Chapter 5

Morbidity analysis

5.1. Introduction

Infrastructure of health services is passing through a phase of transition in North Bengal. The fact can be observed from the dwindling picture of the public health facilities and the flourishing of private sources of care at a faster rate in the region. The reasons behind this fact are, however, not very clear. The question is that – why is the public sector lagging behind its private counterpart in pulling crowd from all sections of population? Though we have tried to explain the phenomenon from the point of view of characteristics of the subject, disorder, and service in the next few chapters, in the present chapter we propose to examine whether the phenomenon of epidemiological transition could be a good supplement to those. If pattern of morbidity of one particular region changes, and existing health care infrastructure is not competent enough to meet growing and diversified demand for health care, people will eke out a living with crumbled public health care system or flee to private sources of care if those are available and affordable. The present study thus applies simple statistical tools to examine the epidemiological profile of Cooch Behar and Jalpaiguri districts of North Bengal (West Bengal, India), and tries to find out its association with pattern of utilisation of health services with respect to public and private types of care; and Allopathic, Homeopathic, and other (traditional) systems of medicine.

In this chapter we will examine the phenomenon of epidemiological transition, types of illness according to characteristics of the subject, and compute incidence and prevalence rates of disease. The research question to be investigated in this chapter is that – whether pattern of morbidity or epidemiological profile of this region has transformed leading to a change in the appeal towards a particular type of care or system of medicine. Simple statistical tools will thus be adopted to examine the epidemiological profile of Cooch Behar and Jalpaiguri districts of North Bengal.

5.2. Characteristics of disorder

Table 24 and figures 23 and 24 show type of illness (characteristics of disorder) classified into three broad categories following the categorisation of Global Burden of Disease Study 1990, as shown in table 17.

Table 24. Characteristics of disorder

Characteristics of the disorder	Category	Rural		Urban		Combined	
		n	%	n	%	n	%
Type of illness*	Group I	187	57.5	26	16.5	213	44.1
	Group II	97	29.8	86	54.4	183	37.9
	Group III	41	12.6	46	29.1	87	18.0
	Total	325	100.0	158	100.0	483	100.0
Severity of illness	Low	121	37.2	45	28.5	166	34.4
	Medium	122	37.5	73	46.2	195	40.4
	High	82	25.2	40	25.3	122	25.3
	Total	325	100.0	158	100.0	483	100.0

** Group I: Communicable, Group II: Non-communicable, Group III: Injuries*

There are 325 cases of illness in the rural areas, out of which more than 57 per cent of the cases (187) are of communicable and related diseases. On the contrary nearly 30 per cent of the cases (97) are of non-communicable diseases. More than 12 per cent cases (41) are of intentional and unintentional injuries. In the urban areas there are 158 cases of illness. Percentages of communicable and non-communicable diseases, and injuries are 16.5, 54.4, and 29.1 respectively. If we compare type of illness between rural and urban categories, we see dominance of communicable diseases in the former and dominance of non-communicable diseases in the latter. The figure for injuries is also higher in the urban category than in the rural category. Table 24 also shows severity of illness in three categories: low, medium, and high. From the table, however, we do not see any specific pattern of severity.

From the point of view of epidemiological transition, the rural areas of this region of North Bengal remain in the pre-transitional stage. The observed epidemiological profile differs from the hypothesised one (Chi-square test statistic: 100.160, sig. 0.000). The urban areas are, however, in the second stage of epidemiological transition (Chi-square test statistic: 35.443, sig. 0.000).

Figure 23 shows disease profile in the rural and urban categories. We see that in the rural areas share of infectious disease is high. In the urban area, however, prevalence of non-communicable disease is high.

