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HOUSEHOLD OUT-OF-POCKET HEALTHCARE EXPENDIT2URE IN INDIA

LEVELS, PATTERNS AND POLICY CONCERNS

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ABSTRACT

This paper uses the most recent wave of Consumer Expenditure Survey 2004-05 to examine the distribution of Out of Pocket (OOP) healthcare payments in India. The purpose of the paper is threefold; first, to analyse the magnitude and distribution of OOP spending across states and between rural and urban settings; second, to comprehend the impact of OOP payments on poverty and; third, to review progressivity of OOP payments vis-à-vis levels of healthcare utilisation. Further, to facilitate a temporal and systematic analysis the results are compared with few other earlier studies on the subject. In conclusion, the paper argues for policy initiatives to improve utilisation of healthcare services and to design financing mechanisms that safeguard poor from making unjust payments.

Keywords: Healthcare Expenditure, Drugs Expenditure, Progressivity, Poverty, India.

JEL Classification: I10, I12, I32

1. Introduction

The issue of health financing has recently started to receive a good deal of attention among researchers and policymakers in India (see, among others, Rao et al 2005, Selvaraju 2003, Peters et al 2002, Mahal et al 2001, Garg 2001, and more recently, Garg and Karan 2009). Most of the studies on this subject note that India is one of the highly privatised health systems in the world where household OOP direct payments account for almost three-quarters of the total health expenditure (see NCMH 2005; Government of India 2005; Mahal et al. 2005; also see, O'Donnell et al 2008; van Doorslaer et al 2007). These payments - being uncertain in nature and magnitude - often intimidate the subsistence requirements of several income-poor households and are detrimental to social welfare. Adversities related to OOP spending are apparent in the form of intensified poverty and ill-fare in the country. For instance, in 1995-96 an estimated 2.2% of the Indian population fell into poverty because of OOP spending (Peters et al 2002) and it increased to around 3.2% in 1999-2000 (Garg and Karan 2009). What is even more disconcerting is to note that most of the income-poor individuals are left in discomforting situations in matters of healthcare utilisation - particularly, inpatient care - and resort to desperate means such as financial borrowing and (productive) asset sales to meet their requirements (see Peters et al. 2002; Dilip and Duggal 2002). In fact, for several individuals sheer inability to meet health expenses are proving

inimical to all important rights to health and life. Such inherent concerns denounce OOP payments as one of the most inefficient modes of health system financing.

In this paper, using the most recent wave of Consumer Expenditure Survey (2004-05), we analyse the magnitude and distribution of OOP spending in India; across states and between rural and urban settings. The paper, primarily, intends to provide a systematic analysis on the issues involved by comparing the key results with findings of earlier studies on the subject. In particular, we develop a narrative on poverty impact of OOP payments and facilitate a discussion on its major components. Further, the distribution of OOP payments is examined to obtain some evidence on disproportionate spending. Although, we employ the methods suggested by Wagstaff and van Doorslaer (2001) to discern the incidence of disproportionate spending but, unlike the authors, this study prefers to avoid their interpretation as catastrophic expenditure because it has a much broader connotation and cannot be plausibly captured through the available data. The paper also attempts to draw some further conclusions on progressivity of OOP payments in India. Progressivity in healthcare financing is noted to be a desirable feature of the health system and entails that the share of the total financing burden borne by the lower income groups should be lesser than their share of society's income (see Wagstaff and van Doorslaer 2000; 2001). The aforesaid principle helps to assess fairness in healthcare payments and provides valuable insights towards devising any feasible intervention. However, the paper argues that it is pertinent to review the underlying distribution of healthcare utilisation before endorsing the simple inference on progressivity. Clearly, progressivity as a concept can be a virtue if it is accompanied by a greater and more equitable utilisation of healthcare. But in India - and even across several developing countries – progressivity in healthcare payments can be largely attributed to high cost of healthcare which deters effective utilisation and produces differentials across income groups (see O'Donnell et al

2008). In concluding, the paper reiterates the need for policy initiatives to improve utilisation of healthcare services and argues for development of health interventions that safeguard poor from making unjust payments.

2. Data and Methods

The study uses the Consumer Expenditure Survey (CES) 2004-05 data of India, collected by the National Sample Survey Organisation (NSSO), Ministry of Statistics and Programme Implementation, Government of India. The CES 2004-05 covers a sample of 124644 households (around 79298 rural and 45346 urban) and provides information on household health expenditure and total household consumption expenditure. Similar information is also collected in NSSO Morbidity and Healthcare Survey (MHS) 2004. However, we have preferred CES for the analysis because in MHS abridged version of consumption expenditure schedule is canvassed which usually underestimates total household consumption expenditure as compared with that found in the quinquennial CES rounds[1] (NSSO 2006a; 2006b and, for a helpful discussion, see Garg and Karan 2009). In particular, the CES information on institutional (inpatient care) and non-institutional (all expenditures on health care other than inpatient care) health expenditures provided in the dataset are clubbed together to obtain total OOP health expenditure. These health expenditures are categorised and recorded under (a) medicine; (b) X-ray, ECG, pathological test, etc.; (c) doctor's/surgeon's fee; (d) hospital & nursing home charges; (e) family planning; and (f) other medical expenses (not recorded above). The recall period for institutional health expenditure is 'last one year'

1 The CES administers a detailed interview schedule for collecting information on household consumption expenditure whereas MHS collects the same information through short set of five questions. Moreover, the recall period for non-institutional expenditure (outpatient care) is different in CES (last 30 days) and MHS (last 15 days). See for details, NSSO (2006a; 2006b) and for a helpful discussion see Garg and Karan (2009).

and for non-institutional health expenditure is 'last 30 days' therefore the institutional health expenditure is divided by 12 and is assumed as the institutional expenditure for one month. Using the household level information (and the specified sample weights), individual-level estimates are obtained by dividing the aggregate expenditure with total number of household members. Expenditure on medicines recorded separately under institutional and non-institutional expenditure is added to compute its share in total health expenditure across different states.

A reasonable outline of the problem is presented by adopting the approach of Wagstaff and van Doorslaer (2003; 2001) and (Garg and Karan 2009). A simple measure of poverty headcount ratio (H) is used to comprehend the poverty impact of healthcare payments in 2004-05. Poverty status of individuals is adjudged by comparing individual incomes with official poverty lines (Planning Commission of India for 2004-05) provided differently for states and sectors (rural-urban). In the pre-payment situation, all the individuals whose consumption expenditure (Y) fall short of the stipulated poverty lines (z) are designated as poor; and the poverty headcount ratio is denoted as H_{pre} ($H_{pre} = \Sigma n_i / N$; $n_i = 1$ if $Y_i < z$, otherwise $n_i = 0$). In the post-payment situation, all the individuals whose consumption expenditure (Y) net of healthcare payments (M) fall short of the stipulated poverty lines (z) are designated as poor; and the poverty headcount ratio is denoted as H_{post} ($H_{post} = \Sigma n_i / N$; $n_i = 1$ if $(Y_i - M_i) < z$, otherwise $n_i = 0$). The poverty impact (H_{pi}) of healthcare payments is then computed as the simple difference between H_{post} and H_{pre} ($H_{pi} = H_{post} - H_{pre}$). Similar method is used to estimate the poverty impact of non-institutional healthcare expenditure. Although, data inadequacies restrain a clear empirical characterisation of catastrophic expenditure in India, nonetheless, the paper attempts to present some insights on disproportionate health expenditures across major Indian states and examine its incidence. These proportions are based on the consideration that a significant number of Indian households survive in the neighbourhood of the poverty line

