



EQUITY IN HOSPITAL SERVICES UTILIZATION IN INDIA

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Introduction

Studies from a number of low-income countries have found that the wealthy often use publicly financed health services at a higher rate than the poor. To examine the situation in India, the use of public and private sector hospital services by economic class was analyzed and the relationship between utilization and public spending on health services and the reported out-of-pocket payments were assessed. Not surprisingly, hospital services in the private sector were found to be significantly pro-rich. In contrast to previous studies, it was found that India's poor report using hospital services in the public sector at a higher rate than the wealthy, particularly in urban areas. However, this varied across states. High OOP expenditure correlated with higher degrees of inequity, and was a likely barrier to accessing care for the poor. Further work is required to explore the significant variation seen between states and to understand the history of its development. A number of policy options are discussed to reduce inequities in access to public health services in India.

Governments finance a small proportion of the overall spending on healthcare services in most low- and middle-income countries (LMIC). While most Organization for Economic Co-operation and Development (OECD) countries spend at least 8% of their gross domestic product (GDP) on healthcare, the majority of LMIC spend less than 5% (WHO 2010). Given this situation, many calls have been made to reverse neo-liberal economic policies that curtail state healthcare spending and promote privatization.

These calls are based in part on the rationale that government investment will improve access by the poor and reduce health inequities (Whitehead, Dahlgren et al 2001; WHO 2004). However, a number of studies have demonstrated that increases in public spending may disproportionately benefit the wealthy (van de Walle 1995; Castro-Leal and Dayton 2000; Sahn and Younger 2000; Mahal, Yazbeck et al 2001; Filmer 2003). A recent review identified only a small number of countries in which the poorest quintile receives at least 20% of the public expenditure on healthcare (Filmer 2003). The more recent Equity in Asia-Pacific Health Systems (EQUITAP) project found similar results (O'Donnell, van Doorslaer et al 2005), particularly for access to inpatient care (Filmer 2003). India is no exception. Mahal et al (2001) analysed the National Sample Survey of (NSS) 1995-96 and found that the richest and poorest quintiles used 33% and 10% of the public health subsidy respectively. It is apparent that simply increasing the financing of publicly delivered health services is no guarantee that the poor will benefit.

Many of these studies use data that is now more than a decade old while health systems around the world have evolved substantially. Moreover, a more recent analysis from Kenya has shown that although the overall public sector subsidy is utilised at higher rates by the wealthy, the subsidies specifically for primary healthcare and inpatient hospital services are utilised more by the poor (Chuma, Maina et al 2012). In one of our recent studies - limited to three northern Indian states - we found that universally delivered public health services result in utilisation which is either neutral or pro-poor (Prinja, Kanavos et al 2012). Similar to other reviews, we found that imposing demand-side cost-sharing mechanisms such as user fees in public sector health facilities in India is regressive and leads to greater out-of-pocket (OOP) spending and high rates of catastrophic healthcare expenditures (Prinja, Aggarwal et al 2012).

In this paper, we use the National Sample Survey Office (NSSO) data (2004-05) (NSSO 2006), to assess income-based differentials in the use of healthcare, and use hospitalisation rates as the outcome measure. We assess these differentials at the overall level, for the public and private sector, and in rural and urban areas. Hospital episodes are reflective of diseases of a serious nature. Any differences in rates of hospitalisation between households with different wealth status are thus clearly socially unjust and inequitable. Moreover, hospitalisations are usually cost-intensive episodes and thus, lack of financial means to access services are most likely related to the differences in its utilisation.

We also examine whether higher rates of state financing of health services leads to more equitable utilisation among households in different states of India. Further we also test the correlation between the extent of OOP expenditures in public hospitals with that of equitable utilisation. The correlation is also tested for private health facilities.

Methods

Data Source

Horizontal equity is the principle that individuals in the same circumstances are treated equally. A healthcare system with perfect horizontal equity would treat patients with the same needs in a similar fashion, regardless of their income, caste,



gender or other characteristics. In the context of this paper, we have defined horizontal inequity as being present if utilisation of hospitalisation care differs by socio-economic class. Consumption expenditure of the household is taken as proxy for the socio-economic class. To estimate horizontal equity in hospital care utilisation at public and private facilities, we analysed data from the NSSO in its 60th round (2004) on "Morbidity and Healthcare" (NSSO 2006). The sample covered 47,302 rural and 26,566 urban households to identify 3,83,338 individuals. All states and union territories were covered as part of the survey (NSSO 2006). It covered curative and preventive aspects of the general healthcare system in India, utilisation of healthcare services provided by the public and private sector and the expenditure incurred by households for availing these services. Overall, data on 29,036 hospitalisation episodes was collected as part of this survey.

