for, the disease will lead to (i) diagnosis of TB, (ii) periodic issue of

drugs and check up, (iii) development of severe symptoms, and (iv) drug reactions. Present figures show about 20 per cent (current prevalence is 4.16/1000 population) of all tuberculosis patients make at least one medical consultation in two weeks.

***Other communicable diseases that were left out***

Some other communicable diseases like urinary tract infections (UTI), sexually transmitted diseases (STD), and vaginal infections have not been reported in the study. Perhaps it could be on account of the negligible rates of prevalence, or inadequacy of the study in incorporating these.

***Aches and pains***

In this category are included different aches and pains affecting various organs or parts of the body (Table 4.6). The commonest among them are pains in the joints, backache, and body ache. Medical diagnoses for these conditions could be many. But as symptoms that warrant medical care, this group so far has not received much attention. World Health Report also mentions the importance of these symptoms and ranks them as number 2 in the list of the first 10. Headache, which usually goes without any specific diagnosis, constitutes a significant problem at the community level. Reasons could vary from a mild fever to hypertension or even momentary mental stress.

**Table 4.6 Rates of different aches and pains per 100 population**

| **Disease*** | **1996** |
|---|---|
| Joints, back & Body ache | 12.44 |
| Toothache | 1.31 |
| Chest pain | 1.53 |
| Headache | 3.49 |

* in 1987, all these groups were lumped together under 'others'.

The emergence of toothache as a separate disease condition is noteworthy. The recognition of the symptom which requires medical attention is itself a turning point in people's perception. There is every chance that the problem is under-reported. In a school survey it was demonstrated that nearly 30 per cent of children suffered dental caries. It is common even among adults. However, the present figure does not reflect the overall situation.

Similarly, unexplained chest pain forms another important reason for medical consultation. Most often it remains without any relief. Medical conditions can vary from costochondritis and stress to coronary heart disease (CHD). The complaint is usually severe enough to make people lethargic and under-productive.

It should be kept in mind that though all aches and pains listed here under acute conditions need not in fact be so. They may tend to pester the subjects for long periods. Thus the consultation frequency may also increase. They may also be considered chronic disease or symptoms of chronic diseases as well. Often failing to make a diagnosis, practitioners usually "prescribe something" and "dispose" of the patients.

***Chronic disease as a reason for acute consultation***

Diseases like coronary artery diseases, diabetes mellitus, hypertension, and stroke are directly related to people's lifestyles. The magnitude of these problems can be only gauged from the reporting of chronic diseases. Apart from increasing the morbidity load in the community, these diseases increase the number of consultations also. The need for more frequent consultations brings added burden to the care delivery system. They form nearly 9–10 per cent of overall consultations for acute complaints. The consultation rate in the population is a function of the disease prevalence, detection rate, and popular perception of the disease in the community. Despite the high prevalence of hypertension, consultation rate is found to be low. Obviously this may be attributed to low detection rate. Even for coronary artery disease the reported figure of 14 per 1000 adult population over 25 years of age is not reflected in consultations. Stroke or paralysis ought to have been included in the chronic disease category.

**Table 4.7 Chronic non-communicable diseases as a cause of medical consultation**

| Disease | 1987 | 1996 |
|---|---|---|
| Hypertension | 2.0 | 5.9 |
| CAD | 1.1 | 1.3 |
| Paralysis | 2.0 | 0.87 |
| Diabetes | 1.4 | 1.75 |

***Chronic respiratory conditions as acute disease***

Respiratory diseases are increasing in all communities. Cough and general difficulty in breathing constitute the symptoms. Part of the group will be included in the fever and ARI group. A good number of the patients on drugs are on self-medication. They may not contact medical officers frequently. So the disease load has to be estimated from the chronic diseases list. Some of them develop acute exacerbation and seek help. It is possible that what is reported represents only this sub-group. However, the reported figures vary among studies. The present study puts the rate at 4.15 compared to 37.85 and 18.61 per 1000 population in the PHC-level information.

Allergy has been categorised together with chronic complaints, probably keeping in mind asthma. However, asthma and allergy are not similar in people's perception. Therefore there is some confusion as to the exact nature of their reported category. Age, genetic/ immunologic make up, extent of pollution, living conditions - all might be contributing to the development as well as sustenance of these diseases.

**Table 4.8 Prevalence of chronic respiratory conditions as a cause of medical consultation per 1000 population**

| Disease | 1987 | 1996 |
|---|---|---|
| Bronchial Asthma | 5.2 | 4.15 |
| Allergy | 2.8 | 1.09 |

**GIT problems**

Usually this includes abdominal pain, 'gas trouble', and other non-specific GIT complaints. The rate per 1000 population comes to 5.46 in the present study while the same is 7.62 in PHC2. In any out-patient attendance one may see that the number of such patients is quite significant. In the 1987 survey it was included in the 'other' category. Therefore no comparison is available. The group may include acid peptic disease, helminthiasis, food poisoning, and similar conditions.

**Table 4.9 Morbidity due to acute illness in rural Kerala for two weeks' period in July 1996 and in July 1987 (Rate/1000)**