and, therefore, the obtained estimates can be effective in exposing the incidence of the problem. Here, *disproportionate* expenditure refers to OOP payments that exceed certain pre-determined thresholds (here set at 5 percent and 10 percent) of total consumption expenditure across the rural-urban setting in different Indian States[2]. For this purpose, first the share of total healthcare payments (M) to total consumption expenditure (Y) is computed to examine the number of households whose medical expenditure is greater than 5% and 10% of their total consumption expenditure. Formally, let T_p be the headcount ratio of households incurring payments in excess of a given threshold cut-off point p (p set at 5% and 10%), and could be written as $T_p = \Sigma n_i/N$, where $i=(1, 2, \ldots, N)$ and N is the total number of individuals in the society. For i^{th} individual, n_i can assume only two values (0 or 1); i.e., $n_i = 1$, if $M_i/Y_i \geq p$ and $n_i = 0$, if $M_i/Y_i < p$. It implies that, n_i assumes a value of one only if the share of total healthcare payments to total consumption expenditure is greater than or equal to the specified threshold point (p); otherwise n_i takes a value of zero.

Lorenz curve, concentration curve and concentration index are used to examine the linkage between OOP payments and total household consumption expenditure. The Lorenz curve plots the percentage of the population arranged from the poorest to the richest are represented on the horizontal axis (x-axis) and the percentage of consumption expenditure enjoyed by the bottom x% of the population is shown on the vertical axis (y-axis) (see Sen 1973). Concentration curve (CC) is a generalisation of the Lorenz curve whereby specific

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2 The impact of healthcare payments in India could be analysed in several ways. For instance, Gumber (2002) comprehends it in terms of share of health expenditure in annual income while Dilip and Duggal (2002) broaden the concept of income by including aspects such as sale of household assets and borrowings to analyse the burden of healthcare expenditure. Some of the recent studies on India (Garg and Karan, 2004) use the methods discussed in Wagstaff and van Doorslaer (2003) and have tried to comprehend financial distress in terms of catastrophic payments on healthcare with varying but arbitrarily defined thresholds.

CC plots the percentage of the population arranged from the poorest to the richest are represented on the horizontal axis and the percentage of aggregate OOP healthcare payment incurred by the bottom x% of the population is shown on the vertical axis (see Kakwani 1980). The concentration index (CI) is defined as twice the area between the concentration curve and the line of equality (45 degree line). It ranges between +1 and -1 and takes positive (negative) values when there is a disproportionate concentration of OOP payments among the rich (poor)[3]. Progressivity of health care payments on pre-payment income is measured by using Kakwani's (1977) index, K_M. It is defined as twice the area between the Lorenz curve for pre-payment income and the concentration curve for health care payments and is formed by plotting the cumulative share of OOP payments on the vertical axis against the cumulative proportion of individuals ranked by pre-payment consumption expenditure on the horizontal axis. If K_M is positive the OOP payments are progressive and if it is negative then they are regressive in nature. The redistributive effect is measured by using the Reynolds-Smolensky index, RS_M and is described as the increase or reduction in income inequality resulting due to difference in pre-payment to post-payment income distributions (Reynolds and Smolensky, 1977). This index can be defined as twice the area between the Lorenz curve for prepayment income and the concentration curve for post-payment income. If the computed RS_M is positive then the redistribution through payments generates a pro-poor income distribution and if negative then it produces a pro-rich distribution. All the figures presented here are based on the weighted sample, as suggested by NSSO (2006b). The discussion of the results is also

3 The CI can be computed by using convenient covariance result (Kakwani, 1980; Jenkins, 1988; Lerman and Yitzhaki, 1989) as follows
$CI = 2\ cov(y_i, R_i) / \mu$,
Where y is the OOP payment whose inequality is being measured, μ is its mean, R_i is the i^{th} individual's fractional rank in the income distribution and $cov(y_i, R_i,.)$ is the covariance. We follow Kakwani et al (1997) for computation of CI based on grouped data.

corroborated with some findings on healthcare utilisation from Morbidity and Healthcare Survey 2004.

3. Distribution of OOP payments and Poverty Impact

The CES 2004-05 records the average monthly per capita OOP payment for rural India at Rs. 36.3 ($0.8) and Rs. 57.4 ($1.3) for urban India (see Tables 1 & 2). With the exception of Uttar Pradesh, the observed pattern of OOP spending is in conformity with the developmental status of the states implying that richer states have a higher average per capita OOP spending on healthcare. The state of Kerala continues to possess the highest average monthly per capita OOP payments of Rs. 101.8 and Rs. 122.2 in rural and urban areas, respectively. The lowest expenditure for rural areas is observed in the state of Assam whereas the lowest in urban areas is in Bihar. Although, a gradual increase in health spending across rural and urban areas is discernible through the tables, but, the pattern of OOP spending across states and regions is somewhat similar to what was noticed during the 1990s. In fact, the changes are visible only in terms of relative distances in the magnitude of such payments. For instance, NSSO (2006b) reports that the per capita OOP spending in rural Kerala is almost eight times that of rural Bihar and two times that of rural Haryana. Similarly, the average per capita spending in urban Kerala is around five times that of urban Bihar and twice that of urban Gujarat and urban Punjab. However, a significant change could be noticed in per capita private spending in Kerala which during the 1990s was comparable with those of Punjab and Haryana and was around four times higher than that in Rajasthan and three times that in Bihar (Peters et al 2002). The most recent estimates suggest a considerable increase in health spending in Kerala which could be attributed not only to greater healthcare utilisation but also to increasing prevalence of chronic ailments and population ageing in the state. The differentials in state-wise average health spending can also be due to differences in the

Table 1: Average monthly per capita OOP expenditure (in Rs.), average OOP share (%) to total and non-food consumption expenditure, share of OOP expenditure on drugs by rural and urban areas of major Indian states, CES 2004-05

States	Rural India				Urban India			
	Avg. per capita OOP spending (in Rs.)	Avg. of OOP shares as % of		% share of OOP expenditure on drugs*	Avg. per capita OOP spending (in Rs.)	Avg. of OOP shares as % of		% share of OOP expenditure on drugs*
		Total Consumption expenditure	Non-food Consumption expenditure			Total Consumption expenditure	Non-food Consumption expenditure	
Andhra Pradesh	39.6	6.8	15.1	72.5	53.8	5.3	9.0	63.3
Assam	11.4	2.1	6.2	82.2	31.8	3.0	5.9	70.6
Bihar	13.6	3.3	9.2	86.0	25.5	3.7	7.5	76.0
Chhattisgarh	28.2	6.6	15.1	84.0	57.6	5.8	9.5	80.3
Gujarat	35.3	5.9	14.1	67.7	60.3	5.4	9.8	61.7
Haryana	50.9	5.9	11.5	72.2	53.2	4.7	8.0	72.7
Jharkhand	17.3	4.1	10.7	81.9	42.5	4.3	8.1	80.8
Karnataka	22.6	4.5	10.0	69.5	42.4	4.1	7.2	61.9
Kerala	101.8	10.0	18.3	64.1	122.2	9.5	15.8	63.0
Madhya Pradesh	31.4	7.2	15.2	75.1	47.0	5.2	8.5	64.7
Maharashtra	44.4	7.8	16.2	68.7	80.5	7.0	11.8	66.6
Orissa	21.9	5.5	14.3	86.3	31.4	4.1	8.3	84.7
Punjab	62.9	7.4	14.6	76.2	65.4	4.9	7.9	77.6
Rajasthan	31.1	5.3	11.6	84.1	47.7	4.9	8.5	83.8
Tamil Nadu	37.3	6.2	13.0	67.3	53.8	5.0	8.7	66.9
Uttar Pradesh	45.4	8.5	18.4	85.9	51.2	6.0	10.9	83.6
Uttaranchal	29.5	4.6	9.8	87.3	34.9	3.6	6.8	90.0
West Bengal	39.7	7.1	17.1	72.6	77.4	6.9	12.2	62.2
All-India	36.3	6.5	14.5	76.4	57.4	5.5	9.5	69.5

Source: Compiled from NSS CES Report (2006a); *computed by authors using the unit level records of CES 2004-05.