Table 1: Hospitalisation Rate (Per 1,000 Persons) in Public and Private Health Facilities, By Wealth Quintile, India (2004-05)

State	Public Sector"					Private Sector*					Overall"				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Punjab	27.0	16.3	19.1	23.0	28.8	29.4	45.3	47.5	69.9	69.9	56.4	61.6	66.7	92.8	98.7
Haryana	32.3	13.5	26.9	25.0	29.6	54.8	40.6	53.7	62.9	81.0	87.1	54.1	80.6	87.9	110.6
Rajasthan	35.0	44.4	44.6	48.0	56.7	17.7	27.4	31.5	37.0	48.7	52.6	71.9	76.2	85.1	105.4
Uttar Pradesh	21.0	20.8	21.8	21.0	26.8	31.2	45.1	48.5	61.6	76.8	52.2	65.9	70.3	82.6	103.5
Bihar	8.9	11.3	9.9	14.3	14.0	48.4	51.9	56.6	68.1	63.9	57.3	63.1	66.4	82.4	77.9
West Bengal	68.7	70.9	67.7	74.0	56.5	11.9	16.3	24.0	29.9	61.2	80.6	87.2	91.6	103.9	117.7
Orissa	66.4	67.8	72.6	64.3	82.8	14.0	21.3	27.9	25.7	31.3	80.5	89.0	100.5	90.0	114.1
Madhya Pradesh	41.9	39.0	37.4	40.3	31.3	23.9	32.4	41.6	49.7	83.4	65.8	71.4	78.9	90.0	114.7
Gujarat	39.5	33.3	27.3	30.9	17.6	48.1	58.6	60.5	62.1	81.1	87.5	91.8	87.8	93.0	98.7
Maharashtra	35.9	34.8	27.3	30.6	18.4	47.1	59.6	68.7	73.4	100.8	83.0	94.4	96.1	104.0	119.2
Andhra Pradesh	35.2	30.6	36.6	29.2	28.2	48.7	62.7	72.3	85.3	100.1	83.9	93.3	108.9	114.4	128.2
Karnataka	39.3	35.2	30.9	27.0	16.8	37.4	48.2	52.0	64.3	93.7	76.7	83.4	83.0	91.3	110.6
Kerala	63.5	55.7	52.9	53.8	26.8	56.2	73.9	78.3	90.4	125.7	119.7	129.6	131.2	144.2	152.4
Tamil Nadu	68.1	54.1	53.2	38.7	21.3	40.3	55.5	58.1	78.2	104.3	108.3	109.6	111.3	116.9	125.7
Overall	39.5	37.9	39.5	41.5	36.9	29.9	39.1	42.8	51.1	68.4	69.4	77.0	82.3	92.5	105.3

*Q1-Q5 represent population quintiles based on wealth status, with Q1: Poorest 20% population, Q5: Richest 20% population.

In the NSS survey, data was collected on the type of healthcare facility accessed for medical care, i.e., public or private sector, and the area of residence of the households, i.e., rural or urban. It was collected over two sub-rounds, wherein the recall period for hospitalisation expenditure was 365 days. Consumption expenditure data was collected for a recall period of one month. Detailed hospitalisation expenditure was also available for drugs (both from healthcare institutions and purchased directly from pharmacies); diagnostic tests; professional fees for doctor; payments to hospital/institution; and other expenditures. Detailed household consumption expenditure was recorded, along with other socio-demographic information including caste, occupation, gender and education.

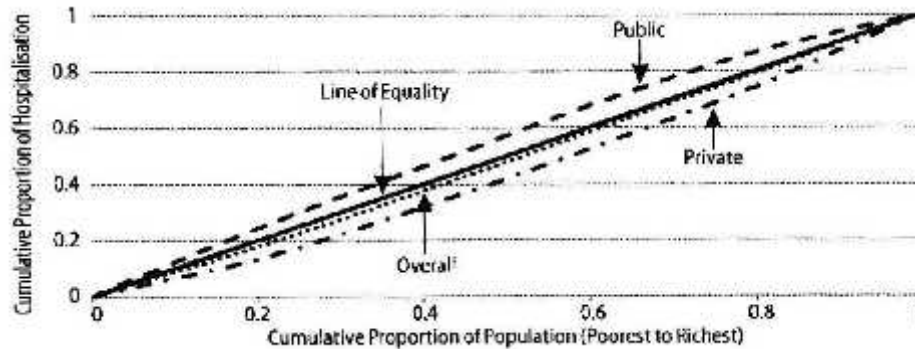
Data Analysis

The lower sample size in smaller states led to large variation around the mean estimate for hospitalisation rate, especially when once stratified by the type of healthcare provider and region. Similarly there was wide variation across the mean estimates for concentration indices and OOP expenditure. Hence, we restricted our correlation analysis to the 14 largest states (with greater than 0.1 million population and 10,000 individuals in the NSSO sample). These larger states comprise more than three quarters of the NSS sample and the Indian population. Households in all states were divided into wealth quintile groups based on monthly per capita consumption expenditure (MPCE). Consumption expenditure was adjusted for age and household composition using the OECD equivalence scale, $W=H/(1+0.7(Na-1)+0.5Nc)$, where W and H are the MPCE and total household consumption expenditure respectively; and Na and Nc are the number of adults and children respectively (OECD 1982). For categorising households into wealth quintiles, we used national distribution of consumption expenditure.