| No | Illness | 1996 | % | 1987 | % |
|---|---|---|---|---|---|
| 1 | Diarrhoeal disorders | 1.50 | 1.22 | 22.0 | 0.15 |
| 2. | Fever | 67.95 | 54.10 | 118.5 | 4.65 |
| 3. | Measles | 0.22 | 0.17 | 0.59 | 0.27 |
| 4. | Jaundice | 0.655 | 0.52 | 2.8 | 1.31 |
| 5. | Typhoid | 0.655 | 0.52 | 0.28 | 0.13 |
| 6. | Asthma | 4.15 | 3.32 | 5.2 | 2.4 |
| 7. | Pneumonia | 0.87 | 0.7 | 0.55 | 0.26 |
| 8. | Heart attack | 1.3 | 1.05 | 1.1 | 0.53 |
| 9. | Paralysis | 0.87 | 0.7 | 2 | 0.94 |
| 10. | Diabetes | 1.75 | 1.2 | 1.4 | 0.66 |
| 11. | HT | 5.9 | 4.72 | 2 | 0.92 |
| 12. | Goitre | 0.65 | 0.52 | 0.35 | 0.16 |
| 13. | Allergy | 1.09 | 0.87 | 2.8 | 1.27 |
| 14. | Joint problem | 8.08 | 6.5 | — | —- |
| 15. | Back ache | 2.40 | 1.92 | — | —- |
| 16. | Tooth ache | 1.31 | 2.1 | — | —- |
| 17. | Eye | 1.3 | 1.05 | | |
| 18. | Ear | 0.2 | 0.17 | | |
| 19. | Body ache | 1.96 | 1.57 | | |
| 20. | TB | 0.87 | 0.7 | | |
| 21. | Tumor | 0.65 | 0.52 | | |
| 22. | GIT/stomach gas trouble | 5.46 | 4.4 | | |
| 23. | Head ache | 3.49 | 2.8 | | |
| 24. | Old age | 1.09 | 0.9 | | |
| 25. | Chest pain | 1.53 | 1.22 | | |
| 26. | Skin | 5.24 | 4.20 | | |
| 27. | Other | 3.27 | 2.62 | | |
| 28. | Mumps | | | 0.49 | |
| 29 | Filaria | | | 0.14 | |
| 30 | Tetanus | | | 0.17 | |
| 31 | Malaria | | | 0.36 | |

**Chronic diseases pattern**

Chronic diseases are of different types. They may be grouped into chronic infections, chronic respiratory problems, joint problems, hypertension-CAD-diabetes mellitus group, cancers, and mental disorders. All of them have something to do with the lifestyle of the patient. The treatment is often symptomatic except for chronic infections. Obviously the thrust is more on prevention and control of disease through lifestyle modification rather than on cure (Table 4.10).

**Chronic respiratory diseases**

Incidence of respiratory diseases remains unchanged when compared to the 1987 situation (16.5 and 14.3 respectively in 1987 and 1996). They mainly represent bronchial asthma. COPD patients also come in this category. The rate does not show much change over time. But there could be pockets where the rate is higher. Because of increasing pollution, increase in use of fossil fuels, tobacco use, vehicular transport, and increasing sedentary habits and ageing, we should expect an increase in the number of such patients over time. As the observation is based on a small number of subjects it is too difficult for us to comment on these. Panikar reports a prevalence of 12.9/1000 for bronchial asthma for the State. This corresponds to the results of the present study. However, PHC1 and PHC2 show higher figures (18.55 and 32.79). The higher prevalence among the poor, as expressed by PHC2, is, however, on the expected lines.

**Table 4.10 The prevalence of chronic diseases /1000 population**

| Sl No | Disease | Rate/1000 | % of total chronic disease |
|---|---|---|---|
| 1 | Leprosy | -- | -- |
| 2 | TB | 4.1 | 3.3 |
| 3 | Filaria | 1.4 | 1.1 |
| 4 | Asthma | 14.3 | 11.3 |
| 5 | BP | 23.0 | 18.2 |
| 6 | CAD | 6.0 | 4.7 |
| 7 | Cancer | 2.3 | 1.8 |
| 9 | Gynec | 4.1 | 3.2 |
| 10 | UTI | 3.7 | 2.9 |
| 11 | Joint | 22.5 | 17.9 |
| 12 | Goitre | 2.3 | 1.8 |
| 13 | Diabetes | 5.5 | 4.4 |
| 14 | Backache | 3.7 | 2.9 |
| 15 | Mental | 0.9 | 0.7 |
| 16 | Other | 38.2 | 25.5 |

**Chronic infections**

In this category are included Tuberculosis, Leprosy, Filariasis, and chronic urinary tract infections (Table 4.11).

**Table 4.11 Prevalence of chronic infection in Kerala (**per 1000 population**)**

| Disease | 1987 | 1996 |
|---|---|---|
| TB | 6.2 | 4.16 |
| Leprosy | 0.43 | — |
| Filariasis | 0.76 | 1.38 |
| UTI | 4.8 | 3.68 |

Tuberculosis remains one of the major chronic infections even today. The rate shows some decline over time. However, in absolute terms, such reduction is not statistically significant. The data from the PHC's show that the problem warrants serious attention and that most often the disease exists in particular geographical pockets. The figures from the DHS indicate a rate of 1.32 per 1000 population. When compared to this, the current figure of 4.16/1000 is three times higher. Could it be due to a poor registration system or to non-registration of tuberculosis patients with district tuberculosis centres? Another important finding is that it is only 25 per cent of the prevalence estimates of National Sample Survey of 1954. It could be argued that 75 per cent of the cases still remain undetected. But going by the experience of Kerala in the health care seeking behaviour of its population, this explanation appears difficult to accept. The prevalence rate in the State should be much lower than the stated figure in the NSS survey, conducted half-a-century ago. The prevalence rate of tuberculosis according to Panikar is 2.7/1000. Apparent differences in the results of the different studies in Kerala could be due at least partly to sampling error. The KSSP sample is spread over all the State while the others are from selected districts.

Leprosy is another disease that has remained a blot on Kerala's public health scenario for long periods. The present study did not bring out any case. The stated figure for Kerala is 1.9 per /10000 population (DHS). From national statistics it is expected that in Kerala prevalence would be between 1-3/10000 population. If the State's effort succeeds it may be possible to control the disease effectively within a short period of time.

Filariasis may be reported as an acute disease with filarial lymphangitis or as a chronic disease with elephantiasis. But most of the cases of elephantiasis remain undisclosed in a survey due to various reasons. The present study shows a doubling of the rate over the 10-year period. It could be due to actual increase in filariasis or a simple chance variation.

