

Public Retreat, Private Expenses and Penury – A Study of Illness Induced Impoverishment in Urban India

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Abstract

Health care can be expensive for the un-insured, often constituting a potential poverty trap. Urban India is particularly vulnerable to this possibility given the greater demand for health, absence of a structured health care system, overburdened public institutions, ubiquitous and unregulated private health care market and the generic paucity of public funds. Using nationally representative household level data at two time points, this paper computes the degree and depth of impoverishment from out of pocket medical expenses, and its variation across states and select socio-economic characteristics. Roughly 6 percent of the urban population or about 18 million people were impoverished entirely due to out of pocket medical expenses in India. There were substantial inter-state variation in incidence of this burden and all but one states display an increase in the degree of impoverishment between 1995-96 and 2004. The depth of poverty also registered a threefold increase between the two periods. Urban Muslims, scheduled caste, casual labour and lower middle income households were easily the most vulnerable to the financial implications of ill-health.

Keywords: Health financing, Poverty, Urban

1. Introduction

Public policy in India witnessed a reorientation post-1991 with the setting in of the structural adjustment programme. One of the tenets of the programme was fiscal austerity that resulted in declining public expenditures on social services. Over the years, public finances reveal a clear tendency of the Government to withdraw from the provision of these services often under the garb of public private partnerships (PPP's), or outright privatisation. It is often argued that the withdrawal of the State was more unambiguously manifested in the urban India as compared to its rural counterpart, mainly because of two reasons. Firstly, in the early nineties, the fact that just a quarter of the total population resided in urban areas and a fraction of them voted, meant that electoral backlashes on sensitive issues of public service delivery from the urban populace, were largely insignificant. Secondly, a relatively higher level of per capita income in the urban areas created a perception that the urban inhabitants were undeserving of public subsidies on these services. Urbanisation, on the other hand, continued unabated as an inevitable outcome of the faster rates of growth to which the economy transited in the post-liberalisation period. Apart from this 'pull' factor, the 'push' of a traditional rural sector also contributed to it. The net result was a huge demand supply mismatch in basic services which was allowed to be catered by the private sector. While this has arguably kept up the availability of services, the affordability of the same has emerged as a crucial policy challenge.

The health sector has possibly borne the greatest brunt of this perceived shift. India currently spends around 4 per cent of its Gross Domestic Product (GDP) on health. Public (Central, State and Local Governments combined) spending on health however accounts for just 1 percent of GDP with the remaining 3 percent being spent by private and external sources. The share of public expenditure in total health expenditure is around 20 per cent while households account for another 70 per cent of total health spending, almost all of which is in the form of out-of-pocket (OOP) expenses¹. Reimbursement in any form is generally availed by those employed in the formal sectors who are a minority in India². Such high levels of OOP spending by the households have certain adverse implications. While for some, access to health care is reduced considerably³, others who opt for treatment face catastrophic burden of health care expenditures. Standard measures of poverty however are unable to capture this aspect. They might inaccurately categorise a household as non-poor simply because high medical expenses (financed often through borrowing and distress sale of household assets) raise its total spending above the poverty line, while spending on food, clothing and shelter is below subsistence levels. There is another dimension to the financial burden of illness that extends beyond movements of a household in and out of poverty in the very short run. Treatment costs are not necessarily paid out of current income always. A household might have to dis-save, borrow, accept contributions, sell assets, reduce other non-discretionary expenditures like food etc. to finance treatment cost. Thus, indebtedness and distress sales of assets are some of the other potential outcomes accruing to the households from a health financing system that relies excessively on private out-of-pocket expenditure.

¹ National Health Accounts India, 2004-05, NHA Cell, Ministry of Health and Family Welfare, Govt. of India

² Unorganised workers constitute about 92 per cent, while unorganised non-agricultural workers constitute around 72 per cent of total work force in India (Report of the National Commission for Enterprises in the Unorganised Sector, Govt. Of India, 2007).

³ Three consecutive National Sample Survey (NSS) Rounds (42nd, 52nd and 60th) on Morbidity and Health care have shown that financial difficulties are one of the most oft-cited reasons for no treatment of ailment and the phenomenon is showing a rising trend.

Against this backdrop, the paper attempts an estimation of treatment cost induced impoverishment in urban India. Given the large socio-economic variations intrinsic to the country, the analysis is extended to determine the inter-state as well as inter-group (religious, caste etc) variations in the incidence of this phenomenon. The entire analysis is carried out for two points of time separated by a decade to understand the inter-temporal variations in financial burden of morbidity in urban India. This is particularly important since the urban health system in India has undergone substantial changes in the last decade or so with potential implications for health care financing and its aftermath. The paper has five sections and is organised as follows. Section 1 attempts to unravel the complexity of the urban health sector in India and argues that the phenomenon of illness induced impoverishment might be more prevalent in the urban areas. Section 2 provides a review of literature on health financing by the households and its effects. Section 3 discusses the advancements and modifications in this paper with respect to the data and methodology, as compared to previous studies. Section 4 presents and discusses the degree of illness induced impoverishment disaggregated across states and select socio-economic characteristics while section 5 concludes with a policy perspective.

1. Health financing in urban India – Public apathy and private choices

Financial burden of health expenses is invariant of the place of residence (rural or urban). However, the urban health scenario in India today is arguably more complex on account of both supply side and demand side characteristics. On the supply side, an urban equivalent of the standard three tier health system that exists in rural India is not present. Urban India has a mixed health system where ministries of health, private insurance, social insurance and targeted schemes coexist, to serve different sections of the population. For example in a large urban centre like Delhi, health planning and service delivery is done independently by the Municipal Corporation of Delhi (MCD), the New Delhi Municipal Corporation (NDMC), the Government of Delhi, Employees State Insurance (ESI) dispensaries, Central Government Health Scheme (CGHS) clinics, hospitals run by the Ministry of Railways, Defence etc. If we add to this, large public hospitals like the All India Institute of Medical Sciences (AIIMS), numerous private hospitals and clinics and the independently working NGO's, what emerges is an extremely complex system that requires an unlikely synergistic effort to achieve homogeneity in the provision of health care to the urban populace at standardised costs. Such a system tends to fragment, increase administrative costs, limit pool sizes and undermine both equity and efficiency objectives. The urban private providers generally have better access to technology but unregulated prices and quality of services. In addition, recent years have also witnessed a concomitant increase in user charges and other effective charges upon consumers even in the public health system, as government-run hospitals and clinics that are starved of public funds resort to making citizens pay more for medicines, diagnostic procedures and surgical aids in the urban areas.

On the demand side, while the rural mass in India, and especially the poor are more likely to forego treatment on account of lack of awareness and illness perception and dearth of medical facility in the vicinity, urban India does not quite face the similar problem. They tend to place greater valuation on health due to generally higher levels of education and larger penetration of mass media that generates awareness. This results in even poor households willing to spend, to ensure minimal healthcare. While this ensures the demand for medical care in some sense, the issue of financial burden looms large on them. Other exogenous factors like the higher cost of living, increased exposure to accidents, lifestyle issues and poor environmental condition makes the urban mass increasingly vulnerable to indispositions and the financial burden originating from health care. The discussed demand and supply characteristics of the urban health therefore constitute a strong case for a detailed investigation of the phenomenon of illness induced impoverishment, with a special focus on urban India.