A state or other sub-national distributions could have been used. In such a situation where an individual state distribution is used to determine wealth quintiles for each state, a person living in Bihar could fall in an upper (richer) quintile. However, as Bihar is a poor state, the same individual will actually lie in the middle or poorer quintile if

Figure 1: Concentration Curve for Hospitalisation in Public and Private Sector Health Facilities in India (2004-05)



we base our cut-offs on income distribution derived from national distribution of consumption expenditure. The rates of overall, public and private hospital service use was calculated per 1,000 individuals per year across MPCE quintiles for all states, and then stratified by area of residence, i.e., rural and urban. The mean OOP costs of hospitalisation in public and private sector facilities were estimated at the state level.

Benefit incidence analysis was undertaken to assess the utilisation of health services among different wealth quintile households. Concentration curves were prepared to graphically assess the equity in utilisation of hospitalisation services. The concentration curve plots the cumulative proportion of the hospitalisations (y-axis) against the cumulative percentage of the population, ranked by household mean per capita consumption expenditure, beginning with the poorest, and ending with the richest (x-axis). In other words, the curve plots shares of the health service utilisation (hospitalisations) against quintiles of the living standards (consumption expenditure). The straight diagonal line is the line of equality, which means that the share of hospitalisations is equal to the share of population, by wealth status. Any curve which lies above the line of equality implies that the services are utilised more by the poor, i.e., a pro-poor distribution. On the other hand, a curve which lies below the line of equality signifies that the services are utilised more by the rich, i.e., a pro-rich distribution.

Concentration indices were computed for utilisation of hospitalisation care in public and private health facilities to provide a composite measure of horizontal equity (O'Donnell, van Doorslaer et al 2008). The concentration index is defined with reference to the concentration curve as twice the area between the concentration curve and the line of equality (the 45-degree line). It can be mathematically defined as:

$CI = 2/\mu cov(h, r)$ where, CI is the concentration index, μ is the mean of the health variable, "h" is the health sector variable and "r" is the rank of the living standards variable which is consumption expenditure.

So, in the case in which there is no socio-economic-related inequality, the concentration index is zero. Concentration index ranges from +1 to -1; with positive (negative) value suggesting pro-rich (poor) distribution. Concentration indices were estimated for public and private health facilities in urban and rural areas. We calculated the 95% confidence limits of the concentration index. An interval which included "zero" means that the index is statistically insignificant, while an interval which does not contain "zero" is statistically significant.

To assess the relationship between public spending and extent of horizontal equity in hospital care in public facilities, we estimated the correlation between CI (public sector) and the absolute levels of public spending expressed as rupees per capita. We used the National Health Accounts (NHA 2004-05) estimations of public sector spending in health for our analysis (MOHFW 2005b). As a second step, we estimated correlation between average state OOP expenditure in public facilities and the concentration index. Mean public sector OOP expenditure for the hospitalisation care was estimated at the state level by analysing the NSSO data.

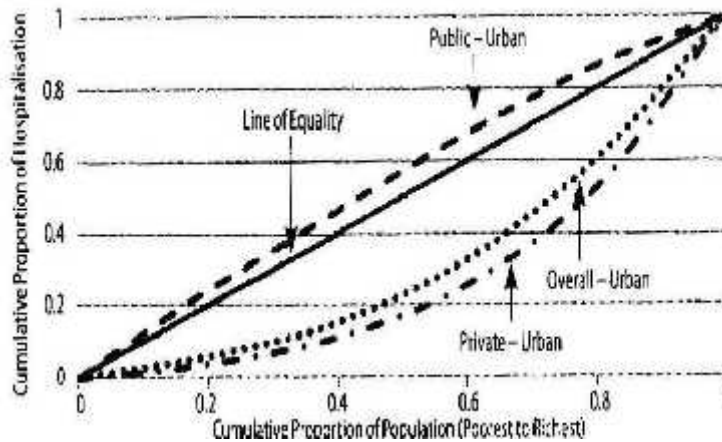
Results

National Findings: Pooled for 14 Large States

Overall, hospitalisation services were utilised at a higher rate by the wealthy. The rate of hospitalisation per 1,000 persons was 69.4 among the poorest households and 105 among the richest households. In the public sector, hospitalisation rate for the poorest and richest quintile households was 3.9% and 3.6% .

