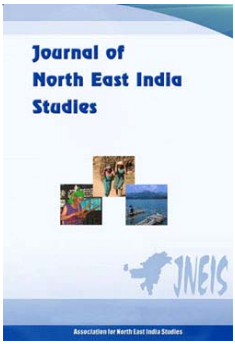

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Kshetrimayum Rabikan Singh

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The Self Perceived Morbidity and its Determinants in North East India

Kshetrimayum Rabikan Singh

The concept of health has evolved through ages, from a simple biological concept to a more complex social concept. The health condition of individuals or a group is largely influenced by socio-economic and political environment. Observing social dimension of health is essential to understand the health condition of a population. This study is an attempt to understand how different socio-economic determinants are associated with the level of morbidity in North East India. The health condition across the North East states is found to be varied by different socio-economic characteristics. The illness rate is found to be higher in rural areas than urban areas for North East on an average. The deeply rooted patriarchal Indian society also gets reflected, where women are found to have more illness rate than male in all the North East states, except Sikkim. Social class also found to have significant influence on the health status of the population. Scheduled Caste community has the highest rate of illness among all the social class. Enabling factors like education and income also have significant impact on illness rate.

Keywords: North East India, Morbidity, Illness rate, Inequalities, Socio Economic Characteristics, Health status, India.

Introduction

The concept of health is difficult to define and is subject to many dimensions and interpretations. Traditional biomedical approach would define health simply as the mere presence or absence of disease. This traditional definition could have many limitations. With this definition, only medical professional can define illness or well being of person. However, social environment and social relationship among people do affect one's illness or well being. It is very important to recognize human beings not only as biological objects, but also as psychological and social creatures.

The World Health Organization defines health as 'state of complete physical, mental and social well being, and not merely the absence of disease or infirmity'.[1] World Health Organization (WHO) takes an inclusive approach by including all as-

Kshetrimayum Rabikan Singh is Ph.D. candidate at Centre for Economic Studies and Planning, Jawaharlal Nehru University, New Delhi. [Email: lamyanba2011@gmail.com]

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pects of one's well being. Their definition relates to one's capability to function everyday activities fully - physically and mentally. However, this concept tends to focus on individuals, neglecting the relationship of the individuals with the social environment. Imrana Qadeer (1985) gives the view that WHO definition tends to focus on the ideal rather than the actual, since it assumes the notion of an absolute, i.e. of complete well being of an individual. She also claims that the definition ignores the fact that well-being or health has a range and cannot be an absolute quantity or quality.

Another definition could be from the social standpoint. Perfect health may be defined as a state in which an individual's capacities for taste and role performance are optimized.[2] Such definition focus on person's capacities to execute tasks in everyday living. It emphasize on social and cultural aspects of health. Social factors do influence how an individual define his/her health condition. Personal perception of health may vary according to one's age, gender, occupation. For instance, younger people may conceptualize health in terms of energy and fitness while older might consider health in terms of functional ability. Imrana Qadeer (1985) defines health as a social concept evolved and determined by the perceptions of a group or community. Thus, health of individual or group is largely determined by the socio-economic, political and technological forces. She argues that a comprehensive concept of health should have an inbuilt social dimension, apart from physical and mental status of individuals. Therefore, it follows that the concept of health and health problems will vary over time, depending upon the available knowledge and consequences of the people and the social environment of the society.

Thus, the concept of health has evolved from traditional and religious practices to more scientific approaches. The current trend of medical culture gives more emphasis on technology and medicine. Health being a special good, is the most important fundamental essence of our life. It is an important constituent of an individual's well being. It also enables a person to function in everyday life to pursue his aims and wants in life that he has reason to value. Importance of health has been recognized through ages. In other words, health is the nutrient of human's capability to function. Democritus in his book *On Diet*, written in fifth century BC, states: "without health nothing is of any use, not money nor anything else".[3] Therefore, the notion of health should not be only limited to the biological aspects, but should also incorporate aspects of social, economic and political behavior. Besides, a healthy population is a prerequisite for economic development. Improvement in health promotes freedom and capability of individuals to make use of available opportunities (Dreze and Sen, 1995:). Also, Ill health condition and poverty are interlinked such that they are inseparable. The significance of health in improving the quality of life is a well recognized fact.

Though, India has achieved high economic growth in the last decade, the performance in condition of health is very poor. More worrying situation is the prevalence of wide inequities in health. Earliest attempt to instill the idea of 'equal utilization of health services ' in the health policy, was made by Bhore Committee way

back in 1946 which suggested the concept of integrated development and comprehensive health care, initiated the idea of primary health care and three tier system of health care. However, even after many reports and recommendations, the development in the health care sector is still far from adequate.