2. Financial burden of illness -- A review of literature

In recent years, uncovered health expenses have emerged as one of the predominant reasons for both short-run and long-run alterations in standard of living of households in India. The acknowledgement of treatment cost as a potential producer of poverty has inspired researchers to study the “poverty ratchet” (Chambers, 1983) or the “medical poverty trap” (Whitehead *et. al.*, 2001) in different country settings and under dissimilar health systems. Existing literature on financial implications of health care have largely used a couple of proxy measures to compute this burden—catastrophic health expenditure and health care cost induced impoverishment. The concept of catastrophic payments is defined as the circumstances when out-of-pocket (OOP) payments cross some threshold share of household expenditure and is considered as a major concern in the health financing system of any country. (Berki,1986; CMH, 2001; Kawabata, Xu et al. 2002; Meesen, Zang et al. 2003; OECD and WHO 2003; Pradhan and Prescott 2002; Wyszewianski,1986; Whitehead, Dahgren et al., 2001; Wagstaff and Van Doorslaer 2003; Xu, Evans et al. 2003). It is acknowledged that the choice of threshold is somewhat arbitrary, 10% of total expenditure has been a common choice (Pradhan and Prescott 2002; Ranson 2002; Wagstaff and Van Doorslaer 2001); with the rationale that this represents an approximate threshold at which the household is forced to sacrifice other basic needs, sell productive assets, incur debt, or be impoverished (Russell 2004). A recent WHO article, using survey data from 89 countries, finds that 3% of households in low-income countries, 1.8% of households in middle-income countries and 0.6% of households in high-income countries incur catastrophic health expenditures (Xu et al. 2007).

Soaring health care expenditure often affects the magnitude and pattern of household consumption. When a member falls ill, the household faces several different costs (treatment cost, transportation cost, opportunity cost of care giving etc.) and takes recourse to diverse strategies to finance the same. While the out-of-pocket expenses set in a ‘real time’ reduction in standard of livings, the coping strategies very often turn out to be potential poverty traps. The chain of events has often been termed as the “poverty ratchet” (Chambers, 1983) or the “medical poverty trap” (Whitehead *et. al.*, 2001). Gertler and Gruber (2002), studied the impact of health shocks on households’ consumption patterns in Indonesia, providing evidence that illness reduced labor supply and household income. Similarly Wagstaff (2005) finds evidence that health shocks are associated with a reduction in consumption in Vietnam, in particular for uninsured and better-off households. Dercon and Krishnan (2000) show that in Ethiopia the consumption risks associated with health shocks are not borne equally by all household members. In addition, estimates of the financial burden of illness are available for at least six Latin American countries (Baeza and Packard 2005), China (Lindelov and Wagstaff, 2005), Thailand (Limwattananon 2007), and fourteen Asian countries and territories (Van Doorslaer et al. 2007).

Studies on India have found average expenditure on medical care rising invariably with monthly per capita consumer expenditure or income of the household (NSSO⁴, 1992; Visaria and Gumber 1994; Rajarathnam, et al. 1996; NSSO, 1998). However medical expenditure as a proportion of total resources at the household’s disposal was much lower for the rich. (Krishnan, 2000). Estimates show health expenditure as a percentage of annual income varying from 3 percent in the richest 20 percent of the households to 12 percent in the bottom 20 percent of the households (Gumber 2002). A study of 35 villages in Rajasthan, found that health and health expenses were one of the main causes that lie behind 85% of all cases of impoverishment. One-half to two-thirds of all households falling into poverty mentioned ill-health and health expenses as a contributory cause (Krishna 2004). Such impoverishment is of even greater concern given the evidence from another detailed study in Rajasthan that shows that health care purchased is often of poor quality, even harmful (Banerjee, Deaton et al. 2004). Nationally, more than 37 million people in India went below poverty line in 1999-2000 as per the \$1 norm of the

⁴ National Sample Survey Organisation (NSSO), initiated in the year 1950, is under the Ministry of Statistics and Programme Implementation of the Government of India. It is the largest organisation in India conducting regular nation-wide, large-scale, continuous survey operation in the form of successive rounds.

poverty line, because of OOP payments (O'Donnell and Doorslaer, et al., 2005). This is in addition to those, who are already below poverty line and are further pushed into acute poverty because of OOP payments. Two other studies (Garg and Karan 2005 and Bonu et. al. 2007) estimated that roughly 3.25 to 3.5 percent of the population made an entry into poverty on account of health care payments. A more recent study with NSSO data reports that after adjusting for the sources (borrowings, contributions and sale of assets etc.) of OOP expenditure, 63.22 million individuals or 11.88 million households were impoverished due to healthcare expenditure in 2004 (Berman et al. 2010). Chowdhury (2011) on the basis of a case study of slums in Delhi shows that treatment of even regular non-hospitalised morbidity impoverished 13 percent of the sampled households, and calls for a refinement in the coverage of targeted health insurance schemes such as the Rashtriya Swasthya Bima Yojana (RSBY), that are restrictive in their coverage.

3. Points of Departure from Earlier Studies

This paper departs from earlier studies on the issue on at least three aspects related to data, methodology and the level of analysis. In what follows we briefly discuss them:

Firstly, most of the studies on financial burden of illness in India have used the NSSO consumption expenditure survey (CES) data. This study uses the NSSO unit record data on Morbidity and Health Care (MHC). The motivation for using this alternate data source is the extensive detail with which parameters on treatment cost have been dealt, which is absent in case of CES data. The MHC round also collects information on socio-economic characteristics of the household including consumption expenditure.

Secondly, the methodology of computing illness induced impoverishment by simply subtracting OOP expenses from consumption expenditure and comparing it with the existing poverty line ignores the fact that the poverty line itself may include some non-food expenditure, no matter how small it is. In other words, some amount of health expenditure is implicit in the poverty line that needs to be deducted and then compared with the household expenditure net of OOP payments to get a more robust estimate of the phenomenon.

Thirdly, India and especially urban India displays large variations across states as well as in the socio-economic profile of its population. In view of this, the paper looks into the differential incidence of the financial burden of OOP expenses across states as well as socio-economic categories for the two points of time.

4. Data and Methodology

Unit record (household level) data from two successive National Sample Survey rounds (1995-96 and 2004) on morbidity and health care forms the database for the study. These were thin (small sample) rounds separated by a decade, which provides the opportunity to examine the impact of possible changes in the health system of the country on financial implications of morbidity. Table 1 presents a comparison of the two rounds with respect to certain aspects.

Table 1: A summary of the data sources

	NSS 52nd Round, July 1995 – June 1996	NSS 60th Round, January – June, 2004
Number of urban blocks surveyed	4991	2668

Number of households surveyed	49658	26566
Percentage reporting ailment in last 15 days	5.4	9.9
Percentage of ailing who were treated during last 15 days	9.1	8.9
Percentage of treated ailments receiving non-hospitalised treatment from government sources	20	19
Average total expenditure (Rs.) for non-hospitalised treatment per ailment	175	306
Percentage of persons hospitalised during a reference period of 365 days	2	3.1
Percentage cases of hospitalisation treatment from government sources	43.1	38.2
Average total expenditure (Rs.) per hospitalisation	3921	8851

Source: Compiled from Report No. 441 (1998) and Report No. 507 (2006) of National Sample Survey Organisation

Morbidity levels were generally higher in 2004 compared to the previous round. This was true for hospitalisation as well as non-hospitalised ailments. There has been a visible decline in the utilisation of Government sources for treatment. Treatment cost has nearly doubled in nominal terms within the decade. These observations presumably bear essential implications for the issue of financial burden of illness. Tables A1 and A2 in the appendix present a disaggregated summary of out of pocket health expenses for the two points of time. Share of out-of-pocket health expenditure in total consumption expenditure of the household was estimated at around 8 percent, nearly double of what it was in the nineties. It is to be noted that the consumption expenditure surveys of the NSS place the health share of household budget in urban India at around 5 percent. Therefore one is tempted to say that regular consumption expenditure surveys underestimate the health care costs of the households and subsequently the resultant economic burden. The distribution of the health share in household budget was pro-rich in the sense that the households in the higher expenditure quintiles spent a smaller proportion of their total resources on health care. This is in spite of the higher perception of ailment among high income groups, the predominance of life style diseases which necessitates expensive treatment and a general preference for private sources of treatment within this group that involves higher costs.