Urinary Tract Infection is one of the commonest problems the elderly face. Both men and women are affected by this problem due to different reasons. Perhaps due to prostate enlargement among males or to loss of muscle tone among women. It is also common among women of reproductive age. Hygienic practices and prompt interventions may reduce the disease load in the community. The apparent reduction observed here cannot be taken for granted. Most often it remains undisclosed. This is more so when we look into the case of sexually

transmitted diseases. We could not get even a single case of Sexually Transmitted Diseases. Obviously, the respondents suppressed the fact.

**Chronic joint problems**

**Table 4.12 Prevalence of joint disorders and backaches / 1000 population**

| Disease | 1987 | 1996 | PHC1* | PHC2* | Panikar@ |
|---|---|---|---|---|---|
| Joint disease & backache | 26.20 | 18.3 | 4.9 | 27.47 | 10.5 |

* Ittiyamma @Panikar 1995

Joint diseases are quite common worldwide. World Health Report puts it as number 2 among 10 common health problems people seek medical care for. The rate is similar on two KSSP studies. The reduction in this group in PHC1 is unexplainable. A part of it could be due to increase in these symptoms in this group among acute diseases. The perception factor should also be considered here.

**Diseases of the circulatory system**

In this group are included Coronary Heart Diseases, High Blood Pressure, and Diabetes. Diabetes is included due to its consequences on the circulatory system.

**Table 4.13 Prevalence of CHD, HT, DM/1000 population**

| Disease | 1987 | 1996 |
|---|---|---|
| CHD | 5.0 | 5.98 |
| Hypertension | 11.8 | 22.99 |
| Diabetes mellitus | 3.4 | 5.52 |

The incidence of coronary heart disease remains more or less unchanged. We expect it to rise over the years. According to available figures, rapid rates of increase have not yet occurred. But one may presume that the figures presented relate only to detected cases. If we assume that 50 per cent of the cases remain undetected, the rate could be as high as about 12 per 1000 adults. Undetected cases obviously remain unreported too. According to earlier studies (Raman Kutty, 1993) the prevalence in Thiruvananthapuram district is of the order of 14 per 1000 population of 25 years and above. These are clinical cases. ECG positives constitute an even higher figure; say, to around 38 per 1000. The extent of under-reporting may be assessed therefore to be more than 50 per cent of all the clinical cases taken together. However, the clinical detection rate over years remains almost unchanged. Panikar reports 5.5/1000 for total population or 11/1000 for adult population.

The prevalence of hypertension in the population is 22.99/1000 population, almost double the finding of the 1987 survey. This can be taken as a pointer to the trend of CHD epidemic that is yet to come. At this rate, 46/1000 will be having hypertension. Panikar puts the figure as 22.6/1000 for total population. This is very close to the KSSP estimate. There is a

low prevalence of hypertension in the fishing community (10.28/1000 according to Ittiyamma in PHC 2). This finding is consistent with low prevalence of CHD and diabetes mellitus among them. This could be due to their physical exercise and dietary patterns and low prevalence of obesity and other risk factors among them. In another study among a suburban population, the prevalence of hypertension varied between 12.8 per cent to 24 per cent of adult population. (Vijayakumar, unpublished dissertation) Going by this estimate it may be assumed that only 1/3 to 1/6 of the cases are detected. The prevalence could be different if we take Kerala as a whole.

The diabetes situation throws light upon another emerging trend in the State. The disease has shown an increase over the decade from 3.4/1000 to 5.52/1000. When expressed for adult population it may reach up to 10.4/1000 population. Diabetes is mainly an adult disease, though juvenile diabetes is not uncommon. Panikar reports the rate to be 11.7/1000 population for Kerala. Isolated studies that included examination of blood sugar levels of the subjects, in urban and rural parts of Thiruvananthapuram, show the prevalence of diabetes to be much higher. Rural prevalence comes to 60/1000 population and urban to more than 100/1000 population. Obviously there are several undetected cases. Studies in other parts of India also show that the incidence of diabetes is on the rise.

**Gynaecological disorders**

Gynaecological problems have not recorded any change in their occurrence rate over the period: they remain at 4.8/1000 in 1987 and 4.14/1000 in 1996. If we double the rate as the reported one applies only to women of child-bearing age, the rate rises to 8.28/1000; if we consider all females over the age of 10 years of age, the rate becomes as high as 10.35/1000 population.

**Mental disorders**

The rate of occurrence of mental disorders is 0.92/1000 population. PHC reports put it at 4-5/1000. In reality the figure should be much higher. Perhaps, only advanced and severe cases have been reported. Mild and moderate cases might have gone unnoticed. The prevalence estimate for India is of the order of 18-20/1000 population. Prevalence of mental disorders has an important bearing for the State as it has the highest suicide rate in the country. Programmes for addressing the reduction in suicide rate should take note of this fact. Without detecting the underlying mental illnesses, it may not be possible to make a dent in the problem.

**Goitre**

The prevalence rate of goitre remains unchanged in the State even after years of marketing of iodised salt. Non-iodised salt consumption in Kerala has gone down significantly. Still the prevalence rate remains at around 2.3/1000. It was 2.1 /1000 in 1987. The reported prevalence rate of goitre for the State reported in official estimates seems to be on the higher side.

**Cancers**

The prevalence of cancer has gone up from 0.92/1000 in 1987 to 2.3 /1000 in 1996. The

decline could be due to better methods of detection or to change in the perception factor making people more willing to discuss or to admit disease than was the case earlier. However, the prevalence of 230/100,000 in the State is high by any standard. Already it is one of the 10 leading causes of death in Kerala.

