Understanding Rural-Urban Differences in Morbidities and Untreated Morbidities in Eastern Part of India: Evidence from 75th National Sample Survey (2017-2018)

Background:

Achieving universal and affordable healthcare is the primary health policy agenda since India's inception as a sovereign state. Substantial efforts have been made to make health system efficient and equitable to reach the benefit of healthcare resources to each section of society (Mohan Rao et al., 2011; Prinja et al., 2012). India's health system has achieved several markers in term of key health indicators such as infant mortality rate, maternal mortality and life expectancy(Nagarajan et al., 2015; Padmanaban et al., 2009; Shabnam, 2023). However, much remains to be achieved while it comes to inequity in access to healthcare and affordable healthcare. A huge section of population coming from socio-economically disadvantage sections still unable to get quality healthcare from the huge public health system of India (Rama Baru et al., 2010). Several policy documents have emphasized on equitable and affordable healthcare as a cornerstone of universal health coverage (Garg et al., 2022; Thakur, 2011).

Prevalence of morbidity is an important indication of diseases burden in a population (Ghosh & Arokiasamy, 2009). Provisioning of health services is very essential to for prevention, treatment of diseases and promotion of the population health (Remais et al., 2013) . Barrier in access to healthcare or utilization leads to the increase in unmet need of healthcare which is the result of both supply as well as demand side issues. Supply side issues operate at health system level on the other hand demand side issues operate at individual, household and community level (Ensor & Cooper, 2004; Mahapatro et al., 2021). Several studies have pointed out the peculiarity in the trajectory of diseases burden and healthcare and healthcare utilization and unmet need of healthcare in India. There has been manyfold increase in utilization of healthcare along with the burden of diseases and subsequent demand for healthcare. But unmet need of healthcare remained stagnant since 1980s with increasing inequity among different regions and socio-economic and demographic groups (Karan & Selvaraj, 2009; Paul & Singh, 2017).

There are large chunk of literature on the diseases burden and prevalence of morbidity specifically focusing on elderly population and utilization and access to healthcare targeting maternal and child population, elderly groups(George et al., 2017; Nagarajan et al., 2015; Padmanaban et al., 2009;

Patel et al., 2023; Paul & Singh, 2017; Prenissl et al., 2022). At subnational level studies of morbidity and utilization of health have been focusing on the Southern states of India and few North Indian states (Das et al., 2017; George et al., 2017; Gupta et al., 2022; Joseph et al., 2010).

But there is very scarce literature on Eastern India states on the overall morbidity situations. The prevalence of morbidity and unmet need of healthcare is one of the highest in eastern India (Mahapatro et al., 2021; Paul & Singh, 2017). In terms of diseases burden, the proportion of ailing persons is higher in eastern India (8.30%) as compared to national average (7.93%); on the other hand, the untreated morbidity in eastern India (17.26%) is much higher than national average (11.26%) according to 75th round of National Sample Survey. A combination of supply side issues such as dilapidated health infrastructure, lack of human resources along with demand side problems such as poverty and underdevelopment aggravated the barriers in the pathways of seeking healthcare (Mahapatro et al., 2021). In terms of economic performance, east India states fall under low-and-middle income states. Almost 40% of the district which are enlisted under aspirational district program are located in the four states (NITI AAYOG, 2018).

Theoretical focus:

The major focus in the present study have been given on regional disparity and socio-economic inequity in morbidity situation and unmet need of healthcare in Eastern India. In the past decades, there have been ample research on inequity in health. The larger structural inequity in society across different identities such as gender, class, race etc. is considered as primary cause of health inequity which is driven by unequal distribution and unequal allocations of power and resources (Alina Baciu et al., 2017; Norheim & Asada, 2009). The prevalence of morbidity and healthcare utilization follow a social gradient. It has been well established that the disease burden is skewed towards socio-economically disadvantaged sections as opposed to healthcare utilization which follow pro-rich distributions. Thus, leading to greater unmet need of healthcare among the poorer sections of society across countries including India (Ghosh, 2014; Gwatkin et al., 1999). It has been found that benefits of government spending reach to the poorer sections in a much less proportions than the wealthier section of society (Pinto et al., 2013).