The methodology is an adaptation of Wagstaff and van Doorslaer's (2003) attempt to estimate illness induced impoverishment for Vietnam, with a relevant modification. The modification suggested is basically to deduct the health expenses corresponding to the expenditure class that contains the poverty line from the existing poverty line to arrive at an adjusted poverty line. The distribution of consumption expenditure net of OOP payments is then compared with this adjusted poverty line to estimate the degree of impoverishment.

Consider a household 'i'. Suppose,

'S_i' = size of the ith household.

'MPC_i' = monthly per capital total consumption expenditure of the ith household,

H_i = monthly per capita health expenditure of the ith household.

Also let 'L' be the poverty line that the household faces. In order to measure poverty gross of health care payment, we define

$$P_i^{\text{gross}} = \begin{cases} 1 & \text{if } MPC_i < L \\ 0 & \text{otherwise.} \end{cases} \dots\dots\dots (1)$$

Now if N is the number of households in the sample, an estimate of poverty headcount ratio gross of health payments is given by,

$$HC^{gross} = \frac{\sum_{i=1}^N S_i P_i^{gross}}{\sum_{i=1}^N S_i} \dots\dots\dots (2)$$

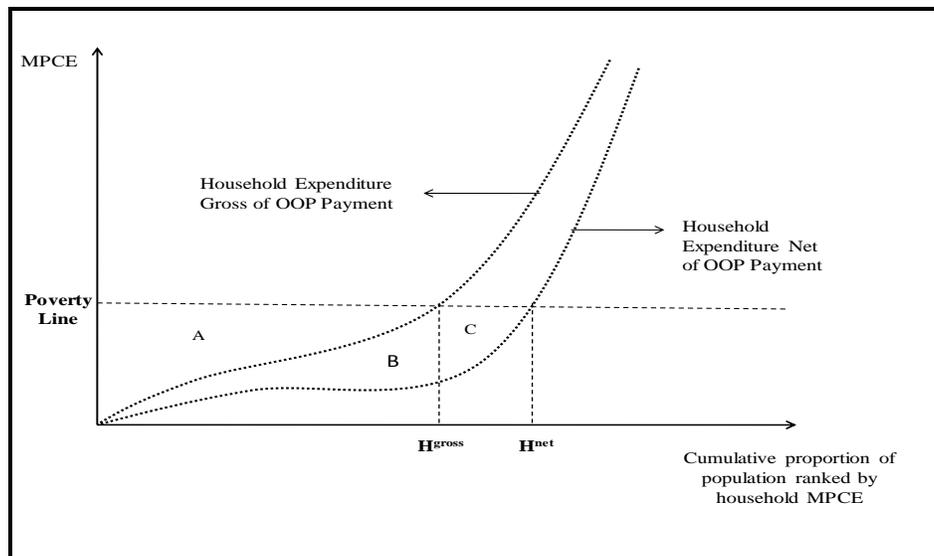
Again, individual poverty gap gross of health payment is given by,

$$G_i^{gross} = P_i^{gross} (L - MPC_i) \dots\dots\dots (3)$$

The mean of this gap in rupee terms is given by,

$$G^{gross} = \frac{\sum_{i=1}^N S_i G_i^{gross}}{\sum_{i=1}^N S_i} \dots\dots\dots (4)$$

Figure 1: Diagrammatic exposition of illness induced impoverishment



Source: The World Bank (2008)

Figure 1 provides an illustration of the discussed methodology. The case displayed in the chart makes an implicit assumption that the relative position of households in the gross and net of OOP expenditure distribution does not change. In the standard case (pre-payment), headcount is H^{gross} and poverty gap is equal to the area 'A'. In the special case (post-payment), poverty headcount increases to H^{net} and the gap is now given by the sum of 'A', 'B' and 'C'. Area 'B' represents the increase in the intensity of poverty due to health care payments, for those households who were already poor on the basis of pre-payment MPCE. Similarly, area 'C' stands for the addition to the poverty gap due to new entrants into poverty after paying for health care. The value of $(H^{net} - H^{gross})$ corresponds to the fraction of households considered as non-poor in spite of their MPCE net of OOP payments for health care, being below the poverty line.

However, the Indian poverty line already contains an allowance for non-food components no matter how inadequately it represents the true state of affairs. For methodological accuracy we need to adjust the poverty line by subtracting the health component of this non-food allowance from the existing poverty

line. Suppose households⁵ in and around the poverty line incur an average per capita health expenditure denoted by X.

The adjusted poverty line is then given by, $L^* = L - X$

In order to estimate poverty net of health payments we first define P_i^{net} such that,

$$P_i^{net} = 1 \text{ if } (MPC_i - H_i) < L^* \\ = 0, \text{ otherwise.} \dots\dots\dots (5)$$

Finally, the head count net of health payments is obtained by replacing P_i^{gross} in equation (2) with

P_i^{net} such that,

$$HC^{net} = \frac{\sum_{i=1}^N S_i P_i^{net}}{\sum_{i=1}^N S_i} \dots\dots\dots (6)$$

The individual poverty gap net of health payments is given as,

$$G_i^{net} = P_i^{net} \{L^* - (MPC_i - H_i)\} \dots\dots\dots (7)$$

One of the central objectives of the current analysis is to make inter-state comparisons in impoverishment induced by treatment cost. However state specific poverty lines being different, a meaningful comparison would require normalisation of the poverty gap which is done by dividing the gap by the respective adjusted poverty lines.

Thus normalised poverty gap, $NG^{gross/net} = \frac{G^{gross/net}}{L^*} \dots\dots\dots (8)$

4.1 Methodological Caveat

A particularly sensitive issue with the methodology illustrated above is that of downward adjustment of the poverty line. The reason why the downward revision might be a subject for disagreement is that, poverty lines in India as given by the Planning Commission are already considered to be low. It has been rightly suggested that these lines do not adequately reflect the minimum expenditure required for a decent standard of living, so much so that they have often been termed as “starvation lines”. So any estimate of poverty headcount based on these lines is bound to underestimate the true extent of poverty prevailing in India. The basis of this criticism is embedded in the methodology of construction of poverty lines. The current poverty line is simply a price updated version of the poverty line in 1979. None of the Governments that have come to power, has shown the political will to redesign the consumption basket of the 70’s, incorporating contemporary consumption patterns, and then re-drawing the poverty line and subsequently poverty ratios on the basis of consumption expenditure data from current quinquennial rounds of the NSS.

However the poverty line of 1979 was not merely based on subsistence food requirements and did contain a non-food component too, which was basically the expenditure on non-food items of the group of people who met the nutrition norms (i.e. 2400 kcals and 2100 kcals for rural and urban areas respectively). Thus

⁵ In the current study, this implies those households which belong to the MPCE class that contains the poverty line for the respective states.

in a sense, the average total expenditure of households just satisfying the normative nutritional requirements has been used as the poverty line. So implicitly this line took into account the expected spending on health care of those in the region of food poverty. Though health care needs of a household are highly stochastic and a seriously ailing person faces health care expenses well above the average, it might be generally assumed that the poverty line for a particular year contains the average health expenditure of the households that belong to the poverty line MPCE (monthly per capita expenditure) class. So any robust attempt to recalculate poverty ratios net of health care payments must be preceded by a readjustment of the poverty line by deducting the average health expenditure of the MPCE class containing poverty line from the original poverty line. Such an adjustment of the poverty line however might push some households out of poverty if their spending on health care is less than the average expenditure that is deducted from the poverty lines. The ethical issue notwithstanding, one must recognise that the indicators of interest in the current context are the post-payment head count and gap and more importantly its deviation from the pre-payment figures that would roughly quantify illness induced impoverishment.