Despite having an impressive economic growth, the health condition of India is still among the worst in the world. Dreze and Sen (2013) argue that the impressive economic growth in India does not lead to proportionate improvement in social development, especially not in health. Former Prime Minister Manmohan Singh expressed his disappointment in health development, when he said, "We cannot hope for a healthy future for our country with a large number of malnourished children".[4] It is not the end, there are more than 620 million people practicing open defecation in the country which is over 50 percent of the total population (UNICEF and WHO, 2012).[5] Lack of proper sanitation and clean drinking water are the major cause of communicable disease. The burden of communicable diseases is among the highest in the globe. India has the highest population of Tuberculosis (TB) cases. Out of 9.2 million cases of TB occuring in India every year, India's share is nearly 1.9 million which accounted for one fifth of the global TB cases (Cauhan 2011). Thousands have lost their precious lives from the preventable disease like malaria, dengue, etc.

The nutritional status of India, for both children and adult, are also one of the lowest in the world. Deaton and Dreze (2009) claim that under-nutrition in India remains higher than those many countries of Sub-Saharan Africa, even though India is richer country than those countries. The *Economic* magazine noted in an article, "Nearly half of India's small children are malnourished: one of the highest rate of underweight children in the world, higher than most countries in the Sub-Saharan Africa. More than one-third undernourished children lives in India".[6] Manmohan Singh recognized the grave situation, who went on to lament, "the problem of malnutrition is a matter of national shame. Despite impressive growth in our GDP, the level of under-nutrition in the country is unacceptably high. We have also not succeeded in reducing this rate fast enough'.[7]

The study attempts to examine the level and pattern of morbidity and to gain an insight into how different socio economic determinants are associated with the level of morbidity. The study also determines the various socio economic characteristics' effect on the pattern and inequalities in morbidity level. Morbidity or illness has been used as a health indicator, in determining the health status of the population.

The whole study has been divided into three parts. A background study on the prevailing condition of health status in India, is followed by an attempt to analyze the details on the pattern of morbidity and its relationship with various socio economic factors, while the last part examines the factors affecting the morbidity using logistic regression. The main sources of data used in this study is National Sample Survey Organization (NSSO) 60th round survey, 'Morbidity, Health Care and Condition of Aged' undertaken in January-June 2004. The survey covered curative aspects of general health care services, utilization of health care services and the expenses incurred by households for availing these services. At the all India level, 60th round covered nearly 73868 households; 47302 in rural areas and 26566 in urban areas. In the North

Eastern region (7 sisters and Sikkim), the survey covered a total of 9012 households; 6382 in rural areas and 2630 in urban areas. At the individual level, the survey covered nearly 46902 individuals; 33761 in rural and 13141 in urban. The primary focus of this paper will be on the information on these 46902 individuals in the North Eastern region.

Self Perceived Morbidity and its Limitations

Understanding the state of ill health of a population is critical in any analysis of inequity in health. As reported morbidity, which is the self perceived state of wellness of one's health condition, implicitly shows the urgency/need of the health services, it is one of the most important determinant of demand for health care utilization. Therefore, understanding the nature and state of reported morbidity will help in having some intuitive grasp of the existing inequity in access to health services. Even though, there are wide and varied views[8] on the suitable measurements of ill status of health, reported/self perceived morbidity has been widely used in many empirical studies (Murray and Chan 1992; Johanson 1991; Duraisamy 2000; Sunder 1995). It is to remember that health itself is a multidimensional in nature; so any attempt to measure the health status appropriately and precisely would be a difficult task, as there is no conclusive final measurable indicator of health status. Health status can be reflected through various indicators such as mortality rate, life expectancy rate, morbidity, nutritional status, anthropometric measures and so on.

The whole basis, for getting information on the self perceived health, is based on asking individuals to evaluate their health condition as perceived by them. Their perceptions may differ even though they have biologically same health status or may found to similar even though their biological health conditions are different. Therefore, there is some association between one's self reported illness and her social, cultural and environment settings. In order words, self reported illness is not biased free; an individual with higher social status and higher education level are expected to have more awareness about his state of health than a poor beggar. Similarly, middle aged person may characterize his illness as 'serious' when he finds difficulty in climbing staircase, however an old man may reported it to be 'normal'.

So, self perceived illness is subjective in nature, relative to the various cultural and social forces. Jylha (2009) suggests that self ratings of health are produced in cognitive process that is inherently subjective and contextual. Sen (2002) also rightly point out that one's self perceived assessment may be seriously limited by his/her social experience. For instance, for those who are brought up in a community with many epidemic diseases and few medical facilities may consider certain symptoms as 'normal' when they are clinically preventable. Thus the social, cultural, demographic and environmental surrounding has significant influence in the variation in the reporting. These led to perception bias among population across different social groups, different caste, and different environment and so on.

Another problem which Saloman, et al (2004) argue is that different people understand a given questionnaire differently and accordingly respond in different ways. Another limitation is the use of proxy respondents in the measurement. When an

adult in a family is asked to report on the health status of another person, most often children, there is possibility of the source of bias. Murray and Chan (1992) give two possible biases: reporting less illness or reporting more illness than the 'true illness' state of the person.