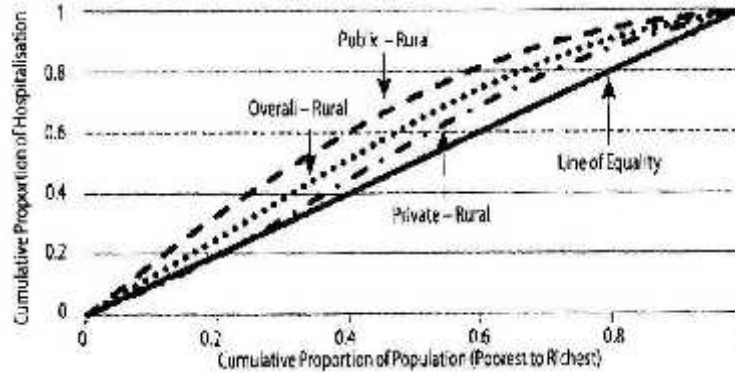


Figure 2: Concentration Curve for Hospitalisations in Public and Private Sector Health Facilities in Urban India (2004-05)



respectively (Table 1, p 53). This implies that the poorest and richest quintiles individuals accounted for 20.8% and 16.5% of all public sector hospitalisations in India respectively (Figure 1). In contrast, the hospitalisation rate in the private sector for the poorest and richest quintiles was 2.9% and 6.8% respectively. In other words, out of 100 hospitalisations in the private sector, the share of the poorest and richest quintiles was 13.4% and 26.8% respectively.

Figure 3: Concentration Curve for Hospitalisations in Public and Private Sector Health Facilities in Rural India (2004-05)



Considering the entire distribution across wealth quintiles, utilisation of hospitalisation service in India is significantly pro-rich (CI=+0.09; 95% limits: +0.07 to +0.1) (Table 1). A positive (negative) value of concentration index signifies that the services are utilised more by the rich (poor). The public sector services are "pro-poor", i.e., concentration index of -0.04 (-0.05 to -0.03) (Figure 1, Table 2). Not surprisingly, the private hospital sector in India is used at a significantly higher rate by the wealthy (CI=+0.17, 95% limits +0.14 to +0.21).

Figure 4: Correlation between Index of Inequality and Mean Expenditure in Public Sector in India (2004-05)

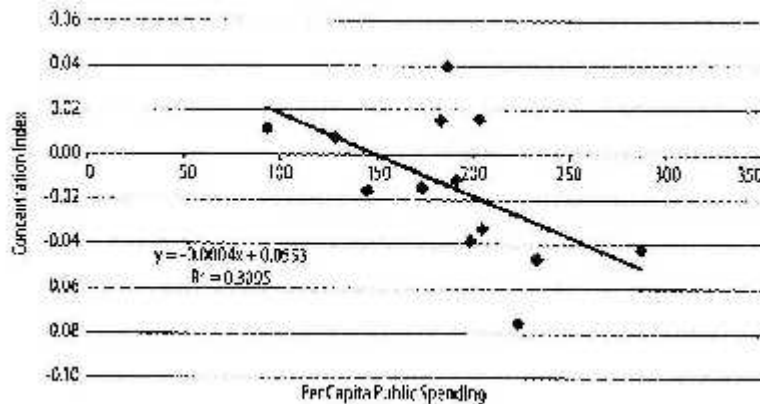
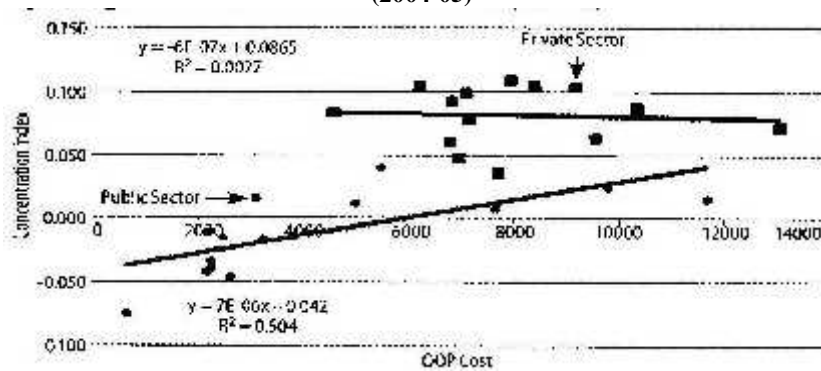




Figure 5: Correlation between Index of Inequality and Out-of-Pocket (OOP) Spending in Public and Private Sector in India (2004-05)



The utilisation of hospitalisation services was more equitable in urban areas (Table 3 (p 56), Figures 2-3 (p 54)). While both the rural (CI=-0.04, 95% limits -0.04 to -0.03) and urban (-0.39,95% limits -0.47 to -0.31) public sector was significantly (P<0.05) pro-poor, the urban public sector was significantly more equitable than the rural (P<0.001). Private sector hospitalizations were inequitable in both the urban (CI=0.18; 95% limits 0.16 to 0.20) and rural (CI=0.16; 95% limits 0.12 to 0.21) India. For the private sector, there was no statistically significant difference in the extent of horizontal equity in rural and urban areas.

State-Level Findings

Among the 14 larger states of India, hospitalisation services were utilised significantly more by the rich (Table 2). The concentration indices were positive and statistically significant, signifying a pro-rich distribution in all states. However within the public sector, we found significant interstate variations in terms of hospitalisation rate by wealth status.