Table 2 shows the poverty line adjustment for the year 1995-96 and 2004 respectively. Columns 2 and 5 display the original state specific poverty lines⁶. Columns 3 and 6 give the total per capita out of pocket expenditure on treatment of ailments for households belonging to the MPCE class that contains the poverty line for respective states. The adjusted poverty lines form the basis of the subsequent analysis on illness induced impoverishment.

Table 2: Poverty Line Adjustments, 1995-96 and 2004

State	1995-96			2004		
	Original Poverty Line (Rs.) (2)	Monthly Per Capita Health Expenditure Of the MPCE Class Containing Poverty Line (Rs.) (3)	Adjusted Poverty Line (Rs.) (4) = (2) - (3)	Original Poverty Line (Rs.) (5)	Monthly Per Capita Health Expenditure Of the MPCE Class Containing Poverty Line (Rs.) (6)	Adjusted Poverty Line (Rs.) (7) = (5) - (6)
Andhra Pradesh	334.18	8.87	325.31	542.89	64.83	478.06
Assam	257.07	1.97	255.1	378.84	41.25	337.59
Bihar	282.21	10.19	272.02	435	51.94	383.06
Gujarat	358.37	12.82	345.55	541.16	50.79	490.37
Haryana	315.1	11.35	303.75	504.49	30.69	473.8
Karnataka	373.17	11.6	361.56	599.66	31.49	568.17
Kerala	354.91	20.32	334.59	559.39	109.85	449.54
Madhya Pradesh	374.09	20.86	353.23	570.15	30.88	539.27
Maharashtra	397.29	18.02	379.27	665.9	67.13	598.77
Orissa	354.82	17.6	337.22	528.49	52.56	475.93
Punjab	294.71	29.41	265.29	466.16	50.12	416.04
Rajasthan	335.11	12.45	322.66	559.63	55.78	503.85

⁶ State specific poverty lines for 1995-96 (Column 2) have been constructed by updating the urban poverty lines of 1993-94 (as provided by the Planning Commission once in 5 years) with the Consumer Price Index for Industrial Workers (CPIIW) for the respective states. The 2004 poverty lines (Column 5) are the state specific urban poverty lines for 2004-05 as reported by the Planning Commission.

Tamil Nadu	369.08	24.72	344.35	547.42	24.07	523.35
Uttar Pradesh	306.53	28.4	278.13	483.26	57.37	425.89
West Bengal	297.53	7.06	290.47	449.32	96.15	353.17
All India	338.15	26.14	312.01	538.6	45.08	493.52

5. Illness and Impoverishment: Trends and Patterns.

Table 3 displays the extent and depth of illness induced impoverishment among the urban population of 15 major states at two points of time. Poverty head count under the 'pre-payment' column implies the proportion of individuals in each state who are poor on the basis of the health expenditure adjusted poverty line. The 'post-payment' poverty headcount column gives the proportion of individuals impoverished when their total health expenditure is netted out of total consumption expenditure. Therefore the 'difference' roughly gives the percentage of individuals who are impoverished exclusively due to the burden of out of pocket payments on health care and this is the indicator of interest in the current analysis. The same applies to the case of poverty gap that calculates the depth of poverty gross and net of health care payments. However since poverty lines are state specific, it renders comparison of poverty gaps impractical. Hence a normalised poverty gap is calculated and expressed in percentage terms that make inter-state comparison possible.

Roughly 6 percent of the urban population or about 18 million individuals were impoverished entirely due to out of pocket medical expenses in India, and disconcertingly, the proportion was higher than what it had been a decade ago (3.5 percent). However the direction and degree of inter-temporal variation is along expected lines since the recent years have seen a significant reduction in the quantum of public health services with a simultaneous proliferation of high cost private sources of treatment. This has arguably been assisted by a higher health seeking behaviour among the urban masses.

If we look into the state wise incidence of this burden, Kerala, Uttar Pradesh and West Bengal displayed the highest difference between pre-payment and post payment head count ratios in 2004. Apart from Haryana, all other states demonstrate an increase in the magnitude of 'medical impoverishment' between 1995-96 and 2004. The increase was highest for Kerala and West Bengal. Kerala is unique in terms of its extremely good health infrastructure, both public and private. The high literacy rates resulting in augmented morbidity perception have ensured a robust demand for health care. It is therefore uncertain whether the high levels of medical impoverishment in Kerala is due to the composition of the health sector or the nature and quantum of demand for medical services, much of which might be perceptual rather than symptomatic. This is certainly not the case with the other states like West Bengal that has witnessed a significant decline in the quality of publicly provided medical care in the last decade or so and consequently more and more people have been opting for the expensive and burdensome private sources of treatment.

The difference between the pre-payment and post-payment poverty gaps indicates an increase in the depth of poverty on account of health care payments. The poverty gap in urban India in 1995-96 increased by Rs. 8.57 after paying for health care. In 2004 the gap increased to Rs. 27.44. So, in nominal terms, the depth of poverty after paying for medical care shows a threefold increase between the two periods. The normalised poverty gap is obtained by expressing the poverty gap as percentage of state specific poverty lines. In percentage terms too the difference in poverty gap pre and post health care payment almost doubled for urban India, between the two points of time. Haryana, Madhya Pradesh and Uttar Pradesh demonstrated higher percentage increase in depth of poverty due to OOP expenses in 1995-96. In 2004 also Uttar Pradesh was among the states with higher poverty-deepening effects of treatment cost along with Kerala, Tamil Nadu and West Bengal.

Incidence of the financial burden of illness cannot be uniform across the population especially in a country like India. This is because aspects like religion, caste, class etc play a dominant role in the access

to, as well as the ability to pay for medical services. These aspects have been found to have a close association with the position of an individual in the socio-economic ladder which in turn partially influences his illness perception, choice of service provider and overall household resilience to shocks. This therefore makes a strong case for looking into the incidence of illness induced impoverishment across these characteristics.

4.1 Religious and Social Group

Table 4 shows the incidence of the phenomenon of ‘medical poverty’ across religious and social groups for the two points of time. The 52nd Round of the NSS on Morbidity and Health care did not collect data on religious groups. Also among social groups, OBC’s were absent since they were included in NSS rounds only since 1999-2000 (55th Round). In 2004, the Muslims were the most vulnerable to the ‘medical poverty trap’ as evident from a much higher poverty head count after deducting private health payments. The head count ratio increased by more than 8 percentage points among Muslims due to out-of-pocket payments for health care, an observation that supplements the findings of the Sachar Committee report⁷. The poverty gap however was found to be higher for Christians implying that though relatively lesser persons in this group were pushed into poverty, their ability to pay for other non-discretionary expenditures was reduced by the highest margin. The lowest increase in depth of poverty after paying for health care accrued to the Hindus. Among the social groups, the scheduled caste households experienced the highest increase in incidence as well as depth of poverty in both the years. The proportion of individuals moving into poverty on account of OOP health payments almost doubled between 1995-96 and 2004 among the urban scheduled caste population.