Note: In 2004-05, $1 = Rs. 44.93 (Financial year average in Indian National Rupees), Reserve Bank of India Publications

level of health transition across the states (Garg and Karan 2009). Peters et al (2003) note that Kerala is in the late transition stage which is marked my greater burden of lifestyle diseases and other chronic ailments. A few backward states such as Bihar, Assam, Rajasthan and West Bengal are in an early to mid transition stage where low incomes of households along with limited knowledge and awareness result in low private spending. The problem accentuates when low private incomes are coupled with low public spending on health and further restrain utilisation due to poor infrastructure and accessibility. However, Uttar Pradesh - a state in early transition -continues with a higher per capita OOP spending and perhaps requires further probing.

Comparison with previous CES (1999-2000) reveals that at the all-India level the share of OOP payments in total consumption expenditure has increased from 4.8% in 1999-2000 to 6.1% in 2004-05. For 2004-05, OOP payments accounts for 6.5% of total consumption expenditure and 14.5% of total non-food expenditure in rural areas whereas in urban areas it forms 5.5% and 9.5%, respectively. Higher shares in rural areas are partly due to the fact that most of the rural population have low incomes and most of their expenses are on food expenditure. Across the major states, OOP payments constitute the maximum share of 10% of total consumption expenditure in rural Kerala and 9.5% in urban Kerala. Among other states, in rural areas the share of OOP payments is higher in Uttar Pradesh, Maharashtra, Punjab, Madhya Pradesh and West Bengal; and in urban areas the share of OOP payments is greater in Maharashtra, West Bengal, Chhattisgarh and Uttar Pradesh (see Table 1). Further, the distribution of OOP payments is analysed according to household consumption quintiles to interpret the differential scale of such payments between the poor and the rich. From Table 2 it could be inferred that the average per capita OOP spending rises moderately with consumption quintiles and becomes distinctively higher for the richest quintile. A clear rural-urban divide is evident in terms of per capita OOP spending and its

systematic difference across all quintiles. In rural areas, richest population quintile (avg. OOP payment of Rs. 9.3) spent ten times more than the poorest quintile (avg. OOP payment of Rs. 93.1) and in urban areas the expenditure by richest quintile is eight times that of the poorest quintile. When these ratios are compared with 1999-2000 figures we notice that the ratio for rural areas has remained constant whereas the ratio for urban areas has declined from ten to eight thus indicating some moderation in differentials. The overall share of OOP in total consumption expenditure from the poorest to the richest quintiles is also noted to be progressive in nature.

In a recently published study Garg and Karan (2009), using CES 1999-2000, examine the composition of the OOP expenditure to derive some clues regarding the components that trigger health care servicing costs. Such components involve drugs, diagnostics, service charges etc. On examining these components, it is found that in rural areas a major share of expenditure is on drugs, both institutional and non-institutional. Revisiting their concern, we notice that that the situation hasn't change much between the two CES surveys and drug related expenditure continue to be the single largest component accounting for around three-fourths of total OOP payments in India. In 2004-05, expenditure on drugs for rural and urban India is reported to be 76% and 70% of total OOP spending, respectively. In a few states (Assam, Bihar, Jharkhand, Orissa, Rajasthan and Uttar Pradesh) it exceeds 80% of the total OOP spending. The proportions of OOP payments on drugs are relatively lower (but above 50%) in urban areas and some other developed states because of involvement of other components services i.e., diagnostics, institutional and non-institutional care. Evidently, expenditure on drugs continues to be the single largest component of total OOP expenditure across consumption quintiles as well. However, both in rural and urban areas, the richer quintiles spend relatively lower proportion of their OOP on drugs and medicine compared to the poorer quintiles (see Table 2). Across the different states, the proportion of OOP spending on drugs

Table 2: Average monthly per capita OOP expenditure (in Rs.), average OOP share (%) to total consumption expenditure, share of OOP expenditure on drugs according to household consumption quintiles in rural and urban India, 2004-05 and 1999-2000

Household Consumption Quintiles	Avg. per capita OOP Spending (in Rs.)			OOP as % of Consumption Expenditure			Drugs as % of OOP Payments		
	Rural	Urban	Combined	Rural	Urban	Combined	Rural	Urban	Combined
CES 2004-05*									
Poorest 20%	9.3	16.5	10.3	3.5	4.3	3.7	84.0	77.7	81.7
2nd Poorest 20%	17.1	31.0	18.7	4.7	5.4	4.8	79.1	74.4	79.5
Middle	24.1	42.6	29.2	5.3	5.4	5.7	79.7	72.5	78.9
2nd Richest 20%	38.9	65.9	46.8	6.6	5.9	6.7	78.9	71.7	76.2
Richest 20%	93.1	132.2	104.2	8.3	5.5	6.7	73.3	65.3	69.9
All Households	36.3	57.4	41.8	6.5	5.5	6.1	76.4	69.5	74.0
CES 1999-00^									
Poorest 20%	9.0	13.8	10.3	3.1	3.5	3.2	86.1	83.3	85.1
2nd Poorest 20%	16.3	25.3	18.5	4.1	4.2	4.1	84.6	78.9	82.7
Middle	24.9	39.7	28.5	4.9	4.6	4.8	82.3	75.0	80.2
2nd Richest 20%	41.0	56.1	44.7	6.1	4.6	5.7	79.3	70.5	76.5
Richest 20%	100.4	133.0	109.2	8.3	5.3	7.4	69.2	60.1	66.2
All Households	29.6	43.5	33.1	5	4.4	4.8	77.3	69.6	74.8

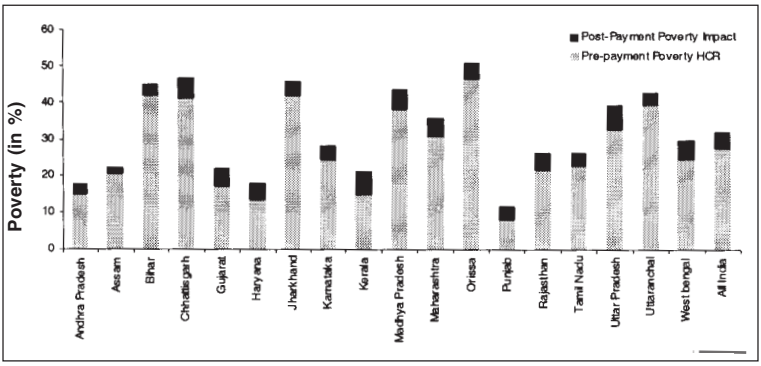
Source: *Computed by authors using CES 2004-05. ^ Compiled from Tables 1 & 2 in Garg and Karan (2009)

is well above 80% in poorer states such as Orissa, Uttar Pradesh, Bihar, Jharkhand, Rajasthan and Chhattisgarh (see Table 1). For south-India (Andhra Pradesh, Karnataka, Kerala and Tamil Nadu) the drugs share in OOP is noted to be around 60-70 percent. These findings do directly feed into concerns regarding drugs policy across the states and perhaps calls for improvements in drug pricing and provisioning to benefit the poor. However, following Garg and Karan (2009), it is advisable to consider the figures with some caution because of difficulties involved in discerning accurately the different components of healthcare such as drugs, diagnostics, doctor's service charges etc. Perhaps, the contamination could be even greater in cases (mostly in rural areas) where doctors collect a consolidated amount which would include drug cost as well as service charges. These intricacies invariably call for further refinements and improvements in the designing and canvassing of health expenditure surveys.