For the public sector, Tamil Nadu (CI= -0.075; 95% limits -0.058 to -0.092) was the most equitable while Rajasthan (CI=0.4; 95% limits 0.03 to 0.05) was most inequitable (Table 2). The rate of utilisation of public sector hospital services among the poorest 20% population was 6.8% in Tamil Nadu and 3.5% in Rajasthan. On the other hand, the rate of utilisation of public sector hospitalisation for the richest 20% population was 2.1% in Tamil Nadu and 5.7% in Rajasthan. Overall, the share of the poorest and richest quintiles among public sector hospitalisations in Tamil Nadu was 24.3% and 9.8% respectively. Besides Tamil Nadu, the public sector services were significantly equitable in Karnataka, Kerala, Andhra Pradesh, Gujarat, Maharashtra, West Bengal and Madhya Pradesh. Public sector utilisation in the remaining six states was significantly pro-rich.

In terms of the private sector, hospitalisation is pro-rich in all the 14 states. The richest use hospital services 5.1 times more than the poorest in West Bengal. Bihar has the least gradient (1.3 times) between the utilisation of rich and poor in private sector. Relative among the states, Orissa had the least inequitable private sector (CI=0.032; 95% limits 0.032 to 0.04), while Karnataka had the most inequitable private sector (CI=0.11; 95% limits 0.08 to 0.13).

Correlation Findings

Among the 14 larger states in India, we found that as the public expenditure on health expressed as per capita spending on health increased, the utilisation of hospital services became more equitable (Figure 4). However; this correlation was weak and statistically insignificant (r=0.4; 95% limits -0.7 to +0.04). However, we found a strong positive correlation (r= 0.71; 95% limits 0.55 to 0.91; P<0.001) between the mean public sector OOP spending and concentration index, i e, the lower the OOP spending in public sector facilities, the more negative is the concentration index, i e, greater is the extent of horizontal equity in the use of hospital services (Figure 5). We also tested whether a similar correlation exists between the OOP expenditure in private sector hospitalisations and its concentration index. Here, we found a very weak and statistically insignificant correlation between private sector OOP spending and horizontal equity in utilisation of hospital services (r=-0.05; 95% limits -0.041 to +0.32).

Table 2: Horizontal Equity for Hospitalisation Care, by Public and Private Sector, in 14 Large States of India

States	Concentration Index								
	Overall			Public			Private		
	Mean	Upper Limit	Lower Limit	Mean	Upper Limit	Lower Limit	Mean	Upper Limit	Lower Limit
Punjab	0.097*	0.073	0.121	0.025*	0.016	0.033	0.072*	0.056	0.088



Haryana	0.094*	0.068	0.120	0.016*	0.012	0.021	0.078*	0.056	0.099
Rajasthan	0.103*	0.085	0.122	0.040*	0.033	0.047	0.063*	0.052	0.074
UP	0.112*	0.095	0.129	0.008*	0.006	0.011	0.104*	0.089	0.119
Bihar	0.061*	0.052	0.069	0.012*	0.010	0.015	0.049*	0.041	0.056
West Bengal	0.073*	0.059	0.088	-0.015*	-0.023	-0.006	0.088*	0.067	0.109
Orissa	0.052*	0.045	0.060	0.016*	0.011	0.021	0.036*	0.032	0.040
MP	0.090*	0.075	0.104	-0.015*	-0.019	-0.012	0.105*	0.088	0.122
Gujarat	0.023*	0.016	0.029	-0.038*	-0.050	-0.027	0.061*	0.043	0.079
Maharashtra	0.067*	0.051	0.083	-0.033*	-0.042	-0.024	0.100*	0.075	0.125
Andhra Pradesh	0.082*	0.069	0.095	-0.011*	-0.014	-0.007	0.093*	0.078	0.108
Karnataka	0.063*	0.048	0.079	-0.046*	-0.055	-0.037	0.109*	0.085	0.134
Kerala	0.042*	0.032	0.051	-0.042*	-0.056	-0.028	0.083*	0.061	0.106
Tamil Nadu	0.030*	0.022	0.037	-0.075*	-0.092	-0.058	0.105*	0.080	0.129
Overall (14 states)	0.089*	0.072	0.105	-0.041*	-0.050	-0.031	0.174*	0.141	0.207

* Significant at 95% of level of confidence.

Discussion

We used the 60th round of NSS data on morbidity and healthcare to analyse the distribution of utilisation of hospitalisation services by wealth status, with separate analysis for the public and private sector in 14 larger states. The extent of horizontal equity was further evaluated according to the area of residence, i e, rural and urban. Finally, we examined the correlation between the extent of horizontal equity in public sector health facilities, with the public spending on health and the level of oos expenditures borne by households.

