Prevalence of Morbidity Among Women: an analysis of North Tripura and Unokuti District, Tripura

Sanjay Sinha[1], Ananta Pegu[2] and Sumanash Dutta[3]
Ph.D. Research Scholar Dept. of Economics Assam University, Silchar
Email:sanjaydmc84@gmail.com[1]
Asst. Prof & HOD, Dept. of Economics, N.C College Badarpur, Karimganj,
Assam Email:anna.pegu@gmail.com[2]
Prof. Dept. of Economics Assam University, Silchar
Email:duttasu2003@gmail.com[3]

Abstract:
The study is based on primary data which are collected with the help of a structured schedule from four different castes of population spread over North Tripura District and Unokuti District of Tripura. Stratified random sampling technique was applied for the collection of data at household level where the sample units are the adult women in the age group of 18 - 55 years. All the data are collected based on the criteria of balanced representation of different social castes such as ST, SC, OBC and General in the sample. Altogether 90 samples have been collected. Main objective of the study is to determine the morbidity status and also to determine the key variables which affect morbidity status of the people of North Tripura. Binary logistic regression model has been applied to determine the key determinants of morbidity status. It has been found that age of the respondent, respondents per day calorie intake and educational level of the respondents are the key determinants of morbidity status of the respondents. The model as a whole explained between 30.6% (Cox & Snell R Square) and 41.1 %(Nagelkerke R Square). And χ^2 (6.460, N=90) =32.811.

Key Words: Morbidity, Health, Body Mass Index, Chronic diseases, Seasonal diseases

Introduction: I

Poverty eradication with an explicit recognition that deprivation has multiple dimensions, both income and non-income, human in particular is the revised approach of Public policy in the New Millennium. Among the non-income dimensions, health and education have received special attention. Recognizing this fact, the central govt of India in 2013 budget promised to spend 0.34 percent of GDP compared to 0.25 percent in 2011-12. The enhanced allocation in Health and Family welfare in 2012-13 is 30477 crore as against 24315 crore in 2011-12. Given the universal trend towards liberalization, privatization and revising the scope for public health centres with emphasis on cost recovery, choice of cost-effective strategy towards health care assumes importance. This in turn would call for an understanding and appreciation of the morbidity profile of the population and the proximate determinants.

Self-reported measures of poor health and morbidities from developing countries tend to be viewed with considerable scepticism. In an influential editorial, Amartya Sen argued that there is a fundamental disconnect between an individual's subjective perception of their health and the objective or actual health condition that they may have (Sen, 2002, 1993). According to Sen, because an individual's assessment of their health is directly contingent on their social experience, socially disadvantaged individuals will fail to perceive and report the presence of illness or health deficits (Sen, 2002). For instance, an individual with no formal knowledge of diseases but residing in an area with substantial disease burden that has inadequate social infrastructure facilities may be inclined to treat disease symptoms as ''normal'' given their lack of awareness, and therefore, health expectation. Sen, therefore, reasons that perceptions and self-reports of health – which he refers to as the "internal'' view of health – can be ''extremely misleading'' as they obscure the true extent of health deprivation (Sen, 2002).

The study is of interest for a different reason. In particular, following from previous findings (Zimmer et al., 2000) and given the fact that self-assessed health is a subjective measure, there may be differences in the way people from different cultural settings subjectively interpret their health and health disorders.

Therefore in this study it has been attempted to determine the morbidity status of the respondents by considering the self-perception of the investigator

by observing the health of the respondents during survey.

Background of the study: II

Morbidity among people has an important influence on their physical functioning and psychological well-being. The objective of this study is to assess morbidity status of the women population in North Tripura and Unokuti District of Tripura and to determine relationship of morbidity with on body mass index, illness record of the 12 months preceding the year and the present health condition of the respondent, destructive Habit Index, Household Amenities Index of the respondent and other socio economic variables among the population in North Tripura and Unokuti of Tripura, India.

Departure from a state of physical or psychological well-being, resulting from disease, illness, injury, or sickness, specially where the affected individual is aware of his or her condition. According to the World Health Organization (WHO), morbidity could be measured in terms of (1) number of persons who were ill, (2) illnesses these persons experienced, and (3) the duration of these illnesses.

