

Catastrophic Payments and Impoverishment due to Out-of-Pocket Health Spending

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Out-of-pocket payments are the principal source of healthcare finance in most Asian countries, and India is no exception. This fact has important consequences for household living standards. In this paper the author explores significant changes in the 1990s and early 2000s that appear to have occurred as a result of out-of-pocket spending on healthcare in 16 Indian states. Using data from the National Sample Survey on consumption expenditure undertaken in 1993-94 and 2004-05, the author measures catastrophic payments and impoverishment due to out-of-pocket payments for healthcare. Considerable data on the magnitude, distribution and economic consequences of out-of-pocket payments in India are provided; when compared over the study period, these indicate that new policies have significantly increased both catastrophic expenditure and impoverishment.

1 Introduction

Out-of-pocket (OOP) payments are the principal source of healthcare finance in most Asian countries and India is no exception. This fact has important consequences for household living standards.

The macroeconomic adjustments of the 1990s prompted some major policy shifts in the health sector. While health sector reforms in India can be traced to as early as the 1980s, as the State began to reduce its role in the provision of healthcare services, it was only in the 1990s that reforms began in earnest. In India, health sector reforms have been piecemeal and incremental but have led to extensive changes in the organisation, structure and delivery of healthcare services and financing (Sen, Iyer and George 2002).

One of the important policy shifts in the public health sector was the introduction of user fees during the Eighth Five-Year Plan (1992-97). Because health policy is administered at the state level in India, user fees were implemented at different times in different states. The majority of states introduced these fees in the mid-to late 1990s. Also, during the late 1990s to early 2000s, many states initiated World Bank-sponsored health system reforms that further increased user fees in government hospitals. Although user fees were waived for people living below the poverty line, the definition of poor was arbitrary, leading to limited relief for most poor people (Thakur and Ghosh 2009).

The second policy change was mainly related to the decline of government spending on health. The Structural Adjustment Programme led to central and state governments reducing funding for the social sector. Public expenditure in the health sector was further squeezed at the state level in the 1990s (Mooij and Dev 2002), leading to a government failure to meet the public's healthcare needs. As public health investment decreased and user fees in the public sector increased, the private sector moved in to exploit the market opportunity (Peters et al 2002; Bhat 1996).

Another major development in the health sector occurred with the introduction of the new Drug Price Control Order (DPCO) in 1994. According to the DPCO (1995), only 74 out of 500 commonly used bulk drugs were to be kept under statutory price control. Pricing pharmaceutical sector was further liberalised in 2002. The impact of these drug policy changes could be seen in the spiralling increase in drug prices during the period 1994-2004 (National Commission on Macroeconomics and Health 2005).

All these developments in the health sector are expected to push OOP health payments upward in both public and

The author is grateful to an anonymous referee for comments on an earlier version of this paper.

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private facilities, and these increases, in turn, are likely to affect healthcare utilisation and overall health. In the absence of adequate insurance coverage – and more than 90% of India’s population has no health insurance – expenditures to treat illness can lead to financial catastrophe, pushing individuals or households into poverty or deepening their existing poverty (van Doorslaer et al 2006; Wagstaff and van Doorslaer 2003; Xu et al 2003).

It is therefore important to assess how the increase in OOP health payments might affect household living standards in India, especially in the context of the ongoing health sector reforms. Empirical studies conducted in many countries on the effects of these policies point to severe negative consequences (Wagstaff and van Doorslaer 2003; O’Donnell et al 2007; Chaudhuri and Roy 2008; Garg and Karan 2009). Such findings have become a major concern for policymakers working on the financing of healthcare throughout the world (Commission on Macroeconomics and Health 2001; OECD and WHO 2003; World Bank 2004; WHO 2005, 2008).

This paper, explores significant changes that appear to have occurred in the 1990s and early 2000s as a result of an increase in OOP spending on healthcare in India and its 16 major states. The data are from the National Sample Survey (NSS) on consumption expenditure of 1993-94 and 2004-05. The paper seeks to analyse (i) the changes in OOP spending during this period, (ii) health-financing contributions and composition in both periods, (iii) the magnitude and distribution of OOP payments relative to total household consumption expenditure across economic classes, (iv) the extent of catastrophic healthcare expenditure due to OOP payments, and (v) the changes in the magnitude and depth of impoverishment because of OOP payments for healthcare.

This paper is organised as follows: Section 2 describes the data and the methods used. Section 3 presents background information on the financing contribution and composition of OOP payments. Section 4 deals with the changes in the magnitude and distribution of OOP payments relative to total household consumption expenditure across economic classes. Section 5 shows the changes in the incidence and intensity of catastrophic expenditure. Section 6 presents the changes in the level and depth of impoverishment due to OOP payments across states. And, finally, Section 7 presents a discussion of the data.

2 Methods

Catastrophic Payments for Healthcare: The methodology applied by this study to measure catastrophic payments for healthcare has been discussed by Wagstaff and van Doorslaer (2003). An OOP payment for healthcare is considered catastrophic when the payment exceeds some threshold (Z_{cat}), defined as a fraction of total household consumption or non-food consumption. If T represents OOP payments for healthcare, x represents total household expenditure and $f(x)$ stands for food expenditure, then a household is said to have incurred catastrophic payments when T/x or $T/[x-f(x)]$ exceeds a specified threshold, Z_{cat} .

One of the approaches used to measure catastrophic payments for healthcare involves analysing the incidence of catastrophic payments – that is, the percentage of households that spend more on healthcare than the threshold, which can be measured by the headcount (H_{cat}). H_{cat} is the fraction of the sample whose expenditures as a proportion of total income exceed the threshold Z_{cat} . Meanwhile, O_i is the “catastrophic overshoot”, which equals $T_i/x_i - Z_{cat}$ if $T_i/x_i > Z_{cat}$ and zero otherwise. The catastrophic overshoot captures the average degree by which payments (as a proportion of total expenditure) exceed the threshold Z_{cat} . If we let $E_i = 1$ if $O_i > 0$ and $E_i = 0$ otherwise, then the headcount is given by expression (1):

$$H_{cat} = (1/N) \sum_{i=1}^N E_i = \mu_E, \tag{1}$$

where N is the sample size and μ_E is the mean of E_i , while H_{cat} captures only the incidence of any catastrophes occurring and O captures the intensity of the occurrence as well.