Overall we found that the hospital services are inequitably utilised more by the rich. The poor use public hospitals at a higher rate than the wealthy, potentially suggesting equitable use. The situation is contrary to this in the private sector, with the rich using more services than the poor. Overall, the public sector was equitable and the private sector was inequitable, irrespective of the region, i e, rural or urban, although utilisation in urban health facilities was slightly more equitable than the rural. We found substantial variation between states in distributional benefits of public sector services with concentration indices ranging from -0.07 to +0.04 in Tamil Nadu and Rajasthan respectively. The private sector was uniformly inequitable in all the states in both rural and urban areas. We

Table3: Horizontal Equity for Hospitalisation Care, By In Type of Care Provider and Region, in 14 Large States of India

States	Concentration Index											
	Rural Public Sector			Urban Public Sector			Rural Private Sector			Urban Private Sector		
	Mean	Upper Limit	Lower Limit	Mean	Upper Limit	Lower Limit	Mean	Upper Limit	Lower Limit	Mean	Upper Limit	Lower Limit
Puniab	0.01	0.00	0.01	0.05*	0.03	0.07	0.09*	0.07	0.11	0.05*	0.04	0.06
Haryana	0.01	0.00	0.01	0.03*	0.02	0.03	0.07*	0.05	0.09	0.11*	0.08	0.14
Rajasthan	0.03*	0.02	0.04	-0.01*	-0.02	-0.01	0.08*	0.07	0.09	0.04*	0.03	0.05
UP	0.01	0.00	0.01	0.00	0.00	0.00	0.11*	0.10	0.12	0.09*	0.07	0.12
Bihar	0.01*	0.01	0.01	0.00	0.00	0.01	0.07*	0.06	0.07	0.03*	0.02	0.05
West Bengal	0.00	0.00	0.00	-0.03*	-0.05	-0.02	0.06*	0.05	0.07	0.11*	0.07	0.14
Orissa	0.03*	0.02	0.03	0.02*	0.01	0.04	0.03*	0.03	0.04	0.04*	0.03	0.05
MP	0.00	0.00	0.01	-0.04*	-0.04	-0.03	0.10*	0.08	0.11	0.11*	0.08	0.14
Gujarat	-0.05*	-0.06	-0.04	-0.05*	-0.07	-0.03	0.08*	0.06	0.09	0.04*	0.02	0.06
Maharashtra	-0.03*	-0.04	-0.03	-0.05*	-0.07	-0.03	0.11*	0.10	0.12	0.10*	0.07	0.13



Andhra Pradesh	-0.02*	-0.03	-0.02	-0.04*	-0.05	-0.03	0.12*	0.11	0.13	0.10*	0.07	0.12
Karnataka	-0.03*	-0.04	-0.03	-0.04*	-0.05	-0.02	0.09*	0.08	0.10	0.13*	0.09	0.16
Kerala	-0.03*	-0.03	-0.02	-0.07*	-0.09	-0.04	0.06*	0.05	0.08	0.12*	0.09	0.16
Tamil Nadu	-0.05*	-0.05	-0.04	-0.08*	-0.11	-0.06	0.10	0.09	0.11	0.10	0.07	0.13
Overall (14 states)	-0.04*	-0.04	-0.03	-0.39*	-0.47	-0.31	0.18*	0.16	0.20	0.16*	0.12	0.21

*Significant at 95% of level of confidence

found a high degree of statistically significant correlation between the extent of horizontal equity (in public facilities) and the level of OOP payments which households had to bear for treatment in public sector facilities. The lower the level of OOP payments in a given state, the more inequitable was the utilisation of healthcare. No correlation was found between the extent of horizontal equity in the private sector and the level of OOP spending.

The strength of our study lies in the analysis of a large, nationally representative data set on utilisation of care. We chose to restrict our analysis to 14 states which have a significant sample size in the survey and hence their concentration index signifies meaningful information. Moreover, these 14 states account for more than three-fourths of the Indian population. We acknowledge that our analysis is limited in terms of the causal influences which we can derive, since we derive our association using a more ecological approach. This limitation in research related to evaluating the equity impact of universal healthcare delivery programmes has been discussed in detail by others who find that in the absence of undertaking typical randomised controlled trials to answer such important policy questions, we should rely on evidence which is provided by such ecological analysis (WHO 2011). Secondly, the current data set does not provide answers to the reasons for utilisation of a particular type of healthcare facility, i.e., public or private. We cannot comment on the quality or responsiveness of care from the present data. Moreover, some states had very few hospitalisation episodes and thus had to be removed from correlation analysis.

Our findings differ from a previous Indian study of the 1995-96 wave of the NSSO data, which found even the public sector services to be highly inequitable in all the states except Kerala (Mahal2000). However, our findings are very similar to what has been observed in a recent analysis in Kenya which compares the extent of horizontal equity over a span of four years (Chuma, Maina et al 2012). There could be multiple explanations to this difference in the extent of horizontal equity noted between our study and previous estimates. First, we focused our analysis on the 14 larger states, whereas Mahal et al (2001) analysed all the states in India. However, this is unlikely to explain the difference in trend as the relative ranks of states in equity status between the two studies remains the same, with Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, Gujarat and Maharashtra being the more equitable states in terms of hospital service utilisation. Second, it could be that the physical and financial access to public sector facilities has improved. However, much of this improvement in public sector has occurred after the onset of the National Rural Health Mission wherein multiple schemes to improve physical (ambulance services, increase in number of public health workforce and public health institutions) and financial (conditional cash transfer schemes and publicly-financed health insurance schemes) access have been implemented (MOHFW 2005a; MOHFW 2005c; MOHFW 2006).