**Table 4.14 Composition of C/C morbidity 1987 and 1996**

| **Disease** | **1996 Rate Rate/1000** | **1996 (%)** | **1987 Rate/1000** | **1987 (%)** |
|---|---|---|---|---|
| Leprosy | -- | -- | 0.43 | 0.3 |
| TB | 4.14 | 3.3 | 6.2 | 4.27 |
| Filaria | 1.38 | 1.1 | 0.76 | 0.52 |
| Asthma | 14.25 | 11.3 | 16.5 | 11.27 |
| BP | 22.99 | 18.2 | 11.8 | 8.05 |
| CAD | 5.98 | 4.7 | 5.0 | 3.38 |
| **Disease** | **1996 1987 (%)** | **1996 (%)** | **1987 Rate/1000** | **1987 (%)** |
| Cancer | 2.3 | 1.8 | 0.92 | 0.63 |
| Gynec | 4.14 | 3.2 | 4.8 | 3.25 |
| UTI | 3.68 | 2.9 | 4.8 | 3.25 |
| Joint | 22.52 | 17.9 | 18.3 | 12.44 |
| Goitre | 2.3 | 1.8 | 2.1 | 1.45 |
| Other | 32.18 | 25.5 | 64.2 | 43.73 |
| DM | 5.52 | 4.4 | 3.4 | 2.3 |
| Backache | 3.68 | 2.9 | - | - |
| Mental | 0.92 | .7 | - | - |

**Gender difference in chronic diseases**

Tuberculosis and Filariasis are more common among males. This conclusion is based, of course, on a small number of observations. Bronchial asthma and high blood pressure show the same extent of prevalence among both the sexes. Coronary heart disease and carcinoma are found more among men. So is the case with urinary track infections (UTI), diabetes, and backache. The prevalence of chronic diseases among women is low according to this study. Urinary Track Infections are generally more common among women due to anatomical reasons like proplapse, loss of muscle tone, and lack of hygiene. Still in this study UTIs are reported more among males. This may be due to interviewer bias in data collection. Higher prevalence of coronary heart disease and carcinoma among men is consistent with patterns observed elsewhere.

Prevalence of diseases such as fits/epilepsy, chronic headache, chronic chest pain, piles,

kidney problems, chronic GIT problems, and chronic skin conditions are not identifiable from these data. It is not sure if it is due to low prevalence of these diseases in the population.

**Table 4.15 Sex-wise difference in morbidity prevalence**

| Disease | Female Rate/1000 | Male Rate/1000 |
|---|---|---|
| Leprosy | — | — |
| TB | 2.75 | 5.51 |
| Filaria | 0 | 2.75 |
| Asthma | 12.87 | 15.63 |
| BP | 23.91 | 22.07 |
| CHD | 2.75 | 9.19 |
| Cancer | 0.91 | 3.67 |
| Gynec | 4.59 | — |
| UTI | 1.83 | 5.51 |
| Joint pain | 21.15 | 22.99 |
| Diabetes | 3.67 | 7.35 |
| Backache | 1.83 | 5.51 |
| Goitre | 0.91 | 2.75 |
| Other | 27.59 | 36.79 |

**Type of Treatment**

Modern medicine is still the treatment of choice for most of the people and most of the conditions in the State. Only 21 per cent of the treatment is met by the other systems. The reasons for such a situation have not been probed into the study. The cost of medicines and consultations differ among systems. The emergence of newer diseases, both communicable and non-communicable, adds to the complexity of the question of system preference. This is because when the patient is told about the limitation of modern medicine for curing conditions such as coronary arterial occlusion, diabetes and cancer, people seek alternative forms of care. Traditional systems such as Ayurveda and Homoeopathy enjoy a high level of confidence among the population for certain specific ailments.

**Table 4.16 The system of treatment**

| System of Treatment | Frequency | % |
|---|---|---|
| Modern medicine | 449 | 78.8 |
| Ayurveda | 65 | 11.4 |
| Homeopathy | 41 | 7.2 |
| Others | 15 | 2.6 |

**Place of treatment**

Place of treatment depends on the perception of the people about a disease, their financial capacity, and their access to the treatment facility. It is found that about nine per cent decides to treat themselves when they are sick. The diseases referred to could be minor ailments, which they think they can manage by themselves. Other reasons could be that they think such diseases are untreatable or even if treated the medicines prescribed would be unaffordable. The reasons are not captured in the study. Once people decide to seek medical treatment while about 29 per cent seeks government facilities, 58 per cent goes in for private sector consultations and treatment.

**Table 4.17 Place of treatment**

| Place of treatment | % |
|---|---|
| Self-treatment | 8.57 |
| Government hospital | 28.57 |
| Private hospital | 58.01 |
| Others | 4.76 |

**Disability pattern**

Overall, the prevalence of disabilities has shown a decline. General disability has come down from 2091/100,000 in 1987 to 1665/100,000 in 1996. This could be due to a variety of factors. Some types of disability can be reduced by medical/surgical intervention as in the case of cataract. In the 1987 survey also, disability rates were the lowest in the higher socio-economic groups, perhaps, due to their ability to go in for timely consultation and appropriate medical intervention. The observed decline in disability prevalence could also be due to the changed case definitions. An example is the reduction of mental diseases from 336 to 155.4. This could be due to the following reasons: the case definition in the 1987 KSSP study included "strange behaviour". The chances are that there might have been an overestimation of mental diseases in that year. The World Health Report 1998 ranks mood disorders as the number one cause of disability with 146 million cases in the world. The reduction observed in the epilepsy category may also be explained by the change in definition. In the 1987 study, the category was fits and epilepsy in the place of epilepsy alone in 1996. In the former it is likely that all the febrile fits that occur among children, were included in this category.