Despite all these limitations reported morbidity is widely used. Duraisamy (2000) claims that morbidity may be more useful health indicator than mortality, as it is related to pain and sufferings of the people, while mortality is a terminal event. Besides, many national surveys include data on reported morbidity. India's NSS survey collected the information on the reported ailments during the past 15 days.

Inequalities in Health Status

Health status of this country varies widely across states, as well as rural-urban within states. These inequalities are due to the fact that different regions of India are at different levels of social and economic development. In order to have some knowledge on the extent of the disparity, Table 2.1 is prepared.

Some of the states selected are Gujarat, Haryana and Kerala having higher per capita income, Maharashtra from medium income state and Bihar from lower income. Nutritional status for adult and infant mortality rates are used as health indicators. Nutritional status of adults has been measured by NHFS using Body Mass Index (BMI). The table provides separately for male and female who's BMI is less than normal.

Table 2.1: Regional Disparity in Health Indicators, 2005-06

	Nutritional status of ever married adults, age (15-49) % of BMI less than normal			**Infant mortality rate per** 1000 live births		
	All	Rural	Urban	All	Rural	Urban
Gujarat				50	58	36
Women	32.3	41.9	19.5			
Men	28.2	35.2	18.3			
Haryana				42	49	19
Women	27.8	32.5	16.9			
Men	26.8	30	19.3			
Maharastra				38	51	22
Women	32.6	43	20.7			
Men	24.9	31.8	17.3			
Bihar				62	63	54
Women	43	45.9	25.1			
Men	28.7	30.9	18.6			
Kerala				15	14	18
Women	12.5	14.3	9.1			
Men	11.9	12.3	11.2			

Source: NHFS III Report, 2005-06, National Fact Sheet

There is wide disparity among states - Gujarat and Haryana have much worse nutritional status than Kerala. Among the five states, Bihar has the worst adult nutritional status, followed by Maharashtra and Gujarat respectively. Rural-urban disparity can be seen in all the states, where rural areas have lower nutritional status than urban. The rural urban disparity is a very serious issue, acknowledging the fact that 83.3 crore out of the 121 crore Indians which 68.84% of the total population still live in rural areas, as per the Census of India, 2011. Similarly, male appear to have better nutritional status compared to female. Furthermore, Bihar has the highest number of infant mortality, followed by Gujarat, Haryana, Maharashtra and Kerala respectively. There is also rural-urban disparity. KRG Nair (2007) finds wide inter-state differentials in malnourishment among children. He also finds that these differentials are increasing over time.

The factors for such inequalities across different region can be due to different social class or economic class or different culture and social organization. TK Roy et al. (2004) examine the inequalities in nutritional status and health care services across states with a focus on social class i.e. caste and tribe. They conclude that the differentials between different social class are partly due to different socio economic characteristics across different social group, but disparity persist in some states even after adjusting the effect of socio-economic factors. Some studies find the inequalities in health status are mainly due to different economic/income class (William Joe et. al. 2008).

Health Status

The health status is checked using three health indicators from SRS survey: birth rate, death rate and infant mortality rate. The detail information is given in the Table 2.2. One discerning observation is the status of all the three indicators for all the NE states except Assam and Meghalaya are better than the national average. Manipur, Nagaland and Sikkim are well ahead of the all India average. In comparison to one of the best state Kerala, Manipur has lower infant mortality death and lower death rate while Tripura has the lower death rate and lower birth rate. Among the NE states, Assam has the worst health condition followed by Meghalaya. This shows the wide inter-state variations among the NE states.

Within the state there is also rural-urban disparity. In general, all the three indicators appear to be higher in rural areas than urban areas. In rural areas, all other NE states except Assam and Meghalaya have better health condition than the national average. Manipur, Nagaland and Sikkim performed well in rural areas; much better condition than national average. For both rural and urban, Manipur performs best among all the NE states. Therefore, most of the NE states have performed better health in comparison to national average, however, when comparison to Kerala, a state whose performance in health sector is remarkable, only Manipur can stand in comparison to Kerala.

Child malnutrition among under-five age group is found to be very high in a recent study by Moatula at al. (2014). Using NHFS III dataset, they claimed that a substantial level of under-five malnutrition (56%) prevailed in NE states. Malnutri

tion directly has many affects on many aspects of children's development. Undernutrition in children happens largely due to wide range of factors which are related to inadequate intake of food, lack of nutritious food in the diet and lack of clean sanitation.