As mentioned earlier, Peters et al (2002) note that in 1995-96 around 2.2% of the Indian population fell into poverty because of OOP spending and it increased to around 3.2% in 1999-2000 (Garg and Karan 2009). We also undertake a similar analysis to update and enhance the informational base and to sensitise policymaking to safeguard low income households from risk of poverty. For analytical purposes, the post-payment consumption expenditure is compared against the official poverty line to compute the poverty headcount ratios for India and its different states (see Table 3 and Figure 1). Results indicate that, after deduction of total OOP expenditure from the total consumption expenditure, poverty in 2004-05 increases by 4.4% (4.6% in rural and 3.7% in urban areas). It implies that if we adjust the pre-payment poverty headcount statistic of 27.6% for OOP payments, then revised incidence of poverty in India would be 32%. For rural and urban India the revised poverty headcount ratio will be, respectively, 32.9% and 29.3%. On converting these ratios to aggregate headcount, it could be discerned that around 48 million (36 million in rural and 12 million in urban

areas) persons would get added to an already existing number of 302 million poor in the country. What is even more disconcerting is to note that around 25% of these 48 million individuals belong only to a single state, Uttar Pradesh.

Figure 1. Poverty Headcount Ratios after accounting for OOP payments, India 2004-05



A disaggregated analysis reveals that the rural areas of Uttar Pradesh, Madhya Pradesh, Kerala and Gujarat have the highest proportion (above 6%) of population moving below the poverty line. Rural Chhattisgarh and West Bengal also bear a poverty impact of almost 6%. Across urban parts the highest poverty impact is in Kerala (6.7%), followed by Rajasthan (5.8%) and Uttar Pradesh (5.1%). A comparison with Garg and Karan (2009), informs of considerable intensification of poverty impact across the states. In 1999-2000 only Uttar Pradesh had an impact of over 5% but in 2002-05 the number of such states has increased to seven and includes Chhattisgarh, Gujarat, Kerala, Madhya Pradesh, Maharashtra and West Bengal (see Table 3). It is rather intriguing to witness that richer states like Kerala and Gujarat which had an impact of over 2% in 1999-2000 are encountering larger impact in 2004-05. Perhaps, the reason lies in the nature of ailments prevailing in the regions (attributable to health transition levels) or even could be due to a more general expansion of health services which have encouraged poor households to spend on minimal healthcare. In the post-payment situation,

the aggregate incidence of poverty in rural parts is the highest in Orissa (52%) followed by Jharkhand (50%) and Chhattisgarh (47%). For urban parts the highest incidence of post-payment poverty is observed in Orissa (47%), Madhya Pradesh (46%) and Chhattisgarh (45%).

In Table 3 we also present the poverty impact of non-institutional OOP expenditure. The figures elicit that in most of the states non-institutional spending has a major role in aggravating poverty. At the all-India level non-institutional expenditure alone contributes to over 70% of the total poverty impact. The share of non-institutional expenditure in total poverty impact is notably higher (around 80%) in poorer states of Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Uttar Pradesh and Uttaranchal. This exercise lay bares a rather dismal picture of welfare across these states which invariably mean that mere outpatient care visit is enough to push households below their basic subsistence requirements. After viewing such appalling consequences of non-institutional care one could only expect the individuals in these states to be imperceptive and obtuse towards institutional care as they do not have other choices then to forego treatment. Nonetheless, in richer states like Gujarat, Kerala and Haryana the situation is different and non-institutional spending causes 50% of the total poverty impact. These figures suggest that institutional spending has a significant impact in terms of welfare outcomes in richer states and perhaps is indicative of lower utilisation of inpatient care in poorer states. Both the situations definitely have very different policy connotations and require not only financial risk pooling but also broad based targeting measures. Nonetheless, the limitations of this type of analysis are obvious (see Peters et al 2002). For instance, it cannot discern consumption expenditure of individuals if they were not required to pay for healthcare. Also, these estimates at best represent a snapshot and cannot capture the dynamics of poverty in terms of loss of future earnings due to health shocks.

Table 3. Poverty increase after accounting for total OOP and non-institutional OOP payment, Major States of India 2004-05

States	Poverty Impact (Headcount Ratio)					
	Total OOP payment			Non-institutional OOP payment		
	Rural	*Urban*	*Combine*	*Rural*	*Urban*	*Combine*
Andhra Pradesh	2.3	4.0	2.8	1.1	3.1	1.6
Assam	1.8	0.6	1.7	1.3	0.1	1.2
Bihar	2.8	2.0	2.7	2.6	1.5	2.5
Chhattisgarh	5.9	3.2	5.5	5.5	2.8	5.1
Gujarat	6.2	2.6	5.0	3.2	1.3	2.5
Haryana	5.3	1.8	4.4	2.9	0.9	2.4
Jharkhand	4.2	1.6	3.8	3.7	1.6	3.3
Karnataka	4.1	3.4	3.9	3.2	2.1	2.9
Kerala	6.0	6.7	6.1	3.2	3.6	3.3
Madhya Pradesh	6.1	3.3	5.5	5.1	2.9	4.6
Maharashtra	5.4	4.4	5.0	3.6	2.4	3.1
Orissa	4.7	2.2	4.3	3.6	1.4	3.3
Punjab	3.8	2.8	3.5	2.5	1.7	2.2
Rajasthan	4.4	5.8	4.7	3.3	4.2	3.5
Tamil Nadu	3.2	3.5	3.3	2.0	2.6	2.2
Uttar Pradesh	7.0	5.1	6.6	5.5	4.4	5.3
Uttaranchal	3.7	1.6	3.2	3.0	1.1	2.5
West bengal	5.7	2.8	5.0	4.3	1.9	3.7
All India	4.6	3.7	4.4	3.4	2.7	3.2

Source: *computed by authors using the unit level records of CES 2004-05.

Note: Pre-payment and post-payment poverty estimates are based on poverty lines prescribed by the planning commission of India that varies across states as well as for rural and urban areas.

4. Disproportionate Healthcare Payments

This subsection studies disproportionate healthcare payments in terms of incidence of OOP spending by individuals that exceeds 5% and 10% of their total consumption expenditure. Although arbitrarily fixed, we believe that these proportions can be effective in exposing the risk of poverty given the fact that a significant number of Indian households survive in the vicinity of the poverty line. Coming to the results, as reported in Table 4, around 32% and 16% of the rural population, respectively, spend more than 5% and 10% of their consumption expenditure as OOP payments. Its distribution across rural parts of different states presents certain mixed patterns. For instance, higher incidence of disproportionateness is noted in high-income states of Kerala and Punjab which also have a higher per capita public spending. Perhaps, this could be due to reasons like more utilisation of private facilities and to some extent these expenditures may be complementing and facilitating the utilisation of public services, particularly for inpatient care. The incidence of disproportionate expenditures is also noted to be higher in low-income states like Uttar Pradesh and Madhya Pradesh which have very low levels of per capita public health spending. Apart from computational reasons like a relatively low cost of treatment can represent a greater proportion of incomes across these states; a part of the explanation also lies in the unavailability of general public services which can direct households to seek treatment from private facilities at a higher cost. Certain other low-income states like Bihar and Orissa have much lower incidence of expenditures exceeding the specified thresholds. In these cases of low household spending coupled with lower public spending on public health plausibly hints at the agonies of the population, a fact apparent through the burden of health deprivation observed in these states.