Material and methods:

Data Source:

75st round of National Sample Survey (NSS) on Social Consumption: Health (July 2017-June 2018) (Schedule number 25.0) is used for the study. It is a unit level data which contains national as well as sub-national level information regarding morbidity, health seeking behavior, healthcare utilization and expenditure on treatment for a specific recall period. 75th round of NSS adopted stratified multi-staged design where the first stage unit (FSU) are the census villages in rural area and urban blocks in the urban area. The ultimate stage unit (USU) is households in both rural and urban area. 113823 household (rural-64552, urban-49271) have been included in the survey which includes 555115 individuals (rural-325883, urban-229232). It is worth mentioning that the survey includes each and every district of the country.

In the present study, sum of the four East Indian states i.e., Bihar, Jharkhand, Odisha and West Bengal have been included in the study. The total sample household included in the study is 19664 (rural-12677, urban-6987) which is 17.27 % of the total sample size of the country. In terms of the individuals, the total sample size of the four states is 94859 persons (rural-61973, urban-32886). Only those who self-reported any ailment in the past 15 days recall period are included in the study for analysis of rural-urban differences in morbidity and unmet need of healthcare. These criteria lead to the reduction in the observation included in the analysis to 8155 (rural-4471, urban-3684). It should be mentioned that the above figure is about the spells of ailments rather than number of ailing persons assuming that there may be more than one ailment in the 15 days recall period and ideally an individual should be sought treatment for each ailment.

Variable for statistical analysis:

Dependent variable: 'whether treatment taken on medical advice (no-1, yes -0)' is considered as a dependent or outcome variable. NSS survey records the nature of treatment in the 15 days recall period. All sorts of treatment i.e., allopathy, Indian system of medicine, homeopathy, yoga & naturopathy and others are combined together thus forming two groups – No treatment (1) and Treatment sought (0). The cases of self-treatment have been clubbed with no treatment.

Predictor variable:

Place of residence: The variable has been categorized into rural and urban. Lack of infrastructure, human resources and poor public investment lead to the fragile rural health sector. Unmet need of healthcare is an important concern in rural India (Banerjee, 2021; Mohan Rao et al., 2011).

Co-variates: Broadly four categories of covariates have been taken into consideration that may impact the inequity in the unmet need of healthcare across rural and urban parts of India. These categories are demographic, socio-economic, institutional support, geographical and nature of diseases. The demographic variable includes age, sex, social groups, marital status and religion; the socio-economic variable includes education, economic strata and household size; Institutional support includes enrollment under any health scheme; Geographical variable includes the four states; lastly, nature of diseases which includes whether chronic or not, duration of ailment.

Statistical analysis:

Binary percentage distribution has been used to cross tabulate the morbidity pattern, met and unmet need of healthcare along the above-mentioned predictor variables. The results are tested for statistical significance using Pearson's Chi-square test for homogeneity or independence. The sample data are also weighted to portray state and provincial level picture.(Banerjee, 2021; Banerjee & Roy Chowdhury, 2020)

Binary logistic model has been used to understand the association between unmet need of healthcare and predictor variable. It is worth mentioning that two binary logistic models have been applied to compute the crude and adjusted association between the unmet need of healthcare and place of residence. In case of adjusted model, different categories of co-variates are controlled to understand the interplay of these factors in determining the pattern and direction of rural-urban differentials in unmet need of healthcare. The results of crude (cOR) and adjusted (aOR) odd ratio have been represented with 95% confidence interval (Banerjee, 2021).

In order to understand the group difference (rural and urban) in the unmet need of healthcare in Eastern India and know the most contributing factors in the differences, Fairlie decomposition

method have been used which is a non-linear approximation of Blinder-Oaxaca decomposition (1973) (Banerjee, 2021; Fairlie, 1999; Rahimi & Hashemi Nazari, 2021).

Expected findings:

Rural-Urban differential in morbidity prevalence in Eastern India:

Table 1 describes the prevalence of morbidities in rural and urban areas along different socio-economic and demographic indicators institutional and geographical variables. NSSO records the disease burden in a community through the measure of self-reported morbidity with the questions *'whether suffering from any chronic ailment?'* and *'whether suffering from any other ailment?'*. Before analyzing inequity in the rate of forgone medical care, it is very pertinent to understand the nature of diseases burden among different groups along different covariates.

