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OUT-OF-POCKET EXPENDITURE ON HEALTH AND HOUSEHOLDS WELL-BEING IN INDIA: Examining the Role of Health Policy Interventions

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OUT-OF-POCKET EXPENDITURE ON HEALTH AND HOUSEHOLDS WELL-BEING IN INDIA: Examining the Role of Health Policy Interventions

Shailender Kumar Hooda*

[***Abstract***: *The high out-of-pocket (OOP) expenditure on health care has serious repercussions for households' well-being in many developing countries, as it plunges a sizeable section of the society even the well-off to abysmal poverty levels. Thus, reducing OOP expenditure is an important health policy goal. How far health policy interventions, especially initiated after 2004-05 (include demand-supply side interventions on financing and provision) have impacted the catastrophic and impoverishment level are not been explored in Indian context, though some evidences are generated from 2004-05 National Sample Survey-NSS data. The purpose of present study is to (i) generate new evidences of the impact of OOP health payment on households' impoverishment using latest 2011-12 NSS data and (ii) examine the impact of health policy interventions (HPI) on prevalence, intensity and incidence of catastrophic health payments. For the purpose, first an index of HPI is constructed at (for 605) district level and then impact is measured in low-high HPI districts. Estimates show that high OOP expenditure not only pushes a large number (3.5 per cent/50.6 million) of people below poverty line, but also cause further deepening of poverty for already poor people. The rural, lowest above poverty line (APL) quintile and households from low income states experienced a large increase in poverty headcounts and poverty deepening impacts. The impact of HPI seems to be effective in protecting the lowest APL households from impoverishment and poverty deepening effect but ineffective for already poor households. Of the financing and provision components of HPI, the impact of high government spending on medicine and enrolment of families under publically-financed health insurance (PFHI) found significant in reducing the per capita health payments, share of health payments in total and non-food expenditure and probability of falling below poverty compared to low medicine spending and low/no enrolment of families under PFHI umbrella.*]

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1. Introduction

Household's out-of-pocket (OOP) payments are the principal source of healthcare finance in many developing countries, including India. Around 71 per cent health spending in India is met out of individual pocket of which in turn 70 per cent is spent on medicines alone (Selvaraj *et al*, 2014). The high OOP payment has several negative implications as it pushes households into poverty or even impoverishing their living standard which leads to direct welfare loss in households well-being (as they pay for healthcare at the expenses of meeting their other basic consumption needs) (Wagstaff and van Doorslaer, 2003; Xu *et al*, 2003). The health services, particularly to poor, many a time remain inaccessible simply because they cannot afford to pay at the time of health emergency and if those do use services suffer financial hardship or even impoverishment and many of them sale asset and/or borrow money, because they have to pay (Xu *et al,* 2003; Dror *et al,* 2008). This results in inequitable access to healthcare (Berman *et al*, 2010) and limits the overall health outcomes to be better.

Reducing OOP payments for healthcare have remained an important health policy goal in many countries. The reforms in health sector in India can be traced from early 1990s when many changes took place in organisation structure and delivery of health services (Sen, Iyer and George, 2002), financing and government spending. It is noticed that because of introduction of user fee (during the late 1990s to early 2000s) in government hospitals (Thakur and Ghosh, 2009), decline in centre and state government spending on health (Hooda, 2013a) and week public health service delivery system, leading to government failure to meet the public's healthcare needs in the one hand and provide an opportunity to private sector to exploit the healthcare market (Peters *et al*, 2002). Secondly, due to the introduction of new Drug Price Control Order (DPCO) in 1995 (under which only 74 out of 500 commonly used bulk drugs were kept under statutory price control) and further more liberalization of pharmaceutical sector in 2002, a spiralling increase in drug prices is noticed during the period between 19994-2004 (NCMH, 2005; Selvaraj *et al*, 2014). These policy changes in combine have significantly increased both catastrophic expenditure and impoverishment (Ghosh, 2010) as the proportion and absolute number of poor between the period from 1993-94 to 2004-05 increased (Selvaraj and Karan (2009). Other studies in Indian context have also pointed out of high incidence of poverty, catastrophe and impoverishment effect of health payments (Bonu, Bhushan & Peters, 2007; Garg and karan, 2009; Shahrawat and Rao, 2012; Selvaraj and Karan, 2012).

Most of these evidences on catastrophic payment and impoverishment are generated from National Sample Survey data that were conducted before or in the year 2004-05 therefore highlights the impact of health policy changes and changes of the macro-economic policies like the Structural Adjustment Programme initiated in early 1990s. After that India has not only gone through buoyant economic growth and structural changes (RBI, 2012) but a lot of policy interventions have also been made in the health sector. Since 2005, two major initiatives in Indian health sector are remarkable for giving a new direction to health system financing, namely: the National Rural Health Mission (NRHM) and publically financed (central *Rashtriya Swastha Bima Yojana*--RSBY and state-level *Aarogyasri*, *Kalaignar*,

Yashaswini in states like Andhra Pradesh, Tamil Nadu and Karnataka) health insurance schemes. NRHM largely relies (except for *Janani Suraksha Yojana*--JSY) on supply-side financing, a traditional way of an integrated financing and provision functions under the umbrella of government ministries and departments (Selvaraj and Karan, 2012). To achieve equitable, affordable and accessible healthcare, India committed to increase in government spending 2-3 per cent of GDP in health under NRHM. This however is a central funded programme, but given the fact that *health is a state subject in India*, the state governments are asked to increase their own spending in health at a specified rate in tandem with increased central funding (Hooda, 2013a). To account the efficiency in health system financing, some major restructuring and change in the allocation pattern of government spending have also been directed. Furthermore, the centre as well as states (Tamil Nadu and Rajasthan) governments has initiated the procurement of drugs and medicine at low price through central procurement agencies to provide free/low price medicine to population in public hospitals/dispensaries/ medical stores/depots. On the other hand, the JSY provides financial incentive to women to promote institutional delivery of child and community as well as publically financed health insurance schemes promise to provide financial risk protection to intermediaries/patients for purchasing healthcare from both the private and public providers. The amount of protection through insurance is ranging from ₹30,000 (under RSBY) to ₹2,00,000 (under *Yeshasvini*). Thus, JSY and social health insurance schemes are the demand-side financing strategies.