Table 4: Incidence (headcount) and concentration of out-of-pocket health care payment at different threshold levels, rural and urban India 2004-05

	Rural India				Urban India			
	Headcount ratio		CI		Headcount ratio		CI	
Threshold level	5%	10%	5%	10%	5%	10%	5%	10%
Andhra Pradesh	33	18	0.204	0.255	30	14	0.027	0.070
Assam	8	3	0.123	0.146	16	8	0.051	0.102
Bihar	18	5	0.145	0.241	18	8	0.133	0.321
Chhattisgarh	30	16	0.236	0.231	38	22	0.053	0.009
Gujarat	31	17	0.046	0.071	34	14	-0.018	0.042
Haryana	30	16	0.040	0.063	26	11	0.109	0.091
Jharkhand	19	9	0.202	0.348	23	14	-0.017	0.057
Karnataka	24	10	0.157	0.215	25	9	-0.008	-0.064
Kerala	55	34	0.014	0.030	52	31	-0.008	-0.046
Madhya Pradesh	33	18	0.067	0.135	28	12	0.130	0.099
Maharashtra	36	20	0.126	0.184	35	18	0.051	0.055
Orissa	25	13	0.204	0.219	23	11	0.060	0.180
Punjab	38	17	0.037	0.176	27	12	0.007	0.113
Rajasthan	26	13	0.122	0.190	28	16	-0.065	-0.073
Tamil Nadu	26	13	0.198	0.279	29	14	0.061	0.104
Uttar Pradesh	43	22	0.089	0.138	33	16	0.024	0.050
Uttaranchal	22	11	0.120	0.145	22	6	0.136	0.094
West Bengal	35	17	0.163	0.220	34	17	0.117	0.149
All-India*	32	16	0.139	0.201	31	15	0.052	0.066

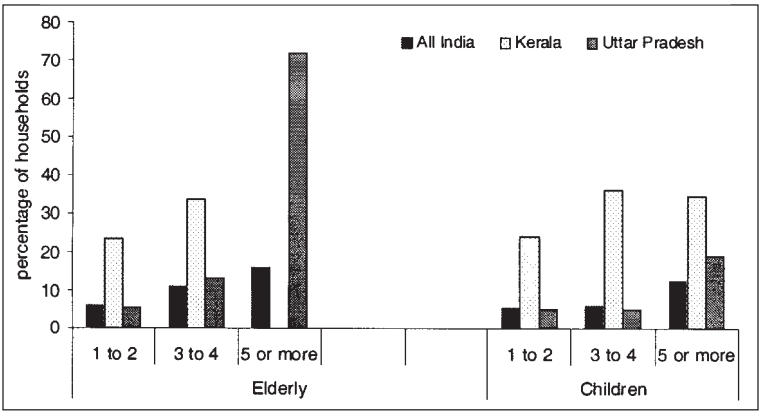
Source: computed by authors using NSS-CES 2004-05 *All-India values here are provided only for the selected major States only.
Note: The CI ranges between +1 and -1 and takes positive (negative) values when there is a disproportionate concentration of incidence among the rich (poor).

To understand whether the incidence of such expenditure is concentrated among the richest or the poorest sections of the population we have computed the concentration index (CI) of the incidence for the two thresholds and are reported in Table 4. Most of CI values are positive indicating that, both in rural and urban areas, higher healthcare expenditures are incurred by individuals belonging to better off sections of the society. For rural areas these CI values further intensifies for health-poor states like Bihar, Jharkhand and Chhattisgarh. Alternatively, these findings could be interpreted as income-related inequalities in health spending which is highest in Assam and Orissa and the least in Kerala and Haryana. In rural Kerala, a low CI value indicate that the disproportionate payments are well spread across the households irrespective of their income levels and that the income-healthcare gradient is conceivably mediated by factor(s) such as nature of ailment and perceptions regarding its severity. In rural areas of Gujarat, Haryana and Punjab the incidence of disproportionate expenditure is weakly concentrated among the richer sections. On the contrary, in rural parts of Chhattisgarh, Jharkhand, Orissa, Andhra Pradesh and Tamil Nadu it reflects strong concentration in favour of the rich and serves as a hint towards income related inequities in health spending in these states. While this concentration increases uniformly with the shift of threshold percentage from 5 to 10 percent, such increase is more revealing in case of Punjab and Madhya Pradesh further endorsing the fact that higher health spending rests primarily with the rich. The observed magnitude of disproportionateness at urban all-India level is almost similar to that of rural India. In terms of inter-state variations, the urban parts of Kerala, Chhattisgarh, Maharashtra, Uttar Pradesh and West Bengal show higher incidence of disproportionate expenditure as against other major states of the Indian union. However, unlike rural India there are subtle differences in its concentration across income groups. For instance, it could be inferred from the CI values that the concentration of incidence in urban areas is less unequal compared to rural areas. In urban areas of Gujarat, Rajasthan, Karnataka and Kerala the concentration of

such disproportionate expenditure is found to be higher among the poorer sections.

Further enquiries are required to discern the disproportionate levels of health care expenditure that can be claimed as catastrophic expenditures and perhaps survey designs and information content can be improvised to facilitate authentic policy interventions. Nevertheless, a preliminary analysis is attempted here to comprehend the relation between number of vulnerable members in the household and incidence of disproportionate OOP expenditure as 10% share of total consumption expenditure. For all India it is observed that on an average around 4.2% household exceeds the 10% threshold and the incidence level is associated with the number of elderly members (individuals aged 60 plus) in the household. As shown in Figure 2, if households have 5 or more elderly then the incidence of such spending is around 15.8%. The incidence declines to 11% in household with 3-4 elderly and is noted to be 6.1% in households with 1-2 elderly. Similarly in households with five or more children (aged less than 5 years) the incidence is noted to

Figure 2. Percentage of households exceeding 10% threshold level by number of children and elderly



Note: In Kerala, there was no (sample) household with 5 or more elderly persons.

be around 12.6%, which declines to 6% and 5.2% for households with 3-4 and 1-2 children respectively. These results suggest that households with more numbers of elderly and children are vulnerable to disproportionate expenditures. Such an association is stronger for the poorer states of India. For instance, in Uttar Pradesh around 72% of all the households with five and more elderly persons incur expenses exceeding 10% of their total consumption expenditure. This proportion declines to 13% of households with 3-4 elderly and is around 5.2% for households with 1-2 elderly. Similarly, in around 19.1% of the households with five and more children incur expenses that exceed the specified thresholds whereas it is noted to be around 5% for households with less than four children. But across richer states the incidence of disproportionateness is not strongly related with the total number of elderly or children in the households. For instance, in Kerala the incidence is noted to be 33.8% in households with 3-4 elderly which declines to 23.6% in households with 1-2 elderly. Similarly in households with 5 and above children the incidence is 34.7%, in households with 3-4 children the incidence is 35.9% and households with 1-2 children the incidence is 24.1%. This could be an aberration in case of Kerala given that the sample may not be well represented with households having five or more children. Nonetheless, this exercise brings to the fore an added dimension that the composition of the household is associated with vulnerability to health spending. Of course, further enquiries along this direction are required to ascertain this elementary association.