The descriptive statistics shows that the prevalence of morbidities is more in urban areas than rural counterpart. State wise variation of morbidity suggest that West Bengal reports highest ailment in the last 15 days followed by Odisha and Jharkhand. Bihar register the least ailment. In terms of

age category, people above 60 reports more ailment than other age-groups with more concentration in urban areas. And urban female population report more morbidity than rural counterpart. On average, illiterate population report less ailment than educated persons. In terms of marital status, those who are currently married report more ailment than others with more concentration in urban areas. In terms of religion, urban Hindu report almost double ailment than rural. On average, Muslim population have more diseases prevalence than Hindu. In case of social

	Variables	Total	Pearson chi2	Rural	Pearson chi2	Urban	Pearson chi2
		Proportion of ailing Persons (PAP)					
place of residence	Rural	7.24	434.8287, $p<0.001$				
	Urban	12.89					
States	West Bengal	14.59	3300, $p<0.001$	13.24	1600, $p<0.001$	17.88	3300, $p<0.001$
	Bihar	2.51		2.46		2.95	
	Odisha	9.38		8.8		12.33	
	Jharkhand	6.74		6.42		8.08	
Age	Below 5 years	7.84	5500, $p<0.001$	7.45	2400, $p<0.001$	10.14	5500, $p<0.001$
	5-15 years	4.7		4.54		5.67	
	16-60 years	7.35		6.46		10.82	
	above 60 years	34.12		29		47.82	
Sex	Male	7.54	58.2614, $p<0.001$	6.56	29.3630, $p<0.001$	11.74	30.4534, $p<0.001$
	Female	9.13		7.96		14.12	
Education	Illiterate	10.18	240.4343, $p<0.001$	9.65	373.6307, $p<0.001$	14.27	240.4343, $p<0.001$
	Upper primary and below	7.45		6.53		12.05	
	Secondary	6.8		5.03		13.14	
	Higher secondary and above	8.7		5.33		13.2	
Marital status	Currently married	9.21	182.2731, $p<0.001$	7.82	40.5336, $p>0.001$	15.09	167.0193. $p<0.001$
	Others	7.38		6.65		10.57	
Religion	Hindu	7.97	32.3857, $p<0.001$	6.65	132.0277, $p<0.001$	13.36	12.7829, $p<0.05$
	Muslim	9.72		9.55		10.57	
	Others	9.61		9.65		9.24	
Social Groups	STs &SCs	7.67	49.4883, $p<0.001$	7.18	9.7993, $p<0.001$	11.06	5.765. $p<0.01$
	Others	8.61		7.27		13.4	
Economic group	quartile 1	6.1	1600, $p<0.001$	6.09	405.6380, $p<0.001$	6.17	644.978, $p<0.001$
	quartile2	9.29		8.81		11.17	
	quartile3	17.24		17.04		17.31	
Health Coverage	Covered by Schemes	15.1	751.2722, $p<0.001$	12.94	289.8311, $p<0.001$	20.38	393.2039, $p<0.001$
	Not covered by schemes	7.77		6.85		11.95	
Household size	4 or less	11.7	713.8232, $p<0.001$	10.2	354.6692, $p<0.001$	16.77	329.1587, $p<0.001$
	5 to 6	6.15		5.35		10.55	
	More than 7	6.07		5.75		7.5	
	N	8155		4471		3684	

Table 1. Rural-Urban differences in morbidity prevalences in Eastern India

group, other (general and OBCs) report more morbidities than SCs and STs. It has been found that urban SC& ST population report more morbidity than rural general and OBC population. People belonging to higher economic group register much higher ailments than lower once. The rural urban distribution of morbidity along economic groups is more or less same. People who are enrolled under any

health scheme reports more morbidity than those who are not. Prevalence of morbidity among not enrolled population in urban area is identical to rural areas. The reporting of ailments is higher among smaller households with more urban concentration.

Spells of ailments in the last 15 days recall period:

Table 2 represents the number of spells of ailments in rural and urban area. People residing in urban area report greater proportion of multiple ailments in the 15 days recall period than those residing in rural area.

Number of Spells of ailments	Rural		Urban		Total	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
1	3,308	76.83	2,317	64.95	5,625	73.35
2	860	18.06	906	24.3	1,766	19.89
3	215	3.78	304	8.1	519	5.05
4	64	1.08	115	2.28	179	1.43
5& above	24	0.24	42	0.38	66	0.28
Total	4,471	100	3,684	100	8,155	100
Table 2. Rural-Urban differential in spells of ailments in Eastern India						

Rural-Urban differential in met need and unmet need of healthcare by select background characteristics in Eastern India:

Table 3 represents unmet need of healthcare from both supply and demand side issues. Almost 17.26% of the respondents did not sought treatment even after falling ill. The failure of medical treatment is highest in Bihar followed by Odisha, Jharkhand and west Bengal. Higher level of unmet need in Bihar (38%) is attributed to both supply and demand side factors. In terms of age differentials, persons belonging to 5-15 years of age-group report higher untreated morbidity (28.62%) than other age groups. Though, persons belonging to age group more than 60, have highest proportion of morbidity, but the unmet need is relatively low. This indicates the greater

tendency to sought healthcare among the older age groups. Unmet need of healthcare is relatively more among male population (18.39%) than female (16.26%). The rural-urban divide is very sharp in terms of unmet need. Unmet need is more among the uneducated population than educatied. Higher the level of education lesser the unmet need. In terms of marital status, untreated morbidities are more among the other than currently married persons. SCs/STs population have greater unmet need than others. The tendency of not seeking care is more among the economically disadvantage population. Untreated morbidities are more than doubled among those who are not enrolled under any health scheme indicating enrollment under insurance schemes reduces barriers in accessing healthcare. Households with larger size have greater tendency to escape treatment. Those suffering from chronic ailment have lesser tendency to escape treatment than those suffering from other ailments.

Variables		Unmet need		Total	Met need	Pearson chi2	N
		supply side	demand side				
States	West Bengal	0.7	9.82	10.52	89.48	392.5077, p<0.001	4866
	Bihar	5.15	32.11	37.26	62.74		729
	Odisha	1.98	20.69	22.67	77.33		994
	Jharkhand	0.63	24.16	24.79	75.21		1566
Age	Below 5 years	1.17	16.43	17.6	82.39	164.2381, ,p<0.001	1067
	5-15 years	2.27	26.35	28.62	70.91		668
	16-60 years	1.14	15.01	16.15	83.84		4329
	above 60 years	0.98	12.15	13.13	86.88		2091
Sex	Male	1.72	16.67	18.39	81.61	0.4020, p<0.001	3823
	Female	0.96	15.3	16.26	83.74		4331
place of residence	Rural	1.82	18.09	19.91	80.09	104.8085, p<0.001	4471
	Urban	0.09	10.78	10.87	89.13		3684
Education	Illiterate	1.22	17.66	18.88	81.12	46.3548, p<0.001	2956
	Upper primary and below	1.88	16.81	18.69	81.31		3141
	Secondary	0.75	12.1	12.85	87.14		791
	Higher secondary and above	0.03	10.91	10.94	89.06		1264
Marital status	Currently married	1.4	12.8	14.2	85.81	84.7593, p<0.001	4776
	Others	1.21	19.96	21.17	78.83		3379
Religion	Hindu	1.58	16.2	17.78	82.23	55.4738, p<0.001	6488
	Muslim	0.42	13.59	14.01	86		1512
	Others	0.5	31.73	32.23	67.77		155
Social Groups	STs &SCs	1.64	20.04	21.68	78.32	68.6069, p <0.001	2188
	Others	1.17	14.17	15.34	84.65		5967
Economic group	quartile 1	1.81	20.62	22.43	77.57	143.0948, p<0.001	2993
	quartile2	1.31	13.95	15.26	84.73		2584
	quartile3	0.43	10.05	10.48	89.52		2578
Health Coverage	Covered by Schemes	0.15	8.25	8.4	91.6	41.6969, p<0.001	1389
	Not covered by schemes	1.49	17.12	18.61	81.39		6766
Household size	4 or less	0.91	15.91	16.82	83.17	1.8491, p>0.01	3737
	5 to 6	2.08	16.09	18.17	81.83		2786
	7 or more	1.27	15.77	17.04	82.96		1632
Ailment	Chronic	0.83	7.5	8.33	91.66	445.1447, p<0.001	4517
	Others	1.84	25	26.84	73.09		3638
N		77	947	1024	7131		8155

Table 3. Rural-Urban differences in Unmet and met need of healthcare in Eastern India

Rural-urban differences in disease-specific morbidity prevalence and untreated morbidity:

The rural urban segregation prevalence of ailment shows that those residing in rural areas mostly suffering from infection, cardiovascular and gastrointestinal diseases. On the other hand, in case of urban areas cardiovascular diseases tops followed by endocrinal and nutritional ailment and infections. The diseases specific prevalence of morbidities inflects that rural area is dominated by communicable diseases unlike non-communicable diseases in urban areas.