In order to determine whether poor households incur more catastrophic payments than rich households, the concentration index (ci) of E_i can be calculated. Positive values of the ci for E_i indicate a greater tendency for rich households to exceed the threshold, while negative values indicate a greater tendency for poor households to exceed the threshold.

Measuring Impoverishment due to Healthcare Expenditure:

In measuring impoverishment – that is, the extent to which households are made poor or poorer by making OOP payments for healthcare – two measures of poverty can be used: the poverty headcount and the poverty gap. While the poverty headcount measures the number of households living below the poverty line as a percentage of total households, the poverty gap captures the depth of poverty or the amount by which poor households fall short of reaching the poverty line.

If we let x_i be household i ’s consumption per capita (which also refers to prepayment), Z_{pov}^{pre} the poverty line and x_i the individual i ’s prepayment income, then we can define $P_i^{pre} = 1$ if $x_i < Z_{pov}^{pre}$ and zero otherwise. The prepayment poverty headcount is then expressed as

$$H_{pov}^{pre} = (1/N) \sum_{i=1}^N P_i^{pre} = \mu_{P^{pre}}, \tag{2}$$

where N is the sample size.

The average prepayment poverty gap is defined as

$$G_{pov}^{pre} = (1/N) \sum_{i=1}^N g_i^{pre} = \mu_{g^{pre}}, \tag{3}$$

where N is the sample size and $g_i^{pre} = x_i - Z_{pov}^{pre}$.

It is possible to define a normalised prepayment poverty gap, given by

$$NG_{pov}^{pre} = G_{pov}^{pre} / Z_{pov}^{pre}, \tag{4}$$

which allows comparative analysis as it eliminates differences in currency or the choice of the poverty line. Post-payment is defined as x_i after the subtraction of payments for healthcare.

Post-payments can be calculated following the same formula as for pre-payment. The effects of OOP payments on poverty, termed “poverty impact” (PI), are then defined as the difference between the relevant prepayment and post-payment measures, such as:

$$PI^H = H_{pov}^{post} - H_{pov}^{pre} \quad \dots(5)$$

$$PI^G = G_{pov}^{post} - G_{pov}^{pre} \quad \dots(6)$$

$$PI^{NG} = NG_{pov}^{post} - NG_{pov}^{pre} \quad \dots(7)$$

3 Data

Cross-sectional data are taken from the 50th (1993-94) and 61st (2004-05) rounds of national and state representative surveys on “consumption expenditure”, collected by the National Sample Survey Office (NSSO 2006) in India. The surveys include responses from 1,15,254 and 1,24,644 households, respectively, comprising 5,64,537 and 6,09,736 individuals. By collecting detailed information on both OOP payments for healthcare and total household consumption expenditure, these surveys offer robust estimates of the magnitude of OOP payments relative to household budgets. The OOP payments for healthcare include expenditure for institutional and non-institutional care.¹ All the variables related to expenditure are converted to a monthly figure. The survey periods for the 50th and 61st rounds were from July 1993 to June 1994 and from July 2004 to June 2005, respectively. The survey period of one year was divided into four sub-rounds of three months each, and an equal number of villages and households were allotted to each round. Since data were collected over a full year, the estimates of health expenditure were expected to be largely free from seasonal fluctuations. The analysis was done at the country and state level. However, smaller states – those with a population of less than 10 million – were not included.

4 Findings

Out-of-pocket Financing Composition of Healthcare in India:

I analyse the impact of OOP payments for healthcare across consumption expenditure quintiles in 16 states for the periods 1993-94 and 2004-05. The mean share of household OOP healthcare expenditure in relation to monthly household consumption expenditure rose from 4.39% in 1993-94 to 5.51% (Table 2, p 66).

The percentage shares of total OOP payments on inpatient care, ambulatory care, medicines and other types of care are given in Table 1. Drugs and medicine, the most vital component of OOP expenditure, account for a substantial part of household payments. However, estimates reveal that spending on drugs declined from 81.6% of household expenditure in 1993-94 to 71.17% in 2004-05. While expenditure on ambulatory care remained stable, spending on inpatient care increased by a factor of 2.5.

The distribution of OOP expenditure varies substantially among the states: drug spending is high (79%-85%) in less-developed states such as Orissa, Bihar, Uttar Pradesh and Assam, while economically prosperous states such as Maharashtra, Kerala, Gujarat, Karnataka and Punjab spend less (60%-67%) on

drugs. However, OOP spending on inpatient care is much higher in these richer states (15%-23% of total OOP expenditure) than in their poorer counterparts. Though average OOP payments on healthcare as a share of total consumption expenditure have registered a substantial increase for the majority of the states, significant differences in the mean OOP budget across states persist. There is a positive relationship between the share of OOP health payments and the level of economic development of states, as measured by the per capita state domestic product (SDP) (Figure 1). However, the gradient is not very steep, indicating that this relationship is rather weak.