4.2 Other household characteristics

Though analysis based on religion and caste throws some light on the relatively vulnerable groups and is important from a policy perspective one must realise that medical impoverishment per se may not be a direct outcome of these attributes. Apart from the nature of illness and health service utilisation there are certain household level factors that often designate relative vulnerability. It might be possible therefore to map the degree of illness induced impoverishment with selected household characteristics. Gender of household head and the type of household on the basis of their main occupation, are two such factors. Gender of the household head is often an important factor when dealing with health service utilisation. This is so firstly because female headed households are generally found to be economically more vulnerable than their male counterparts. Traditionally, males are the bread winners of a household and the females assume this role due to death of or separation from the male member. Unfamiliarity with the job market, lack of specific skills and very often downright gender discrimination in payments place the female headed households in a relatively worse-off position leading to economic vulnerability. On the other hand, households with a female head habitually display a better health seeking behaviour, more so if the female head is educated and informed. Several studies have proven that empowerment of the mother

⁷ The Government of India had constituted a High Level Committee on the social, economic and educational status of the Muslim community of India, chaired by Justice Rajindar Sachar in 2005. According to the Committee report, the Muslim community has been found to lag behind other religious groups of India in most development indicators. The community is relatively poor, illiterate, has lower access to education, lower representation in public and private sector jobs, and lower availability of bank credit for self-employment. In urban areas, the community mostly lives in slums characterized by poor municipal infrastructure. Though the issue of health per se has been left out of the purview of the report, the findings do bear significant implications for the economic status of the Muslim households and their resilience to shocks like illness and its treatment.

through education, income generation or simply enhanced status, which is typical of certain societies, go a long way in securing better health especially for her children and other family members.

Given the current scheme of health financing in India where treatment cost is substantially paid out of pocket⁸, the households' ability to pay is also an important determinant of health seeking behaviour. This vindicates the inclusion of type of household (determined by the source of the household's income during the 365 days preceding the date of survey) as a variable across which the degree and intensity of 'medical poverty' may vary. For example a regular wage or salaried household might display high health spending simply because of formally assured reimbursement from the employer. On the other hand a casual labour household might display a distorted demand for medical care because of the lower ability to pay for treatment as well as the probable loss of man days owing to the ailment or its treatment. Another important categorical variable in analysing illness induced impoverishment might be the consumption expenditure quintile (CEQ) to which a household or an individual belongs. The pertinent issue here is to explore whether even the higher quintiles demonstrate cases of medical poverty trap. Therefore we explore the extent of illness induced impoverishment across sex of household head, type of household and CEQ's.

⁸ Household health expenditure that we consider throughout the analysis is out-of-pocket expenditure which means total health expenditure net of any reimbursement.

Table 3: Inter-state and inter-temporal variations in illness induced impoverishment in urban India, 1995-96 and 2004

States	Poverty Head Count (%)						Poverty Gap (Rs)						Normalized Poverty Gap					
	1995-96			2004			1995-96			2004			1995-96			2004		
	Pre-Payment (%)	Post-Payment (%)	Difference (%)	Pre-Payment (%)	Post-Payment (%)	Difference (%)	Pre-Payment (Rs)	Post-Payment (Rs)	Difference (Rs)	Pre-Payment (Rs)	Post-Payment (Rs)	Difference (Rs)	Pre-Payment	Post-Payment	Difference (%)	Pre-Payment	Post-Payment	Difference (%)
Andhra Pradesh	31.93	35.54	3.61	13.76	20.14	6.38	23.02	32.08	9.06	13.82	46.74	32.92	0.071	0.099	2.8	0.029	0.098	6.9
Assam	7.42	9.39	1.97	1.85	6.34	4.49	2.95	8.73	5.78	0.44	12.36	11.92	0.012	0.034	2.3	0.001	0.037	3.5
Bihar	30.94	34.89	3.95	19.24	24.52	5.28	18.58	26.21	7.63	21.23	48.96	27.73	0.068	0.096	2.8	0.055	0.128	7.2
Gujarat	18.57	21.33	2.76	6.23	11.15	4.92	12.59	20	7.41	5.29	27.31	22.02	0.036	0.058	2.1	0.011	0.056	4.5
Haryana	12.01	17.62	5.61	9.24	14.78	5.55	7.11	28.37	21.25	6.02	26.3	20.28	0.023	0.093	7	0.013	0.055	4.3
Karnataka	39.52	41.56	2.04	33.1	37.05	3.95	36.51	43.03	6.51	42.55	58.01	15.46	0.101	0.119	1.8	0.075	0.102	2.7
Kerala	26.33	30.97	4.64	11.09	22.67	11.58	17.52	25.49	7.97	9.96	53.43	43.47	0.052	0.076	2.4	0.022	0.119	9.7
Madhya Pradesh	42.08	45.84	3.76	42.62	49.06	6.44	32.59	52.73	20.14	54.59	89.26	34.67	0.092	0.149	5.7	0.101	0.166	6.4
Maharashtra	28.28	31.19	2.91	22.78	29.78	7	27.2	34.49	7.29	37.32	67.44	30.12	0.072	0.091	1.9	0.062	0.113	5
Orissa	38.47	41.4	2.94	24.79	31.54	6.75	31.91	39.84	7.93	30.61	49.4	18.79	0.095	0.118	2.4	0.064	0.104	3.9
Punjab	3.49	6.09	2.6	7.35	14.15	6.8	1.83	5.66	3.83	5.85	60.28	54.43	0.007	0.021	1.4	0.014	0.145	3.1
Rajasthan	21.47	23.68	2.22	24.28	28.69	4.41	10.69	15.07	4.38	17.06	41.26	24.2	0.033	0.047	1.4	0.034	0.082	4.8
Tamil Nadu	34.56	38.12	3.56	23.8	28.87	5.07	27.19	33.37	6.17	21.94	57.33	35.39	0.079	0.097	1.8	0.042	0.11	6.8
Uttar Pradesh	21.69	27.18	5.49	22.56	31.36	8.8	11.21	26.32	15.11	19.2	49.36	30.16	0.04	0.095	5.4	0.045	0.116	7.1
West Bengal	21.35	24.25	2.9	7.36	14.57	7.21	12.22	17.13	4.91	4.89	28.08	23.19	0.042	0.059	1.7	0.014	0.08	6.6
All India Urban	23.52	27.01	3.49	19.35	25.47	6.12	15.31	23.88	8.57	21.73	49.17	27.44	0.049	0.077	2.7	0.044	0.1	5.6

Table 4: Illness induced impoverishment across religious and social groups

	Poverty Head Count (%)						Poverty Gap (Rs)					
	1995-96			2004			1995-96			2004		
	Pre-paym ent	Post-paym ent	Diffe rence	Pre-paym ent	Post-paym ent	Diffe rence	Pre-paym ent	Post-paym ent	Diffe rence	Pre-paym ent	Post-paym ent	Diffe rence
Religious Group												
Hindu				17.78	23.46	5.68				20	45.7	25.7
Muslim				28.7	37.33	8.63				31.71	64.53	32.82
Christian				10.38	14.65	4.27				8.59	45	36.4
Others				17.03	22.62	5.59				23.5	58.58	35.07
Social Group												
SC	39.03	42.79	3.77	30.23	36.91	6.68	31.08	40.21	9.12	36.5	64.62	28.12
ST	45.63	48.64	3.02	30.03	33.15	3.12	42.74	46.3	3.56	40.74	56.42	15.68
OBC				24.41	30.57	6.16				26.32	53.55	27.23
Others	22.95	26.2	3.25	11.01	17.07	6.06	16.38	25.3	8.92	11.95	39.94	27.99
All India	23.52	27.01	3.49	19.35	25.47	6.12	15.31	23.88	8.57	21.73	49.17	27.44