Table 4 & 5 represents the top 10 prevalent diseases in rural and urban areas. Top three prevalent diseases in both rural and urban areas are both communicable and non-communicable diseases indicating the dual burden of diseases in both rural and urban context. In rural area infection is the most common ailment as opposed to cardiovascular diseases in urban area. But the unmet need for infection related diseases is much higher than cardio-vascular diseases. This indicate that people suffering from cardio-vascular diseases are more consistent in seeking healthcare than those suffering from infections. Respiratory infection is more prevalent in urban area (11.72%) than rural (8.46%). But people belonging to urban (16.57%) have greater tendency to visit medical facilities than rural (28.61%). The prevalence of gastrointestinal diseases is 6.67% and 4.27% in rural and urban area respectively. More People belonging to rural area (6.67%) remain untreated than urban area (2.04%). Psychiatric and neurological problems contribute to a large extent in prevalence of morbidity in rural (5.88%) and urban area (4.28%). But the treatment seeking behavior reveals that the proportion of untreated persons in rural area (33.76%) is almost 3 times higher than urban area (13.05%). This indicates that the consciousness regarding mental health problems in much less in rural areas as compared to urban. Endocrinal metabolic and nutritional problems constitute a large problem in both urban (20.8%) and rural areas (9.14%). Unmet need for the ailments is much less in urban areas (1.92%) than rural (7.62%).

Rural	PAP in %	Unmet need %
infection	37.55	27.07
cardiovascular	12.01	3.36
musculoskeletal	9.64	22.94
Endocrinal metabolic and nutritional	9.14	7.62
respiratory	8.46	28.61
Gastro-intestinal	6.78	6.67
psychiatric and neurological	5.88	33.76
skin	4	21.24
injuries	2.38	6.63
eye	1.46	17.88

Table 4. Morbidity prevalence and untreated morbidities in Rural Eastern India.

Urban	PAP in %	Unmet need %
Cardiovascular	25.24	1.12
Endocrinal metabolic and nutritional	20.8	1.92
Infection	19.09	29.6
Respiratory	11.72	16.57
Musculoskeletal	7.25	18.62
Psychiatric and neurological	4.28	13.05
Gastrointestinal	4.27	2.04
Injuries	2.51	8.95
Skin	1.63	6.62
Genitourinary	0.94	6.85

Table 5. Morbidity prevalence and untreated morbidities in Urban Eastern India.

Determinants of inequity in unmet need of healthcare in Eastern India:

Crude and adjusted odd ration have been measured to understand the effect of place of residents on unmet need of healthcare. The crude analysis in the model 1, shows that the odds of not seeking treatment almost 50% less likely in urban area than the rural counterpart at 99% confidence level. In model 2, several socio-economic, institutional and demographic variables have been controlled. The adjusted odd ratio does not show any kind of change in the pattern of rural-urban differences in unmet need of healthcare. Although, the addition of the control variable lead to the contraction of intensity in rural urban difference with higher level of significance.

Further, it has been found that age, education level, marital status, religion, social groups, states and health coverage are significant determinants of unmet need of healthcare. persons belonging to the age groups 5-15, 15-60 are having more than twice odds of forgone healthcare as compared to the age group 0-5. But the probability of not seeking healthcare reduced for elderly population at higher level of significance (99% confidence level). The odds of not seeking treatment among urban household is 30% less than rural. The likelihood of not seeking healthcare reduce with the increase in educational status with 95% level of significance.

In terms of marital status, persons other than currently married have 30% more likely to not seek healthcare with 99% level of significance. Those belong to other than SCs and STs are less likely to forgone healthcare by 30% at 99% confidence level. In terms of states, West Bengal, Odisha and Jharkhand are almost 70%, 50% and 40% less likely to not seek healthcare compared to Bihar at higher confidence interval. The odd of not seeking healthcare is quarter times more among those who are not enrolled under any health insurance schemes at 95% confidence interval. Those suffering from ailments other than chronic have 3 times greater odds of not seeking healthcare with 99% level of significance. The likelihood of not seeking healthcare is slightly more among those who experienced several spells of ailments with 99% level of significance.