Table 2.2: Health Indicators in North East States, Kerala and All India, 2012

	Birth rate			Death rate			Infant mortality rate		
Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
All India	21.6	23.1	17.4	7	7.6	7	42	46	28
Arunachal	19.4	21	13.9	5.8	6.7	2.7	33	37	13
Assam	22.5	23.7	15.6	7.9	8.3	5.6	55	58	33
Manipur	14.6	14.4	15.2	4	4	4.2	10	10	11
Meghalaya	24.1	26.2	14.4	7.6	8.1	5.4	49	50	40
Mizoram	16.3	20.2	12.2	4.4	5.5	3.1	35	44	19
Nagaland	15.6	15.7	15.1	3.2	3.3	2.8	18	18	18
Sikkim	17.2	17.3	16.7	5.4	5.7	3.3	24	25	16
Tripura	13.9	14.6	10.7	4.8	4.7	5.1	28	29	19
Kerala	14.9	15.1	14.2	6.9	7	6.5	12	13	9

Source: Sample Registration System (SRS), September 2013, Vol. 48, No.2, pp. 1-6

Another serious illness faced by many children is anaemia. NHFS III has the information on percentage of children age 6-59 months having the disease of anaemia. All the NE states, except Assam, have lower percentage of children with anaemia than all India average.

From the table 2.3, interstate disparity and regional inequalities in the three health indicators are clear in NE states region of India. Among the states, Assam and Meghalaya are the worst, while urban areas appear to perform better than rural areas within each state. For the infant mortality rate, rural areas in Mizoram have an average of 44 deaths per thousand, while the value is only 19 in urban areas.

From the NHFS III survey, the following table is made. The level of nutritional status in NE states is, in general, better than the all India average. Though, the level of nutritional status for stunted, wasting and underweight for NE states, except Meghalaya, are lower than national average, the interstate disparity among NE states is quite distinct. Such disparity in nutritional status of children among the NE states has also been recognized before (Moatula at al. (2014). The health inequalities have many implications on the public policy on health. The inequalities in health are also often characterized by the existing setting of social, economic and cultural in the population.

Patterns of Morbidity

A close observation on the levels and patterns of morbidity level could provide some

hints on the prevailing ill state of health environment. A comparison has been made between the North Eastern states and the remaining other Indian states (excluding the 8 north eastern states) using the NSS 60th round. The used measure of morbidity is the 'number of the self reported ailments' which have been calculated as the number of persons reported illness per thousand of population during the last 15 days.

Table 2.3: Nutritional Status of Children under age 3 in NE states and All India
(Nutritional Status in %)

All India/NE states	Stunted	Wasted	Underweight
All India	38	19	46
Arunachal Pradesh	34	17	37
Assam	35	13	40
Manipur	25	8	24
Meghalaya	42	28	46
Mizoram	30	9	44
Nagaland	30	15	30
Sikkim	29	13	23
Tripura	-	20	29

Source: National Fact Sheet, NHFS III, 2005-06

Inter State and Rural Urban Variations

Estimates of reported morbidity per thousand populations for all the 8 states are produced in Table 3.1. Among all the states, Tripura has the highest rate of reported morbidity (122 per thousand) followed by Assam and Arunachal Pradesh respectively while, Mizoram has the lowest reported morbidity followed by Manipur. There is wide inter-state variation in the prevalence of reported illness among the North Eastern States. Some of better states such as Mizoram, Meghalaya, Sikkim and Manipur have reported lower reported illness, probably indicating better health status.Though higher reported illness is directly associated with vulnerability of the population to diseases, it would be inadequate to explain the existing disparity only with the health related aspects of the population. Socio economic differentials in the population sample could also have significant influence on it.

The prevalence of illness/morbidity is also found to be higher in All India (excluding the North Eastern states) than in North Eastern States as whole. Morbidity level is found to be 92 per thousand for the whole remaining India. This pattern may imply that people in North Eastern are less likely to face illness than the people of other states of India. One reason could be due to its geographical location and availability of forest products like fresh fruits and vegetables. Second reason could be because people in north east have more health concerns, thereby taking preventive measures like clean sanitation, avoiding oily food etc.

Secondly, another interesting trend is that reported morbidity in rural North Eastern states is higher than in urban North Eastern states. It is learned that all the states, except Assam, reported higher morbidity in rural areas than urban areas. In

Table 3.1: Reported morbidity in the North Eastern States, 2004

Illness per thousand population by state and region			
States	Rural	Urban	Total
Sikkim	55	13	50
Arunachal Pradesh	61	51	60
Nagaland	62	52	59
Manipur	29	27	28
Mizoram	21	17	19
Tripura	130	72	122
Meghalaya	51	50	51
Assam	82	83	82
All NE States	80	64	78

Source: NSS 60th round, 2004-05

Assam also, the difference in reported illness is minimal, 82 per thousand in rural whereas 83 per thousand in urban. It seems that rural people in north eastern are more prone to illness, as compared to those in urban areas. Rural areas in NE states are very backward; majority of them without pipe drinking water, without connectivity, deteriorating condition of public health care and no pukka toilet and so on. These prevailing conditions might also tend to bring more diseases in rural as compared to urban NE states.