Using data from a study conducted among rural urban communities in North Tripura and Unokuti, this study examines the factors associated with health status among the adults women aged 18-55 years in these district's settlements with particular emphasis on morbidity experiences in the twelve months preceding the survey.

Health problems in Tripura: III

Major health problems in Tripura are Diarrhoeal diseases, parasitic infestation, infective hepatitis, enteric fever and other waterborne diseases originating from sources such as non-potable drinking water and poor sanitation, malnutrition among children, anaemia, malaria, and respiratory diseases. Diarrhoeal diseases and enteric fever (group of diseases) was the leading cause of mortality in the state. As per data available of recent time, 47.7 percent of rural population is not covered by potable water facilities, 24.6 percent is only partially covered. High endemic levels of diarrheal diseases together with epidemics cause much of the work load for the health services, leaving very little time for other activities such as MCH and Family Welfare (Tripura Human Development Report 2010).

Materials and methods: IV

The study is based on primary data which are collected with the help of a structured schedule from four different castes of population spread over three municipalities of

North Tripura and Unokuti District during December 2010 to June 2011. Stratified random sampling technique was applied for the collection of data at household level where the sample units are the adult women in the age group of 18 - 55 years. All the data are collected from both urban and rural areas and the basic criteria of selection of population groups was a balanced representation of different social castes such as ST, SC, OBC and General in the sample.

The sample size is 90. Only the adult women who looked apparently active at the time of survey are included in the sample. Information pertaining to the body weight (*W*) and height (*H*) of the respondents are collected through household survey with the help of appropriate kit.

Variables included in the study are To estimate the result binary logistic regression model has been applied with following set of variables:

Dependent variable

Here the dependent variable is categorical

- Morbidity (Health condition of the respondents observed by the investigator as well as reported by the respondents)=1 for chronic diseases(12 months preceding the survey or more) and 0 otherwise (seasonal and initial stage of any disease)

Independent variables are

- Respondents monthly income
- Age of the respondents
- Education level of the respondents
- Sex of the respondent (it is categorized as 1=male, 0 otherwise)
- Marital status (it is categorized as 1=married, 0 otherwise)
- Respondents working condition (it is categorized as 1=permanent, 0 otherwise)
- Respondents calorie intake per day
- Residence of the respondents(it is categorized as 1=urban, 0 otherwise)
- Household amenities(house type-pucca/ kucha, number of rooms, sq. ft. area under roof,kitchen-separate/attached, latrine-sanitary/kucha/attached/ separate, fuel for cooking, water source,electricity,in house drainage,and sewage disposal facility) index ($Z_{hai} = \frac{X-M}{\sigma}$)

X= unit observations of the series
M= Mean of the observations
And σ= standard deviation of the series

- Destructive habits (alcohol, exercise, drinking of water, vaccination, medical checkup, working hours, smoking-drinking tobacco chewing etc. and rising time in the morning) index($Z_{dhi} = \frac{X-M}{\sigma}$)

X= unit observations of the series

M= Mean of the observations

And σ= standard deviation of the series

- Body mass index(BMI) it is categorized as 1=normal, 0 otherwise

Physical Status of the Respondents: V

Table: 1

Physical Status of the Respondents

Place	Normal	Handicapped
Rural	60	0
Urban	30	0
Combine	90	0

Source: Field Survey

Table-1 explains the physical status of the respondents as appeared at the time of survey. Out of the 90 respondents, all respondents are found to be physically normal and active. And no handicapped respondents are there in the sample.

Morbidity details of the respondents: VI

To assess health in terms of mortality rates only is misleading. This is because; mortality indicators do not reveal the burden of ill health in a community, for example mental illness and rheumatoid arthritis. Therefore morbidity indicators are used to supplement mortality data to describe the health status of a population. In this case study morbidity is given due importance as an indicator of health.