Model specifications	Model 1	Model 2	
Number of observations	8155	8154	
Probability>chi2	0	0	
Pseudo R2	0.0147	0.1207	
Log Likelihood	-3036.4016	-2709.1232	
Dependent variable: Medical treatment not sought 1= Yes, 0=No			
Covariates		Odd ratio	Confidence interval 95%
Model 1		cOR	
place of residence	Rural@		
	Urban	0.516†	.4494252 - .5943713
Model2		aOR	
place of residence	Rural@		
	Urban	0.719†	.6038506 - .8579084
Age	Below 5 years@		
	5-15 years	2.156†	1.655201- 2.808409
	16-60 years	2.330†	1.783983 - 3.04376
	above 60 years	1.933†	1.449053 - 2.579489
Sex	Male@		
	Female	0.949	.822528 - 1.097168
Educational Status	Illiterate to Post graduate	.972**	0.9524817-.9921771
Marital status	Currently married@		
	Others	1.321***	1.097953 - 1.590179
Religion	Hindu@		
	Muslim	.764**	.6177008 - .947415
	Others	1.643**	1.10881 -2.435435

Social Groups	STs &SCs@		
	Others	.775***	.6589118 - .9118492
Economic group	quartile 1@		
	quartile2	1.026	.8636184 - 1.220675
	quartile3	1.005	.8008755 - 1.261223
States	Bihar@		
	West Bengal	0.317†	.2514125 - .3943223
	Odisha	.583†	.4664254 - .730559
	Jharkhand	0.651	.5131076 - .8267114
Health Coverage	Covered by Schemes@		
	Not covered by schemes	1.299**	1.032695 - 1.634336
Household size	4 or less@		
	5 to 6	0.906	.7741614 - 1.061948
	More than 7	0.78**	.643726 - .9462031
Nature of ailment	Chronic		
	Others	3.279†	2.682222- 4.010518
Spells of ailment		1.149***	1.042609- 1.266519
Duration of ailments		0.999	0.9998706-1.000034
Table 6. Determinants of Untreated morbidity in Eastern India			

Major contributory factors of rural-urban differences in untreated morbidity in Eastern India:

Table 6 explains the separate contribution of the predictor variables in the rural-urban differences in unmet need of healthcare in Eastern India using Fairlie's decomposition techniques (1999). The rural-urban gap is 0.069 which means the unmet need of healthcare is 6.9% higher in rural area than urban. The pooled estimates of co-efficient shows that 92.372 % of the total gap is explained by the range of co-variates. The decomposition result shows that 76% of the gap is explained three covariates social category (p<0.001), economic status (p<0.01) and nature of ailments (chronic or not) (p<0.001). Apart from that geographical location (p<0.01) and duration of ailment (p<0.1)

also found as a significant factor despite very marginal contribution in the differences. The rest of the co-variates contributing to the differences insignificantly.

Pooled estimates			
	Co-efficient	%	P>|z|
Rural mean	0.15678819		
Urban mean	0.08767644		
Rural-Urban Gap	0.06911175		
Contributions from Rural-Urban differences			
sex	-0.0000416	0.06	0.681
Social Category	0.0081957†	11.858	0
Economic status	0.015304***	22.143	0.001
Enrollment under scheme	-0.0003216	0.465	0.214
State	0.000634***	0.917	0.001
Age	-0.001769	2.559	0.583
Religion	0.0007611	1.101	0.32
Education	-0.0025576	3.7	0.219
Household size	-0.000397	0.574	0.052
Marital status	0.0005518	0.798	0.825
Nature of ailment (chronic or not)	0.0295281†	42.725	0
Duration of ailments	0.0026775*	3.874	0.067
Spells of ailment	-0.0011047	1.598	0.104
explained gap including all the variables	0.05140444	92.372	
Un-explained gap	0.01770726	7.628	
Reference category: †p<0.001, ***p<0.01, **p<0.05, *p<0.1			
Table 6. De-composition in Rural-Urban differential in Unmet need of healthcare in Eastern India			

Discussion and Conclusion:

The paper made an attempt to add few knowledge in the existing literature on the unmet need of healthcare in India. It uses binary percentage distribution, logistic model and decomposition techniques to understand the unmet need of healthcare in low-and-middle income states of Eastern India. The findings of the study as follows: cross tabulation of the proportion of ailing persons along different co-variates shows that reporting of ailments in much lower in rural than in urban context. Conversely, the descriptive statistics on unmet need pointed out that rate of forgone healthcare is much lower in urban area. Irrespective of the co-variates, demand side factors play greater role in shaping the unmet need among different group of population. The diseases specific distribution of morbidity status and untreated morbidity shows dual burden of diseases in both

rural and urban area. The prevalence of psychiatric and neurological diseases is slightly higher in rural than urban but the rate of seeking healthcare is much lower. This finding indicates that rural population is addressing mental health issues as a problem but due to lack of availability of quality healthcare they are unable to seek healthcare which is needed further exploration.