Table 3.2: Morbidity Rate by Region and Gender: For NE States

	Morbidity Rate				
NE States	Region			Gender	
	Rural	Urban	All	Male	Female
Sikkim	55	13	50	61	37
Arunachal Pradesh	61	51	60	59	61
Nagaland	62	52	59	60	57
Manipur	29	27	28	25	31
Mizoram	21	17	19	20	18
Tripura	130	72	122	119	126
Meghalaya	51	50	51	48	55
Assam	82	83	82	78	87
All	80	64	78	75	82

Source: NSS 60th round, 2004-05

3.2 Bias against Women

As for the whole North East, the prevalence rate of illness per thousand population works out to be 75 and 82 for male and female respectively. Higher rate of illness

among female is also observed in both rural and urban areas. This trend implies that women have more chances of facing illness than their male compatriots. Among the 8 states, only Sikkim has higher rate of illness among male than female (see Table 3.2). This gender biases should not be considered lightly as it is one of the basic dimensions of social injustice. This long standing bias against female gender issue has also been point out by some authors (Gita Sen et al. 2002; Duraiswamy 1995). Besides, the prevalence of gender biases in access to nutrition and health services has long been recognized (Das Gupta, 1987).

In order to have a more understanding on the profile of the gender based inequalities in reported morbidity, the Table 3.3 is calculated. In rural areas, the reported illness is higher for boys than rural during younger age i.e. 0-5 years. This might be due to better care of male child and thus illness of male child is well perceived and reported by the parents. This is an indication of preference of mild child in the attitude of parents. This bias in the parental behavior might cause the observed children gender bias in the reporting of illness by their families.

Table 3.3: Gender specific Inequalities in Reported Morbidity by Individual's Characteristics in NE states, 2004.

		Rural		Urban
		Male	Female	Male	Female
All	84	93	77	88
Marital Status				
Never married	74	78	45	64
Currently Married	76	66	71	70
Widowhood	232	238	87	161
Divorced/Separated	103	48	38	24
Age				
0-5	173	158	125	162
6-14	62	51	40	52
15-59	42	58	34	55
Above 60	326	361	284	238
Education level				
Not literate	145	127	122	147
literate without formal education	100	125	51	155
Below primary	67	44	92	49
Primary	54	65	45	39
Middle	48	52	30	54
Secondary	41	65	45	106
Higher secondary	49	49	14	24
Diploma/Certificate	40	361	51	54
Graduate	39	82	66	32
Post graduate	10		20	21

Source: Computed from NSS 60th round 2004-05

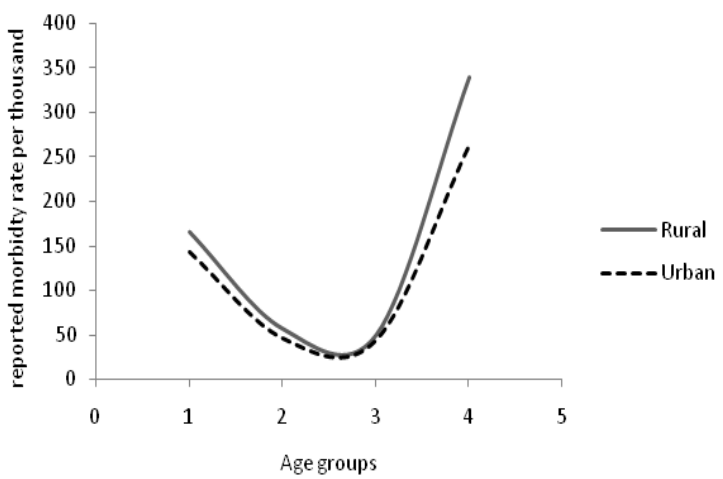
However, this observed pattern is opposite in urban areas, where there is higher reported illness among female children. One can wonder why there is opposite trend in rural and urban. One possible reason could be female's vulnerability towards diseases. Some of nutritional studies also found higher malnutrition among females than among male (Sen and Sengupta 1983). This underlying cause can also be seen in both the age gaps, 5-14 and 15-59 where females have higher reported illness than male in both rural and urban areas.

Above 60 years, one should expect higher prevalence of illness among female, as observed in the rural areas. However, contrary to the expectation, males have higher reported illness than females in urban areas. This trend is difficult to explain. One possible reason could be under-reporting of ailments among female.

3.3 Age wise Differentials in Reported Morbidity

The estimates of reported morbidity for the whole north east by age groups are provided in the Table 3.4. The reported illness rate among children (0-5 years) is 164 per 1000 children. Then, it started decreases with age, until 60 years, and then it rises to 330 per thousand. This indicates the vulnerability of elderly population. With more and more aging population in the coming years, the burden of disease and illness on the society is going to increase in the coming years. Fig 3.1 shows the J shaped association between age and morbidity for rural and urban separately. It clearly show higher rate of illness in rural areas in all the four age groups.

Fig 3.1: J Shaped Association between Age and Morbidity



Source: computed form NSSO 60th round

Notes: 1, 2, 3 & 4 refer age groups 0-4, 5-14, 15-59 and above 60 respectively.

