Levels, Differentials and Determinants of Morbidity in West Bengal, India

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Abstract

The paper investigates the level, differentials and determinants of morbidity in West Bengal. The morbidity prevalence rate for the year 1995-96 was 65 per thousand in rural and 64 per thousand in urban areas. Females reported more illness than males in both rural and urban areas. The prevalence rate of illness was higher among children aged 0-4 and adults above 60 years compared to other age groups. Significant seasonal and regional variations were found. While the prevalence of acute ailments was higher among poorer individuals, the richer people were at higher risk of suffering form chronic diseases. There was an inverse relationship between household size and morbidity prevalence. The untreated illness was found to be higher in rural than in urban areas. Financial inability and non-availability of health care services were cited as the major reasons for not seeking treatment.

Keywords Hospitalisation; Morbidity; Acute disease; Chronic disease; Communicable disease; Non-communicable disease; Prevalence; Socioeconomic factors; Rural population; Seasons, Regions; Regression analysis; India

Introduction

It is well established that improvement in the health status of population is both an important means of increasing productivity and economic growth as well as an end in itself. Health is also seen as part of the basic human capabilities (UNDP 1999) and an integral part of welfare. However, there has always been a problem of choosing correct indicator that reflects the true health status of the population.

Mortality is often considered as a good proxy for overall community health status and it is a general practice to use the infant mortality rate or life expectancy at birth in quantifying group health status. However, ' morbidity ', a state of ill health, has been increasingly recognized as a measurable indicator of well-being. Moreover, a section of demographers and health care professionals are of the view that it would be better to look at the morbidity indicators rather than mortality rates to get a correct picture of the health scenario of a population. By implication, morbidity and disability are believed to follow the levels and trends of mortality. Nevertheless, considerable evidence has been accumulated to show that mortality and morbidity may have differing levels, patterns, and trends. If the trends in morbidity run counter to trends in mortality, it raises serious questions about the net improvement in human condition over time.

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The health transition in India has occupied a centre stage in the ongoing debate on the relationship between mortality and morbidity (Murray, 1998). While there has been a general decrease in mortality in India, both at the country and state level over the last two decades, what has happened to morbidity? There is a widespread concern among the academia and health policy planners in India about whether the burden of disease due to morbidity is following the secular trend of mortality.

Sometimes, death rates can also give a misleading sketch of the health status. For example, Alter and Riley (1989) and Riley (1990) have argued, on the basis of time series data from developed countries that morbidity has increased with social and economic development despite the decline in age specific mortality. They put forward this on the basis of evidence that there has been a rise in the frail persons (mostly aged) who survived due to improved medical technology, but are at a higher risk of having a disease or multiple diseases. There are also studies in developing countries like India, which support this hypothesis. In case of Kerala, it can be said that it has a good health status on the basis of its low level of mortality. But the picture is completely different if we look at estimates of morbidity for Kerala (Dilip, 2001). National level surveys show that the morbidity in Kerala is higher than elsewhere in India (NSS 1992; NSS, NCAER 1998). However, all of these surveys are based on reported morbidity, which to a large extent, is based on individual's perception.

The available data on morbidity is being used to construct a 'disability adjusted life year' (DALY) index for the international comparisons. DALY is a measure which combines healthy life years lost because of premature mortality with those lost as a result of disability (The World Bank, 1993:1). The available data makes it possible to estimate the disease specific DALYs at the level of a country. However, one major drawback of DALY estimates is that the estimates are based on hospital-based records of the type nature, the incidence and levels of disease and disability (Shariff, 1998). But in the countries like India, the institutional and hospital based statistics do not reflect the true or community levels incidence of disease and disability. Only a small fraction of the sick persons may approach hospitals for treatment, that too often when they face severe and life threatening situations.

It is clear that to make an objective evaluation of the disease burden of a country and its many regions, community level estimates of morbidity are essential. The morbidity data collected by NSSO at its 52nd round (1995-96) gives an opportunity to estimate the morbidity at state and country level. India, which is often described as a sub-continent with substantial regional rural-urban and social group differentials in the standard and quality of life including human health, it would always be worthy to study the region or states separately. The estimates of morbidity, in general and disease specific incidence rates in particular, would serve as valuable information to the health planners and administrators for appropriate and timely measures to monitor, control and eradicate diseases. It can also be used to assess the burden of diseases (Duriasamy, 1998).

Contrary to the general belief that being a communist ruled state West Bengal is a homogeneous society, there are wide variations in the per capita income and other socio economic characteristics. According to NCAER 1993 survey, the morbidity prevalence rate in West Bengal was 81 per one thousand population, which points out to the dilapidated health status of the state.

However, studies regarding the morbidity pattern of the state are scanty. In this context, it was decided to investigate the levels, differentials and determinants of morbidity in West Bengal.

Review of literature

As per the WHO definition health is a state of complete physical, mental and social well being. In short, it is absence of illness, though from a wider perspective it is not merely absence of disease or infirmity. Mortality and morbidity are two basic aspects generally used to measure the health status of a population. Normally, mortality indicators like infant mortality, life expectancy etc., which are more comprehensively correlated to the definition of health are used to measure health status. Unlike mortality, morbidity is a subjective phenomenon that is expected to describe the suffering due to various disabilities and illnesses in a population. Yet mortality is mostly used to evaluate the health status of the population since it is comparatively simple to analyse and data is easily available. Still morbidity 'a state of ill health' has been increasingly considered as a measurable with a potential for replacing mortality rates as indices of social and personal well being. The advantage of morbidity is that it can be measured in a cost effective manner since it is relatively frequent phenomenon than death or infant mortality (Dilip 2001).

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However, reported morbidity is likely to vary not only between countries but also within country by region and community. There is also a trend among communities with lower mortality to report higher morbidity. Murray (1996) with examples of United States and Indian states of Kerala and Bihar specified that based on morbidity levels reported, it can be argued that a Bihari is healthier than a Keralite or a Keralite is healthier than American. This type of variation happens because of completeness of morbidity reporting or out of variation in disease profile between the populations under study.

The self-reported morbidity is found to be higher among rich than poor in many countries (Gumber and Berman, 1997, Murray and Chen, 1992). The high morbidity among lower socio-economic group can be due to higher levels of observed morbidity and similar health ideals as compared to higher socio-economic groups (Murray, 1996).

Apart from all these while studying morbidity, care should be taken to disentangle incidence, prevalence and duration of illness (Murray 1996).

The National Sample Survey Organisation is having more than four decades of experience in collecting information on morbidity in India. Their experience (NSSO, 1998) was that the self reported morbidity information they collected might be affected by proxy reporting, health care consciousness, level of living and recall lapse. These are issues linked with collecting data from health interview surveys in all populations and many researchers for studying illness levels follow this method, which is cheaper and practically feasible.

Now, coming to differentials in morbidity, on a whole the surveys conducted in India showed a 'J' shaped relationship between age and morbidity, an indication that elders and children are susceptible to illness (Kannan, et al, 1991;Shariff, 1995; Gumber, 1997; NSSO, 1998).

Morbidity estimates from the interview surveys in India are biased against the females (Sundar, 1992, Iyer and Sen, 2000; Mahiwala, et al.2000). In case of KSSP study (Kannan, et al.1991) the gender differentials were insignificant for acute ailments but chronic ailments were significantly lesser in females who were having relatively longer life span than males, which was rather surprising. They attribute this to underreporting of ailments by woman since majority of interviewers used in both of these surveys were males. Duriasamy (1995) while analysing the 1986-87 data for Tamil Nadu found that the males were reported to be having significantly higher than females. But an analysis of Andhra Pradesh data (Satya Sekar, 1997) showed that incidence of sickness (both treated and untreated) to be higher in females than males, but hospitalisation rate was higher in males than females.