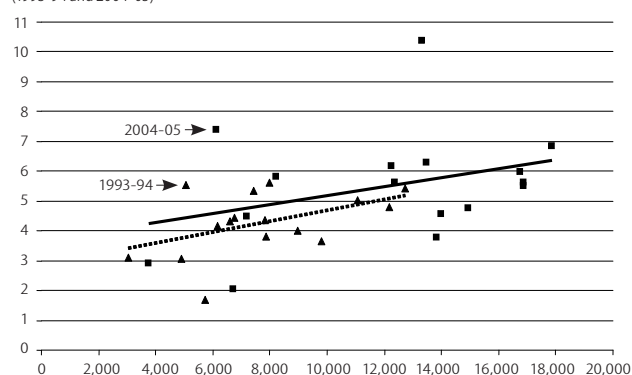
Table 1: The Composition of Out-of-Pocket Payments for Healthcare
(1993-94 and 2004-05, in %)

State	1993-94				2004-05			
	Inpatient Care	Ambulatory Care	Medicine	Other	Inpatient Care	Ambulatory Care	Medicine	Other
Bihar	0.73	7.71	90.00	1.57	3.95	10.51	84.14	1.4
Orissa	0.81	4.86	93.13	1.20	5.53	5.58	85.2	3.7
Rajasthan	1.64	4.48	86.81	7.08	7.62	4.41	83.11	4.86
Uttar Pradesh	1.79	3.84	92.19	2.18	8.32	5.38	81.86	4.43
Himachal Pradesh	2.21	2.55	94.48	0.77	6.60	1.73	87.95	3.71
Punjab	2.27	5.29	91.44	1.00	17.91	7.68	67.46	6.94
Madhya Pradesh	2.84	7.74	85.92	3.51	12.21	13.92	71.27	2.59
Haryana	4.18	5.24	89.10	1.47	15.71	9.07	70.11	5.11
Assam	4.26	6.41	83.03	6.30	9.17	7.42	78.77	4.63
West Bengal	6.60	13.67	77.87	1.87	12.36	17.30	65.80	4.54
Karnataka	7.07	13.18	67.49	12.26	14.98	16.06	65.17	3.79
Andhra Pradesh	7.64	14.98	75.61	1.78	12.37	17.00	67.09	3.54
Maharashtra	7.83	18.54	71.00	2.62	17.66	15.37	60.82	6.15
Gujarat	8.33	13.05	75.57	3.05	18.2	12.94	64.16	4.7
Tamil Nadu	9.61	17.77	67.63	4.99	13.69	18.09	66.56	1.67
Kerala	11.05	5.48	77.45	6.03	23.08	9.89	62.68	4.34
India	5.06	11.39	81.60	1.95	12.94	11.58	71.17	4.31

Drugs and medicine are the same.

During the study period, the highest increase in OOP payments on healthcare as a share of total household consumption expenditure was observed in Kerala (4.7%), Himachal Pradesh (2.5%), Maharashtra (2%) and Gujarat (1.9%) (Table 2). Uttar Pradesh, one of the poorest states of India, has a very high OOP share compared with many high-income states, and this share increased during the period considered. This could be explained by the fact that government expenditure on healthcare declined at an annual rate of 1.54% from 1993-94 to 2002-03 (Economic Research Foundation 2006). Furthermore, the high healthcare utilisation of

Figure 1: Average OOP Share (%) in Indian States Ranked by Per Capita SDP (Rs)
(1993-94 and 2004-05)



private providers due to insufficient public healthcare infrastructure may have also contributed to the prevailing high oop share in Uttar Pradesh (the proportion of population utilising healthcare services from the private sector is almost 90%).²

Since Bihar continues to be the poorest state in India, households have little choice but to divert their resources for other necessary food and non-food consumption. This could also be due to the poor availability of healthcare services, which has led to low healthcare utilisation (NSSO 2006). Karnataka's decreasing oop share is due to other factors. The annual growth rate of public expenditure on health in Karnataka (7.31%) sharply increased between 1993-94 and 2003-04, and per capita spending by the Government of Karnataka on healthcare is the second highest in the country (Economic Research Foundation 2006). In addition to this, the state is also ahead of others in protecting households from uncertain health risks by a better risk-pooling mechanism, with nearly 10.5% of households reporting having at least one member covered by health insurance in 2005-06 (International Institute for Population Sciences and ORC Macro 2007).

There is significant variation in the oop payments for healthcare within the country and its different states. During the period between 1993-94 and 2004-05, the distribution of oop share in India became more skewed (Table 2). Except for West Bengal and Uttar Pradesh, the standard deviation of the share was at least twice the mean for all the other states. This feature is typical of healthcare expenditure distribution, indicating that many people spend little or nothing on healthcare, while a few sick individuals have high expenditures. The coefficient of variation is the greatest in Maharashtra, which also has a greater mean oop share. On the other hand, West Bengal, with a high oop share, had the lowest coefficient of variation, one that further declined from 1.94 in 1993-94 to 1.82 in 2004-05.

The Concentration Index (CI) of oop payment for healthcare, which rank households according to their income on the x-axis and their healthcare expenditure on the y-axis, indicate the

progressivity of household healthcare payments. These indices show whether healthcare payments account for an increasing proportion of income as the latter rises. The CIs are positive for both periods, indicating that oop payments on healthcare are disproportionately concentrated among the rich. The quintile-specific means of oop payments also confirm this result. Notably, the trends of oop health payments for healthcare as share of monthly household consumption expenditure increased during the reform period, particularly among the households belonging to richest, second richest and middle quintiles.

It is interesting to note that although Kerala has the highest average oop healthcare spending share (10.5% of total consumption), there is very little variation in this share across consumption expenditure quintiles. This might be explained by the fact that Kerala is India's most literate state, a place where households across the socio-economic strata have been exposed to an extensive healthcare infrastructure. Consequently, they are more conscious about their healthcare needs and are willing to spend a larger proportion of their resources on healthcare than households in other states. Although Maharashtra, Himachal Pradesh and Uttar Pradesh show as high an average share of oop payments for healthcare as Kerala, they also show a steep gradient. The most dramatic declines in the gradient for oop payments on healthcare can be seen in Haryana, Madhya Pradesh, West Bengal and Bihar, while a steep increase in the income gradient has occurred in Karnataka and Punjab.