**Table 4.18 Pattern of disability / 100, 000 population**

| Disability | 1987 | 1996 |
|---|---|---|
| Immobility | 694 | 377.36 |
| Deafness/ dumbness | 328 | 488.4 |
| Blindness | 208 | 133.2 |
| Mental diseases | 336 | 155.4 |
| Epilepsy | 203 | 88.8 |
| Mental retardation | 210 | 244.2 |
| Mixed category | 92 | 177.6 |

## 5. Maternal and child health

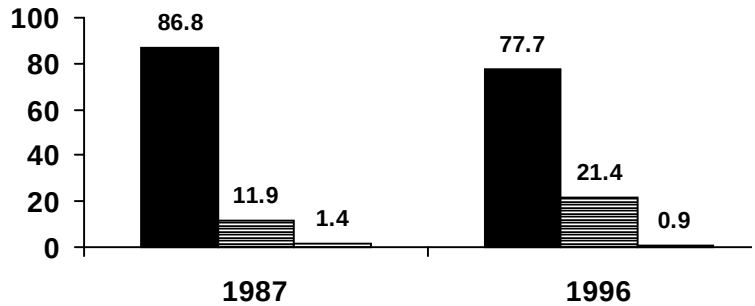
**Table 5.1 Place of childbirth, 1987 and 1996**

| Place of child-birth | 1996 | 1987 |
|---|---|---|
| **Home** | 2.9 (03) | 21.2 (279) |
| **Private Hospital** | 58.3 (60) | 41.5 (546) |
| **Government Hospital** | 38.8 (40) | 36.9 (485) |
| **Others** | 00.0 (00) | 0.4 (005) |
| **Total** | 100.0 (103) | 100 (1315) |
| **Unaccounted** | 00 | 40 |

Institutional delivery of 97.1 per cent is a vast improvement over the 1987 situation when the rate was 78.80 per cent (according to KSSP survey) and the 1993 situation when it was reported to be 92 per cent (according to the report of the sample registration system). The State is gradually moving to a situation of 100 per cent institutional delivery. One of the other important findings of the study is that the share of total deliveries in private hospitals has increased by 17 percentage points, while that of the government hospitals has increased, by only less than one percentage point. The majority of those who shifted to institutional delivery from home delivery during the period of 10 years approached private hospitals. The rapid growth of the private sector has been a conspicuous phenomenon in the health care sector of the State in recent decades. The steady decline in the infant mortality rate in the State may be largely due to the increase in the proportion of institutional delivery that tends to reduce chances of perinatal mortality, which is a major contributor of infant mortality in most developing countries. Institutional delivery in India as a whole during 1993 was only 25 per cent. Many other developing countries had figures of institutional deliveries very close to that of India (Table 5.2). But the rates in Brazil and the Dominican Republic come close to that of Kerala.

**Type of child birth**

**Figure 5.1 Type of child birth**




The percentage of caesarian sections has gone up from 11.9 per cent in 1987 to 21.4 per cent in 1996. This is only a rural sample. The urban figures are likely to be higher than this, which would make the caesarian rate in the State one of the highest in the world. A study conducted in Thiruvananthapuram district found that the caesarian rates in some of the hospitals were as high as 60 per cent. However, as per World Health Organisation, no region in the world is justified in having a caesarian rate higher than 10-15 per cent. A caesarian section

poses documented medical risks to the mother's health, including infections, hemorrhage, transfusion, injury to other organs, anesthesia complications, psychological complications, and a maternal mortality two to four times higher than that for vaginal child birth. There is no reliable estimate of maternal mortality in Kerala. The available figures range from 87 to 168 per 100000 live births. Compared to other health indicators of the State like infant mortality (of 13 per 1000 live births), total fertility rate (of 1.7), life expectancy (of 69 for males and 74 for females), this estimated maternal mortality figure is on the high side.

**Table 5.2 Cesarean section rates**

| Country | Sample size | LCS % | Institutional delivery(%) | Skilled attendant at delivery (%) | Year |
|---|---|---|---|---|---|
| **Africa** | | | | | |
| Burkina Faso | 6302 | 1.3 | 43 | 41 | 1988-'93 |
| Cote d'lvoire | 3989 | 1.8 | 45 | 45 | 1992-'94 |
| **Central African Republic** | | | | | |
| Egypt | 2836 | 1.9 | 50 | 46 | 1990-'95 |
| Kenya | 11454 | 6.6 | 33 | 46 | 1 991-'95 |
| Madagascar | 6062 | 5.2 | 44 | 45 | 1988-'93 |
| Malawi | 5604 | 1.0 | 45 | 57 | 1987-'92 |
| Morocco | 4512 | 3.4 | 57 | 57 | 1988-'92 |
| Namibia | 2235 | 3.5 | 37 | 40 | 1990-'94 |
| Niger | 3814 | 7.0 | 67 | 68 | 1987-'92 |
| Rwanda | 7094 | 0.9 | 16 | 15 | 1987-'92 |
| Senegal | 5612 | 1.8 | 25 | 26 | 1987-'92 |
| Uganda | 5581 | 2.3 | 47 | 47 | 1988-'93 |
| Zimbabwe | 6027 | 2.6 | 35 | 38 | 1992-'95 |
| Latin America | 2328 | 6.0 | 69 | 69 | 1991-'94 |
| Belize | | | | | |
| Nordeste Brazil | 1490 | 8.4 | 76 | 77 | 1986-'91 |
| Brazil | 3392 | 17.9 | 76 | 96 | 1986-'91 |
| Brazil | 2864 | 31.6 | 81 | 95 | 1981-'86 |
| Colombia | 4782 | 36.4 | 92 | 97 | 1991-'96 |
| Dominican Republic | 5050 | 16.9 | 77 | 85 | 1991-'95 |
| Ecuador | 3820 | 22.0 | 92 | 92 | 1986-'91 |
| Guatemala | 8837 | 17.1 | 64 | 64 | 1989-'94 |
| **Asia** | 9150 | 8.2 | 34 | 35 | 1991-'95 |
| IndonesiaPhilippines | 16983 | 2.5 | 18 | 34 | 1989-'94 |
| Kerala (rural) | 8803 | 5.9 | 28 | 53 | 1988-'93 |
| Kerala (rural) | 1314 | 11.9 | 78 | 90 | 1987 |
| **Europe** | 103 | 21.4 | 97 | 99 | 1996 |
| United Kingdom | | | | | |
| Finland | | 9.0 | | | 1985-'90 |
| Canada | | 11.9 | | | |
| **North America** | | 18.3 | | | 1989-'90 |
| United States | | 22.8 | | | 1993 |

Sources: From Burkina Faso and Indonesia, Demographic and Health Surveys at national level. For Kerala KSSP Surveys 1987 and 1996. For other countries various sources including personal communication from Elisabeth Aahman at WHO Geneva.