Most of the surveys (Duggal and Amin, 1989; Sundar 1992; NCAER, 1992; Satya Sekar, 1997 NSSO, 1998; Gumber and Kulkarni, 2000) show that morbidity rates are higher in rural areas than in urban areas. Others (Duriasamy, 1995; Sundar 1995; Mahiwala, et al, 2000) found that morbidity rates are higher in urban areas than in rural areas.

Finally, even within communities also higher income groups with presumably lower mortality found to report higher morbidity (Murray and Chen, 1992). Surveys in India give different picture regarding relationship between income levels and prevalence of illness. According to Sundar (1992) differentials in prevalence of illness between low income groups and high-income groups have declined from 87 per thousand to 47 per thousand and from 77 per thousand to 58 per thousand, in rural and urban areas respectively. Duggal and Amin (1989) found that prevalence of both acute and chronic diseases were found to be higher in upper classes than in lower classes. Similar inverse relationship between morbidity and mortality are sometimes attributed to the fact that educated people because of better awareness of disease takes more precautions against diseases, which in turn reduces their morbidity (Duriasamy, 1995). But if that was true then the variable income must have a negative relations with morbidity level reported, which was not observed in that study. Though in Andhra study (Satya Sekar, 1997) high level of morbidity was observed among poor than rich no such pattern was observed for hospitalisation rate.

Data

The National Sample Survey Organization (NSSO) conducted a countrywide survey on morbidity and health care in its 52nd round in between July 1995 and June 1996.A stratified two stage sample design was adopted in this round to select the sample households for schedule 25.0 (used to collect information) from the chosen samples. Each State or Union Territory (UT) was divided into one or more agro climatic regions by grouping contiguous districts, which are similar with respect to population density and crop pattern. The NSSO divides West Bengal into four zones. The Himalayan zone constitutes three districts Kochbihar, Darjeeling and Jalpaiguri.The Eastern Plains constitute five districts-West Dinajpur, Maldah, Murshidabad, Nadia and Birbhum. The Central Plains consist of six districts-24-Parganas (North), Kolkata, Howrah, Hooghly, Burdwan, 24 Parganas (South). The Western zone has three districts-Midnapore, Bankura, Purulia.

In the 52nd round, the central sample covers 8249 households comprising 4612 households in rural areas and 3637 households in urban areas. The results are combined to get the overall picture for West Bengal. Our study, therefore, is based on the health status of 41606 people who lived in 8249 households covered in the survey. Of the 4612 households in rural areas, 953 persons were found as hospitalization cases while 1578 cases were reported to have suffered from some ailment in the past 15 days prior to the survey date. However, in case of hospitalization the reference was taken as 365 days before the survey date. On the other hand, out of 3637 households in urban areas 908 cases were reported to have hospitalized in the last 365 days while 1194 cases were reported as ailment case (Table 1).

Morbidity data collected in the survey are based on the respondents' own assessment of their health status, rather than on medical examination. However, information was collected personally, as far as possible, from all the adult members of the household. We analyzed information recorded during the survey about whether any member of the household suffering from any ailment during the last 15 days and about hospitalization of any member of the household during the last year. An ailment-that is, an illness, or injury-was defined as any deviation from a state of physical and mental well-being. A person was considered to have been hospitalized if he or she had used medical services as an inpatient in any hospital. Since the data collection was spread over a year, this data set is free from seasonal variations in morbidity.

Methods

The prevalence of ailments and hospitalization were determined with information from the survey on any person who had fallen ill during the 15 days leading up to the survey and on hospitalization cases during the year up to the date of the survey, respectively. The prevalence of any ailment or its morbidity, was defined as

Morbidity =

$$\frac{\text{Number of persons who were ailing during the 15 days prior to the survey} * 1000}{\text{Total population in the sample}}$$

Annual hospitalization rate =

$$\frac{\text{Number of persons who had been hospitalized during the year prior to the survey} * 1000}{\text{Total population in the sample}}$$

The differences in morbidity levels by selected background variables are closely related to the health status of the population. In this study, an attempt has been made to examine the differences in morbidity levels by individual characteristics as well as household socio-economic characteristics

through bivariate analysis. For both hospitalized and ailment cases, the percentage distribution by type of disease was also examined. Logistic regression analysis was performed to study the independent effect of predictor variables on the morbidity of the population. A similar exercise was carried out to see how far these determinants influenced hospitalisation.

Results

Age-Sex difference in morbidity and hospitalisation rate

Table 2 and table3 present the age and sex specific estimates of morbidity and annual hospitalisation rates for rural and urban areas of West Bengal. The prevalence rates of temporary illness per thousand population, during 15 days prior to the survey were 65 in the rural and 64 in the urban areas. The morbidity prevalence rate of females was higher than for males in both rural and urban areas. Significant differences were observed in terms of hospitalisation rate for rural and urban areas. While the hospitalisation rate for rural area was 10 per thousand population, it was 20 in urban areas. Although sex specific difference was absent in rural areas, the hospitalisation rate for females (21 per thousand) than males (19 per thousand) was slightly higher in urban areas.

In case of hospitalised cases, age differences in morbidity were high in age group up to 4 years, it declined in age group 5-14 and then it started rising at higher ages. In rural areas, while female showed lower morbidity in almost all age groups, there was considerable level of higher morbidity in the age group 15-34 which is the prime age group for child bearing. Similar pattern was also observed in case of urban areas where the higher morbidity was experienced in the age group of 15-59.

Almost the same pattern of age-sex difference in morbidity rate was observed in ailment cases. Here, the age-sex specific morbidity rate followed ' U ' shape as the prevalence rate was highest in 0-4 age group and then it began declining, reached the maximum low at 15-24 age group and then started increasing. While females showed lower morbidity in most age groups compared to males, except in childbearing age group of 15-44 years in rural areas, they reported higher morbidity rate than their counterparts for all age groups, except in the age group of 0-14 years in urban areas.

Morbidity and hospitalisation by different background characteristics

Table5 shows the morbidity and hospitalisation rates according to different background characteristics of the household.

Morbidity

Morbidity prevalence rate per thousand population was 65 in rural and 64 in urban areas. Gender differential in prevalence of ailments was found as the reported morbidity prevalence rate was higher among females (70 per thousand population) than among males (61 per thousand). The morbidity prevalence rate was high in the 0-4 age group, declined with age up to 24 years and then started to increase thereafter displaying the commonly reported 'U' shaped relationship.

The monthly per capita consumer expenditure (MPCE) quintile which represents the economic condition of the household has showed a positive relationship with morbidity. Stark difference was noticed-the prevalence of ailments in the richest quintile (93 per thousand) was almost double compared to the poorest quintile (54 per thousand).

Another striking finding is that the morbidity prevalence rate among the ST was significantly lower than other social groups. This may be due to the fact that the consciousness among these indigenous people is still very low which might have led to less reporting of ailments.

There was an inverse relationship between household size and morbidity prevalence rates. That is, small families experienced higher rate of morbidity than large families.

Prevalence of ailments in West Bengal showed a high degree of seasonal variation. The burden of ailments was highest during July-September (76 per thousand population) and lowest during October-December (58 per thousand population).