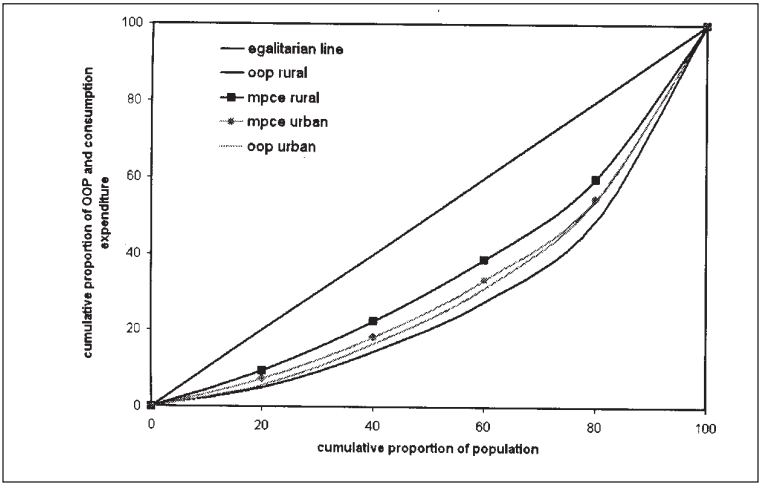
5. Progressivity of Healthcare Payment in India

We use the Lorenz curve and concentration curve (CC) to present a simple sketch of progressivity of OOP payments in rural and urban all-India. In Figure 3, the diagonal represents the line of equality and the curves with markers are the Lorenz curves (black coloured Lorenz curve for rural and grey coloured Lorenz curve for urban areas). Same coloured

curves (black for rural and grey for urban), but without markers, show the CCs for the respective areas. A comparison of these curves reveals that the CCs lay outside the respective Lorenz curve thus indicating progressivity of OOP payments both in rural and in urban areas. However, based on the observed gap between the CC and Lorenz curve it can be inferred that the magnitude of progressivity differs between urban and rural areas. In urban areas the CC and Lorenz are much closer than rural areas implying that in urban areas the OOP payments are distributed in conformity with the consumption expenditure of the population whereas in rural areas the concentration of OOP payments is much higher among the richer sections of the population.

Table 5 reports the values of concentration index for out-of-pocket payments, C_{oop}, Kakwani index of progressivity of out-of-pocket payments on prepayment income, K and the Reynolds-Smolensky index of redistributive effect for out-of-pocket payments vis-à-vis pre-payment income, RS. The positive and larger C_{oop} figures of 0.45 confirm the graphical inference that the concentration of healthcare payments among the richer sections is higher in rural areas. In rural parts concentration of

Figure 3 Concentration curves of OOP expenditure and Lorenz curve for rural and urban India, 2



OOP spending is more among richer sections and is particularly higher in Tamil Nadu and Chhattisgarh where the CI values are in excess of 0.5. In urban parts such concentration is highest in West Bengal, Madhya Pradesh, Haryana, Bihar and Maharashtra as discerned by the CI values exceeding 0.4. The positive values for Kakwani's index (*K*) revalidates that, both in rural and urban India, health care payments are progressive although the degree of progressivity is lower for urban India. For rural India the index value is noted to be 0.15 whereas for urban India it is computed to be 0.03. However, several interesting conclusions emerge once we visit the state specific performance. For instance, it could be noticed that the magnitude of Kakwani's index varies considerably across the states. As indicated by the negative values of *K*, health care payments are regressive in rural areas of Haryana and Kerala and in urban areas of Punjab, Rajasthan, Jharkhand, Chhattisgarh, Karnataka and Kerala. The redistributive effect of OOP payments is studied with the help of Reynolds-Smolensky index. The positive *RS* values indicate that as a consequence of medical care payments income inequality declines marginally for all-India as well as for most of the states, excepting Haryana and Kerala. Nonetheless, negative RS values for urban parts of Punjab, Rajasthan, Chhattisgarh, Jharkhand, Karnataka and Kerala hints at smaller intensifications in post-payment income inequalities.

But what does progressivity in OOP payments imply in the Indian context? It must be noted that progressivity of a health system could be treated as a virtue under conditions where everyone has equal access to healthcare. However, it is widely observed that healthcare utilisation in developing countries such as India is often distorted because of differences in ability to pay, perceptions regarding morbidity and non-availability of services in certain regions (Peters et al 2002). Under such circumstances, it is plausible to come across situations where the states demonstrate a tendency to be progressive in healthcare financing but altogether are marked with skewed healthcare utilisation. As noted by Peters et al (2002) such differences in OOP spending across income

Table 5: Progressivity and redistributive effect of out-of-pocket payment with respect to prepayment income in India

States	Rural			Urban		
	C_{oop}	K	RS	C_{oop}	K	RS
Andhra Pradesh	0.469	0.175	0.012	0.392	0.017	0.001
Assam	0.298	0.099	0.002	0.342	0.023	0.000
Bihar	0.345	0.139	0.003	0.446	0.112	0.005
Chhattisgarh	0.518	0.221	0.014	0.325	-0.113	-0.008
Gujarat	0.378	0.106	0.005	0.330	0.020	0.002
Haryana	0.317	-0.022	-0.002	0.449	0.085	0.002
Jharkhand	0.427	0.202	0.007	0.329	-0.026	-0.001
Karnataka	0.405	0.138	0.007	0.367	-0.001	-0.001
Kerala	0.375	-0.006	-0.001	0.262	-0.149	-0.015
Madhya Pradesh	0.445	0.176	0.015	0.475	0.076	0.005
Maharashtra	0.439	0.126	0.012	0.440	0.062	0.005
Orissa	0.447	0.161	0.010	0.382	0.028	0.002
Punjab	0.418	0.122	0.011	0.374	-0.028	-0.001
Rajasthan	0.385	0.134	0.010	0.251	-0.121	-0.007
Tamil Nadu	0.566	0.244	0.016	0.393	0.032	0.002
Uttar Pradesh	0.395	0.106	0.008	0.390	0.021	0.001
Uttaranchal	0.406	0.121	0.005	0.400	0.073	0.002
West Bengal	0.457	0.183	0.014	0.484	0.102	0.007
All-India*	0.456	0.152	0.011	0.409	0.030	0.003

Source: computed by authors using NSS-CES (61st round)

* All-India values here are provided only for the selected major States only

Note: If Kakwani,s Index, *K*, is positive the payments are progressive and if it is negative then they are regressive in nature. If Reynolds-Smolensky index, *RS*, is positive then the redistribution through payments generates a pro-poor income distribution and if negative then it produces a pro-rich distribution.

groups when combined with low use of public facilities by vulnerable groups further triggers problems related with accessibility. NSSO Morbidity and Healthcare Survey (2004) reports of such stark variations in utilization rates and the number of treated spells of ailment across different income and spatial categories. While among the poorer sections of the population the utilization rates is around 750 persons per thousand ailments, it peaks to around 900 persons per thousand among the richer individuals. What is even more important is to note that around 28 percent of the rural individuals have cited financial problems another 12 percent have reported absence of medical facility in vicinity as a major reason not availing treatment. The problem of financial constraints is perhaps omnipresent and even prevents around 20 percent of the urban individuals from seeking healthcare. These findings suggests that in India progressivity in OOP payment is a result of systematic bias in inclusion of the various sections of the population that is largely determined by aspects such as geographical location and socioeconomic status (O'Donnell et al 2007). Also, we have overlooked the issue of borrowings and indebtedness among high income households which superficially contributes to a progressive structure of financing but undeniably has wider repercussions. Because of such apprehensions, it becomes all the more important to assess progressivity in a much broader framework.