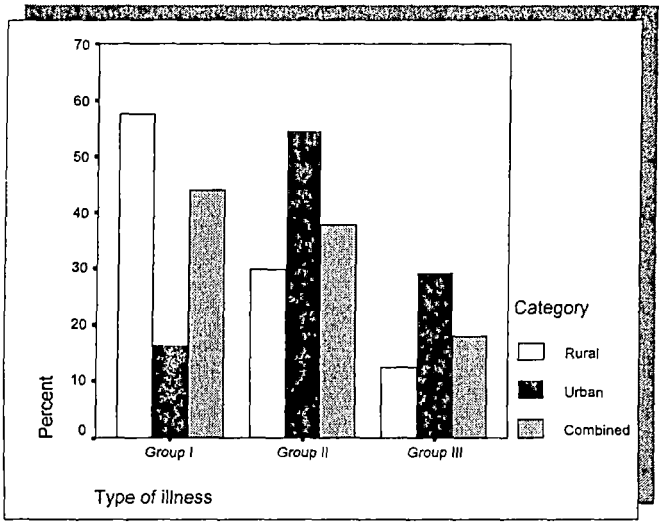

Figure 23. Type of illness of the morbid persons

5.3. Type of illness and characteristics of the subject

We have presented type of illness by individual or household characteristics in the rural, urban, and combined categories as follows.

Table 25. Type of illness* by characteristics of the subject - Rural

Characteristics of the Subject	Category	Group I		Group II		Group III	
		n	%	N	%	n	%
Age-structure	0-4	37	19.8	16	16.5	5	12.2
	5-14	40	21.4	28	28.9	12	29.3
	15-64	76	40.6	32	33.0	16	39.0
	65+	34	18.2	21	21.6	8	19.5
	Total	187	100.0	97	100.0	41	100.0
Gender	Male	71	38.0	53	54.6	22	53.7
	Female	116	62.0	44	45.4	19	46.3
	Total	187	100.0	97	100.0	41	100.0
Caste	SC/ST	71	38.0	36	37.1	18	43.9
	General	116	62.0	61	62.9	23	56.1
	Total	187	100.0	97	100.0	41	100.0

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Family size	≤ 5	108	57.8	48	49.5	15	36.6
	> 5	79	42.2	49	50.5	26	63.4
	Total	187	100.0	97	100.0	41	100.0
Education	≤ Primary	72	38.5	51	52.6	21	51.2
	Middle +	115	61.5	46	47.4	20	48.8
	Total	187	100.0	97	100.0	41	100.0
Normal out-of-door trips	≤ 4 / month	41	21.9	28	28.9	12	29.3
	5 +	146	78.1	69	71.1	29	70.7
	Total	187	100.0	97	100.0	41	100.0
Travel to distant places	No	92	49.2	49	50.5	22	53.7
	Yes	95	50.8	48	49.5	19	46.3
	Total	187	100.0	97	100.0	41	100.0
Standard of living	Low	124	66.3	70	72.2	31	75.6
	High	63	33.7	27	27.8	10	24.4
	Total	187	100.0	97	100.0	41	100.0
Agricultural possessions	Low	33	17.6	26	26.8	10	24.4
	High	154	82.4	71	73.2	31	75.6
	Total	187	100.0	97	100.0	41	100.0
Income	< 2000	86	46.0	38	39.2	23	56.1
	2000 – 4999	75	40.1	42	43.3	15	36.6
	5000 +	26	13.9	17	17.5	3	7.3
	Total	187	100.0	97	100.0	41	100.0

** Group I: Communicable, Group II: Non-communicable, Group III: Injuries*

Table 26. Type of illness* by characteristics of the subject -Urban

Characteristics of the Subject	Category	Group I		Group II		Group III	
		n	%	n	%	n	%
Age-structure	0-4	4	15.4	31	36.0	15	32.6
	5-14	7	26.9	28	32.6	16	34.8
	15-64	10	38.5	17	19.8	9	19.6
	65+	5	19.2	10	11.6	6	13.0
	Total	26	100.0	86	100.0	46	100.0
Gender	Male	16	61.5	56	65.1	28	60.9
	Female	10	38.5	30	34.9	18	39.1
	Total	26	100.0	86	100.0	46	100.0
Caste	SC/ST	7	26.9	15	17.4	6	13.0
	General	19	73.1	71	82.6	40	87.0
	Total	26	100.0	86	100.0	46	100.0