Interesting results have been found for the spatial distribution of ailments. The central plains which constitute Kolkata, the capital city and other adjoining areas reported highest prevalence rate (83 per thousand). On the other hand, it was only 33 per thousand in the western part of West Bengal.

Acute and chronic ailments

Here, the ailments which were of relatively shorter duration (less than 30 days) were classified as acute and the ailments which were of relatively longer duration (more than 30 days) were classified as chronic. Most ailments classified as acute were communicable and most ailments classified as chronic were non-communicable.

Acute ailments

The prevalence of acute ailments was 47 per thousand in rural areas and 49 per thousand in urban areas. The aged people (60+ age group) had suffered severely from acute ailments (112 per thousand population). The prevalence was also high among those aged 0-4 years (93 per thousand population). The lowest prevalence rate was experienced by those who were in the age group 25-34 years (29 per thousand).

Although the sex differences were only marginal, significant differences were found for the prevalence of acute ailments among different social groups. While the prevalence rate was only 27 per thousand population among ST, it was 48 for other social groups.

An inverse relationship was observed between the prevalence of acute ailments and MPCE indicating that a person of higher economic background had a less chance of suffering from acute ailments. The persons from a smaller household (<=4) reported highest prevalence rate (59 per thousand population). However, it was only 37 per thousand population for those who were staying with 7-8 members.

Seasonal variations were found as the prevalence rate was highest during July-September (55 per thousand population) and lowest (31 per thousand population) during October-December.

Regional differences were also observed with Himalayan region reporting the highest morbidity prevalence (65 per thousand) and west plains experienced lowest morbidity prevalence (19 per thousand); the acute morbidity prevalence rates for central and eastern plains were 62 per thousand population and 35 per thousand population respectively.

Chronic ailments

The prevalence of chronic ailments was 19 per thousand population in rural areas and 16 per thousand population in urban areas. No significant sex difference was found. A direct association between age and prevalence of morbidity was observed. While the morbidity prevalence rate was only 5 per thousand

population in the age group 0-4 years, it increased to 24 per thousand in the age group 35-44 years and to 94 per thousand in the 60+ age group.

Unlike acute ailments, the risk of getting chronic ailments was higher for people belonging to higher economic status. The morbidity prevalence rate for richest quintile (24 per thousand population) was two times more than the poorest quintile (12 per thousand population). The morbidity prevalence rate increases moderately from 1st MPCE quintile to 2nd MPCE quintile (17 per thousand population) and then it rose to 22 per thousand population for individuals of 3rd MPCE quintile.

As in case of acute ailments, the prevalence rate of chronic ailments among ST population (8 per thousand) was very low compared to other social groups (20 per thousand population). Chronic ailments were reported at a rate of 25 per thousand population for households with 0-4 members, 16 per thousand population with 5-6 members, 17 per thousand population with 7-8 members but only 13 per thousand population with 9 or more members.

There was not much seasonal variation found except for the monsoon season (July-September) when prevalence of chronic conditions was relatively high (22 per thousand population).

Significant regional variations were observed-the morbidity prevalence rate was as low as 0.4 per thousand population in the Himalayan region of West Bengal. As expected, the highest prevalence rate was found in the central region (27 per thousand population). While the western part of the state witnessed a modest level of prevalence (9 per thousand population), it was 16 per thousand in the eastern region.

Hospitalization

The hospitalisation rate was much higher in urban areas (20 per thousand) compared to rural areas (10 per thousand). Since the health care infrastructure, especially the curative health care facilities which were mainly located in urban areas, the urbanities had greater access to inpatient treatment than their rural counterparts. The morbidity prevalence rate was high in the 0-4 age group, declined with age up to 24 years and then started to increase thereafter displaying the commonly reported 'U' shaped relationship. Sex differences were not noted.

Importantly, a wide gap was found between the poorest and the richest MPCE quintile in terms of utilizing curative services. Individuals of richest household were almost four times more likely to seek inpatient treatment than their counterparts belonging to poorest household.

As in the case of ailments, the hospitalisation rate was also higher among the ‘others’ (14 per thousand) than among ST population (9 per thousand). The hospitalization rate was also slightly higher in small households than in large households.

Although seasonal differences were insignificant, some amount of regional differences was observe

Determinants of Morbidity

Table5 shows the results of the logistic regression carried out to see the independent effects of different background variables on the reported health status of the population. The odds ratios are indicative of the probability of getting sick (or ailments) and hospitalised compared to the reference category during the reference period, when the effects of other variables were controlled. The

dependent variables are dichotomous in nature taking the value of one if it was reported that an individual had suffered from any kind of ailments during the 15 days prior to the survey or being hospitalised in the last one year or zero otherwise. The explanatory variables included in this model are: age, sex, place of residence, caste, household size, per capita consumption expenditure, season and region.

The results indicate that age was an important indicator. The odds ratios of 0.44, 0.34, 0.37, 0.58, 0.95 and 2.10 for age groups 5-14, 15-24, 25-34, 35-44, 45-59 and 60+ were highly significant and confirmed a 'J' shaped relationship between age and morbidity. The sex dummy variable did not have any significant effect on morbidity. The urban people were 34 percent less likely to report morbidity than the rural people. People from the scheduled caste community were 34 per cent more likely to report as sick compared to scheduled tribes people. The inverse relationship observed by the bivariate analysis between household size and morbidity, was also confirmed by logistic regression. This analysis also found a negative association between MPCE and a person's sickness. People belonging to the highest expenditure quintile were 46 percent more likely to report illness than people from the lowest MPCE.

The seasonal variations had significant impact on ailments. As compared to months of July-September, the probability of getting illness were 24 percent, 26 per cent and 19 per cent less for the months of October-December, January-March and April-June respectively.

People living in more developed region like central West Bengal were 48 percent more likely to report an ailment than their counterparts in Himalayan region. On the contrary, people from the western part of the state were 48 per cent less likely to reveal any sickness.

In case of hospitalisation, the effect of age was positive and statistically significant implying that the chance of getting hospitalised increased with age. The odds of hospitalisation were 1.25, 1.55, 1.73, 2.54 and 3.51 higher in those aged 15-24, 25-34, 35-44, 45-59 and 60+ years than in those aged 0-4 years.

Variables like sex, caste and place of residence did not have any effect on hospitalisation. However, the effect of MPCE was robust. There was a greater likelihood of seeking inpatient treatment for those who belonged to the upper MPCE quintile. Hospitalisation was about 2.5 times more likely in those belonging to the highest MPCE quintile than the lowest MPCE quintile. The risk of hospitalisation was 17 per cent less during the period April-June than in the period of July-September. Household size was found to be significant only for the largest household with 9+ members.

Surprisingly, the odds of hospitalisation for central West Bengal was found to be lower than their counterparts in Himalayan region. People of western region were also less likely to being hospitalised than people belonging to Himalayan region.

Reason for untreated illness

Almost 20 percent ailment cases in rural areas remained untreated while the rate was half in urban areas. Sex differences in seeking treatment for ailments were not found. The reasons for not seeking treatment are reported in table6. While a majority of untreated cases, 43 percent in the rural areas cited financial inability for not seeking treatment, it was 20 percent in urban areas. This again points out to the need of providing public health care in the rural areas.

Interestingly, about 67 percent cases in urban areas and 35 per cent in rural areas indicated that the ailment was not serious enough for seeking treatment. Eight percent people of rural areas reported unavailability of medical services responsible for untreated illness.

However, in West Bengal, lack of faith in institutional treatment and long waiting were not important reasons for untreated illness. About 13 percent of the rural cases and 11 percent of the urban cases are grouped under' others ' reason which needs further examination.