Catastrophic Payments: Catastrophic spending on health occurs when a household reduces its basic expenses over a certain period of time, sell assets, or accumulate debts in order to cope with the medical bills of one or more of its members. Since there are no universally accepted cut-off values or thresholds for defining the catastrophic nature of healthcare payments, the catastrophic headcount has been defined here as the percentage of households spending more than a 5-25% of their total consumption expenditure on

Table 2: Out-of-Pocket Payments for Healthcare as a Percentage of Household Consumption Expenditure (1993-94 and 2004-05)

	India	Assam	Bihar	Madhya Pradesh	Orissa	West Bengal	Uttar Pradesh	Karnataka	Andhra Pradesh	Gujarat	Tamil Nadu	Rajasthan	Maharashtra	Punjab	Himachal Pradesh	Haryana	Kerala	
2004-05																		
Mean	5.51	2.05	2.92	5.82	4.48	6.15	7.38	3.78	5.62	5.51	4.56	4.76	6.82	5.96	6.30	5.60	10.36	
CV	2.37	2.35	2.06	2.52	2.2	1.82	1.98	2.57	2.06	2.67	2.36	2.42	2.71	2.07	2.38	2.22	2.19	
CI	0.122	0.093	0.094	0.109	0.182	0.129	0.085	0.174	0.142	0.068	0.167	0.125	0.092	0.127	0.121	0.047	0.023	
Quintile means																		
Poorest	4.00	1.66	2.50	4.61	3.30	4.61	5.81	2.22	3.92	4.47	3.12	2.82	5.42	3.52	3.61	3.76	11.57	
2nd poorest	5.01	1.86	2.65	5.60	5.55	5.41	6.73	3.56	5.61	4.55	4.16	3.92	6.48	4.67	4.91	4.92	8.87	
Middle	5.92	2.02	3.12	6.31	6.21	6.38	7.64	4.18	6.66	6.29	5.55	5.24	6.94	4.94	6.68	5.70	9.30	
2nd richest	6.69	2.29	3.38	6.90	5.51	7.91	8.82	5.41	7.51	6.43	5.65	5.23	6.77	7.20	7.66	6.51	11.59	
Richest	7.09	2.79	5.70	7.95	6.26	8.12	8.69	5.00	6.79	5.77	6.89	6.38	8.81	7.11	7.33	5.92	10.47	
1993-94																		
Mean	4.39	1.68	3.10	4.34	3.05	4.45	5.52	4.37	5.36	3.64	3.99	4.15	4.80	5.43	3.82	5.03	5.62	
CV	1.97	1.82	1.92	1.82	1.87	1.94	1.68	1.82	1.78	2.03	2.12	2.31	2.33	1.32	1.99	1.80	1.90	
CI	0.106	0.096	0.141	0.166	0.164	0.170	0.101	0.055	0.097	0.044	0.139	0.091	0.0307	0.044	0.147	0.113	0.018	
Quintile means																		
Poorest	3.25	1.31	2.14	2.81	1.97	2.66	4.19	3.63	3.91	3.37	2.72	3.35	4.19	4.83	2.40	3.58	5.00	
2nd poorest	4.19	1.61	2.78	3.75	2.59	3.86	5.20	4.32	5.29	3.67	3.51	3.84	5.06	5.29	3.15	5.07	6.08	
Middle	4.68	1.60	3.18	4.49	3.09	4.74	5.79	4.79	6.05	3.49	4.44	4.00	4.98	5.58	4.41	4.73	5.36	
2nd richest	5.23	1.73	3.45	5.41	4.18	5.88	6.54	5.01	6.23	3.87	5.06	4.42	5.41	5.99	4.22	5.31	6.51	
Richest	5.45	2.39	4.67	6.62	4.22	6.15	6.76	4.40	6.07	4.09	5.12	5.61	4.52	5.69	5.43	7.04	5.04	

CV - Coefficient of variation and CI - Concentration index.

Table 3: Percentage of Households Incurring Catastrophic Payments for Healthcare in India and Select States (1993-94 and 2004-05)