The above-mentioned health indicators in the State are close to those of developed countries; maternal mortality, however, is not. An enquiry for assessing the current maternal mortality rate and its causes in the State is warranted. One of the reasons for the reported high maternal mortality rate in the State could be the increasing rate of caesarian sections. In most developing and developed countries the rate of caesarian section is much lower than in Kerala. Only in Brazil, the caesarian rates are reportedly higher than in Kerala. The American College of Obstetricians and Gynecologists (ACOG) recommends that the concept of routine repeat caesarian sections be replaced by specific indication for surgery and that most women be counselled and encouraged to labour and have vaginal child birth after having had a caesarian earlier. Caesarian sections are sometimes performed for other than maternal or foetal well-being, such as avoidance of patient pain, patient or provider convenience, provider legal concerns or provider financial incentives.

**Birth weight**

Low birth weight (<2500 gm) babies were 13.3 per cent in 1996 which is an improvement over 19 per cent reported by the National Family Health Survey in 1992-'93 for rural Kerala. Little difference was found in birth weight in children as between women who gave birth in private hospitals and those who gave birth in Government hospitals. The average birth weight of male babies (2945 gm) was found to be slightly higher than that of female babies (2804 gm). The percentage of low birth weight babies is one health indicator in which Kerala still lags behind other countries in health status comparisons (Table 5.3).

Kerala's health indicators are usually compared to those of Costa Rica, China, and Sri Lanka, which also have achieved good health status at low cost. Low birth weight prevalence is comparatively high in Kerala, the reasons for which remain unknown. The low calorie intake particularly during the ante-natal period could be one of the main reasons.

**Table 5.3 Proportion of low birth weight (LBW) babies in different countries**

| Name of country | % of Low Birth Weight (<2500 gm) |
|---|---|
| India | 30 |
| Pakistan | 25 |
| Costa Rica | 7 |
| China | 6 |
| Kerala (India) | 13 |
| USA | 7 |
| Sweden | 4 |

Source: World Development Report 1993 and 1995. The data is for the year 1985 except China, which is for the year 1991.

| | |
|---|---|
| Percentage of Low Birth Weight | 13.3 |
| Average birth weight of study population | 2870 gm |
| Average birth weight of male babies | 2945 gm |
| Average birth weight of female babies | 2804 gm |

**Expenditure on child birth**

Expenditure data were available for 92 out of 103 cases of childbirth. The average reported expenditure per childbirth was Rs. 2505. The average expenditure for deliveries in private hospitals was Rs. 2870 and in government hospital Rs. 2025. Even though there is a difference in expenditure as between private and government hospitals, the average expenditure of over Rs. 2000 in government hospitals, which are supposed to give free care, is an indication of several shortcomings: lack of supplies, corruption, and internal privatisation of the public health sector. The average expenditure per normal hospital delivery in the State is reported as Rs. 2145 and for caesarian delivery Rs. 3800. The expenditure for caesarian delivery is not as high as one would expect. This could be another reason for the increasing rates of caesarian sections in the State. The average cost for a Caesarian section in the United States is reported to be $ 7186 and that for normal delivery $ 4334. The ratio is the same also in Kerala. Caesarians cost 1.6 times of the expenditure for vaginal delivery in the US; in Kerala, it is 1.7 times.

The average expenditure in the private sector was reported as Rs. 2456 for a normal delivery and Rs. 4944 for a caesarian delivery. The expenditure in the private sector per caesarian delivery is two times of that for vaginal delivery. The average expenditure per vaginal delivery in the government sector is reported to be Rs. 1670 and that for caesarian section, Rs. 2864. Surprisingly the percentage of caesarian sections in the private sector was reported to be only 17 per cent while that in the government sector was as high as 30 per cent. In 1987 the percentage of caesarian sections in the private sector was 16.5 per cent and in government sector was 12.6 per cent. The major shift to caesarian section has taken place in the government sector; the private sector remained almost unchanged. The reasons for the high increase in the proportion of caesarian sections particularly in the government sector remain to be studied in detail.

## 6. Utilisation of Health Care System

The present study focuses mainly on the various aspects of the health status of the rural population of Kerala. While considering the achievements and improvements in health status of the population, one has to assess the health care infrastructure and institutions available in the State. But the scope of the present study does not include this aspect. Hence we are not in a position to examine the composition, organisation, and quantitative dimensions of the health care sector. This means that the supply aspects of the health care system have not been covered. Some of these areas have of course, been taken care of by other institutional surveys such as the one carried out by the Directorate of Economics and Statistics, Government of Kerala, in 1996. The State Planning Board also has brought out various aspects of the supply side of the health care system. Only some aspects of the demand side of the health care system have been covered in the present study.

The people of Kerala depend mainly on three major systems of medicine, viz. Allopathy, Ayurveda, and Homoeopathy. Among them, modern medicine (Allopathy) accounts for the highest share, with 82 per cent of the population opting for it as the system of treatment. Ayurveda accounts for 11 per cent and Homeopathy 7 per cent. We have included a residual category of 'others' in the study. This refers to the various other, mostly indigenous, practices prevailing in the State. But, it is found that the percentage of the population preferring them is very negligible. During the past one decade, there took place a large shift away from this category. In fact, the study done in 1986-'87 had shown that around 12 per cent of the population had been using such indigenous practices. No single system has received the advantage due to this shift; however, it is the share of modern medicine (Allopathy) which has gone up to the largest extent, by 10 percentage points.