Odd ratio shows that unmet need is significantly low in urban area. Social groups, age, state, religion, nature of ailment and spells of ailments are determinants of untreated morbidities. The decomposition reveals that economic status, social strata, nature of diseases are significant contributor to the rural-urban gap. It is worth mentioning economic factor is not found to be a significant contributor in the logistic model but it emerges as an important contributory variable in explaining rural-urban differential in unmet need of healthcare. From the above discussion it is found that besides structural determinants, nature and severity of diseases are also plays significant role in shaping the inequity in unmet need of healthcare(Banerjee, 2021; Mahapatro et al., 2021; Padmanaban et al., 2009; Ranjan et al., 2023).

References:

Alina Baciu, Negussie, Y., Geller, A., & Weinstein, J. N. (2017). The Root Causes of Health Inequity. In *Communities in Action: Pathways to Health Equity*. National Academies Press (US). https://www.ncbi.nlm.nih.gov/books/NBK425845/

Banerjee, S. (2021). Determinants of rural-urban differential in healthcare utilization among the elderly population in India. *BMC Public Health*, *21*(1), 939. https://doi.org/10.1186/s12889-021-10773-1

Banerjee, S., & Roy Chowdhury, I. (2020). Inequities in curative health-care utilization among the adult population (20-59 years) in India: A comparative analysis of NSS 71st (2014) and 75th (2017-18) rounds. *PloS One*, *15*(11), e0241994. https://doi.org/10.1371/journal.pone.0241994

Das, R. A., Kumar, S. G., & Roy, G. (2017). Morbidity pattern and its relation to functional limitations among old age rural population in Kerala, India. *Journal of Family Medicine and Primary Care*, *6*(2), 301–304. https://doi.org/10.4103/2249-4863.220015

Ensor, T., & Cooper, S. (2004). Overcoming barriers to health service access: Influencing the demand side. *Health Policy and Planning*, *19*(2), 69–79. https://doi.org/10.1093/heapol/czh009

Fairlie, R. W. (1999). The Absence of the African-American Owned Business: An Analysis of the Dynamics of Self-Employment. *Journal of Labor Economics*, *17*(1), 80–108. https://doi.org/10.1086/209914

Garg, S., Tripathi, N., Ranjan, A., & Bebarta, K. K. (2022). How much do government and households spend on an episode of hospitalisation in India? A comparison for public and private hospitals in Chhattisgarh state. *Health Economic Review.* https://ideas.repec.org/a/spr/hecrev/v12y2022i1d10.1186_s13561-022-00372-0.html

George, L. S., Deshpande, S., Krishna Kumar, M. K., & Patil, R. S. (2017). Morbidity pattern and its sociodemographic determinants among elderly population of Raichur district, Karnataka, India. *Journal of Family Medicine and Primary Care*, *6*(2), 340–344. https://doi.org/10.4103/2249-4863.220025

Ghosh, S. (2014). Equity in the utilization of healthcare services in India: Evidence from National Sample Survey. *International Journal of Health Policy and Management*, *2*(1), 29–38. https://doi.org/10.15171/ijhpm.2014.06

Ghosh, S., & Arokiasamy, P. (2009). Morbidity in India: Trends, Patterns and Differentials. *Journal of Health Studies*.

Gupta, P., Patel, S. A., Sharma, H., Jarhyan, P., Sharma, R., Prabhakaran, D., Tandon, N., & Mohan, S. (2022). Burden, patterns, and impact of multimorbidity in North India: Findings from a rural population-based study. *BMC Public Health*, *22*(1), 1101. https://doi.org/10.1186/s12889-022-13495-0

Gwatkin, D. R., Guillot, M., & Heuveline, P. (1999). The burden of disease among the global poor. *Lancet (London, England)*, *354*(9178), 586–589. https://doi.org/10.1016/S0140-6736(99)02108-X

Joseph, N., Subba, S. H., Naik, V. A., Mahantshetti, N. S., & Mallapur, M. D. (2010). Morbidity among infants in South India: A longitudinal study. *The Indian Journal of Pediatrics*, *77*(4), 456–458. https://doi.org/10.1007/s12098-010-0018-0

Karan, A. K., & Selvaraj, S. (2009). *Deepening Health Insecurity in India: Evidence from National Sample Surveys since 1980s*. https://www.epw.in/journal/2009/40/special-articles/deepening-health-insecurity-india-evidence-national-sample-surveys

Mahapatro, S. R., James, K. S., & Mishra, U. S. (2021). Intersection of class, caste, gender and unmet healthcare needs in India: Implications for health policy. *Health Policy OPEN*, *2*, 100040. https://doi.org/10.1016/j.hpopen.2021.100040