Table 4: Illness induced impoverishment across select household characteristics

	Poverty Head Count (%)						Poverty Gap (Rs)					
	1995-96			2004			1995-96			2004		
	Pre-Paym ent	Post-Paym ent	Diffe rence	Pre-Paym ent	Post-Paym ent	Diffe rence	Pre-Paym ent	Post-Paym ent	Diffe rence	Pre-Paym ent	Post-Paym ent	Diffe rence
Sex of household head												
Male	25.85	29.2	3.36	19.23	25.34	6.11	19.03	27.82	8.79	21.44	49.13	27.69
Female	27.88	30.75	2.88	20.61	26.82	6.21	23.03	31.86	8.83	24.74	49.59	24.85
Type of Household												
Self-employed	27.18	30.84	3.66	20.12	27.02	6.9	18.76	28.52	9.76	20.63	43.44	22.81
Regular wage/salaried	16.79	19.85	3.05	11.34	16.42	5.08	10.95	18.07	7.12	12.29	37.51	25.21
Casual labour	54.5	57.49	2.99	42.72	48.75	6.03	49.3	58.79	9.5	54.88	85.3	30.42
Others	20.63	24.51	3.88	13.88	21.4	7.52	16.63	30.56	13.92	17.54	85.44	67.9
Consumption Expenditure Quintiles												
Poorest	100	100	0	100	100	0	74.78	84.64	9.86	85.13	121.1	35.97
Poor	20.39	27.93	7.54	7.37	19.37	12	4.37	16.51	12.13	2.2	28.47	26.27
Middle	0	3.69	3.69	0	5.24	5.24	0	6.09	6.09	0	22.3	22.3
Rich	0	1.51	1.51	0	2.9	2.9	0	4.6	4.6	0	13.41	13.41
Richest	0	1.1	1.1	0	2.29	2.29	0	10.79	10.79	0	40.52	40.52
All India	23.52	27.01	3.49	19.35	25.47	6.12	15.31	23.88	8.57	21.73	49.17	27.44

No significant difference is noticeable between male and female headed households in terms of impoverishment due to health payments. In 1995-96, male headed households had a slightly higher difference between pre payment and post payment head count indicating higher proportion of impoverishment cases as against female headed households. In 2004 however the situation was reversed with female headed households displaying a marginally higher difference in head count on incorporating health care costs. With respect to type of households, it were the individuals belonging to 'others' type of

households among whom the incidence of poverty induced by treatment cost was the highest. This was true for both points of time. Households belonging to this category are predominantly headed by renters and pensioners. The depth of poverty as given by the difference between pre-payment and post-payment poverty gaps was also high for this group followed by the casual labour households. The highest increase in illness induced poverty over time was noted for the casual labour households for whom the difference in pre and post payment headcount doubled between 1995-96 and 2004.

The poorest CEQ though economically the most vulnerable did not register a single incident of 'medical poverty'. The interpretation of this observation however is purely technical. The poverty line was above the cut-off representing the poorest CEQ, and therefore entry into poverty for this group was out of question, as they were already poor. The poverty gap however increased post-payment. In nominal terms post-payment poverty gap in 2004 was four times that in 1995-96. The incidence of poverty was highest for the 'poor' CEQ. This was largely because this category consisted predominantly of those households who were located just above the poverty lines. As such, movements into poverty were more prevalent within this category. In 2004 close to 12 percent of the total population in this group had to face impoverishment owing to health care payments. Government anti-poverty programs generally exclude them in the pretext of being technically above the poverty line. As such they constitute the most vulnerable group as far as health shocks are concerned. Unwarranted health events in the family are found to drive even richer households into poverty, at least in the short run. This is apparent from the observation that there were cases of illness induced impoverishment even among persons belonging to the higher expenditure quintiles. However, they might be relatively at ease with this burden largely due to their corpus of savings and as such may not have to adopt drastic coping measures which are inevitable in case of poorer households.

The impoverishing impact of OOP health expenses per se, is essentially a 'real-time' phenomenon when measured on the basis of current consumption expenditure of a household. The duration of its poverty status is crucially dependent on the sources of financing. In other words, high cost incurred on a particular ailment episode might push a household into poverty real time, but a liberal corpus of saving might come to its rescue and eventually pull it up. Poorer households, without the cushion of financial savings, might resort to borrowing from friends, relatives, formal and informal moneylenders or even distress mortgaging and selling of assets. This is particularly true in the Indian context where financial inclusion is heavily biased against the poor. Thus, the sources of financing OOP health expenses do in a way determine the intensity and duration of the burden.

5. Conclusion

Illness and its treatment is a potential producer of penury. There also exists substantial variation in the incidence of this burden. This is particularly true for urban India which is vastly heterogeneous in terms of socio-economic characteristics of its population as well as the prevailing health system. In this context the paper attempts to explore the degree and distribution of this phenomenon among the urban populace in India. Roughly 6 percent of the urban population or about 18 million individuals were impoverished entirely due to out of pocket medical expenses in India. Though there were substantial inter-state variations in incidence of this burden, most of the states demonstrate an increase in the degree of 'medical impoverishment' between 1995-96 and 2004. The poverty gap pre and post health care payment almost doubled for urban India, between the two points of time. Urban Muslims were the most vulnerable to the 'medical poverty trap' for whom the head count ratio increased by more than 8 percentage points due to out-of-pocket payments for health care in 2004. Among the social groups, the scheduled caste households experienced the highest increase in incidence as well as depth of poverty in both the years. The proportion of individuals moving into poverty on account of OOP health payments almost doubled

between 1995-96 and 2004 for the urban scheduled caste population. No significant difference is noticeable between male and female headed households in terms of impoverishment due to health payments. Households headed by renters and pensioners had the highest incidence of poverty induced by treatment cost at both points of time. The depth of poverty was also high for this group followed by the casual labour households. The highest increase in illness induced poverty over time was noted for the casual labour households for whom the difference in pre and post payment headcount doubled between 1995-96 and 2004. With 12 percent of the total population in the group facing impoverishment, the lower middle quintile was easily the most vulnerable lot as far as health shocks are concerned. Unwarranted health events in the family are found to drive even richer households into poverty, at least momentarily.

In India, the State has clearly failed to deliver quality public health services at affordable cost to its citizens and is also reluctant to revamp the system with a judicious mix of financing, regulation, monitoring and implementation. Recent initiatives like introduction of cash transfers in place of the public distribution system etc is an indication of the State wanting to withdraw from its historically contemplated role of a provider of public services and rather assume the role of a facilitator of these services. This has resulted in weak lower tier public health institutions and consequently a huge pressure on specialty hospitals and institutes of research in the urban areas. The urban mass who cannot afford the long waiting time in public institutions opt for the private providers who again operate on a for-profit basis. Incidentally many of the private hospitals in urban areas are built on land acquired at a concessional rate from the Government on condition that a certain proportion of beds should be made available free of cost to the poor. However these institutions have been found to flout these conditions on a regular basis. While public insurance schemes such as the Rashtriya Swasthya Bima Yojana (RSBY) do acknowledge the phenomenon of health care induced impoverishment, their coverage is restricted to hospitalisation episodes. Though hospitalisation entails higher treatment costs, non-hospitalised morbidity is generally the more prevalent form of indisposition and therefore potentially more debilitating for a poor household, notwithstanding the relatively lower cost of treatment vis-à-vis inpatient cases. Moreover, while the scheme provides financial protection to the poor in some way, it does not ensure quality of service.