3.4 Reported Morbidity by Socio Economic Characteristics

Table 3.4 shows the higher prevalence of illness among SC population, followed by OTHERS, OBC and ST respectively. The observed disparity among different social groups in North Eastern States has significant policy implications. Though the trend is

Table 3.4: Morbidity by Age and Social Group for Whole NE Region

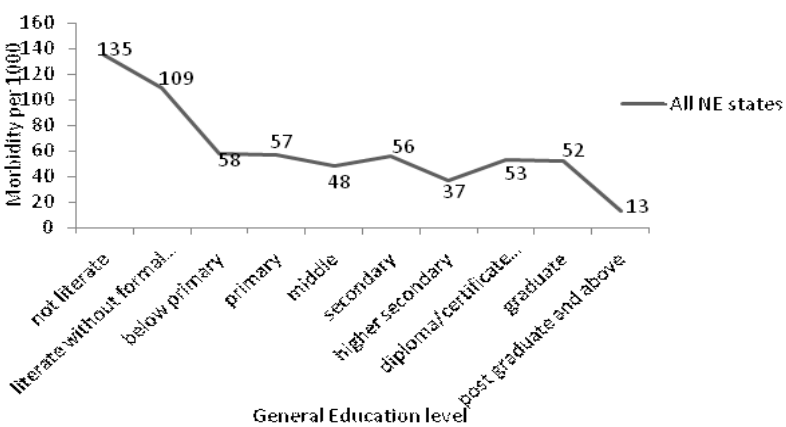
	Illness Rate per Thousand		
	Rural	**Urban**	**All**
Age Group			
0-5	166	143	164
6-14	57	46	56
15-59	50	44	49
Above 60	340	263	330
Social Group			
ST	64	40	61
SC	90	85	89
OBC	81	56	78
others	88	76	86

Source: computed form NSSO 60th round

also equally happening in All India level, it shows some reflection of our caste driven society whether it is North East or India. The distribution of illness rate by different level of education is examined using a graph. It is clearly visible that there is inverse relationship between illness rate and education level. As shown in the figure 3.2, morbidity rate falls sharply with higher level of education. Similar inverse relationship trend was also observed by the earlier study (Duraisamy 2000; Sunder 1995; Duraiswamy 1995) for studies in India. The reason for such trend could be because more elite and educated individuals have more health concerns, more awareness about illness and they are more likely to take preventive measures.

However, another line of argument is 'cultural conditioning' hypothesis (Johansson, 1991), according to which morbidity would be expected to be more among

Fig 3.2: Reported Morbidity by Education Level, 2004.



Source: Computed from NSS 60th round 2004-05

educated individuals. This claim could be seen in some portion of the graph. On close examination, a rising trend is observed between higher secondary educated and graduated individuals. It is expected that there would large difference in knowledge about illness, health environment between higher secondary educated and graduated person. Graduated person are more likely to report more about their illness than a higher secondary educated. At the lower level, there is drastic fall in illness rate with higher level of education, but some rise in illness rate is found after certain level of education and then it again falls.

As for whole North Eastern States, variation in reported morbidity is also seen across different household type/occupation. In rural areas, agricultural labour has highest rate of reported illness, indicating they are more vulnerable to diseases. While casual labour experiences more illness in urban areas (Table 3.5). One of the most vital factors which might have significance impact on the prevalence of illness is the income of the household. Monthly per capita income (MPCE)[9] has been used as a proxy to represent the economic classes of the household. Table 3.6 has been constructed to check any association between reported illness and different economic classes.

Table 3.5: Morbidity Prevalence Rate by Occupation, 2004

Sector	HHS type	Illne rate
rural	self employed in non agriculture	80
	agricultural labour	98
	other labour	81
	self employed in agriculture	74
	others	86
urban	self employed	69
	regualr wage/salary earnings	66
	casual labour	89
	others	26

Source: Computed from NSS 60th round 2004-05

Overall, there is decline in the prevalence rate of illness with increase in the MPCE. Poorest 20 % reported illness rate of 95 per thousand, while illness rate of 78, 63, 76, 65 were reported by Q2, Q3, Q4 and Q5 respectively. This shows a negative relationship between the illness and MPCE level. However, among the 8 states, Nagaland and Manipur reported a clear positive association between MPCE and reported illness while there is no clear association in Sikkim and Arunachal Pradesh. The remaining four states show negative association.

Therefore, there is no clear one way relationship between MPCE and illness rate; could find negative in some areas or could be positive in other areas. Any attempt to

analyze the observed phenomenon, have to account various operating phenomenon. Some of possible operating factors are closely associated with individuals' behavior and choice. Firstly, as it is self reporting process, a person in a lower economic class may not perceive himself to be ill unless he faced serious health problems. A daily wage earner farmer might not consider a back pain to be an illness. However, a person with higher economic status might consider himself as ill even though the illness is not serious. Therefore, with higher economic status, there is chance of higher reporting of morbidity. Also, level of education and health concerns may improve with the improvement in the economic status. Such is the case where there is finding of positive association between reported illness and income (Duraiswamy 1995; Sunder 2002; Dilip 2002). On the contrary side, the nutritional and health condition of people may improve with the improvement in economic status, as people can afford good quality food, clean water and health awareness. This could lead to lower morbidity. This inverse relationship has been observed in some of the studies (Duraiswamy 2000; Sunder 1995; Sunder 1992).