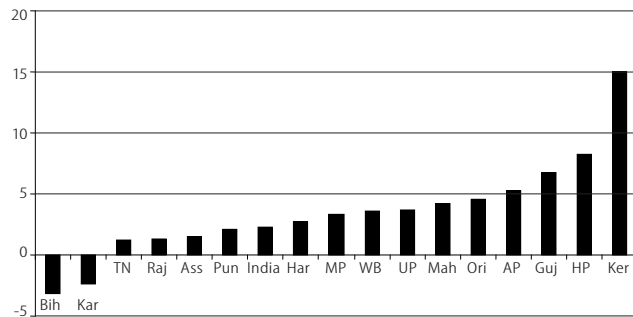
		OOP Payments as Share of Total Household Consumption Expenditure							
		1993-94				2004-05			
Threshold		5%	10% (95% CI)	15%	25%	5%	10% (95% CI)	15%	25%
India	Catastrophic headcount (H_c)	26.66%	12.97% (12.77-13.17)	7.45%	2.77%	29.98%	15.37% (15.17-15.57)	9.24%	4.15%
	Concentration index (C_c)	0.1019	0.1024	0.1047	0.1471	0.1095	0.1186	0.1408	0.1689
	Overshoot (H_g)	2.27%	1.34%	0.85%	0.39%	3.19%	2.12%	1.52%	0.90%
	Concentration index (C_{Eg})	0.1002	0.1025	0.1084	0.1195	0.1327	0.1414	0.1467	0.1424
Assam	Catastrophic headcount (H_c)	7.86%	1.96% (1.53-2.39)	0.77%	0.21%	9.25%	3.21% (2.98-3.45)	1.63%	0.59%
	Concentration index (C_c)	0.1444	0.2035	0.1667	0.4944	0.0723	0.1360	0.1593	0.0614
	Overshoot (H_g)	0.33%	0.13%	0.06%	0.03%	0.63%	0.34%	0.23%	0.13%
	Concentration index (C_{Eg})	0.1462	0.1919	0.2214	0.2006	0.1075	0.1034	0.0791	0.0144
Bihar	Catastrophic headcount (H_c)	21.03%	8.96% (8.37-9.54)	4.81%	1.27%	17.56%	5.76% (5.16-6.36)	2.88%	1.05%
	Concentration index (C_c)	0.1151	0.1535	0.1987	0.2894	0.0784	0.0912	0.1690	0.2856
	Overshoot (H_g)	1.39%	0.71%	0.39%	0.14%	1.08%	0.57%	0.37%	0.19%
	Concentration index (C_{Eg})	0.1661	0.2148	0.2644	0.3910	0.1423	0.1836	0.2161	0.2115
Madhya Pradesh	Catastrophic headcount (H_c)	26.38%	12.98% (12.27-13.69)	7.40%	2.93%	30.57%	16.30% (15.35-17.24)	10.44%	4.85%
	Concentration index (C_c)	0.1670	0.1642	0.1822	0.2073	0.0898	0.1042	0.1259	0.1964
	Overshoot (H_g)	2.26%	1.32%	0.83%	0.37%	3.58%	2.46%	1.80%	1.07%
	Concentration index (C_{Eg})	0.1858	0.2039	0.2238	0.2908	0.1179	0.1236	0.1272	0.1039
Orissa	Catastrophic headcount (H_c)	18.74%	7.68% (6.89-8.47)	3.67%	1.16%	24.02%	12.21% (11.30-13.11)	7.36%	3.08%
	Concentration index (C_c)	0.1747	0.2099	0.26343	0.2306	0.1915	0.2122	0.1689	0.2285
	Overshoot (H_g)	1.23%	0.64%	0.36%	0.14%	2.40%	1.56%	1.08%	0.61%
	Concentration index (C_{Eg})	0.2122	0.2382	0.2574	0.3004	0.199043	0.1937	0.19223	0.1942
West Bengal	Catastrophic headcount (H_c)	28.29%	14.25% (13.48-15.03)	7.48%	2.34%	34.99%	17.80% (16.74-18.86)	10.72%	4.85%
	Concentration index (C_c)	0.1584	0.1552	0.1508	0.2426	0.1170	0.1240	0.1802	0.2213
	Overshoot (H_g)	2.24%	1.22%	0.70%	0.28%	3.50%	2.25%	1.55%	0.84%
	Concentration index (C_{Eg})	0.1802	0.1989	0.2398	0.3292	0.1574	0.1770	0.19056	0.1822
Uttar Pradesh	Catastrophic headcount (H_c)	31.76%	16.57% (15.89-17.26)	10.09%	4.09%	39.66%	20.24% (19.50-20.99)	12.41%	5.88%
	Concentration index (C_c)	0.0746	0.0911	0.0883	0.1478	0.0755	0.0919	0.1062	0.1394
	Overshoot (H_g)	3.01%	1.86%	1.22%	0.56%	4.42%	2.99%	2.20%	1.34%
	Concentration index (C_{Eg})	0.1097	0.1275	0.1488	0.2125	0.0932	0.0995	0.0988	0.0854
Karnataka	Catastrophic headcount (H_c)	26.60%	11.82% (10.93-12.70)	6.79%	2.60%	22.81%	9.87% (8.78-10.96)	5.15%	2.26%
	Concentration index (C_c)	0.0535	0.0622	0.0449	0.0439	0.1411	0.1485	0.21859	0.3775
	Overshoot (H_g)	2.15%	1.26%	0.81%	0.38%	1.84%	1.10%	0.76%	0.42%
	Concentration index (C_{Eg})	0.0341	0.0238	0.0116	-0.0037	0.2154	0.2600	0.2934	0.2966
Andhra Pradesh	Catastrophic headcount (H_c)	25.26%	11.88% (10.82-12.93)	6.50%	2.77%	32.23%	17.17% (16.37-17.98)	10.36%	4.69%
	Concentration index (C_c)	0.1116	0.0980	0.0743	0.0991	0.1222	0.1551	0.1781	0.2097
	Overshoot (H_g)	2.04%	1.18%	0.76%	0.35%	3.39%	2.22%	1.55%	0.83%
	Concentration index (C_{Eg})	0.0722	0.0504	0.0386	0.0769	0.1555	0.1645	0.1658	0.1437
Gujarat	Catastrophic headcount (H_c)	21.42%	9.97% (8.76-11.17)	5.35%	2.24%	30.88%	16.76% (15.64-17.88)	9.47%	4.06%
	Concentration index (C_c)	0.0741	0.0710	0.1007	0.2273	0.0655	0.0114	0.0456	0.0597
	Overshoot (H_g)	1.63%	0.88%	0.52%	0.18%	3.27%	2.14%	1.52%	0.89%
	Concentration index (C_{Eg})	0.1188	0.1574	0.2194	0.3634	0.0553	0.0589	0.0647	0.0744
Tamil Nadu	Catastrophic headcount (H_c)	24.11%	11.59% (10.89-12.30)	6.74%	2.93%	26.08%	12.86% (12.24-14.31)	7.45%	3.15%
	Concentration index (C_c)	0.1618	0.1391	0.1424	0.1436	0.1769	0.1983	0.2046	0.1646
	Overshoot (H_g)	2.11%	1.28%	0.86%	0.44%	2.59%	1.67%	1.18%	0.70%
	Concentration index (C_{Eg})	0.1065	0.0789	0.0573	0.0094	0.1609	0.1490	0.1303	0.0956
Rajasthan	Catastrophic headcount (H_c)	24.33%	11.86% (10.96-12.77)	6.93%	3.18%	25.05%	13.20% (12.30-14.15)	8.37%	3.68%
	Concentration index (C_c)	0.0949	0.1462	0.1680	0.1375	0.1251	0.1045	0.0944	0.1568
	Overshoot (H_g)	2.28%	1.43%	0.98%	0.52%	2.77%	1.86%	1.32%	0.77%
	Concentration index (C_{Eg})	0.0829	0.0683	0.0323	-0.0849	0.1258	0.1298	0.14437	0.1605
Maharashtra	Catastrophic headcount (H_c)	30.42%	15.29% (14.59-16.0)	8.74%	2.85%	34.98%	19.46% (18.69-20.24)	11.92%	5.31%
	Concentration index (C_c)	0.0640	0.0056	-0.0183	-0.0773	0.0851	0.0608	0.1028	0.0809
	Overshoot (H_g)	2.60%	1.52%	0.94%	0.44%	4.33%	3.03%	2.26%	1.47%
	Concentration index (C_{Eg})	-0.0325	-0.0741	-0.1098	-0.1625	0.0813	0.0848	0.0892	0.0922
Punjab	Catastrophic headcount (H_c)	35.04%	15.12% (14.01-16.23)	7.39%	2.90%	37.79%	17.25% (15.75-18.75)	10.05%	3.86%
	Concentration index (C_c)	0.0399	0.0477	0.0700	0.0801	0.0423	0.1238	0.1424	0.2947
	Overshoot (H_g)	2.44%	1.29%	0.76%	0.30%	3.06%	1.96%	1.38%	0.81%
	Concentration index (C_{Eg})	0.0568	0.0722	0.0848	0.1237	0.1959	0.2593	0.31704	0.4002
Himachal Pradesh	Catastrophic headcount (H_c)	21.74%	10.21% (8.96-11.46)	6.30%	2.64%	33.14%	18.48% (16.97-19.98)	11.62%	5.03%
	Concentration index (C_c)	0.1913	0.1693	0.1861	0.2701	0.1689	0.1349	0.1752	0.1988
	Overshoot (H_g)	1.88%	1.12%	0.73%	0.34%	3.86%	2.60%	1.86%	1.06%
	Concentration index (C_{Eg})	0.1611	0.1559	0.1401	0.0816	0.1251	0.1222	0.1099	0.0384
Haryana	Catastrophic headcount (H_c)	28.95%	16.55% (14.80-18.30)	10.08%	3.60%	34.07%	19.27% (17.60-20.94)	12.30%	5.48%
	Concentration index (C_c)	0.0837	0.0777	0.1090	0.2898	0.0627	0.0113	-0.0193	-0.0496
	Overshoot (H_g)	2.85%	1.77%	1.12%	0.48%	3.30%	2.28%	1.70%	1.05%
	Concentration index (C_{Eg})	0.1422	0.1748	0.2260	0.3363	0.0184	0.0033	0.0013	0.0226
Kerala	Catastrophic headcount (H_c)	34.21%	17.40% (16.27-18.52)	9.72%	2.97%	52.55%	32.42% (31.16-33.69)	20.45%	8.95%
	Concentration index (C_c)	0.0228	0.0116	-0.0183	0.0576	0.0360	0.0156	0.0150	-0.0151
	Overshoot (H_g)	3.00%	1.77%	1.13%	0.59%	7.05%	4.97%	3.68%	2.28%
	Concentration index (C_{Eg})	-0.0056	-0.0192	-0.0201	-0.0394	0.0098	0.0029	0.0003	-0.0084