The best way forward would be to direct more financial and human resources into the overtly ailing public health sector. Apart from the cost aspect this would go a long way in ensuring quality of service, which currently seems to be a luxury of some sorts, especially to the urban poor. A well functioning public health system involving preventive as well as curative health care can also reduce the indirect costs of illness that are largely hidden or are indirectly manifested in terms of choice of service provider. The unchecked growth of the commercial private sector must be restrained if not stopped. Strict observance of standard guidelines for medical and surgical intervention and use of diagnostics and standard fee structure should be made obligatory. In view of the variation in treatment seeking behaviour of the urban populace, sufficient support should be provided to traditional systems of medication too so that they can emerge as a low cost but equally effective alternative to the urban poor. In other words, from a policy perspective, we need to target the reasons for impoverishment rather than the poor per se. This work has argued that morbidity and its treatment thereof is the key event affecting household economic solvency in the short run with potential indebtedness in the longer run for the urban households in India. So, even in the context of counting the poor, this work is an appeal to explicitly incorporate health shocks and their aftermath in the existing poverty lines for an accurate representation of the marginalised sections of the society.

Reference

- Baeza, C., and T. G. Packard (2005) 'Beyond Survival: Protecting Households from the Impoverishing Effects of Health Shocks in Latin America', Washington, DC: World Bank.
- Banerjee, A., A. Deaton, et al. (2004). "Health care delivery in rural Rajasthan." *Economic and Political Weekly*: 944-49.
- Berki S. (1986). 'A look at catastrophic medical expenses and the poor', *Health Affairs*: 138-145.
- Berman P, R Ahuja, L Bhandari (2010), 'The impoverishing effect of healthcare payments in India: new methodology and findings', *Economic & Political Weekly* 2010; 45:65-71
- Bonu, S, I Bhushan and Peters H David (2007): "Incidence, Intensity, and Correlates of Catastrophic Out-Of-Pocket Health Payments in India", ERD Working Paper No 102, Asian Development Bank.
- Chambers, R (1983), *Rural Development: Putting the Last First*. Longman, London.
- Commission on Macroeconomics and Health (2001). 'Macroeconomics and Health: Investing in Health for Economic Development', Geneva, World Health Organisation.
- Dercon, S. and P. Krishnan. (2000) 'In Sickness and in health: risk-sharing within households in rural Ethiopia', *Journal of Political Economy* 108(4): 688-727.
- Garg, C C and A K Karan (2005): "Health and Millennium Development Goal 1: Reducing Out-of-Pocket Expenditures to Reduce Income Poverty – Evidence from India", EQUITAP Project: Working Paper # 15.
- Gertler, P. and J. Gruber. (2002) 'Insuring consumption against illness', *American Economic Review* 92(1): 51-76.
- Gumber A. (2002) *Structure of the Indian Health Care Market: Implications for Health Insurance Sector. Regional Health Forum Vol 4.*
- Kawabata K, Xu K (2002) 'Preventing impoverishment through protection against catastrophic expenditure', *Bulletin of the World Health Organization*. 80: 612.
- Krishna, A. (2004). "Escaping Poverty and Becoming Poor: Who Gains, Who Loses, and Why?" *World Development* 32(1): 121-136.
- Krishnan, T.N. (2000) *Access to Health Care and Burden of Treatment in India: An Interstate Comparison*, In Rao (eds.) *Investing in Health*: New Delhi, Sage Publications: 212-230.
- Limwattananon, S, V. Tangcharoensathien and P. Prakongsai. (2007) 'Catastrophic and poverty impacts of health payments: results from national household surveys in Thailand', *Bulletin of the World Health Organization* 85: 600–606.
- Lindelow, M. and A. Wagstaff. (2005) 'Health shocks in China: are the poor and uninsured less protected?', World Bank Policy Research Working Paper No. 3740. Washington, D.C.: The World Bank.
- Meesen B, Zang Z (2003) 'Iatrogenic Poverty', *Tropical Medicine and International Health*. 8(7): 581-584.
- National Sample Survey Organisation (NSSO) (1992) *Morbidity and Utilisation of Medical Services, NSS 42nd Round July 1986 - June 1987, Sarvekhshana*, April 1992:55-75 S134-S.
- National Sample Survey Organization (NSSO). *Morbidity and Treatment of Ailments*. Report No. 441. New Delhi: Department of Statistics, CSO, GOI, 1998.
- OECD and WHO DAC guidelines and reference series – Poverty and Health. Paris: OECD Publishing; 2003. Available at <http://whqlibdoc.who.int/publications/2003/9241562366.pdf>
- Pradhan, M. and N. Prescott (2002). 'Social risk management options for medical care in Indonesia', *Health Economics* 11: 431-446.
- Rajaratnam J, Abel R, Duraisamy S, John KR. Morbidity pattern, health care utilization and per capita health expenditure in a rural population of Tamil Nadu. *National Medical Journal of India* 1996;9:259--62.
- Ranson, M.K. (2002) 'Reduction of catastrophic health care expenditures by a community based health insurance scheme in Gujarat, India: Current experiences and challenges', *Bulletin of the World Health Organization*, 80 (8), 613-621.

Russell S. (2004) 'The economic burden of illness for households in developing countries: a review of studies focusing on malaria, tuberculosis, and human immunodeficiency virus/acquired immunodeficiency syndrome', *American Journal of Tropical Medicine and Hygiene*. 71 (Supp. 2): 147-155.

Chowdhury S (2011), 'Financial Burden of Transient Morbidity: A Case Study of Slums in Delhi', *Economic and Political Weekly*, 46 (33), pp 59-66.

van Doorslaer E, O'Donnell O, Rannan-Eliya RP, Somanathan A, Adhikari SR, Akkazeieva B, et al. Paying out-of-pocket for health care in Asia: catastrophic and poverty impact. EQUITAP Working Paper 2, May 2005. Erasmus University, Rotterdam. Available at: <http://www.equitap.org>.

Van Doorslaer, E, O O'Donnell, R Rannan-Eliya (2007). 'Catastrophic expenditures on health care in Asia', *Health Economics*., Feb.21.

Visaria, Pravin and A. Gumber. (1994) Utilisation of and Expenditure on Health Care in India. Ahmedabad: Gujarat Institute for Development Research.

Wagstaff, A. (2005) 'The Economic Consequences of Health Shocks', World Bank Policy Research Working Paper WPS3644. Washington DC: World Bank.

Wagstaff, A. and E. van Doorslaer (2003) 'Catastrophe and Impoverishment in Paying for Health Care: With Application to Vietnam 1993-98', *Health Economics*,12 (11): 921-933.

Wagstaff, A. and E. van Doorslaer (2003) 'Catastrophe and Impoverishment in Paying for Health Care: With Application to Vietnam 1993-98', *Health Economics*,12 (11): 921-933.

Wagstaff, A., & van Doorslaer, E (2001). 'Paying for health care: Quantifying fairness, catastrophe and Impoverishment with applications to Vietnam 1993-98', World Bank Policy Research Working Paper No. 2715. Washington DC, World Bank.

Whitehead, M., Dahlgren, G., & Evans, T. (2001) 'Equity and health sector reforms: Can low income countries escape the medical poverty trap?', *Lancet*, 358, 833-836.

World Bank, 2008, Quantitative Techniques for Health Equity Analysis—Technical Note # 19.

Wyszewianski, L. (1986). 'Financially catastrophic and high cost cases: Definitions, distinctions and their implications for policy formulation', *Inquiry* 23(4): 382-94.

Xu K, Evans D B, Kawabata K, Zeramdini R, Klavus J, and Murray C J L. (2003) 'Household Catastrophic Health Expenditure: A Multicountry Analysis', *The Lancet*. 362, July 12.

Xu, K. D.B. Evans, G. Carrin, A. M. Aguilar-Rivera, P. Musgrove and T. Evans. (2007) 'Protecting households from catastrophic health spending', *Health Affairs*, 26(4): 972-983.