Mohan Rao, Krishna D. Rao, A. K. Shiva Kumar, Mirai Chatterjee, & Thiagarajan Sundararaman. (2011). Human resources for health in India. *Lancet (London, England)*, *377*(9765), 587–598. https://doi.org/10.1016/S0140-6736(10)61888-0

Nagarajan, S., Paul, V. K., Yadav, N., & Gupta, S. (2015). The National Rural Health Mission in India: Its impact on maternal, neonatal, and infant mortality. *Seminars in Fetal and Neonatal Medicine*, *20*(5), 315–320. https://doi.org/10.1016/j.siny.2015.06.003

NITI AAYOG. (2018). *Aspirational Districts Programme*. https://www.niti.gov.in/aspirational-districts-programme

Norheim, O. F., & Asada, Y. (2009). The ideal of equal health revisited: Definitions and measures of inequity in health should be better integrated with theories of distributive justice. *International Journal for Equity in Health*, *8*(1), 40. https://doi.org/10.1186/1475-9276-8-40

Padmanaban, P., Raman, P. S., & Mavalankar, D. V. (2009). Innovations and Challenges in Reducing Maternal Mortality in Tamil Nadu, India. *Journal of Health, Population, and Nutrition*, *27*(2), 202–219.

Patel, P., Muhammad, T., & Sahoo, H. (2023). The burden of disease-specific multimorbidity among older adults in India and its states: Evidence from LASI. *BMC Geriatrics*, *23*(1), 53. https://doi.org/10.1186/s12877-023-03728-1

Paul, K., & Singh, J. (2017). Emerging trends and patterns of self-reported morbidity in India: Evidence from three rounds of national sample survey. *Journal of Health, Population and Nutrition*, *36*(1), 32. https://doi.org/10.1186/s41043-017-0109-x

Pinto, A. D., Kumar, R., Prinja, S., Jan, S., & Kumar, M. I. (2013). *Equity in Hospital Services Utilisation in India*. *48*(12). https://www.epw.in/journal/2013/12/special-articles/equity-hospital-services-utilisation-india.html

Prenissl, J., Neve, J.-W. D., Sudharsanan, N., Manne-Goehler, J., Mohan, V., Awasthi, A., Prabhakaran, D., Roy, A., Tandon, N., Davies, J. I., Atun, R., Bärnighausen, T., Jaacks, L. M., Vollmer, S., & Geldsetzer, P. (2022). Patterns of multimorbidity in India: A nationally representative cross-sectional study of individuals aged 15 to 49 years. *PLOS Global Public Health*, *2*(8), e0000587. https://doi.org/10.1371/journal.pgph.0000587

Prinja, S., Kaur, M., & Kumar, R. (2012). Universal health insurance in India: Ensuring equity, efficiency, and quality. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine*, *37*(3), 142–149. https://doi.org/10.4103/0970-0218.99907

Rahimi, E., & Hashemi Nazari, S. S. (2021). A detailed explanation and graphical representation of the Blinder-Oaxaca decomposition method with its application in health inequalities. *Emerging Themes in Epidemiology*, *18*(1), 12. https://doi.org/10.1186/s12982-021-00100-9

Rama Baru, Arnab Acharya, Sanghmitra Acharya, A K Shiva Kumar, & K Nagaraj. (2010). *Inequities in Access to Health Services in India: Caste, Class and Region*. *38*, 10.

Ranjan, A., Thiagarajan, S., & Garg, S. (2023). Measurement of unmet healthcare needs to assess progress on universal health coverage—Exploring a novel approach based on household surveys. *BMC Health Services Research*, *23*(1), 525. https://doi.org/10.1186/s12913-023-09542-0

Remais, J. V., Zeng, G., Li, G., Tian, L., & Engelgau, M. M. (2013). Convergence of non-communicable and infectious diseases in low- and middle-income countries. *International Journal of Epidemiology*, *42*(1), 221–227. https://doi.org/10.1093/ije/dys135

Shabnam, S. (2023). Changing morbidity-free life expectancy in India by gender and place of residence. *International Journal of Community Medicine and Public Health*, *10*, 1867–1876. https://doi.org/10.18203/2394-6040.ijcmph20231288

Thakur, J. (2011). Key Recommendations of High-Level Expert Group Report on Universal Health Coverage for India. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine*, *36*(Suppl1), S84–S85.