healthcare. However, it is evident from other empirical studies that 10% of total expenditure is widely accepted as the standard, as this represents an approximate threshold at which the household is forced to cut down on subsistence needs, sell productive assets, incur debts or be impoverished (van Doorslaer et al 2006).

The impact of the increase in the share of OOP expenditure can be seen in the incidence of catastrophic expenditure (Table 3, p 67). It is important to note that the catastrophic character of OOP payments increased between the two time points at the 5%, 10%, 15% and 25% thresholds. The catastrophic healthcare expenditure incidence (OOP > 10%) increased from 13.1% in 1993-94 to about 15.4% in 2004-05. The catastrophic headcount was more than 4% even at the highest defined threshold level (OOP > 25%) in 2004-05, and the percentage of households falling into the “catastrophic” bracket increased substantially, from a low level of 2.77% in 1993-94.

The proportion of households facing catastrophic OOP health payments varied widely among states, from 3.46% in Assam to 32.42% in Kerala (Table 3) in 2004-05. A similar pattern in catastrophic health payments was also observed in 1993-94, when catastrophic headcounts were prevalent mostly in high- and middle-income states (except Uttar Pradesh) at lower threshold levels. However, at the highest threshold level (25% of total consumption expenditure), many poorer states such as Madhya Pradesh, Uttar Pradesh and Rajasthan had higher levels of catastrophic headcount than some of the high-income states such as Punjab, Maharashtra, Gujarat and Tamil Nadu. The pattern has not changed much even after a decade or so. In 2004-05, with the exception of two poor states, Madhya Pradesh and Uttar Pradesh, catastrophic headcount at every threshold level continued to be concentrated among the relatively developed states (Figure 2). However, two higher-middle-income states, Tamil Nadu and

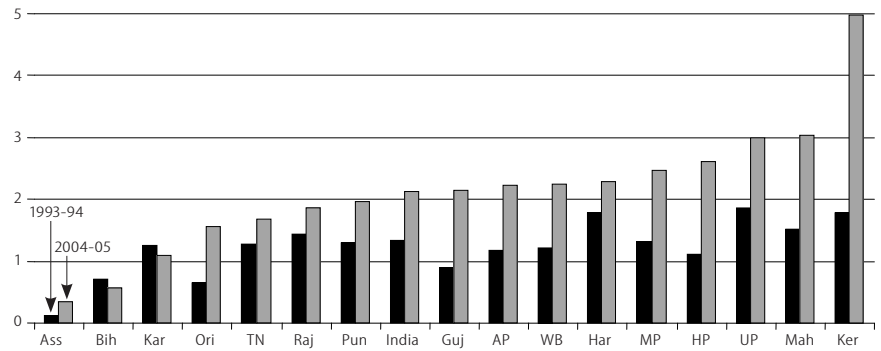
Figure 2: Percentage Change in Catastrophic Expenditure (OOP > 10%) in India and Selected States (1993-94 to 2004-05)