An argument which can probably restore the importance of progressivity in direct payments emanates from the hypothesis that most of the poor in India perhaps benefit from its large public health system and thus will not be required to incur huge OOP expenses. But even this hypothesis could be somewhat weakened by the fact that, irrespective of income categories and sector of origin, healthcare utilisation (both for institutional and non-institutional care) is heavily biased in favour of private sector. Such apprehension is validated by the Morbidity and Healthcare 2004 survey which finds that around 80% of total ailments are treated from the private sources. While for rural areas it varied from 70% for the poorest to 82% for richest sections; in urban areas it varied

from 74% to 89% (see, NSSO 2006a). These figures are symptomatic of unsatisfactory reach and performance of the public health system in many of the Indian states. Therefore, if we encounter regressivity in healthcare payments then perhaps it might qualify as an indicator of improved utilisation levels although it may be accompanied by obvious impoverishing effect - as observed in Kerala[4]. It must be noted that this paper views both the aspects – utilisation and impoverishing effect – as two prominent policy concerns deserving equal attention but nevertheless are worth highlighting because they require different policy approach across different socioeconomic categories. In fact, insurance against impoverishment and improvements in utilisation are possible only if health systems of these regions are working in a more equitable fashion.

6. Conclusion

This study revisits the distribution of healthcare payments in India and analyses - the incidence of disproportionateness in OOP spending; progressivity of such payments and; its poverty impact. The results presented here revalidate that richer section of the population are spending more on healthcare as compared with the poor. In a relative sense, poorer sections continue to spend a major share of the OOP expenditure on purchase of drugs and medicine and only a smaller share is allocated on components such as diagnostics, service charges and other institutional or non-institutional expenses. Our finding substantiates the concerns raised by Garg & Karan (2009) and reaffirms the need for policy attention on drugs expenditure to curb the expanding component of OOP spending. Furthermore, the study notes that OOP spending acts stern on the poverty status of the household and pushes

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4 Partly, the regressive patterns in Kerala are observed due to higher prevalence of short duration acute ailments, a definitive age pattern in prevalence of chronic illness involving longer duration of treatment and greater utilisation of private sector for in-patient care (Dilip 2002, 2007; Navaneetham and Kabir, 2006). Healthcare spending by lower income groups is also facilitated by Self Help Groups activities whereby around 20% of the borrowing is spend on healthcare (Narayana 2008b).

several of them below the poverty line, particularly in the rural areas of backward states. Larger contributions of non-institutional spending in poverty impact are worth revealing because it is correlated with issues like limited availability of public health services, low utilisation levels and poor ability to pay. A general analysis of OOP expenditure related catastrophe is not attempted here because it can only be facilitated through indicators such as loss of productive assets and indebtedness of the household along with issues of pure health loss (including loss of life) and its direct/indirect impact on the household. Nonetheless, the exercise of describing incidence and concentration of disproportionate OOP payment has reinforced the elementary notion that healthcare utilisation is in general concentrated among richer individuals. It is also discernible that higher incidences of disproportionateness are often coupled with lower concentration and lower incidence with higher concentration. Therefore, while comparing incidence of disproportionateness for its implied adversity, it is relevant to discuss concentration adjusted incidence levels to moderate the differential incidence across states. We find that disproportionate expenditures among states in early stages of health transition (Uttar Pradesh) are associated with composition of the households. For example the incidence of such expenditure is more among households with large number of dependents (elderly 60+ years and children below 5 years). For states in later stages of health transition (Kerala) the association is diluted and might be due to differences in nature of ailments and issues like quality of care. The OOP spending profile of Kerala suggests that because of epidemiological transition and the growing burden of lifestyle diseases the demand for curative care, which is often resource-intensive, is also increasing. With increasing privatisation of diagnostics and drug supplies several low-income households find it difficult to avail treatment. The government of India although has attracted some interest of the private sector to setup health care facilities in high priority areas but so far the performance of such collaborations has been quite ordinary

and somewhat extemporized as there are procedural ambiguities in the financial, legal and institutional set up of partnerships (Baru and Nundy, 2008). In this context, it becomes important that collaborations are successfully expanded to tackle the mounting burden of lifestyle diseases and other chronic conditions in several Indian states[5]. Moreover, new methods to advance the partnership in the delivery of outpatient care services should be designed. One of the essential features of such partnerships should be drafting of treatment plans for patients by giving due importance to the issue of equity in access and utilisation of healthcare based upon important socioeconomic or geographical conditions. Perhaps, the government may also be required to address the grievances of the states with poor infrastructure to encourage such partnerships.

For most of the Indian states, OOP payment is progressive in nature and indicates of a compression in inequality levels in the post-payment situation. But progressivity in Indian context reflects a different problem altogether wherein the rural poor are constrained because of reasons such as low incomes, limited access to healthcare, lack of awareness and poor infrastructure. In view of such facts, direct healthcare payments should be viewed as regressive instrument (Whitehead et al 2001) and as a proxy for inequality in appropriation of health benefits whereby the richer sections gain invariably from a direct spending on health services while the poorest endure further deteriorations in health. For policymakers it represents dual concerns of; a) improving access and utilisation through expansion of public facilities and b) development of innovative financing mechanisms to achieve desirable distribution of healthcare expenditures. The need for much wider health policy coverage in rural areas is essential to improve utilisation of health

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5 According to National Health Accounts of India (2001-02) 87.7 per cent of the total private health spending has been utilised for curative care services. The brunt of escalating costs of curative care is largely borne by the poorer sections of the society and more so because the government has been largely absent in its provisioning.

services and at the same time to safeguard poor from making unjust payments. A progressive health system with universal access and utilisation can perhaps render redistributive effect that would be much more favourable to the society. The preliminary remarks presented here nonetheless require greater analytical attention to identify the multiple constraints for accessing medical care across regions. Limited resources and other fiscal caps, certainly restrains public health systems to invest appropriately in expansion of services, quality improvement, expensive medical treatment and medical research (see Narayana 2008b). Nonetheless, there are lessons to be learned which are beyond such constraints. For instance, why Kerala allocates a considerable proportion of its public expenditure towards social sectors and why other backward states fail to arrive at consensus on higher social expenditure.

In recent times, compulsory insurance schemes have emerged as an interesting approach to combat difficulties in healthcare seeking. At present, India has a few health insurance schemes largely classified as mandatory health insurance schemes, voluntary health insurance schemes, employer-based health insurance and community-based health insurance schemes. However, a large proportion of the population remains outside the net of such schemes and therefore inclusion of the population in health welfare schemes certainly requires special provisions for vulnerable sections of the population. This is because equity in access to health can be achieved mainly through compulsory insurance, which especially for poorer countries would invariably mean that insurance premiums are to be independent of health status. Perhaps, micro-insurance is also emerging as an interesting option towards this end where the nodal agencies have a vital role to play (Ranson 2002; Ahuja, 2005). However, to further this intent, as well as to comprehend other complex issues, it is important that we develop a rather specific and comprehensive data collection and analytical approach to engage with substantive issues pertaining to health financing including study on insurance potential, catastrophic, and impoverishing effects of healthcare

payments. Use of appropriate reference period (accounting for recall bias) for data collection, an elaborate expenditure account by nature of service and providers can provide some further insights for health policies.