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Family size	≤ 5	18	69.2	51	59.3	30	65.2
	> 5	8	30.8	35	40.7	16	34.8
	Total	26	100.0	86	100.0	46	100.0
Education	≤ Primary	23	88.5	67	77.9	32	69.6
	Middle +	3	11.5	19	22.1	14	30.4
	Total	26	100.0	86	100.0	46	100.0
Normal out-of-door trips	≤ 4 / month	17	65.4	69	80.2	35	76.1
	5 +	9	34.6	17	19.8	11	23.9
	Total	26	100.0	86	100.0	46	100.0
Travel to distant place	No	8	30.8	27	31.4	15	32.6
	Yes	18	69.2	59	68.6	31	67.4
	Total	26	100.0	86	100.0	46	100.0
Standard of living	Low	10	38.5	29	33.7	18	39.1
	High	16	61.5	57	66.3	28	60.9
	Total	26	100.0	86	100.0	46	100.0
Agricultural possessions	Low	20	76.9	64	74.4	29	63.0
	High	6	23.1	22	25.6	17	37.0
	Total	26	100.0	86	100.0	46	100.0
Income	< 2000	1	3.8	8	9.3	5	10.9
	2000 – 4999	8	30.8	23	26.7	15	32.6
	5000 +	17	65.4	55	64.0	26	56.5
	Total	26	100.0	86	100.0	46	100.0

* *Group I: Communicable, Group II: Non-communicable, Group III: Injuries*

Table 27. Type of illness* by characteristics of the subject - Combined

Characteristics of the Subject	Category	Group I		Group II		Group III	
		n	%	*n*	%	*n*	%
Age-structure	0-4	41	19.2	47	25.7	20	23.0
	5-14	47	22.1	56	30.6	28	32.2
	15-64	86	40.4	49	26.8	25	28.7
	65+	39	18.3	31	16.9	14	16.1
	Total	213	100.0	183	100.0	87	100.0
Gender	Male	107	50.2	109	59.6	50	57.5
	Female	106	49.8	74	40.4	37	42.5
	Total	213	100.0	183	100.0	87	100.0

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Caste	SC/ST	78	36.6	51	27.9	24	27.6
	General	135	63.4	132	72.1	63	72.4
	Total	213	100.0	183	100.0	87	100.0
Family size	≤ 5	126	59.2	99	54.1	45	51.7
	> 5	87	40.8	84	45.9	42	48.3
	Total	213	100.0	183	100.0	87	100.0
Education	≤ Primary	95	44.6	118	64.5	53	60.9
	Middle +	118	55.4	65	35.5	34	39.1
	Total	213	100.0	183	100.0	87	100.0
Normal out-of-door trips	≤ 4 / month	58	27.2	97	53.0	47	54.0
	5 +	155	72.8	86	47.0	40	46.0
	Total	213	100.0	183	100.0	87	100.0
Travel to distant place	No	100	46.9	76	41.5	37	42.5
	Yes	113	53.1	107	58.5	50	57.5
	Total	213	100.0	183	100.0	87	100.0
Standard of living	Low	134	62.9	99	54.1	49	56.3
	High	79	37.1	84	45.9	38	43.7
	Total	213	100.0	183	100.0	87	100.0
Agricultural possessions	Low	53	24.9	90	49.2	39	44.8
	High	160	75.1	93	50.8	48	55.2
	Total	213	100.0	183	100.0	87	100.0
Income	< 2000	87	40.8	46	25.1	28	32.2
	2000 – 4999	83	39.0	65	35.5	30	34.5
	5000 +	43	20.2	72	39.3	29	33.3
	Total	213	100.0	183	100.0	87	100.0

** Group I: Communicable, Group II: Non-communicable, Group III: Injuries*

Tables 25, 26, and 27 show types of illness according to characteristics of the subject (background characteristics of the patients / respondents / households) in rural, urban, and combined categories respectively. In the rural areas there are 187, 97, and 41 cases of illness in the three broad categories of diseases (communicable, etc., non-communicable, and injuries) respectively. Of the 187 cases of communicable diseases, etc., nearly 20 per cent occurs among children who are in their first 4 years of age. Percentage figures corresponding to the 5-14, and 65 + age groups are also closer to the above. The figure is simply double (40.6 %) in the working age group. From these figures it is clear that the occurrence of communicable disease is the highest in the 0-4 age group (it is to be

mentioned that age groups are not equal). Similarly, children in the 0-4 age group suffer most from non-communicable diseases also. Occurrence of intentional and unintentional injuries is seen the highest for the children in the 5-14 age group. Gender differences in pattern of morbidity are also prominent. Women suffer more from diseases in the Group-I, as those include maternal and reproductive morbidity also. Men suffer more from non-communicable diseases and injuries. Households in small families (with family members 5 or less) suffer more from diseases in Group-I, and in the large families (with more than 5 family members) suffer more from injuries (Group-III). Occurrence of communicable diseases, etc. is higher in the families whose heads have middle or higher levels of education. Households with higher income suffer less as compared to the poorer ones from all types of diseases.