Karnataka, have a substantially lower catastrophic headcount than other states at every threshold level.

cis, which reflect how the proportion of households exceeding the threshold vary across the income distribution, are presented in Table 3. At each threshold, the incidence of catastrophic health payments was concentrated among the rich households in both 1993-94 and 2004-05 and increased between the two time points studied. Even if the threshold is raised from 5% to 25% of total

Figure 3: Mean Catastrophic Overshoot (OOP > 10%) in India and Selected States (1993-94 to 2004-05)



consumption expenditure, the proportion of rich households with catastrophic expenditure still increases for both years. However, it is important to note that rich households are more likely than poor ones to spend their savings on healthcare and thus are less likely to experience real impoverishing impact of such expenditure (Berman et al 2010).

The intensity of catastrophic payments is measured by the amount by which OOP payments exceed the defined threshold (for example, 10% of total expenditure); this margin is referred to as the “catastrophic overshoot” (Wagstaff and van Doorslaer 2003). Since wealthier households spend a larger fraction of their income on healthcare than poor ones do, they are more likely to overshoot the threshold by a larger amount. This holds true irrespective of the threshold, though for each threshold there was a greater concentration of overshooting among the better off in 2004-05 than in 1993-94 (Table 3). Defining the catastrophic payment as 10% of total consumption expenditure, Kerala has the highest mean overshoot (Figure 3). Also, the mean overshoot pattern across states (presented in Figure 3) is akin to the pattern depicted by the catastrophic headcount. However, a significant amount of variation exists across states in the distribution of catastrophic healthcare payments across income classes.

The Impoverishing Impact of Healthcare Spending: The impact of OOP payments on various measures of poverty over the period in question is examined here. Table 4 (p 69) presents the poverty headcount ratio, both gross and net, of OOP payments on healthcare for India in 1993-94 and 2004-05. The pre-OOP poverty headcount ratio in India was 36% in 1993-94 and 27.6% in 2004-05.

OOP payments increased the poverty ratio by 4 percentage points in 1993-94 and 4.4 percentage points in 2004-05. In other words, 35 million people in 1993-94 and 47 million people in 2004-05 were pushed into poverty by the need to pay for healthcare services. The poverty gap comparisons across years are most meaningful when normalised poverty gaps are used: i.e., when poverty gaps are divided by the poverty line (Wagstaff and van Doorslaer 2003). The increase in the normalised gap because of OOP payments was 1.4 percentage points in 1993-94 and 1.8 percentage points in 2004-05.

5 Discussion

OOP payments are the principal means of financing healthcare in most low-income countries, and India follows this pattern.

This article has presented data which suggests that new policies have had a major impact in increasing the incidence of catastrophic expenditure and impoverishment. However, there could be alternate explanations. The analysis shows that the OOP payments for medical care increased between 1993-94 and 2004-05. On average, households spent 5.5% of total consumption expenditure on healthcare in 2004-05 compared to 4.4% in 1993-94.

Table 4: OOP Payments for Healthcare: Poverty Headcounts and Poverty Gaps, India (1993-94 and 2004-05)

Poverty Measures	1993-94	2004-05
Poverty headcounts* (in %)		
Prepayment headcount (pre-Hp)	36.0	27.6
Post-payment headcount (post-Hp)	40.0	32.0
Poverty impact – headcount (post-Hp - pre-Hp)	4.0	4.4
Poverty gaps (in Rs)		
Prepayment gap (pre-G)	18.77	23.4
Post-payment gap (post-G)	21.87	30.6
Poverty impact – gap (post-G - pre-G)	3.1	7.2
Normalised poverty gaps (in %)		
Prepayment normalised gap (pre-NG)	8.4	5.8
Post-payment normalised gap (post-NG)	9.8	7.6
Normalised poverty impact (post-NG - pre-NG)	1.4	1.8

Hp - Poverty headcount, G - Poverty gap, NG - Normalised poverty gap.

This may be attributed to medical inflation that has been presumably higher than the overall price level for goods and services in the economy during the period. An increase in healthcare use from private sector can also partly explain the rise in OOP healthcare expenditure.

The empirical evidence described here shows that the trends of OOP health payments for healthcare as share of monthly household consumption expenditure increased in greater proportion during the period among the households belonging to richest, second richest and middle quintiles than poorer quintiles. These results indicate the rising trend of over medicalisation among the richer quintiles.

There are considerable inter-state differences in the mean OOP budget. The results suggest a positive relationship between the share of OOP health payments and the level of economic development of states measured by the per capita SDP. One possible reason could be the fact that in high income states, the prevalence of non-communicable diseases is higher which could account for the higher OOP expenditure on healthcare. Apart from income and the availability of health services, the mechanism of healthcare financing seemed to play an important role towards deciding state differences in OOP spending on healthcare. Where public healthcare investment and insurance coverage were higher, the OOP payment share was lower (Karnataka). However, this does not explain the full amplitude of OOP payment share differences by state. For instance, the OOP payment share reported in Maharashtra was much higher even though public investment and insurance coverage

were relatively better in this state. On the other hand, in Uttar Pradesh, the OOP payment share is the second highest in the country despite very low public health spending.