Morbidity by type of illness

The NSS survey collected data on the type of ailment based on the information provided by the respondent for hospitalised and out patient cases using a pre-coded list of 58 illnesses. Information on the type of ailment is not collected for untreated illnesses. The data on the type of ailment enable us to regroup the diseases and study the distribution of these illnesses by age and sex categories. The ailments are classified on the basis of the 'International Classification of Diseases' (tenth revision) developed by the World Health Organisation. The classification is the one adopted by the World Bank to compute DALY (disability-adjusted life years) to measure the global burden of disease. The ailments are broadly classified into three categories: (i) communicable, maternal, perinatal and nutritional, (ii) non-communicable and (iii) injuries. The fourth category namely 'others' is added in this study to include 'other diagnosed ailment' and 'undiagnosed ailment' (Both of less than 30 days and more than 30 days).

The distribution of both hospitalised and ailments by type of ailment are given in table 8 for both rural and urban West Bengal respectively. The share of communicable diseases in rural and urban areas was 42 and 33 percent of the hospitalised cases and about 56 and 57 percent of the ailment cases respectively. The non-communicable diseases accounted for about 26 and 31 percent of the hospitalised cases and about 22 percent and 27 per cent of the ailment cases in the rural and urban areas respectively. About 7 and 8 percent of the hospitalised illness and 3 percent of ailments were due to injuries in both rural and urban areas.

Among the communicable diseases, diarrhoeal disease accounted for the largest share of both hospitalised and ailment cases for both rural and urban areas. Nearly 5-8 per cent of the hospitalised illnesses were related to pregnancy and child birth (including natural abortion). A good percentage of People got hospitalised due to respiratory infections. The third important disease was fevers of short duration, which invariably affected the rural and urban people. About 2-3 per cent of the total hospitalised cases were owing to tuberculosis.

Among the ailment cases, fever of short duration was the most predominant. It accounted 31 and 33 percent for rural and urban areas. About 8 and 9 percent people of rural and urban areas were affected by cough and acute bronchitis.

Among the non-communicable diseases, while digestive diseases were the most predominant in rural areas, cardiovascular diseases were much prevalent in urban areas. The diseases of Genitourinary, tumors, sense organs, namely eye, ear, nose and gum and cancers seemed to be important which required hospitalised care. People in the urban areas were more affected by heart failure and cerebral stroke than their rural counterparts.

About 26-28 percent of the hospitalised illness and 20 percent of the ailment cases came under 'others' category (of less than and more than 30 days).

Age specific distribution of the three broad categories of ailments is shown in figure 1(a)-3(b). It was evident that the communicable diseases were concentrated in the younger age groups while person in the older age groups were affected more by non-communicable diseases. The age specific distribution of ailments shown in the table led to some interesting findings: About 11-32 percent of the sick children aged 0-4 suffered from diarrhoeal disease while 9-52 percent suffered from fevers, respiratory and other infectious and parasitic diseases. Cardiovascular disease, cancer and digestive diseases, tuberculosis and Genitourinary were the predominant ones among adults.

Discussion

The analysis showed the variations in reported levels of morbidity in West Bengal. The morbidity prevalence rate for the year 1995-96 was 65 per thousand in rural and 64 per thousand in urban areas. The morbidity prevalence rate of females is slightly higher than for males in both rural and urban areas.

The differential in the morbidity prevalence rates across socio-economic and demographic groups were analyzed. The prevalence rate of illness was higher among children aged 0-4 and adults above 60 years compared to other age groups. Thus a 'U' shaped pattern between age and morbidity was observed. Women in the reproductive age groups (15-44 years) showed considerably higher prevalence of illness, perhaps due to complications arising from pregnancy and child-birth. While the morbidity because of chronic ailments was lower among children, the aged people were at a higher risk. The high prevalence rate of illness among the aged population pointed out the need for targeted health care services for the elderly.

Significant differences were found for the prevalence of both acute and chronic ailments among different social groups. As in the case of ailments, the hospitalisation rate was also higher among the 'others' (14 per thousand) than among ST population (9 per thousand). This could be largely due to underreporting of morbidity by ST population in rural areas.

Both the prevalence of ailments and hospitalisation were inversely related to household size. Surprisingly, it was found that the people who were better in terms of their economic well-being were at a higher risk of having health problems than the poor. The prevalence obtained after ailments were classified as acute and chronic, partially explained this phenomenon. The reported burden of the acute ailments was higher among people who were from the better-off sections than the people who were poor. On the other hand, the chronic ailments which constituted of lifestyle-related diseases were found to be higher among the economically well-off sections. The inequality was starker in case of hospitalisation with the richer people having the highest hospitalisation rate.

Seasonal variations were significant, with morbidity being highest between July and September. Regional differences were also clearly observable as the reported prevalence of ailments and hospitalisation was higher in Central West Bengal compared to Himalayan, Eastern and West Plains. The greater social and economic development, coupled with higher physical accessibility to health care services could be responsible for the regional variations observed during the study. It should be noted that the variations were much larger for chronic ailments than for acute ailments.

The percentage of untreated ailments was significantly higher in rural areas than in urban areas. Almost half of the ailments remained untreated because of financial inability in rural areas. This again reemphasized the necessity of providing public health care services and making it physically accessible for the people living in rural areas.

Interestingly, a good number of cases in both rural and urban areas indicated that the ailment was not serious enough for seeking treatment. Unavailability of medical services was also held responsible for untreated illness.

However, in West Bengal, lack of faith in institutional treatment and long waiting were not important reasons for untreated illness. A significant percent of the rural and urban cases are grouped under ' others ' reason which needs further examination.

The distribution of type of illness among age-sex groups suggests that the communicable diseases were concentrated in the younger age groups while the aged people suffer more from non-communicable ailments. Among communicable diseases diarrhoeal, fever; disease related to pregnancy and childbirth, respiratory infections and tuberculosis are major ailments. In the case of non-communicable diseases, digestive, cardiovascular, Genitourinary, tumors and sense organ diseases are important sources of sickness.

The determinants of ailments and hospitalisation showed that increase in age of individuals increased the risk of being sick. The prevalence of ailments was likely to be less in urban areas compared to rural areas. The morbidity rate was inversely related with the household size. This might be due to the underreporting in larger households (Dilip 2002). The rich people were more likely to report their ailments and seek in patient treatment than the poor people. It is clear that like other parts of India, the public health care services, especially at the secondary and tertiary level, poor people had a limited access compared to their richer counterparts. This could be due to the introduction of user-charges in Govt. run hospitals (Sen 2000). On the other hand, because of the steep increase in drug price, which was the direct result of the macro-economic changes that India had undergone in 1991-92, the private health care services especially the in-patient treatment were beyond the reach of the poor people.

The findings clearly suggest that the gap in reported morbidity prevalence and hospitalization rate by different socio-economic groups were because of the inequity in the access and utilization of health care services. This points out to the need for better targeting of the public health care services to the poor.

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Table-1: NSSO Sample Characteristics

	Rural	Urban
Sample villages/urban blocks	480	368
Sample households	4612	3637
Sample Population	24095	17511
Hospitalized cases	953	908
Ailment cases	1578	1194

Table2: Prevalence of ailments during 15 days leading up to the survey date by age and sex in West Bengal, 1995-96.