In the urban areas people suffer more from non-communicable diseases and injuries as shown in table 26. Incidence of non-communicable diseases seems to be the highest for children in the 0-4 age group followed by children in the 5-14 age group. Males have higher risk of suffering from all types of diseases than females do. Morbidity is high in the small (with family members 5 or less) families and in families where household-heads are primarily educated or illiterate. Pattern of morbidity with respect to household-income draws our attention. We see that incidence of diseases increases sharply with income for all types of diseases. Table 27 shows the pattern of morbidity in the combined category.

If we compare results of rural and urban categories, we see that females in the former suffer more from Group-I diseases than females in the latter. On the contrary males in the urban areas suffer more from all types of diseases than their rural counterparts. Pattern of morbidity with respect to household income is quite reverse in the two categories. In rural areas, comparatively, poor households are seen to suffer more. In the urban areas the affluent households are reported to suffer more than the poorer ones. The reason behind such fact is, however, not clear. Comparatively, burden of disease among the affluent households in rural areas may be low or affluent households in urban areas might have experienced many complexities, which they have reported.

Households, whose heads make many normal out-of-door trips, suffer more from all types of diseases in rural areas or vice-versa. The fact is quite opposite in urban areas

where those households suffer more whose heads make few normal out-of-door trips. Rural households who have low standard of living, high agricultural possessions, and low levels of income suffer more from communicable diseases. In the urban areas households with high standard of living, low agricultural possessions, and high levels of income suffer more from non-communicable diseases.

The following figures show type of illness by some selected categories.

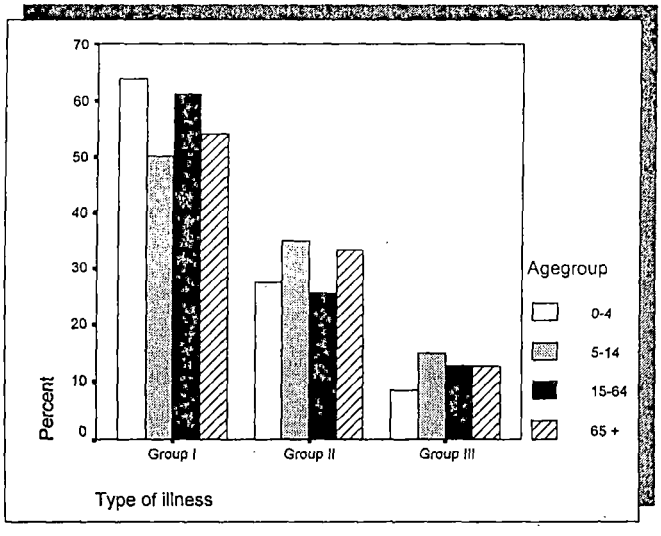

Figure 24. Type of illness of the morbid persons by age group – Rural

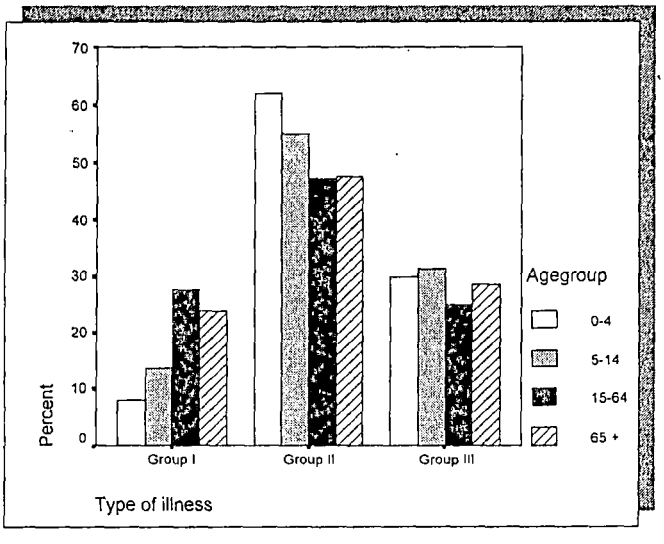

Figure 25. Type of illness of the morbid persons by age group – Urban

Figures 24 and 25 show that burden of disease is high in all the age-groups in rural areas where people surfer more from infectious diseases. In the urban areas burden of disease is high among all for children where they suffer from non-communicable diseases.