Table: 2

Morbidity Details of the Respondents

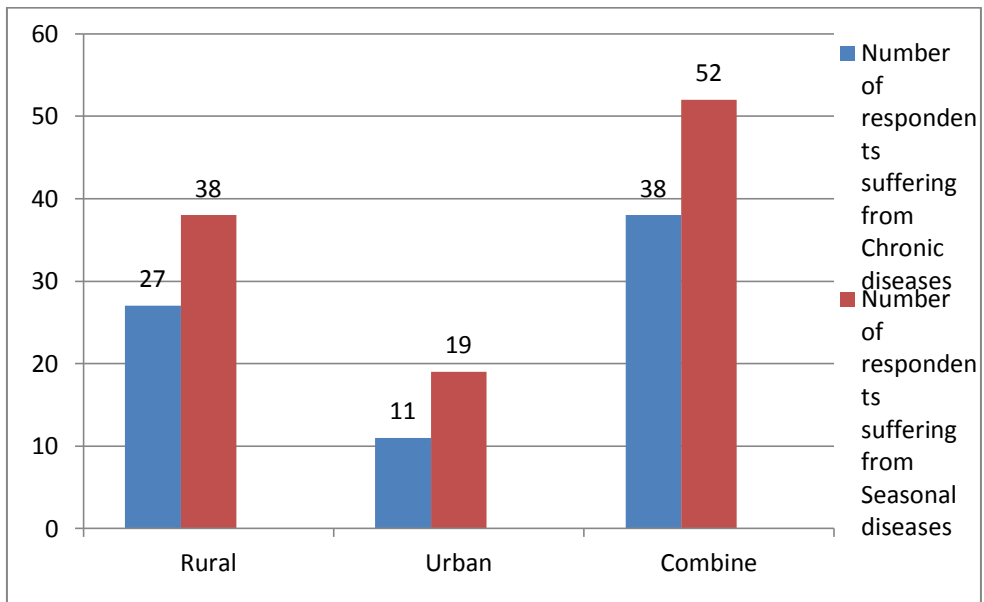| Place	Frequency of Illness	
	Number of respondents suffering from Chronic diseases	Number of respondents suffering from Seasonal diseases
Rural	27	33
Urban	11	19
Combine	38	52

Source: Field Survey

Fig: 1-Respondents Morbidity Records

Table-2 and Figure-1represents the morbidity records of the respondents. In table-2 morbidity records of the respondents(recall basis) is shown into two categories i.e. morbidity due to chronic diseases like chronic gastric, skin diseases, diabetic, TB, sexual impotency etc. and morbidity due to seasonal diseases like cough, cold ,fever diarrhoea etc. Out of the total 90 respondents, a total of 38 rural and urban respondents suffer from chronic diseases in which rural respondents constitute the major part comprises of 27 persons. A total of 52 respondents are found to have suffered/ suffering from seasonal diseases. However, seasonal disease is almost common to those who have suffered or are suffering from chronic diseases. The prevalence of the seasonal diseases is more in rural areas of the district, 33 rural respondents suffers from seasonal diseases and 19 females of municipalities suffer from seasonal diseases.

Table-3 documents morbidity records of the respondents at the time of survey. Records of morbidity have been collected under three categories i.e. respondents suffering from communicable diseases i.e. illness due to a specific infectious agent or its toxic products capable of being directly or indirectly

transmitted from man to man or from the environment through air, dust, soil, water, food etc. , non-communicable diseases and seasonal diseases. It is a good sign that only 1 respondent suffer from communicable diseases. In rural areas no respondents suffers from communicable diseases. In urban areas it is only 1 female respondent who suffer from communicable diseases. In case of non-communicable diseases 40 respondents, 29 rural females and 11 urban female respondents suffer from non-communicable diseases as recorded at the time of survey. Prevalence of seasonal diseases is more in rural areas recording 31 female respondents who reported that they suffer from seasonal diseases as against 18 female respondents in urban areas.