The two contrasting phenomenon can only decide the resulting relationship between income and illness. Since, there is balancing effect between two the phenomenon, it is hard to derive a conclusion, based on findings of positive or negative association. It would require a more micro level studies, where the effect of each phenomenon can be analyzed.

Table 3.6: Incidence of Reported Morbidity by Economic Class (MPCE), 2004.

	Income quinlties				
State	Q1	Q2	Q3	Q4	Q5
Sikkim	62	68	40	22	42
Arunachal Pradesh	63	57	57	62	61
Nagaland	0	1	24	48	74
Manipur	15	11	11	56	52
Mizoram	4	24	32	21	15
Tripura	119	131	141	137	75
Meghalaya	41	45	45	52	91
Assam	96	80	70	81	69
All	95	78	63	76	65

Source: computed from NSSO 60th round Survey.

Examining the Factors affecting the Morbidity rate: Multivariate Analysis

With the descriptive profile pictures of the reported illness in mind, factors which might have significant influence on the prevailing illness can be studied using multivariate analysis. Many factors such as socio economic, demographic and cultural settings have, in many ways affect the health behavior of an individuals. It is seen above that reported morbidity varies considerably by sex, age, income, caste, occupation's type and education level. However, descriptive tabulation failed to provide further

information like separate impact of each factor while holding others constant, strength or significance of each factors. An alternative method of studying the effect of various characteristics can be examined using a multivariate analysis. One advantage of this method, both separate impact of each factors and its significance can be studied.

Since the dependable variable is dichotomous, taking value 1 if an individual is reported ill in the last 15 days and 0 otherwise, method adopted here is a binary logistic regression. The explanatory/independent variables include enabling factors: income, education and occupation type, demographic characteristics: age, sex and household size and social structures like social caste. Table 4.4 represents the results of the logistic regression made to find out the impact of various background characteristics. The odds ratio of each independent variable is given along with the significance level. The odds ratio indicates the odds of being ill compared to its respective reference category during the reference period while all the effect of other variables are kept constant. The reference category has the odd ratio equal to 1. So, if the odds ratio of an event is greater than 1, then it implies an increase likelihood of the event compared to the reference category. Similarly, an odds ratio of less than 1 indicates a deceased likelihood of the event.

The odds ratios of all the four age groups are found to be highly significant at 1% significance level. The elderly individuals of above 60 years have the highest chances of getting ill, followed by children under 5 years, 6-14 years and 15-59 years respectively. Elder individuals (above 60 years) have more than 8 times the likelihood of being ill of the adult group i.e. 15-59 years. Similarly, 6-14 years groups have 18% more likely to report illness than the adults group (15-59). This highly significant result proved the U shaped relationship between age and morbidity. As mentioned in the above section, the higher burden of disease among elderly people needs to be taken seriously with the growing population of old aged population. By 2050, India will be the country with second largest population aged 80 or more – 37 million persons in that age groups.[10] The dependency of old aged people on working people is going to increase dramatically. The burden of disease will worsen the situation which will bearing on poverty, especially in rural areas. Higher health risks faced by older population need proper attention from the health care policy maker.
Social groups have been an important determinant of social injustice and economic inequality. This societal structure is also getting reflected in health status of the society. Social groups have been found as a significant determinant of morbidity. The odds ratios of 0.753, 1.127 and 1.100 observed for ST, SC and OTHERS are found to be highly significant. SC communities are 12% more likely to report an ailment compared to OBC. Surprisingly, ST peoples are 15% less likely to report an ailment compared to their higher class OBC. Here, the complex perception bias might have caused the absorbed trend or it could be that ST communities are more healthy compared to OBC, SC and other communities. The logistic regression analysis confirmed the negative association between income and reported ailments. With increase in incomes, there may be rise in the nutritional status and health concerns which might lead to proper preventive measures, which prevent them from diseases, especially communicable and infectious diseases. All the odds ratios of all the income quartile

Table 4.1: Results of Binary Logistic Regression of the Determinants of Morbidity