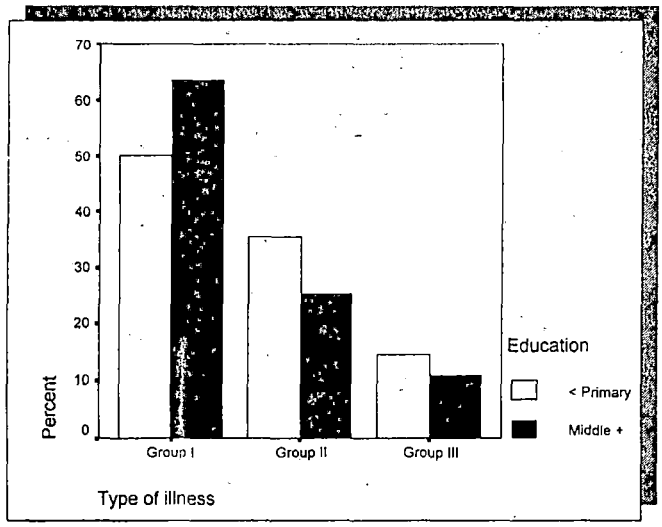

Figure 26. Type of illness of the morbid persons by education – Rural

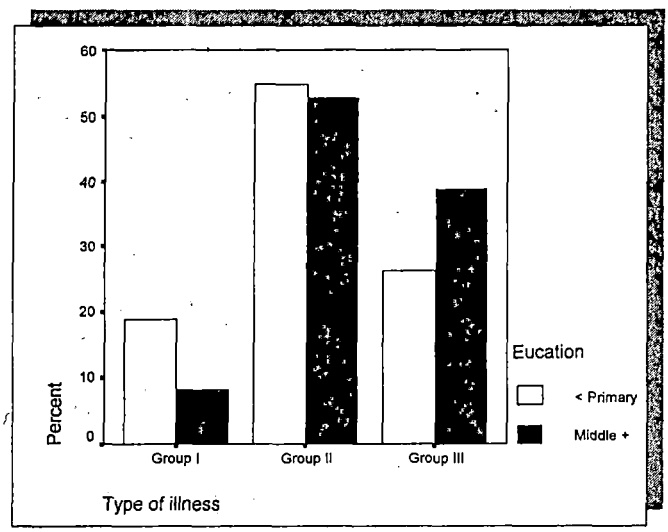

Figure 27. Type of illness of the morbid persons by education – Urban

Figures 28 to 33 show pattern of morbidity with respect to education, standard of living and affordability of households (agricultural possessions, and income). From all the figures we confirm that in the rural areas infectious disease and in the urban areas non-communicable disease predominate, which supports the phenomenon of epidemiological transition.