The third potential explanation could be that with rising inflation of health expenditures in the private sector, the poor have no choice but to use the public sector.

Finally, the fourth explanation could be the differential pattern of health care use between the poor and the rich. A review of international evidence argues that the share of the benefits captured by the poor decreases with the complexity (and cost) of the services (Yaqub 1999). In other words, the poor are more likely to use primary care services than secondary and more likely to use secondary than tertiary. Moreover, analysis of facility-based data in several Indian states show the poor use proportionately more of the secondary hospitals, particularly those that are located in the poorer rural areas (IHS 2000; STEM 2000). The recent growth of the private sector which has occurred in India in the past one decade has happened in the area of tertiary care (Bhat 1999). In such a situation it could be that the public sector provides a sizeable share of secondary care while it provides proportionately less of tertiary care. Thus the poor who utilise mainly secondary care use the public sector making it equitable, while tertiary care utilisation in the private sector is inequitable. However, due to limitations of data we cannot examine this hypothesis and we propose this as a future area of research. The NSSO data does not differentiate a service utilised in a public or private hospital between either secondary or tertiary nature. More empirical work is required to broaden the understanding of determinants of equity in healthcare utilisation.

We noted that although both the rural and urban public sector was equitable, utilisation of urban public hospitals was significantly more equitable than the rural health centres. This could be explained by two factors. First, it may relate to the lack of private options in rural regions for wealthier patients, who therefore use the public hospital system and "displace" poorer



patients (WHO 2007; Rao, Rao et al 2011). Second, it could be the result of a poorer rural population and lesser ability than their urban counterparts to afford health care, even at the public health facilities. The financial burden of inpatient care is consistently greater for rural households than for urban households, with rapid increase in expenditures per admission. In 2004-05, about 14% of rural households and 12% of urban households spent more than 10% of their total consumption expenditure on healthcare (Selvaraj and Karan 2009). In the same year, about 39 million (30.6 million in rural areas and 8.4 million in urban areas) Indian people fell into poverty as a result of OOP expenditures (Selvaraj and Karan 2009). As such the effect of health expenditures is greater in rural areas and in poorer states, where a greater proportion of the population lives near the poverty line. Nearly 30% rural and 20% urban households, who did not seek healthcare for a recent self-reported morbidity, cited financial reasons for not having sought medical care (NSSO 2006).

Our findings are relevant to policymakers in India - and in other LMIC - who are working towards the goal of universal access to high quality healthcare. We shed some light on the issue of what makes access to public hospitals services equitable. Our findings suggest that one of the ways forward is to reduce OOP payments during hospitalisations. There are two broad ways of achieving this end. First, it could take the "pre-payment risk pooling route" where the individuals or the government makes a prepayment to avoid the inequitable outcomes in utilisation. This could improve access to health services, especially for the poorest. However, it entails a number of operational issues, such as the appropriate means test for identifying the poor if the prepayment from the government has to be directed to the poor. Also, it comes with its own gamut of problems of managing a risk-pooling programme such as checking adverse selection, countering moral hazard and fraudulent claims (Akerlof 1970). The implementation of the RashtriyaSwasthyaBimaYojana (RSBY), the government's health insurance for the informal sector employees and below poverty line population has brought to light many of these issues related to implementation of a prepayment scheme (Palacios 2010). The more serious fallout of this route could be an over-emphasis on secondary and tertiary care with a relative lack of primary care (Thomson, Foubister et al 2009). Moreover, some recent analysis have shown that the publicly-financed health insurance schemes in India have not resulted in reduction of OOP or catastrophic expenditures as a result of healthcare (Selvaraj and Karan 2012).

The second route to achieving an equitable universal healthcare could be by increasing the capacity of public hospitals and the quality of care that they deliver, while reducing or payments. The increase in investment in the initial years could take a form of geographical targeting in rural areas and other socially disadvantaged areas. This increased public spending could also be targeted to areas which are major contributors of OOP payments, i.e., drugs and diagnostics. Even for inpatient care, drug expenditures account for the largest burden of this cost (Garg and Karan 2009). Drugs, diagnostic tests, and medical appliances account for more than half of OOP expenditures (Mahal, Karan et al 2010). This increased spending for medicines and diagnostics can be made more efficient if supplemented with regulation of the pharmaceutical industry and improved price controls and bulk purchasing (Selvaraj and Nabar 2010) (Balarajan, Selvaraj et al 2011). Some of these changes may already be in the pipeline (MOHFW 2011). Lastly, there is a need to remove user charges from public health hospitals, which are regressive (Prinja, Aggarwal et al 2012). These recommendations have also been put forth by the High Level Expert Group on Universal Healthcare constituted by the Government of India (HLEG 2011).