Table A1. Household average out-of-pocket health expenditure and its variation

States	OOP Health Expenditure Per Capita (Rs.), 1995-96						OOP Health Expenditure Per Capita (Rs.), 2004					
	Consumption Expenditure Quintile						Consumption Expenditure Quintile					
	Poores t	Lower Middl e	Middl e	Upper Middl e	Riches t	All	Poores t	Lower Middl e	Middl e	Upper Middl e	Riches t	All
Andhra Pradesh	8	28	21	33	35	24	50	51	50	96	268	108
Assam	8	15	11	51	55	28	28	130	22	101	46	70
Bihar	9	14	35	17	51	20	29	91	61	67	72	57
Chhattisgarh							21	31	59	82	60	45
Delhi	16	9	15	15	37	25	6	7	11	21	22	17
Gujarat	16	11	16	17	39	21	48	33	57	54	244	88
Haryana	10	18	30	97	130	69	22	52	59	61	240	82
Himachal Pradesh	3	7	16	25	15	16	30	31	41	58	33	39
Jharkhand							25	40	53	72	87	54
Karnataka	7	10	13	25	36	18	17	38	37	41	81	41
Kerala	15	20	25	36	50	30	82	111	142	128	190	136
Madhya Pradesh	9	40	20	29	111	34	36	50	57	97	216	65
Maharashtra	8	18	18	20	46	26	34	51	80	94	161	95
Orissa	7	16	13	14	55	18	28	36	45	33	49	36
Punjab	18	21	21	30	57	35	68	58	201	84	163	109
Rajasthan	4	9	10	22	33	16	44	58	52	52	70	54
Tamil Nadu	8	18	11	20	59	21	28	39	67	117	160	84
Uttar Pradesh	19	23	31	44	78	36	45	57	74	86	222	80
Uttaranchal							20	8	57	31	88	50
West Bengal	8	14	26	18	44	22	62	69	72	81	269	115
Religious Group												
Hindu							37	51	60	78	164	81
Muslim							46	59	116	70	129	71
Christian							44	59	58	101	232	135
Others							67	46	85	103	205	110
Social Group												
ST	3	11	14	20	65	17	18	27	43	60	45	35
SC	11	20	16	23	60	20	37	40	67	60	155	56
OBC							42	47	61	76	130	65
Others	10	20	21	27	50	27	43	68	78	83	184	106
Sex of Household Head												
Male	10	20	20	24	53	26	41	51	69	77	164	81
Female	8	17	19	50	37	27	33	60	64	93	199	90
Household Type												
Self-employed	11	22	20	27	60	27	39	56	61	90	133	73
Regular/wage/salary	11	14	18	21	45	25	37	44	78	65	146	82
Casual Labour	9	24	22	33	64	20	46	47	53	51	69	48
Others	7	30	27	51	56	40	31	79	71	120	296	152
All India	10	20	20	27	51	26	40	52	68	78	168	82

Table A2. Share of health (OOP) in total household consumption expenditure

	Share of OOP Health Expenditure in household consumption expenditure, 1995-96 (%)						Share of OOP Health Expenditure in household consumption expenditure, 2004 (%)					
	Consumption Expenditure Quintile						Consumption Expenditure Quintile					
States	Poores t	Lower Middl e	Middl e	Upper Middl e	Riches t	All	Poores t	Lower Middl e	Middl e	Upper Middl e	Riches t	All
Andhra Pradesh	3.2	7.6	4.4	5.2	3.2	4.7	11.0	8.0	6.2	8.4	9.6	8.7
Assam	3.2	4.0	2.3	8.0	5.3	4.5	6.4	19.8	2.6	8.6	2.5	7.6
Bihar	3.7	3.9	7.4	2.7	4.1	4.2	7.4	13.9	7.1	6.1	3.4	8.3
Chhattisgarh							5.3	5.1	7.3	7.5	3.2	6.0
Delhi	5.1	2.5	3.2	2.4	3.0	2.9	1.2	1.2	1.3	1.7	1.1	1.3
Gujarat	6.0	2.9	3.2	2.7	3.6	3.4	11.0	5.4	7.0	4.8	10.7	6.9
Haryana	3.7	4.7	6.5	14.3	10.7	9.1	4.9	8.4	7.0	5.3	9.9	6.8
Himachal Pradesh	1.1	1.9	3.4	4.1	1.5	2.5	6.3	5.3	4.9	5.0	0.9	3.9
Jharkhand							6.6	6.6	6.5	6.4	4.0	6.1
Karnataka	2.9	2.8	2.6	3.8	3.3	3.1	4.0	5.9	4.4	3.5	3.7	4.2
Kerala	5.8	5.5	5.2	5.5	4.1	5.2	19.4	18.4	16.8	10.8	9.6	14.3
Madhya Pradesh	3.3	11.4	4.1	4.7	11.3	6.6	9.8	8.0	6.9	9.4	9.9	8.8
Maharashtra	3.2	4.8	3.7	3.1	3.9	3.7	8.5	7.8	9.4	8.1	7.7	8.2
Orissa	2.5	4.4	2.8	2.2	4.8	3.2	7.0	5.9	5.5	2.9	2.7	4.9
Punjab	6.5	5.6	4.2	4.8	4.8	4.9	22.8	9.5	25.7	7.6	7.8	13.5
Rajasthan	1.5	2.6	2.1	3.6	3.4	2.7	10.0	9.0	6.2	4.8	3.4	6.6
Tamil Nadu	3.0	4.7	2.3	3.0	5.1	3.6	7.1	6.2	8.4	10.4	6.8	7.7
Uttar Pradesh	7.4	6.2	6.3	6.9	7.0	6.8	11.5	9.3	9.1	7.5	11.1	9.9
Uttaranchal							4.8	1.3	6.9	2.9	4.7	3.9
West Bengal	3.1	4.0	5.6	2.8	3.9	3.8	14.2	11.0	8.7	7.1	11.7	10.3
Religious Group												
Hindu							9.0	8.1	7.3	6.8	7.3	7.6
Muslim							11.2	9.4	14.4	6.1	7.0	9.9
Christian							11.1	9.2	6.9	9.0	8.9	9.0
Others							23.0	7.3	9.8	9.1	9.7	11.7
Social Group												
ST	1.4	2.9	2.9	3.2	5.5	2.8	5.7	4.3	5.1	5.5	2.1	4.8
SC	4.5	5.4	3.3	3.7	5.6	4.4	9.4	6.5	8.5	5.4	9.0	7.9
OBC							10.6	7.6	7.4	6.8	6.1	7.9
Others	3.8	5.5	4.3	4.2	4.4	4.4	10.0	10.6	9.3	7.2	7.9	8.5
Gender of Household Head												
Male	3.9	5.4	4.1	3.8	4.6	4.4	10.1	8.1	8.3	6.7	7.3	8.0
Female	3.2	4.6	3.8	7.6	3.4	4.4	8.5	9.6	7.9	8.4	9.0	8.7
Type of Household												
Self-employed	4.2	6.0	4.1	4.3	5.6	4.8	9.6	8.9	7.3	7.8	6.6	8.2
Regular/wage/salary	4.0	3.7	3.7	3.4	4.1	3.8	9.3	6.9	9.6	5.7	6.5	7.2
Casual Labour	3.5	6.6	4.7	5.2	5.3	4.8	11.3	7.8	6.5	4.7	3.8	8.8
Others	2.9	7.8	5.4	7.7	4.1	5.4	7.6	12.5	8.3	10.8	12.1	10.6
All India	3.9	5.3	4.1	4.2	4.5	4.4	9.9	8.3	8.3	6.9	7.5	8.1