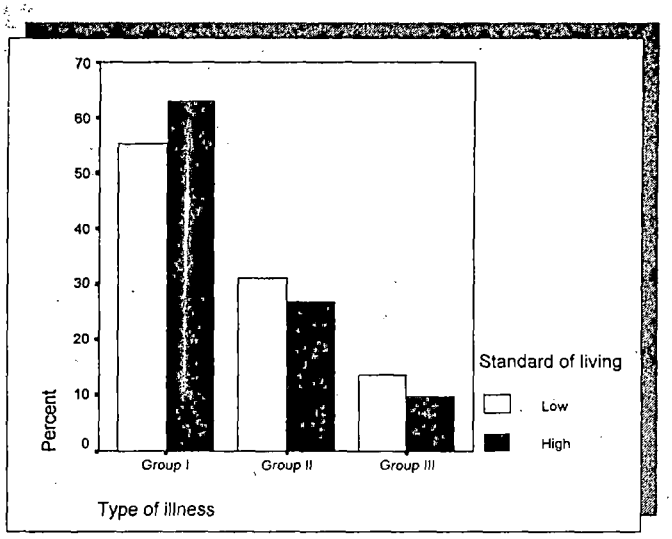

Figure 28. Type of illness of the morbid persons by standard of living – Rural

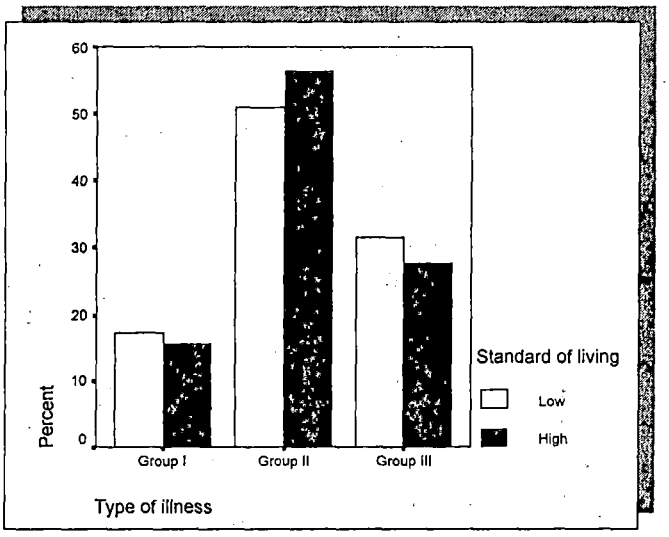

Figure 29. Type of illness of the morbid persons by standard of living – Urban

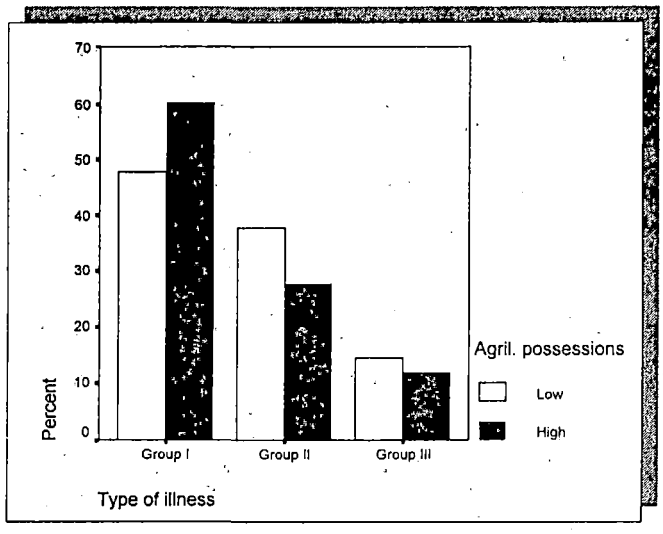

Figure 30. Type of illness of the morbid persons by agricultural possessions – Rural

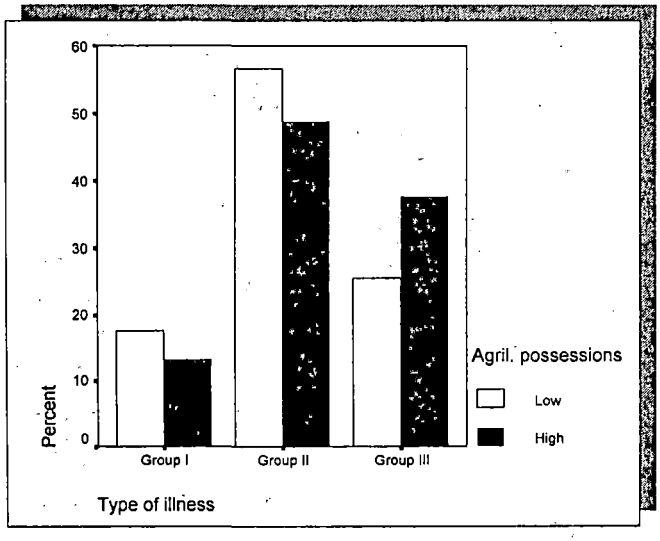

Figure 31. Type of illness of the morbid persons by agricultural possessions – Urban