In summary, this analysis is indicative of the persisting miseries of Indian population who are required to trade-off their basic consumption expenses because of uncertain episodes of medical illness. These expenditures are often unavoidable and seldom leave one with a twosome choice, i.e., whether to seek treatment or not to do so? Given these findings, it is important to discontinue its treatment as everyday trivia and revive analytical and political efforts for developing right set of institutions to minimise toll on social welfare. Initiatives like National Rural Health Mission of India that intends to improve utilisation of health services in rural areas are definitely efforts in the right direction but much remains to be done.

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References:

Ahuja, R (2005), 'Health Insurance for the Poor in India: An Analytical Study,' Indian Council for Research on International Economic Relation, Working Paper No. 161, June.

Baru, R V and M Nundy (2008), 'Blurring of Boundaries: Public-private Partnerships in Health Services in India,' *Economic and Political Weekly*, January 26.

Commission on Macroeconomics and Health (2001) Macroeonomics and Health: Investing in Health for Economic Development. World Health Organisation: Geneva.

Dilip T R (2002) 'Understanding Levels of Morbidity and Hospitalisation in Kerala, India,' *Bulletin of the World Health Organisation* 80:746-751.

Dilip T R (2007) 'Age Specific Analysis of reported Morbidity in Kerala, India,' *World Health and Population* Vol 9(4) 1-11.

Dilip, T.R., and Duggal, R., (2002), 'Incidence of non-fatal Health Outcomes and Debt in Urban India,' Draft paper presented for Urban research symposium, 9-11 December 2002, at World Bank, Washigton D.C.

Garg C and A. K. Karan (2004) 'Catastrophic and Poverty Impact of out of Pocket Payment for Health Care in India: A State Level Analysis,' WP 23, Institute for Human Development, New Delhi.

Garg C. C and Anup A.K. (2009) 'Reducing out-of-pocket Expenditures to Reduce Poverty: A Disaggregate Analysis at Rural Urban and State Level in India, *Health Policy and Planning,* 24; 116-128.

Government of India (2005) *National Health Accounts, India* (2001–2002). New Delhi: Ministry of Health and Family Welfare.

Gumber, A (2002), Structure of Indian Health Care Market; Implications for Health Insurance Sector, Regional Health Forum, Vol.4.

Jenkins S (1988), Calculating Income Distribution Indices from Microdata. *National Tax Journal*, Vol. 61.

Kakwani N C, (1977), 'Measurement of Tax Progressivity: An International Comparison,' *Economic Journal,* 87(345): 71-80.

Kakwani, N C (1980), *Income Inequality and Poverty; Methods of Estimation and Policy Applications*, New York, Oxford University Press.

Kakwani, N C, A Wagstaff and E van Doorslaer (1997), 'Socioeconomic Inequalities in Health: Measurement, Computation and Statistical Inference,'*Journal of Econom*terics 77(1): 87-104.

Lerman, R I and S Yitzhaki (1989), 'Improving the Accuracy of Estimates of Gini Coefficients,' *Journal of Econometrics*, Vol. 42(1).

Mahal A, Singh J, Afridi F et al (2001). Who Benefits from Public Health Spending in India? New Delhi: National Council for Applied Economic Research.

Mahal A, Sakthivel S, Nagpal S. (2005). National Health Accounts for India. In: National Commission on Macroeconomics and Health (NCMH). Financing and Delivery of Health Care Services in India. NCMH Background Papers. New Delhi: Ministry of Health and Family Welfare, Government of India, pp. 256–63.

Narayana D (2008a), 'Adjustment and Health Sector Reforms: The Solution to Low Public Spending on Healthcare in India,' in Slim Haddad, Eris Baris and D Narayana (eds*) Safeguarding the Health Sector in times of Macroeconomic Instability: Policy Lesson for Low and Middle Income Countries,* IDRC & CRDI and African World Press, New Jersey.

Narayana D (2008b), 'High Health Achievements and Good Access to Healthcare at Great Cost: The Emerging Kerala Situation,' in Slim Haddad, Eris Baris and D Narayana (eds) *Safeguarding the Health Sector in times of Macroeconomic Instability: Policy*

Lesson for Low and Middle Income Countries, IDRC & CRDI and African World Press, New Jersey.

National Sample Survey Organisation (2006a) 'Morbidity Health Care and The Condition of Aged' Report No 507*,* New Delhi: Ministry of Statistics and Programme Implementation.

National Sample Survey Organisation (2006b) 'Level and Pattern of Consumer Expenditure 2004-05,' Report No 508*,* New Delhi: Ministry of Statistics and Programme Implementation.

National Sample Survey Organisation (2007), Consumer Expenditure Survey 61st Round, Central Statistical Organisation, New Delhi.

Navaneetham K. and Kabir M. (2006) 'Health Status of Kerala: A Life Course Perspective', Project Report Submitted to IDPAD, Thiruvanathapuram: Centre for Development Studies.

NCMH (2005) Report of the National Commission on Macroeconomics and Health. New Delhi: Ministry of Health and Family Welfare, Government of India.

O'Donnell O, van Doorslaer E, Rannan-Eliya RP et al. (2005) 'Who Pays for Healthcare in Asia,' *Journal of Health Economics* 27: 460-475.

Peters, D., Yazbeck, A.S., Sharma R., Ramana, G.N.V., Pritchett, L, Wagstaff, A. (2002) *Better Health Systems for India's Poor. Findings, Analysis and Options,* Washington DC:World Bank.

Peters DH, Rao SK and Fryatt R (2003), 'Lumping and Splitting: The Health Policy Agenda in India,' *Health Policy and Planning* 18; 249-60.

Ranson MK. 2002. 'Reduction of Catastrophic Health Expenditures by a Community Based Health Insurance Scheme in Gujarat, India: Current Experiences and Challenges,' *Bulletin of World Health Organization* 80: 613–21.

Reynolds M and E Smolensky (1977), *Public Expenditures, Taxes and the Distribution on Incomes: The United States*, 1950, 1961, 1970; New York; Academic Press.

Van Doorslaer, E., O'Donnell, O., Rannan-Eliya, R.P., Somanathan, A., et al., (2007), 'Catastrophic Payments for Health Care in Asia,' *Health Economics* 16 (11), 1159–1184.

Wagstaff A and E. van Doorslaer, (2000), 'Equity in Health Care Finance and Delivery,' In A.J.Culyer and J.P.Newhouse eds., *Handbook of Health Economics (1B)*, Elsevier, Amsterdam, Chapter 34, 1803-1862.

Wagstaff A, and van Doorslaer E (2001), 'Paying for Health Care; Quantifying Fairness, Catastrophe and Impoverishment, with Applications to Vietnam, 1993-98.' WP No. 2715, The World Bank.

Wagstaff A, and van Doorslaer E (2003) 'Catastrophe and Impoverishment in Paying for Health Care: with Applications to Vietnam, 1993-98,' *Health Economics* 12; 921-34.

Whitehead, M., Dahgren, G., Evans, T., (2001) 'Equity and Health Sector Reforms: Can Low-income Countries Escape the Medical Poverty Trap?' *The Lancet* 358, 833–836.

World Bank (2004), The Millenium Development Goals for Health: Rising to the Challenges. World Bank: Washington, DC.

World Health Organisation (2005) Sustainable Health Financing, Universal Coverage and Social Health Insurance. 115th World Health Assembly Resolution EB115.R13, Geneva.

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