Public Spending and Outcomes

Our findings also reflect the fact that increases in public spending do not by themselves translate into equitable outcomes. Rather they have to be accompanied by proper targeting of the public money. States such as Tamil Nadu have been able to achieve significantly equitable public systems at a relatively low cost. This highlights the importance of appropriate resource allocation decisions. "Inverse care law" is a known phenomenon, with the rich being the first to take the benefit of a programme which is universally available (Prinja and Kumar 2009). This leads to an increase in inequities with universal programmes. Hence some form of geographical or population or service based targeting would be essential for allocation of public spending in health so that the distributional benefits of healthcare are reaped by those who are most in need.

To conclude, our findings suggest that the public sector delivery of hospital services are generally pro-poor in India and there is a need for better targeting of public spending in health for equitable distributional outcomes. However, there are large regional (rural areas are relatively inequitable) and state-specific variations, and overall the public sector constitutes a smaller proportion of the health sector than it does in many other countries. Levels of oos payment appear to be a strong predictor of inequity in the use of public health services and lowering of such expenses may improve access for the poorest. Other barriers to care of course exist including adequate health human resources, transport, the need to improve the quality of services, reduce waiting times and address the informal costs and charges that patients sometimes face. Developing strategies for ensuring availability of medicines and diagnostics would remain the key challenge to achieve this goal. Using the example of Tamil Nadu Health Systems Corporation and Chittorgarh and Nagaur district models, Srinivasan (2011) estimates the cost of provision of free medicines at all public sector facilities and argues that this is an achievable target.



References

1. Akerlof, G (1970): "The Markets for 'Lemons': Quality Uncertainty and Market Mechanism", *Quarterly Journal of Economics*, 84(488-500).
2. Balarajan, Y, S Selvaraj et al (2011): "Healthcare and Equity in India", *Lancet*, 377(9764): 505-15.
3. Bhat, R (1999): "Characteristics of Private Medical Practice in India: A Provider Perspective", *Health Policy Plan*, 14(1): 26-37.
4. Castro-Leal, F and J Dayton (2000): "Public Spending on Healthcare in Africa: Do the Poor Benefit?", *Bulletin of the World Health Organisation* 78(1): 70.
5. Chuma, J, T Maina et al (2012): "Does the Distribution of Healthcare Benefits in Kenya Meet the Principles of Universal Coverage?", *BMC Public Health*, 12(1): 20.
6. Filmer, D (2003): "The Incidence of Public Expenditures on Health and Education", Background Note for the World Development Report 2004: Making Services Work for the Poor, Washington DC, World Bank.
7. Garg, C and A Karan (2009): "Reducing Out-of-Pocket Expenditures to Reduce Poverty: A Disaggregated Analysis at Rural-Urban and State Level in India", *Health Policy Plan*, 24: n6-28.
8. HLEG (20n): "High Level Expert Group Report on Universal Health Coverage for India", Planning Commission, New Delhi.
9. IHS (2000): "APWP Patient Satisfaction Survey 2000", Report Series, Institute of Health Systems, Hyderabad.
10. Mahal, A (2000): "Who Benefits from Public Sector Health Spending in India? Results of Benefit Incidence Analysis", National Council of Applied Economic Research, New Delhi.
11. Mahal, A, A Karan et al (2010): "The Economic Implications of Non-communicable Disease for India", Health, Nutrition and Population (HNP) Discussion Paper, World Bank, Washington DC.
12. Mahal, A, A S Yazbeck et al (2001): "The Poor and Health Service Use in India", Health, Nutrition and Population (HNP) Discussion Paper, World Bank, Washington DC.
13. MOHFW (2005a): "JananiSurakshaYojana: Guidelines for Implementation", Ministry of Health and Family Welfare, Government of India, New Delhi.
 - (2005b): "National Health Accounts India", National Health Accounts Cell, Ministry of Health and Family Welfare, Government of India, New Delhi.
 - (2005c): "National Rural Health Mission: Implementation Guidelines", Ministry of Health and Family Welfare, Government of India, New Delhi. - (2006): "Report of the Working Group on Healthcare Financing Including Health Insurance for the nth Five-Year Plan", Ministry of Health and Family Welfare, Government of India, New Delhi, accessed from http://planningcommission.nic.in/aboutus/committee/wrkgrp11/wgl_rphfw3.pdf on 20 January 2011.
 - (2011): "Draft National Pharmaceutical Pricing Policy", Ministry of Health and Family Welfare, New Delhi, available from <http://pharmaceuticals.gov.in/mshT2810/FTY2.pdf>
14. NSSO (2006): "Morbidity; Healthcare and Condition of the Aged", Ministry of Statistics and Programme Implementation, Government of India, New Delhi.