	Rural			**Urban**		
Age Group	Male	Female	All	Male	Female	All
0-4	97	95	96	120	95	108
5-14	49	39	44	51	47	49
15-24	39	39	39	35	46	40
25-34	27	60	44	37	37	37
35-44	38	106	68	43	77	58
45-59	101	98	99	93	104	98
60+	227	211	219	136	164	150
Total	61	70	65	61	68	64

Table3: Hospitalisation rate by age and sex in West Bengal, 1995-96

	Rural			Urban		
Age Group	Male	Female	All	Male	Female	All
0-4	11	5	8	21	13	17
5-14	4	5	4	12	10	11
15-24	7	12	10	10	20	15
25-34	13	15	14	16	23	20
35-44	10	9	10	16	22	19
45-59	21	11	16	25	36	30
60+	30	17	24	67	37	52
Total	10	10	10	19	21	20

Table 4: Prevalence of ailments and hospitalisation by selected background characteristics in West Bengal, 1995-96.

	Prevalence per thousand population			
Background Characteristics	**Any ailment**	**Acute ailments**	**Chronic ailments**	**Hospitalization**
Sex				
Male	61	45	17	13
Female	70	50	20	13
Age				
0-4	98	93	5	10
5-14	45	41	6	6
15-24	39	30	10	11
25-34	42	29	12	16
35-44	65	42	24	12
45-59	99	54	46	20
60+	197	112	94	33
Place of residence				
Rural	65	47	19	10
Urban	64	49	16	20
MPCE quintile				
Q1 (Poorest)	54	57	12	7
Q3 (Middle)	55	42	20	12
Q4 (2^{nd} richest)	79	45	22	15
Q5 (Richest)	93	41	24	24
Caste				
ST	32	27	8	9
SC	67	49	18	11
Others	67	48	20	14
Household size				
<=4	84	59	25	48
5-6	64	47	16	41
7-8	56	37	17	33
>=9	51	38	13	29
Season				
July-September	76	55	22	15
October-December	58	41	18	13
January-March	61	46	17	12
April-June	64	47	18	12
State Region				
Himalayan	54	65	0.4	40
Eastern Plains	53	35	16	36
Central Plains	83	62	27	42
West Plains	33	19	9	36

Table5: Results of logistic regression analysis for determinants of ailments and hospitalisation in West Bengal, 1995-96.

Independent variables	Odds ratio	
	Any ailment	Hospitalization
Age (years)		
0-4	1	1
5-14	0.44*	0.82
15-24	0.34*	1.25**
25-34	0.37*	1.55*
35-44	0.58*	1.73*
45-59	0.95	2.54*
60+	2.10*	3.51*
Sex		
Male	1	1
Female	1.06	1.01
Place of residence		
Rural	1	1
Urban	0.66*	0.97
Caste		
ST	1	1
SC	1.34*	1.06
Others	1.21	0.98
Household size		
<=4	1	1
5-6	0.81*	1.04
7-8	0.71*	0.86
9+	0.63*	0.79*
Quintile (MPCE)		
Q1	1	1
Q2	1.03	1.23**
Q3	1.03	1.40*
Q4	1.33*	1.75*
Q5	1.46*	2.33*
Season		
July-September	1	1
October-December	0.76*	0.90
January-March	0.74*	0.89
April-June	0.81*	0.83**
Region		
Himalayan	1	1
Eastern Plains	0.88	0.85
Central Plains	1.48*	0.75*
West Plains	0.52*	0.79**

Table 6: Reason for untreated ailment during the reference period of 15 days

Reason	Rural	Urban
No medical facility	8.0	0.0
Lack of faith	0.5	2.0
Long waiting	0.0	0.4
Financial reasons	43.4	20.0
Ailment not considered serious	34.8	66.9
Others	13.3	10.7

Table 7: Percentage distribution of *hospitalised* during 365 days prior to the survey and *ailment* cases in the last 15 days leading up to the survey date by type of ailment in Rural West Bengal, 1995-96.

Type of Ailment	Hospitalised (Age Group)						Ailments (Age Group)					
	0-4	**5-14**	**15-34**	**35-59**	**60+**	**All**	**0-4**	**5-14**	**15-34**	**35-59**	**60+**	**All**
I Communicable, maternal, perinatal and nutritional	68.3	40.5	45.5	34.8	25.9	**41.8**	65.0	77.9	66.8	46.9	30.5	**55.9**
Tuberculosis	0.0	0.6	3.1	3.9	2.3	2.7	0.0	0.2	1.7	2.9	2.0	1.5
Diarrhoeal	29.4	20.5	14.0	19.1	16.3	**17.8**	11.3	14.4	7.9	10.7	9.0	**10.6**
Childhood cluster	0.5	2.3	1.3	0.9	0.0	1.1	2.0	1.1	1.1	0.0	0.0	0.8
Meningitis	0.8	5.7	0.9	0.4	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Other infectious and parasitic	14.4	0.0	0.0	0.3	0.0	1.4	2.1	1.5	3.0	0.1	0.9	1.4
Leprosy	0.0	0.0	2.4	0.5	0.0	1.1	0.0	0.0	0.4	0.0	0.0	0.1
Respiratory infections	14.6	2.1	0.2	5.9	7.3	**4.2**	9.0	5.2	9.8	7.7	15.6	**9.1**
Maternal & child birth	0.0	0.0	20.7	0.6	0.0	**8.4**	0.0	0.0	2.2	0.2	0.0	0.5
STDs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Filaria								0.0	0.3	1.2	0.0	0.4
Nutritional	0.3	2.0	0.1	1.0	0.0	0.6	0.8	0.5	2.0	0.9	0.0	0.9
Fevers	8.3	7.3	2.8	2.2	0.0	**3.3**	47.9	46.0	26.4	23.3	12.9	**30.6**
II Non-communicable	4.6	17.8	23.0	30.8	46.5	**25.7**	6.8	8.5	20.0	33.2	38.1	**22.3**
Epilepsy	0.0	0.4	1.9	0.0	0.0	0.8	0.0	0.4	1.2	0.0	0.0	0.3
Mental and behavioural	0.0	0.3	0.2	0.4	0.0	0.2	0.0	0.7	0.2	3.3	0.1	1.1
Other diseases of nerves	0.0	1.0	0.1	0.3	0.0	0.2	0.0	0.1	1.2	1.1	2.7	1.0
Cardiovascular	0.0	1.4	1.3	3.0	3.7	1.9	0.1	0.0	2.3	6.5	1.4	2.5
Cerebrovascular	0.0	0.0	0.3	0.5	1.3	0.4	0.0	0.0	0.0	0.0	0.1	0.0
High/low blood pressure	0.0	0.0	0.0	2.2	0.3	0.6	0.0	0.0	0.3	6.5	6.1	2.8
Piles	0.0	0.0	0.1	0.2	0.0	0.1	0.0	0.0	0.1	0.0	1.4	0.2
Sense organ	0.1	3.4	0.4	3.7	10.7	2.9	4.9	1.8	2.9	2.0	3.0	2.8
Cancers	0.0	0.0	0.4	1.2	5.6	1.2	0.0	0.0	0.0	0.0	0.5	0.1
Tumors	0.0	6.2	9.1	1.4	0.9	**4.8**	0.1	0.0	0.9	0.0	0.0	0.2
Diabetes	0.0	0.0	0.0	1.2	1.1	0.5	0.0	0.0	0.0	1.7	0.9	0.6
Digestive	1.9	1.2	3.7	9.9	11.9	**6.0**	0.0	0.3	7.0	4.8	3.3	**3.4**
Genitourinary	2.0	1.6	3.9	5.1	4.6	**3.9**	0.0	0.2	0.8	0.6	2.4	0.8
Disabilities	0.0	0.1	0.6	0.7	5.1	1.1	0.0	3.7	1.5	1.8	7.6	3.2
Other non-communicable	0.6	2.2	1.0	1.0	1.3	1.1	1.7	1.3	1.6	3.2	8.6	**3.1**
III Injury	1.8	10.8	9.2	7.6	0.3	**7.2**	3.9	2.7	2.9	0.9	1.2	**2.2**
IV Others	25.3	30.8	22.4	26.9	27.3	**25.5**	16.1	19.8	22.4	20.5	20.3	**20.0**
All	100	100	100	100	100	100	100	100	100	100	100	100

Table 8: Percentage distribution of *hospitalised* during 365 days prior to the survey and *ailment* cases in the last 15 days leading up to the survey date by type of ailment in Urban West Bengal, 1995-96.