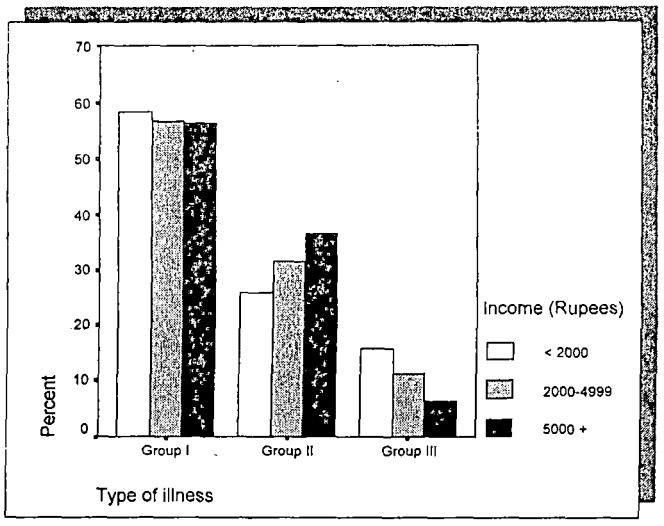

Figure 32. Type of illness of the morbid persons by cash income – Rural

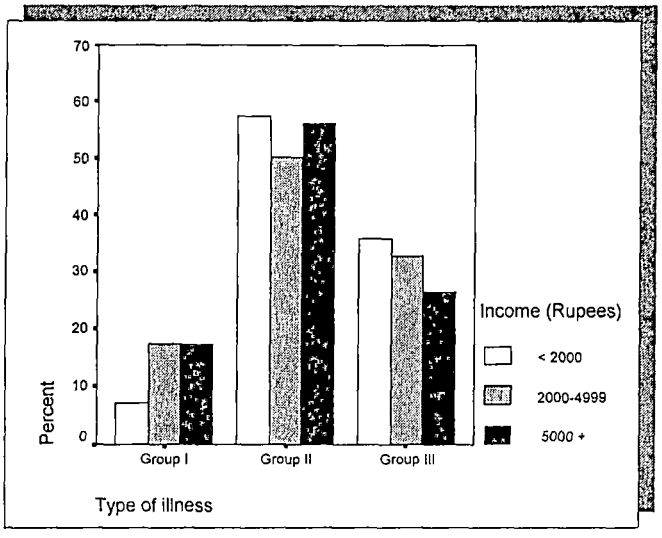

Figure 33. Type of illness of the morbid persons by cash income – Urban

5.4. Incidence and prevalence of disease

Table 28. Annual incidence and prevalence rates of disease

Rates	Rural	Urban	Combined
Incidence rate	273.06	165.91	234.81
Prevalence rate	525.12	459.89	501.84

Table 28 shows incidence and prevalence rates of diseases. Incidence rate of disease in the rural areas of the districts is 273.06. It conveys that 273 in every 1000 persons face new attacks annually or roughly 22 in every 1000 persons face new attack monthly. In the urban areas annual incidence rates is 165.91; in other words, roughly 14 in every 1000 persons fall ill monthly. In the combined category annual prevalence rate of disease is 234.81 per 1000.

The prevalence rates are higher than incidence rates to some extent as those consider new attacks as well as illness, which are prevailing during the reference period. In the rural areas 525 in every 1000 persons fall ill annually or roughly 43 in every 1000 persons fall ill monthly. In the urban areas annual and monthly prevalence rates are 459.89 and 37.80 per 1000. In the combined category annual prevalence rate disease is 501.84.

If we compare the above rates with the figures cited in the section of review of literature, we see that prevalence rates of disease is far above the national average. According to the NSS (1980), annual prevalence rate of disease was 333.33. The prevalence rate of disease is thus 1.5 times higher than the national average. When we compare the results with the findings of NCAER (Sundar, 1995), the prevalence rate of rural areas is 2.56 times higher than the national average, and 3.33 times higher than the average rate of West Bengal. In the urban areas the rate (prevalence) is 1.61 times higher than the national average and 2 times than the state-level (West Bengal) average. Though strictly not comparable, if we contrast the findings of our study with those of the Inspiration (2002), we may comprehend that the occurrence rates for few diseases like fever, diarrhoea, etc. (communicable diseases) are tremendously high in Cooch Behar as depicted by the latter. According to that study, on an average, one person is likely to suffer from these diseases more than once in a year, as the rates are 171 and 160 per cents respectively.

5.5. Summary

In the rural areas communicable, maternal, perinatal, and nutritional diseases and in the urban areas non-communicable diseases predominate. As of disease profile, rural areas of this region of North Bengal remain in the pre-transitional stage. Urban areas are in the

second stage of epidemiological transition. Incidence and prevalence rates of disease also vary sharply according to the place of residence. As the disease profile of this region is complex, i.e., as this region has epidemiologic profile of a pre-transitional society as well as a society in the mid-transitional stage, the people of this region may have complex and diversified need for health care. We will see in Chapter 7 how this complex epidemiologic profile affects the pattern of utilisation of care.