Table: 3

Morbidity details of the respondents (at the time of survey)

Place	Communicable Diseases	Non-Communicable Diseases	Seasonal Diseases
Rural	0	29	31
Urban	1	11	18
Combine	1	40	49

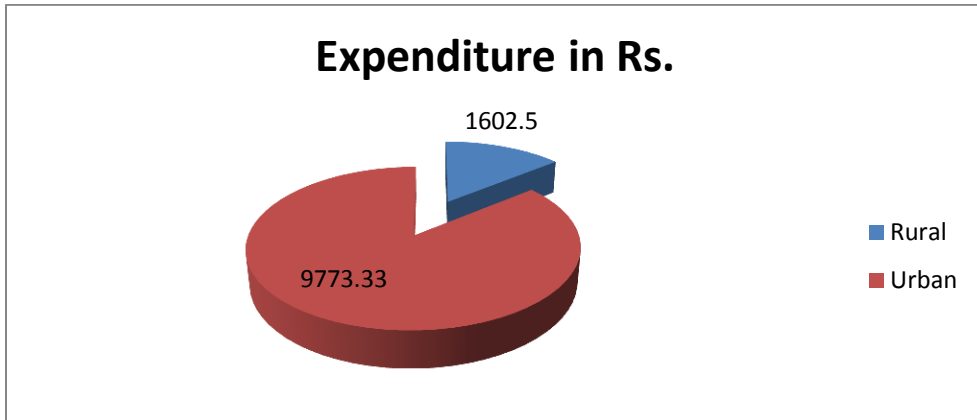Source: Field Survey

Table: 4

Place	In Rs.
Rural	1602.50
Urban	9773.33
Combine	3969.99

Average medical Expenditure of the respondents

Source: Field Survey

Figure: 2- Medical Expenditure of the respondents

Health status and expenditure on health shows a direct relationship. Table-4 presents average medical expenditure incurred by the respondents. Table-4 shows that average medical expenditure is higher for urban respondents at an average of Rs. 9773.33 as against Rs. 1602.50 for rural female respondents.Table-4 conveys another important message that average urban medical expenditure is almost 5 folds higher than rural average medical expenditure.

Results and Discussion: VII

In order to identify the morbidity determinants within this limited scope of study, a qualitative response model (Logit Model) is constructed where the dependent variable is a categorical variable taking value $Y_i = 1$ if a respondent in the age group 18-55 years have chronic diseases value in the normal range and $Y_i = 0$, otherwise (implying seasonal diseases).

Table: 5- Logistic regression predicting likelihood of reporting a problem of morbidity

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Odds Ratio
Step 1(a)	RMI	.000	.000	.332	1	.564	1.000
	AR	.072	.034	4.448	1	.035	1.074
	EDLR	-.206	.081	6.460	1	.011	.814
	MS	-22.744	40193.000	.000	1	1.000	.000
	RWC	.900	.695	1.676	1	.195	2.460
	RCAI	-.004	.002	3.838	1	.050	.996

PD						
RESI	.632	.822	.592	1	.442	1.882
HAI	-.152	.094	2.612	1	.106	.859
DHI	-.192	.120	2.561	1	.110	.825
BMI	-.291	.708	.169	1	.681	.748
Const ant	30.513	40193.0 00	.000	1	.999	178437 963593 48.370

A Variable(s) entered on step 1: RMI, AR, EDLR, MS, RWC, RCAIPD, RESI, HAI, DHI, BMI.

Table6: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	32.811	10	.000
	Block	32.811	10	.000
	Model	32.811	10	.000

Table: 7 Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	89.769	.306	.411

Direct logistic regression was performed to access the impact of a number of factors on the likelihood that respondents would report that they had a problem of chronic diseases. The model contained ten independent variables(Respondents monthly income, Age of the respondents, Education level of the respondents, Sex of the respondent (it is categorized as 1=male, 0 otherwise), Marital status (it is categorized as 1=married, 0 otherwise), Respondents working condition (it is categorized as 1=permanent, 0 otherwise) Respondents calorie intake per day, Residence of the respondents(it is categorized as 1=urban, 0 otherwise), Household amenities index ($Z_{hai} = \frac{X-M}{\sigma}$), Destructive habits index($Z_{dhi} = \frac{X-M}{\sigma}$), Body mass index(BMI) it is categorized as 1=normal, 0 otherwise). The full model containing all predictors was statistically significant, x^2 (6.460, N=90) =32.811, p<.001, indicating