Type of Ailment	Hospitalised (Age Group)						Ailments (Age Group)					
	0-4	**5-14**		**0-4**	**5-14**		**0-4**	**5-14**		**0-4**	**5-14**	
I Communicable, maternal, perinatal and nutritional	67.6	32.6	48.8	21.8	13.6	**32.7**	71.4	77.8	68.0	59.4	33.5	**56.8**
Tuberculosis	0.0	0.0	3.0	1.5	4.0	2.1	0.0	0.2	0.0	0.8	2.9	0.9
Diarrhoeal	32.4	22.2	20.0	12.2	6.3	**15.9**	0.0	17.5	4.8	4.1	1.9	**5.9**
Childhood cluster	0.0	1.2	0.8	0.3	0.0	0.5	0.0	1.6	0.4	0.2	0.0	0.3
Meningitis	5.0	1.6	1.6	0.0	0.0	1.0	0.0	0.4	1.0	0.0	0.0	0.2
Other infectious and parasitic	0.0	2.6	0.0	0.0	0.0	0.3	0.0	1.2	4.6	1.8	2.7	2.2
Leprosy	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1
Respiratory infections	17.0	0.3	0.6	1.7	2.2	2.3	13.7	10.8	7.6	4.8	11.9	**8.4**
Maternal & child birth	0.0	0.0	16.0	1.2	0.0	**5.3**	0.0	0.0	0.0	0.2	0.0	0.4
STDs	0.0	0.0	0.1	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	-
Filaria	0.0	-	-	-	-	-	-	0.0	0.0	0.0	0.6	0.1
Nutritional	0.0	1.4	1.1	1.1	0.0	0.9	0.0	0.0	0.0	3.5	0.4	1.3
Fevers	13.2	3.3	5.6	3.3	1.1	**4.2**	57.7	45.6	49.6	34.8	13.1	**37.0**
II Non-communicable	5.2	16.7	14.6	42.1	55.2	**30.9**	1.6	1.4	4.3	28.4	41.6	**27.5**
Epilepsy	0.0	0.0	0.0	0.2	0.0	0.1	1.1	0.9	3.8	0.0	0.0	0.8
Mental and behavioural	0.0	0.9	0.3	0.0	1.0	0.4	0.0	0.0	0.0	1.2	0.0	0.4
Other diseases of nerves	0.0	2.4	0.4	0.6	0.6	0.7	0.2	0.2	0.2	1.0	1.1	0.7
Cardiovascular	0.0	0.4	0.5	8.9	13.7	**5.7**	0.0	0.0	0.0	3.2	14.4	**3.3**
Cerebrovascular	0.0	0.0	0.1	3.7	5.3	2.2	0.0	0.0	0.0	0.0	2.4	0.3
High/low blood pressure	0.0	0.0	0.6	3.1	4.2	2.0	0.0	0.0	0.0	6.9	7.1	**3.6**
Piles	0.0	0.0	0.4	1.5	0.0	0.7	0.0	0.0	0.0	0.0	0.1	0.0
Sense organ	0.0	2.8	1.1	5.9	12.8	4.9	0.2	0.2	0.2	3.2	5.2	2.9
Cancers	0.0	0.0	0.8	4.8	4.8	2.7	0.0	0.0	0.0	0.7	0.9	0.4
Tumors	0.0	0.0	0.8	2.4	0.0	**1.1**	0.0	0.0	0.0	0.1	0.0	0.1
Diabetes	0.0	0.0	0.0	0.8	1.4	0.5	0.0	0.0	0.0	4.0	1.6	1.6
Digestive	1.2	0.9	5.2	4.4	2.5	**3.8**	0.0	0.0	0.0	2.7	0.7	**1.8**
Genitourinary	1.3	4.6	2.1	3.8	7.5	3.9	0.0	0.0	0.0	1.6	0.6	1.7
Disabilities	0.0	0.3	0.0	0.1	0.9	0.2	0.1	0.1	0.1	0.5	1.7	0.6
Other non-communicable	2.7	3.4	2.3	1.9	0.5	2.0	0.0	0.0	0.0	3.3	5.8	**2.1**
III Injury	4.1	10.5	8.3	9.4	3.5	**7.8**	7.1	5.6	5.6	1.1	0.9	**2.5**
IV Others	23.0	41.0	28.4	26.7	27.6	**28.7**	19.9	15.7	15.7	19.9	24.2	**20.1**
All	100	100	100	100	100	100	100	100	100	100	100	100

Figure 1(a).

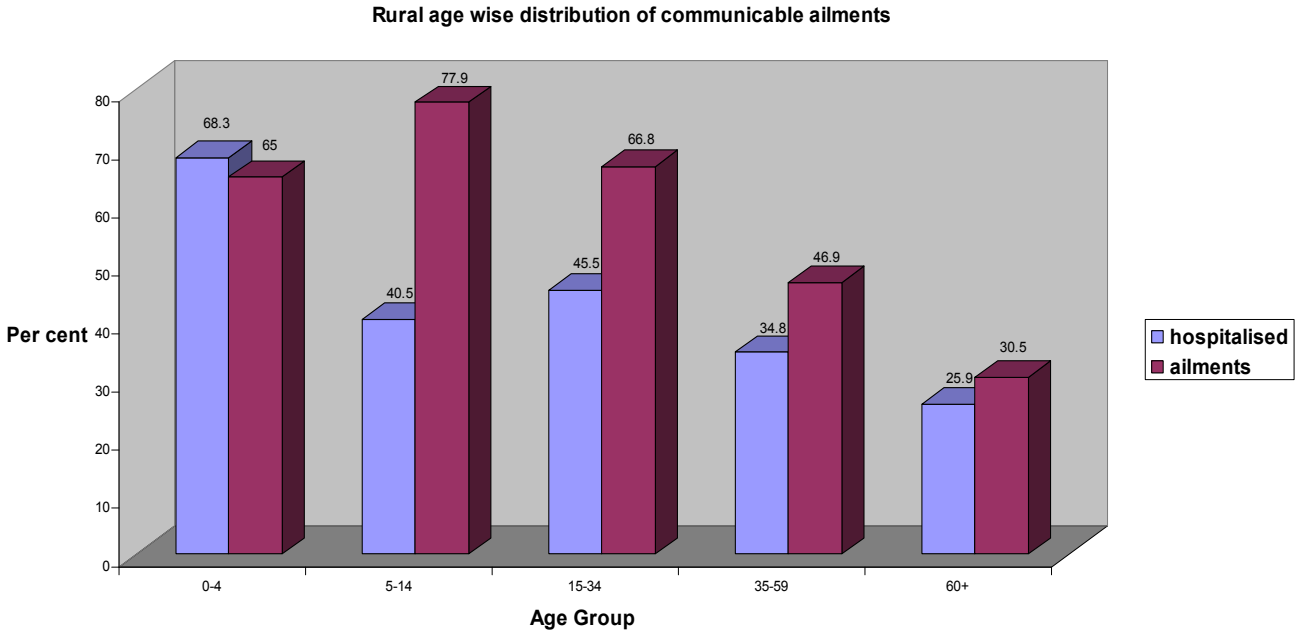


Figure 1(b).