Drugs accounted for 61-88% of the total OOP payments across states, which is several times higher than in established market economies and which clearly points to the overuse of drugs in India. One reason for the high reported expenditure on drugs could be the difficulty of obtaining an accurate picture of the breakdown between outpatient care and drugs for institutional care. For example, rural practitioners and informal healthcare providers tend to give drugs as part of their service and charge a single amount. Also, since the poor have very limited access to professional healthcare services, they often opt for self-medication and end up spending a large amount on medicines. It is argued that the incentives provided by the pharmaceutical companies in India to the physicians have also contributed to the irrational use of medicines. Hospitalisations accounted for only 13% of OOP expenditure at the all-India level in 2004-05. The distribution of OOP payments on inpatient care, ambulatory care, medicines and other types of care varied considerably across states. While the households in lower-income states spent a higher fraction of OOP payments on medicine, their counterparts in higher-income states spent a higher fraction on inpatient care. One possible explanation could be that the states with low SDP (and possibly low per capita government spending on healthcare) would have less medicines in the pharmacies compared to better-off states forcing the patients to purchase medicines from the market and hence incurring higher OOP payments on medicine.

The analysis indicates that catastrophic healthcare expenditure incidence (OOP > 10%) increased to about 15.4% in 2004-05 from 13.1% in 1993-94. Meanwhile, 4% of households fell into the “catastrophic bracket” in 2004-05 (by spending more than 25% of their total consumption expenditure) – a substantial increase from a low level of 2.8% in 1993-94. There are important differences in the incidence of catastrophic health payments across states. Catastrophic health expenditures most often stayed at a low threshold (comprising a smaller share of total household expenditure) in economically better-performing states. However, at the highest threshold level – i.e., 25% of total expenditure – many of the poorest states such as

Madhya Pradesh, Uttar Pradesh and Rajasthan had higher levels of catastrophic headcount. The incidence of catastrophic expenditure increased substantially in Kerala (15%), Himachal Pradesh (8.3%), Gujarat (6.8%) and Andhra Pradesh (5.3%), where the OOP payments share also increased between the two time points. Surprisingly, in Gujarat, the CI value decreased from 0.07 to 0.01 for catastrophic expenditure, indicating that the poorest households were making more catastrophic health payments. Importantly, Gujarat is one of those states where community health insurance (CHI)

Table 5: People Impoverished due to OOP Payments (1993-94 and 2004-05)

States/India	1993-94		2004-05	
	%	Number	%	Number
Assam	1.88	4,38,263	1.70	4,73,926
Andhra Pradesh	4.07	27,96,568	2.76	18,32,173
Karnataka	4.29	20,02,380	3.86	21,20,144
Bihar	3.50	31,14,549	2.71	23,86,664
Punjab	3.71	7,82,497	3.45	8,75,748
Tamil Nadu	3.67	21,07,512	3.33	21,34,396
Himachal Pradesh	2.66	1,45,811	4.54	2,86,428
Haryana	3.72	6,42,442	4.36	9,78,820
Orissa	3.60	11,78,778	4.32	16,45,272
Rajasthan	3.68	17,00,518	4.71	28,25,246
Gujarat	3.33	14,30,416	4.99	26,59,171
Maharashtra	3.95	32,43,734	4.96	50,71,038
West Bengal	4.70	33,18,942	5.01	41,91,346
Madhya Pradesh	4.79	32,48,927	5.47	35,01,128
Kerala	4.33	12,91,691	6.15	20,11,480
Uttar Pradesh	5.33	77,90,750	6.64	1,17,11,234
India	4.0	3,52,17,191	4.40	4,73,76,688

has gone far towards containing the impact of healthcare costs on poor insured households (Ranson and Akash 2003). This suggests the need for providing protection to the remaining uncovered population against the financial risk of illness. The distribution of catastrophic payments also differs across states. Barring a few states, catastrophic expenditure is more evenly distributed in economically better-performing states than in their disadvantaged counterparts. In most of the poorest states, it is the richer households that can afford to spend a larger fraction of their resources on healthcare, while the poorer ones are not in a position to divert their resources from other needs.

However, contrary to the hypothesis that an increase in OOP payments leads to a reduction (or regression) in the progressivity of the financial burden of healthcare, the results suggest that at every threshold, the incidence of catastrophic health payments became more concentrated among rich households over the period 1993-94 to 2004-05 – both across India and in most of the selected states. This has to do with the limitations of the methodological approach adopted in this study. The main problem with its focus on catastrophic payments and impoverishment is that it misses a huge number of households that do not have the financial capacity to utilise healthcare services and therefore could not be quantified (Pradhan and Prescott 2002).

It is noted that despite the greater concentration of catastrophic payments among better-off households in the majority of the states, OOP payments aggravated the prevalence and intensity of poverty in India over the period 1993-94 to 2004-05 (Table 5, p 69).

The results of this paper imply that lower- and middle-income households bear the brunt of the ongoing healthcare reforms. The evidence points towards higher incidences of impoverishment among these populations. Therefore, a rather broad-based risk pooling and prepayment measure (balancing between sick and healthy) would seem to be a better financing strategy as it would limit OOP spending, increase financial protection, reduce the risk of impoverishment and ensure the utilisation of healthcare services by the poorest of the poor. Social health protection mechanisms may be more suitable for a country like India with a dominant informal sector. Alternatively, high OOP payments for healthcare and their consequent effects on household living standards can be prevented by subsidising drugs for low-income households (from lower-middle-class households to those living below the poverty line) and by increasing the contribution of both public and private-sector spending on healthcare, which would in turn reduce the household burden.

NOTES

- 1 Expenditure on institutional care includes (i) purchase of drugs and medicines; (ii) payments for diagnostic tests; (iii) medical fees; (iv) payments made to hospitals and nursing homes for medical treatment; and (v) others. The expenditure for non-institutional care are the same for the first three items. The other types of expenditure recorded under this are (i) family planning appliances including intrauterine devices (IUDs), oral pills, condoms, etc, and (ii) others.
- 2 Author's own calculation from the 60th round of the NSSO data collected in 2004 on healthcare utilisation.

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