Independent Variables	P Value	Odds Ratio
Age groups		
0-5	0.000	2.891***
6-14	0.000	1.18***
15-59®	0.000	1***
above 60	0.000	8.472***
Social group		
ST	0.000	0.753***
SC	0.000	1.127***
OBC®	0.000	1***
OTHERS	0.000	1.1***
Income class		
bottom 20 (Q1)®	0.000	1***
20-40 (Q2)	0.000	0.831***
40-60 (Q3)	0.000	0.686***
60-80 (Q4)	0.000	0.844***
richest 20	0.000	0.874***
General education level		
Illiterate®	0.000	1***
literate without formal education	0.000	1.051***
below primary	0.000	0.664***
Primary	0.000	0.737***
Middle	0.000	0.677***
Secondary	0.000	0.763***
higher secondary	0.000	0.535***
diploma/certificate course	0.000	0.541***
Graduate	0.000	0.704***
post graduate and above	0.000	0.162***
Gender		
male®		1***
Female	0.000	1.087***
Place of residence		
rural®	0.000	1***
Urban	0.000	0.888***
Constant	0.000	0.078***

® represents the reference category, *** significant at 99% confidence level
Source: computed from NSSO 60th survey, 2004-05

less than 1, suggesting less likelihood of getting ill compared to lowest quartile groups (poorest 20%). Compared to bottom 20% of the population, top richest quartile has 13% less chances of reporting an ailment. This significant negative relationship is consistent with other studies (Sunder 1995; Sunder 1992; Duraisamy 200).

From the table, it is clear that general education levels have negative impact on the prevalence of morbidity. The odds ratios of the educational level are declining with higher education and are less than 1, except literate without formal education. Those with post graduate education are 84% less likely to report an ailments compared to illiterate. Similarly, higher secondary educated persons are 47% less chances of reporting any illness. This negative association has also been established by some studies (Sunder 1995; Duraisamy 1995). One small contradict trend observed here, is that literate persons without formal educated are more likely to report ailments than illiterate persons.

Gender inequality is one of the basic fundamental issues for inequity in the society. Gender inequality can be easily found in economic and political participation, gender based discrimination and so on. Such is the case with health profile of the individuals based on sex. The observed odd ratio 1.087 is highly significant, indicating females are 9% more likely to get illness than male. This is a long standing problem, being recognized by many other studies (Gita Sen et al. 2002; Duraisamy 1995).

The rural urban disparity in morbidity level is confirmed by the logistic regression. The result shows odds ratio of urban being 0.888 which indicate rural has 12% more chances of getting illness compared to urban areas.

Conclusion

The study shows the wide variations in the level of prevalence of reported morbidity rate among population in the North Eastern States of India. The variations are characterized by many factors such as place of residence, gender, demographic factors and enabling factors like income, education level and occupation. The information on morbidity level among population is vital in health policy making, as it might throw some features of health inequity. The main findings and their relation to health inequity are summarized.

First, there was interstate variation as well as rural urban disparity. In comparison to India, North Eastern India has lower rate of morbidity rates which can be a good indicator of better health status. The higher burden of ailments would suggest the essential of availability of medical facility in rural areas.

Secondly, the illness rate was higher among female compared to male which implies the prevalence of gender bias in our society. This inequity must be seen from a broader perspective, incorporating all cultural and social settings. Another finding was the J shaped association between age and morbidity level.

Thirdly, there was also significant influence of enabling factors like education and income. In general, education has negative impact on prevalence of morbidity. Therefore, by providing more education, it may reduce the prevalence of ailments. A negative relationship between income and morbidity was observed. As income rises, the chances of being ill got reduced.

The logistic analysis significantly confirmed the expected association between morbidity and its determinants. The analysis reaffirm that health status/ill health of a population cannot be seen in isolation, it is inseparable from the social, economical and cultural environment. The analysis proofs the importance of various socio economic characteristics in determining the health status of a population. The findings of 'Urban bias' and 'Gender bias' shows the existing negligence of our policy makers towards the health inequities. Similarly, the inequities of health status among different economic class, could suggest the need to encourage more public health services.

The inequities in health status are also a part of larger socio and economic inequalities, such as caste discrimination, poverty and economic inequality. Any approach towards the goal of health equity should try to incorporate the larger issue of social injustice and economic inequalities.

Notes

[1] Constitution of World Health Organisation(2006), p. 1.
[2] See Gavin Mooney(1986), "Economics, Medicine and Health Care", p. 23.
[3] Cited in Sudhir Anand(2004), p17.
[4] Quote by Manmohan Singh, while releasing Hunger and Malnutrition report 2011, can be found at http://pib.nic.in/newsite/erelease.aspx?relid=79457
[5] Cited in Dean Spears et al.(2013), p. 2.
[6] http://www.economist.com/node/17090948
[7] Quote by Manmohan Singh, while releasing Hunger and Malnutrition report 2011, can be found at http://pib.nic.in/newsite/erelease.aspx?relid=79457
[8] Amartya Sen (2002) uses life expectance rate as measurement of health status. Human development Index used life expectancy rate, mortality rate to capture the health status of individuals.
[9] Definition of MPCE and how it has been calculated has been given in the Methodology Chapter. Here, households have been ranked by MPCE, thereby dividing into to five equal quartile groups; Q1, Q2, Q3, Q4 and Q5. Q1 represents poorest 20 % of the population while Q5 denotes the richest top 20 % of the population.
[10] World Population Aging report 2013, United Nation.

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