**Table 6.1 Percentage distribution in the utilisation of health system**

| Year | Modern Medicine (Allopathy) | Ayurveda | Homoeopathy | Others |
|---|---|---|---|---|
| 1987 | 72 | 10 | 6 | 12 |
| 1996 | 82 | 11 | 7 | Neg. |

Neg: Negligible

### Utilisation of government and private institutions

The different health systems in the State fall under either the government sector or the private sector. There exists also an ill-defined sector, comprising people who go in exclusively for self-care. This sector is not insignificant in the case of treatment of acute illnesses. Our present study reveals that only around 28 per cent of acute illness cases get reported to the government hospitals for treatment. Of the rest, 58 per cent seeks health care from the private institutions and around 5 per cent goes to co-operative and other medical institutions.

About 9 per cent goes in for self-care. The extent of utilisation of government and private institutions shows minor changes over the past decade. Patients going to the government

sector were around 23 per cent in 1987. The corresponding figure for 1996 is 28 per cent. The percentage of patients going to private institutions has fallen consequently from 66 per cent in 1987 (including co-operatives) to around 63 per cent in 1996. Since the sizes of the sample covered in these two studies are different, one cannot say whether the observed shift is real or only apparent. But it is true that even after the growth of private institutions and private health care infrastructure facilities, the extent of dependence on the government sector institutions has not come down. But it is also true that more than half the population attend private hospitals for treatment of acute illnesses.

**Table 6.2 Sector-wise distribution of the sector of medical treatment for acute illnesses**

| Sector | % |
|---|---|
| Government hospital | 28 |
| Private hospital | 58 |
| Others | 5 |
| Self | 9 |

Our study has looked into the reasons for people opting for private hospitals in case of treatment of acute illnesses. Of the total number of reasons given, 15 per cent reported easy access as the main reason. They had private institutions in the vicinity of their homes. For another 20 per cent, the reason was that either there was no doctor at the government hospital (10 per cent) or no treatment was being prescribed by them (10 per cent). About 14 per cent felt that no medicines were available in the government hospitals. In the opinion of another 18 per cent, bribing was rampant in government hospitals and better personal consideration and fair treatment came from the staff of private hospitals. For about 23 per cent, belief that adequate care would be taken by private hospitals was strong. Still another factor for the popularity of private hospitals is their ubiquitous presence, particularly in rural areas.

**Table 6.3 Reason for preference for private hospitals**

| | |
|---|---|
| Adequate care in private hospital | 23 |
| Nearness to private hospital | 15 |
| No medicines in government hospital | 14 |
| Better behaviour from doctors and staff in private hospital | 13 |
| No treatment from government hospital | 10 |
| No doctor in government hospital | 10 |
| Bribery in government hospital | 5 |
| No cleanliness in government hospital | 3 |
| Other reasons | 7 |

Access to hospitals in terms of distance is considered one of the major factors in the utilisation of the health care system. Surveys such as NFHS-92 have shown that Kerala is ahead of other States in this regard. According to the present study, 70 per cent of the population has access

to a hospital within 5 km of their residence. In fact, 36 per cent of the total rural population has at least one hospital within 2 km. Only three per cent had to go more than 10 km to attend a hospital.

**Utilisation of PHCs**

Primary Health Centres are the key to access to the governmental health care system in the State. Respondents were asked whether they knew about the existence of the primary health centre in their area. More than 80 per cent knew about its existence. This was the case a decade ago too. But the significance even today is that the rest of the population remains unaware of a PHC in the locality. It might be due to the distance factor; or to the fact that the PHC is known in the locality as a hospital. In some cases, the PHC earmarked for a particular panchayat might be located in some other panchayat. The question regarding utilisation of the facilities of the Primary Health Centre received more definite answers: 40 per cent of the rural population attend primary health centres. But, the 1987 study also had come out with the same result. One may argue that the PHCs have not lost their significance, but it is also true that the level of utilisation has remained static.

Lack of medicines and the distance factor were the two major reasons for non-utilisation of PHC services mentioned by about 44 per cent of the rural folk, 22 per cent for each reason. Nearly 19 per cent attributed it to the absence of doctors while 16 per cent blamed it on lack of availability of treatment facilities. Around 15 per cent did not have 'faith' in the services rendered at the PHCs. All these reasons point to the fact that people consider Primary Health Centres as curative centres alone. The major emphasis of a Primary Health Centre being prevention rather than cure, it is surprising that even in Kerala in which health awareness and education levels are high, the message has not gone across the population. This fact has to be considered in the context of the finding of the study that 75 per cent of the households reported that the health workers from the Primary Health Centre had not visited them at all during any day of the preceding one-month. A decade ago also, 82 per cent of the households was of the same view. One may argue that there has happened a slight improvement, but the amount of manpower wasted for PHCs should be looked into. There has to be a serious effort to study how the work of the health workers could be re-oriented to make it more efficient and productive.

## 7. Household expenditure on medical care

The total economic burden of ill health is caused by both direct expenditure for medical care as well as by loss of earnings. Of this, the first is easily ascertained in household health surveys. We have collected data on medical expenditure incurred in the fortnight prior to the survey. This ensures good recall and would include expenses for acute as well as chronic illnesses during the period and simple extrapolation would give the total annual expenditure for medical care. Since the basic method employed in 1987 was the same, comparison is possible.

The medical expenditure per morbid person per episode increased from Rs. 16.56 to Rs. 165.22 during the decade, an increase of 898 per cent (Table 7.1). The per capita medical expenditure rose from Rs. 88.92 to Rs. 548.86 during the period, the rate of increase being 517 per cent (Table 7.2). This lower rate of increase in comparison to the rate of increase for expenditure on morbidity episodes is a simple reflection of the significant reduction in the morbidity rate.