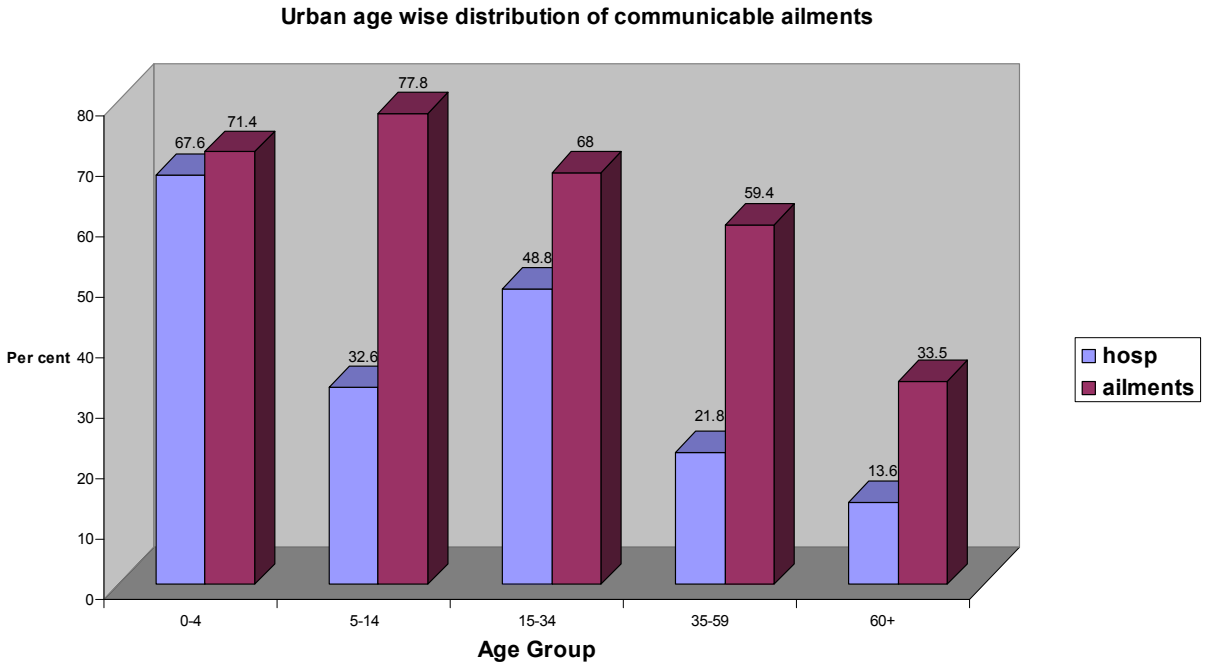


Figure 2(a).

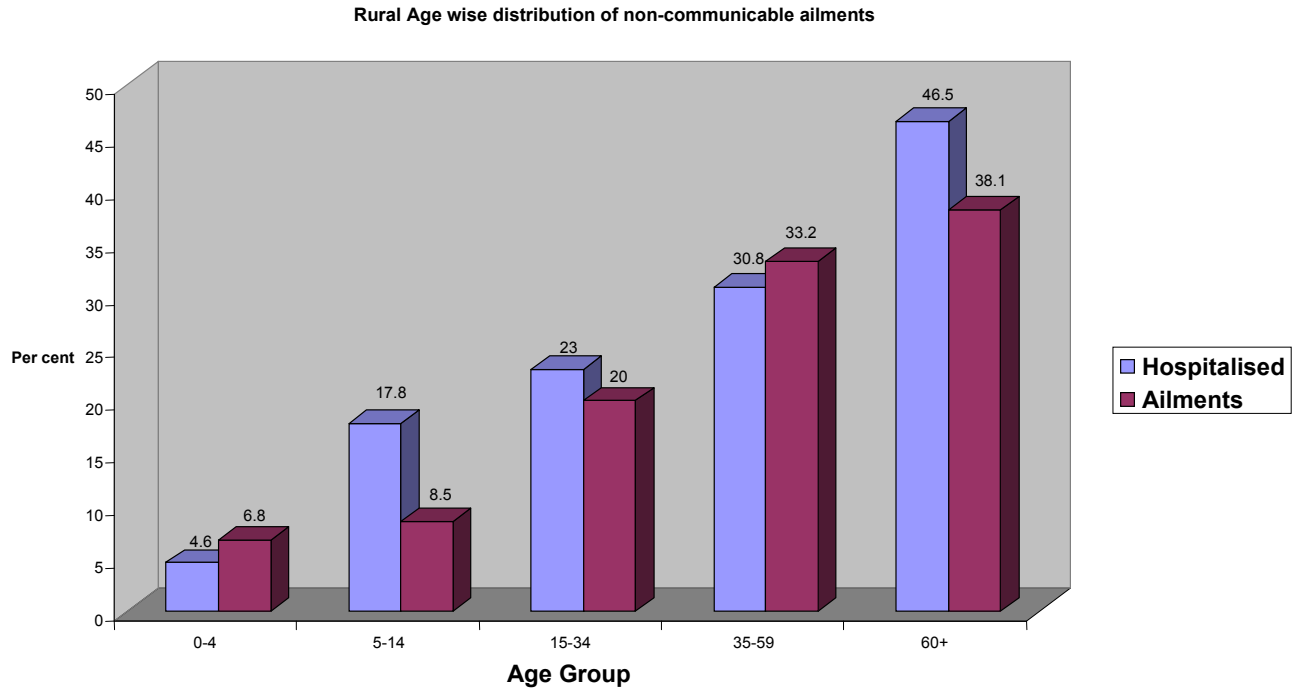


Figure 2(b).