that the model was able to distinguish between respondents suffers from chronic diseases and otherwise. The model as a whole explained between *30.6% (Cox & Snell R Square) and 41.1 %* Nagelkerke R Square) of the variance in morbidity status and correctly classified 32.811% of cases. As shown in table 5 only three of the independent variables made a unique statistically significant contribution to the model (age of the respondents, respondent's calorie intake per day and education level of the respondents). The strongest predictor of reporting a morbidity problem is age of the respondents, recording an odds ratio of 1.074.The odds ratio of 0.996 for respondents calorie intake per day is less than 1, indicating that respondents are .996 times less likely to report having a problem of calorie intake. And the odds ratio 0.814 for education level of the respondents is less than 1, indicating that respondents are .814 times less likely to report having a disadvantage of education.

Appendix

Brief Description of Statistical Technique used for Analysis the details of the multivariate statistical technique used for the analysis of data and the need to use the technique and basic model are briefly provided below. However, formulae and algorithms are not described. Appropriate references have been cited for them.

Logistic Regression Analysis

Logistic regression (logit regression) is used when the response or dependent variable is dichotomous (i.e., binary, or 0-1). The predictor variables may be quantitative, categorical or a mixture of the two. Suppose, the probability of the occurrence of event Y, [P (Y=1)] depends on a set of explanatory variables X_1, X_2, X_3… X_k.

The basic form of the logistic function is

$$P = P[Y = \frac{1}{X_1, X_3, X_3, \ldots\ldots\ldots X_k}]$$
$$= \frac{e^x}{1+e^x} = \frac{\exp(Z)}{1+\exp(Z)}$$

Where Z, is a linear function of a set of predictor variables, X1, X2, X3,… Xk , given by
$$Z = b_0 + b_0X_1 + b_2X_2 + \ldots\ldots + bkXk,$$
and b_0, b_1, b_2, ….. b_k are regression coefficients.

Logit of P is derived by taking natural logarithm, that is, log $[(p/1-p)] = Z$

The quantity $[(p/1-p)]$ is called the odds and hence log $[(p/1-p)]$, the log odds. The coefficients b_0, b_1, b_2,…..b_k are similar to regression coefficients and are called logit

regression coefficients. These coefficients are used to compute odds ratios (reported in results), which give the ratio of two odds of an event occurring (Y=1). In the case of a dichotomous independent variable, the odds ratio can be interpreted as the increased odds of a positive outcome on the dependent variable for the affirmative category (X=1) over the negative one (X=0). An odds ratio more than one indicates a positive association between the independent and dependent variables and an odds ratio less than one indicate a negative association.

Owing to the dichotomous nature of the dependent variable Morbidity (*Chronic diseases Vs. Seasonal diseases*), the technique of logistic regression has been used for the analyses. The logistic regression technique can be used not only to identify the risk factor but also to predict the probability of success.

References

Francis Obare, *"Self-assessed Health Status and Morbidity Experiences of Teenagers in Nairobi's Low Income Settings",* African Population Studies Vol.22 n°1/Etude de la Population Africaine Vol. 22 n° 1

Government of India, Census report 2011(provisional)

Government of India, Budget 2012-13

Kamlesh Joshi, Rajesh Kumar, Ajit Avasthi, *"Morbidity profile and its relationship with disability and psychological distress among elderly people in Northern India" Int. J. Epidemiol. (2003) 32 (6):* 978-987.

Sen, A.K. *"Health: perception versus observation".* BMJ, 324(7342), 860–861. (2002)

Sen, A. K. "Positional objectivity", Philosophy and Public Affairs, 22, 126–145.(1993)

S.V. Subramanian, Malavika A. Subramanyama, Sakthivel Selvaraj, Ichiro Kawachi *"Are self-reports of health and morbidities in developing countries misleading? Evidence from India"* Social Science & Medicine 68 (2009) 260–265.