An approximate estimate of the general rise in cost of living may be calculated at a compound rate of 10 per cent annual increase in the consumer price index. This works out to an increase of 136 per cent in nine years. The fact that rise in per capita medical expenditure is four times attests to the high degree of *Mediflation* that has occurred during the period under study.

**Table 7.1 Medical expenditure (Rs.) per morbid person per episode (1987 & 1996)**

| Item of Expenditure | 1987 | 1996 | % increase |
|---|---|---|---|
| Drug | 8.24 | 83.48 | 913 |
| Fee | 2.90 | 29.87 | 930 |
| Other | 5.41 | 51.87 | 859 |
| Total | 16.56 | 165.22 | 898 |

**Table 7.2 Medical expenditure (Rs.) per capita per year (1987 & 1996)**

| Item of Expenditure | 1987 | 1996 | % increase |
|---|---|---|---|
| Drug | 44.20 | 282.36 | 539 |
| Fee | 15.60 | 99.06 | 535 |
| Other | 29.12 | 167.44 | 475 |
| Total | 88.92 | 548.86 | 517 |

It is clear from Tables 8.1 and 8.2 that the explosive rate of increase in expenditure is not confined to any single item such as medicines. True, the period witnessed big spurts in drug prices, but doctor's fees and expenditure on other items (like laboratory tests) have also increased at nearly the same rates. Nor is the *mediflation* confined to modern medicine (Table 7.3).

**Table 7.3 Medical expenditure (Rs.) per morbid person per episode by system (1987 & 1996)**

| System | 1987 | 1996 | % increase |
|---|---|---|---|
| Modern medicine (Allopathy) | 20.72 | 197.19 | 852 |
| Ayurveda | 10.80 | 98.97 | 816 |
| Homoeopathy | 7.47 | 66.44 | 789 |
| Other | NA | 45.57 | - |

Modern medicine (Allopathy) continues to be the costliest followed by Ayurveda and Homoeopathy in that order, but the proportions are similar in 1987 and 1996. The rates of increase of expenses for Ayurveda and Homoeopathy are not appreciably different. It is well known that the cost of Ayurvedic drugs have also risen rapidly in recent years, and many of the differences between expenditure in the private and the government sectors are found to be negligible (Table 7.4).

Such a result is not surprising since in most government hospitals, drugs have to be purchased by the patient from the market. In addition, there exists the system of private practice by government doctors and rampant corruption at all levels. A valid question that may be raised is 'what is the raison d'être of government hospitals if they cannot provide cheap medical care to the needy? Successive governments have not shown the necessary political will to ensure this basic facility.

**Table 7.4 Medical expenditure (Rs.) per morbid person per episode by sector (1996)**

| Sector | Expenditure |
|---|---|
| Home | 46.55 |
| Government | 183.96 |
| Private | 195.71 |
| Other | 171.10 |

By far the most disturbing fact emerging from the study is that the impact of mediflation is most severe for the lower socio-economic groups (Tables 7.5 and 7.6).

**Table 7.5 Annual per capita medical expenditure by socio-economic status (!987 & 1996)**

| Status | 1987 | 1996 | % increase |
|---|---|---|---|
| I | 54.99 | 477.26 | 768 |
| II | 42.11 | 467.26 | 1010 |
| III | 126.33 | 538.27 | 326 |
| IV | 160.80 | 569.49 | 254 |
| All | 88.92 | 548.86 | 517 |

**Table 7.6 Annual per capita medical expenditure as per cent of per capita income by socio-economic class (1987 & 1996)**

| Status | 1987 | 1996 | % increase |
|---|---|---|---|
| I | 7.18 | 39.63 | 452 |
| II | 2.93 | 16.11 | 450 |
| III | 3.38 | 5.08 | 50 |
| IV | 2.18 | 2.44 | 12 |
| All | 3.57 | 6.79 | 90 |

While the rise in per capita medical expenditure in the study period is 326 per cent and 254 per cent in SES 3 and SES 4 respectively, it is 768 per cent for SES 1 and a whopping 1010 per cent for SES 2. Similarly the ratio of annual per capita medical expenditure to per capita income shows a very uneven distribution across social groups. In the richest segment, this ratio as percentage was 2.18 in 1987 and 2.44 in 1996, whereas in the poorest it rose from 7.18 per cent to a whopping figure of 39.63 per cent. In SES 2 medical expenditure is 16.11 per cent of the income. Even granting certain degree of under-reporting of incomes, this is a very high figure, and undoubtedly is a major contributing factor to indebtedness and further impoverishment of households in the lower rungs of the social ladder.

The reasons for the differences in the impact of mediflation across the social spectrum are yet to be studied. But one point seems to stand out. As seen in Table 7.5, the differences in annual per capita medical expenditure between the lower and the higher social classes that was seen in 1987 have largely vanished in 1996. This would tend to imply that the sort of discrimination among different groups of the clientele practised by doctors in prescribing, ordering investigations etc., is being given up. Use of costlier drugs when cheaper substitutes are available, ordering scanning procedures, etc., are probably increasingly being resorted to for all the patients, ignoring their socio-economic conditions. Latest generation of drugs and most modern facilities for diagnosis are becoming increasingly unavailable in the government sector. Even when they are available, they are being made available to patients at prices fixed by outside agencies that bring these technologies, like the KHRWS and Hospital Development Societies. The social usefulness of these agencies needs to be debated.

In summary, the decade under study saw a pronounced increase in per capita medical expenditure constituting a *mediflation*. The irony is that it happened during a period of remarkable decline in morbidity. The poorer sections of society have borne the brunt of these changes. In the process they get pushed down to levels below the poverty line and become increasingly indebted.

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