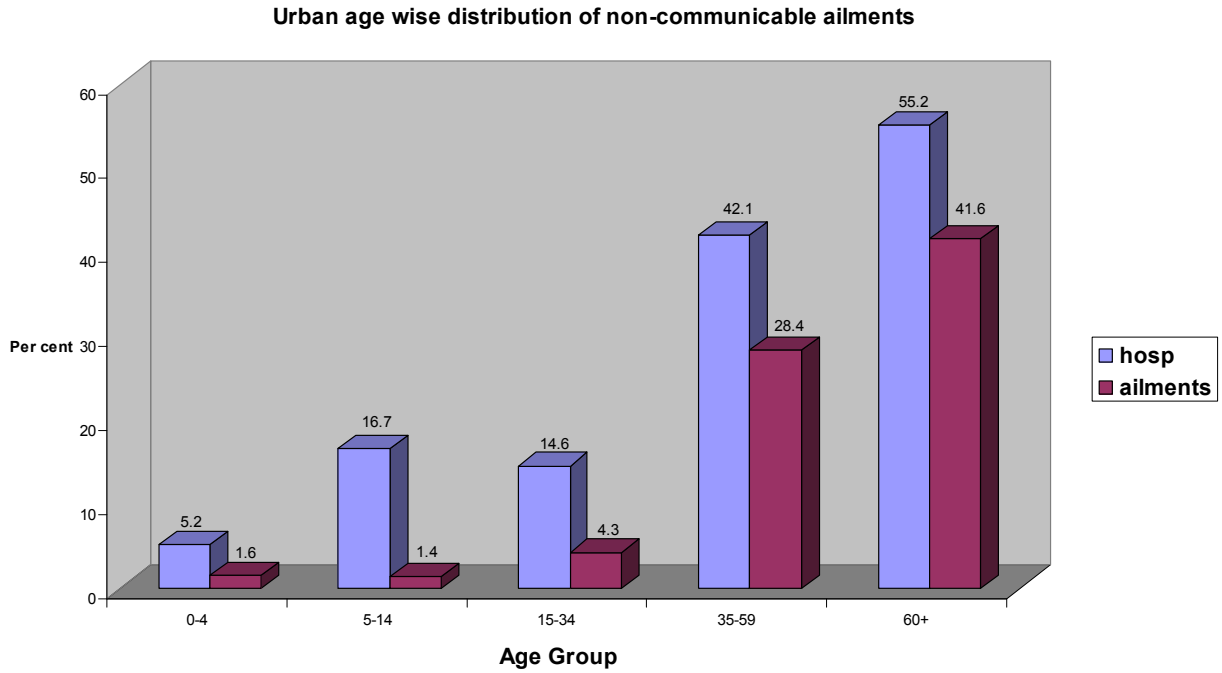


Figure 3(a).

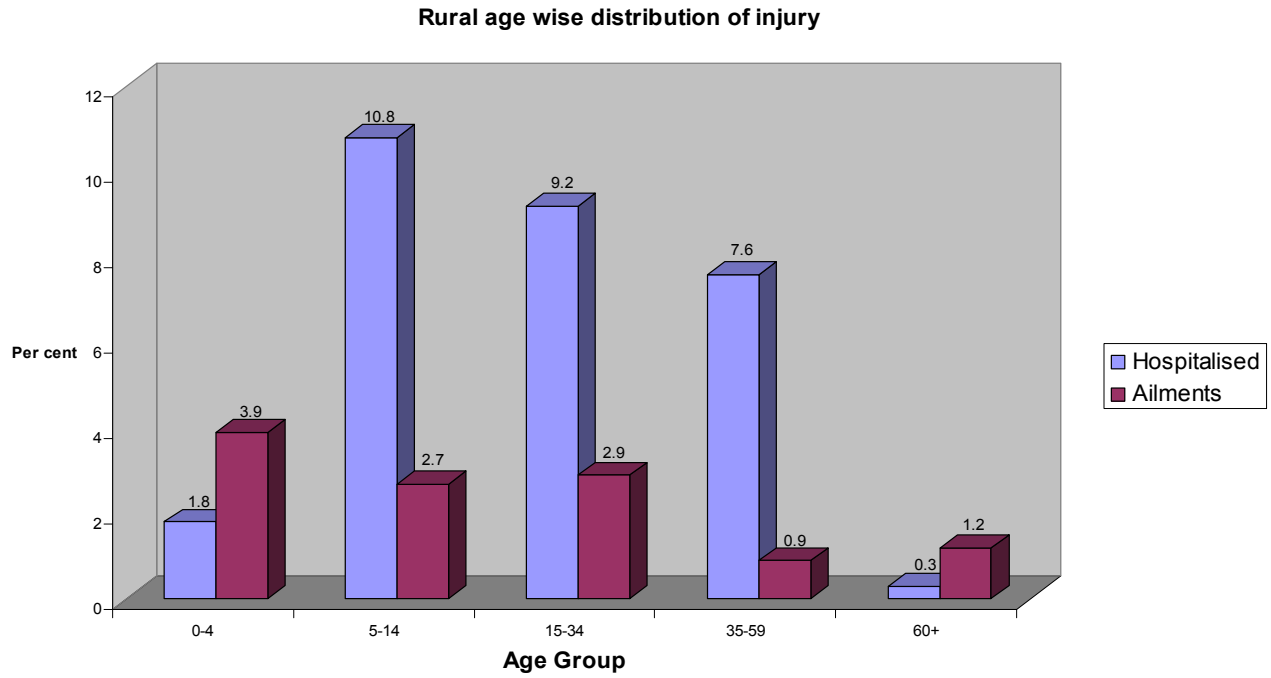
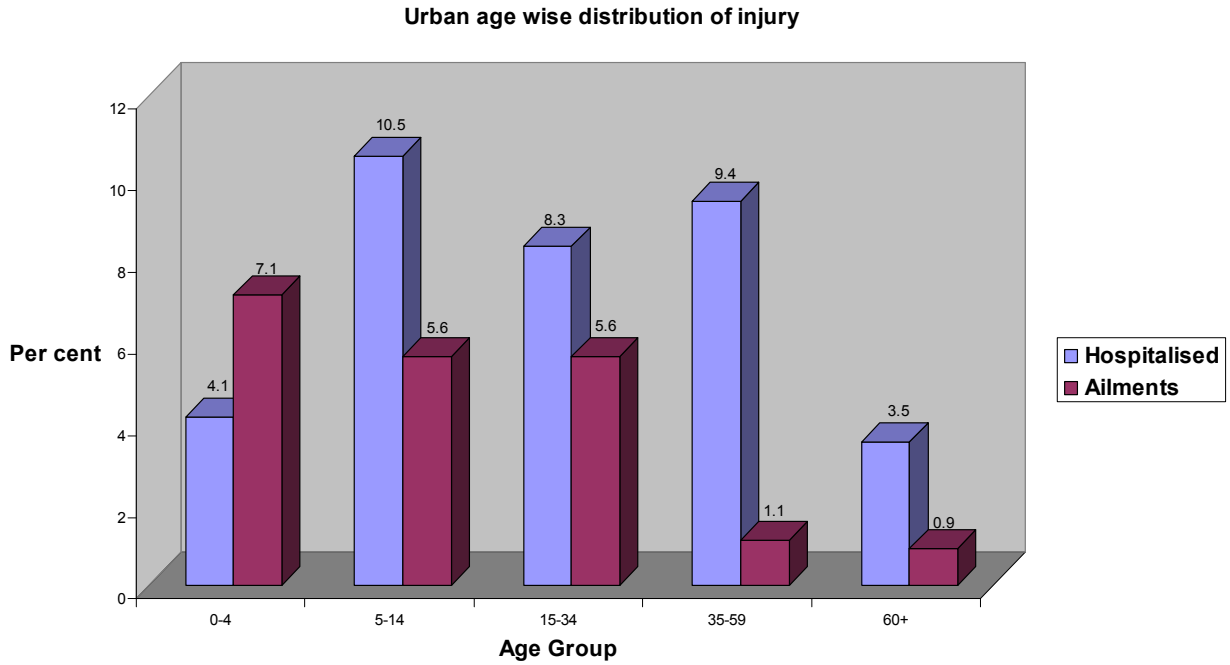

Rural age wise distribution of injury
Per cent
12
10
8
6
4
2
0
10.8
9.2
7.6
3.9
2.7
2.9
1.8
0.9
1.2
0.3
0-4
5-14
15-34
35-59
60+
Age Group
Hospitalised
Ailments

Figure 3(b).


Urban age wise distribution of injury
Per cent
12
10
8
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4
2
0
10.5
9.4
8.3
7.1
5.6
5.6
4.1
3.5
1.1
0.9
0-4
5-14
15-34
35-59
60+
Age Group
Hospitalised
Ailments