These demand and supply-side health policy interventions are relates with financing and provision. These are having three major components, namely: provisioning of comprehensive (primary, secondary and tertiary) health services, providing medicine at low cost or free to people and financial risk protection through health insurance. All these in combine expected to reduce the burden of high OOP spending from households. How far these health policy interventions (HPI) serve the purpose is examined by studying the relationship between catastrophic health payment and household's well-being in Indian context.

As discussed, most of the earlier evidences are based on NSS 2004-05 data[1] therefore did not capture the impact of health policy changes that are initiated after 2004-05. The purpose of the present study therefore is to: 1) generate new evidences on prevalence, intensity and incidence of catastrophic health payments in India using most recent NSS *Consumption Expenditure Survey* round 2011-12, and 2) examine the impact of health policy interventions (controlling for other factors) on prevalence, intensity, incidence of catastrophic health payments. To examine the impact of health policy interventions first an index of the extent

[1] Selvaraj S & Karan (2011-12) however tried to examine the impact of publically-financed health insurance schemes in providing financial risk protection using 2009-10 NSS data, but methodology adopted in the study was weak (Dilip, 2012). Second, Shahrawat and Rao (2012) study tried to examine 'how well recently introduced national insurance schemes meant for the poor (like the RSBY) are able to provide financial protection'. The data set utilized in the study is NSS 2004-05, which is prior to the launch year (April, 2008) of RSBY. The conclusion derived from the analysis therefore would be week in providing clear policy guidelines.

of HPI is constructed and then impacts are examined in low-high HPI areas. This study provides an empirical base for policy and programme initiatives to mitigate the impoverishing effects of health payments in India.

2. Data and Methods

The data source for the present study is drawn from the unit level records of Consumer Expenditure Survey (CES) 68th (2011-12) round, conducted during July 2011-June 2012 by National Sample Survey Organization (NSSO), Government of India. The CES's undertaken every five years in India at household level across the country. It comprises a nationally representative sample of households. The 68th round cover 1,01,662 households (59,695 rural and 41,967 urban) at the national level including all States and Union territories (UTs). In the present exercise, the results of 99,697 households (59,000 rural and 40,697 urban) are presented (excluding UTs) which is around 98.07 per cent of the total sample households.

CES collects information on expenditure of households' consumption for about 380 items ranging from non-food to food items. Under health items, it collected information on institutional (as inpatient) and non-institutional (as outpatient) medical expenditure ranging from expenditure on medicine, X-ray, ECG, pathological test, etc., doctor's/surgeon's fee, hospital & nursing home charges, family planning devices, other medical expenses, etc. We have analysed total OOP (institutional and non-institutional) expenses for health care. The 2011-12 survey data distinguishes two types of reference periods, therefore the information are captured under two scheduled Type-I and Type-II. Under Type-I, recall periods for institutional expenses are 30 days and 365 days, while under Type-II, reference period is 365 days. For non-institutional expenses, Type-I and Type-II schedules have only 30 days recall period. To make consistency, we have explored data from Type-I with mix recall period (MRP). For non-institutional, the given 30 days expenses, while for institutional expenses 365 days is explored but converted into 30 days. To arrive at total OOP, the converted institutional expenses are added into non-institutional expenses. Note that during the reference period of survey, around 80 per cent of all households and 72 per cent of BPL households had made OOP payments for healthcare. Therefore, the analysis based on the present data will provide more convening results for policy formulation.

Measuring HPI: As discussed, after 2004-05, with the launch of NRHM, initiatives for an inclusive health policy that provide affordable, accessible and decentralized public health services (be it primary, secondary or tertiary care) are called for (Selvaraj and Karan, 2009; Reddy *et al*, 2011b). To provide the same, not only the overall increase in government spending (2.5% of GDP) is proposed but it also directed that spending on drugs/medicine should increase. Further, along with some states-run, a centrally sponsored health insurance scheme (RSBY) also introduced in April, 2008 to provide financial risk protection to poor people during health emergency, particularly for hospitalization (inpatient) care. The amount of insurance coverage is fixed at ₹30,000. As per the guideline, the BPL families (of 5 members) need to enrol under RSBY umbrella with a nominal registration fee of

Rupees 30, without which the families would not eligible to get RSBY benefits. Thus, enrolment under the scheme became important. To explore these dimensions, study has taken provisioning of health services and insurance enrolment ratio at district and government spending on medicine at state level. Using these indicators an index of HPI is constructed by employing Principle Component Analysis (PCA) method (Kundu A, 1984). The detail is being provided in *Box-1*. The index value then is merged with 2011-12 CES household level data.

Box-1: Measuring the Extent of Health Policy Intervention: Parameters and Indicators

Parameters	*Indicators*
1. Health Infrastructure *(district level information)*	District & sub-divisional hospital, CHCs, PHCs and SCs at districts level. Each indicator is rationalized by dividing it with district population.
2. Medicine/Drugs *(state level information)*	Proportion of state government spending on drugs and medicine out of total health spending in a state. The ratio is kept constant for all districts of a state.
3. Health Insurance Coverage *(district level information)*	Enrolment ratio under RSBY = enrolled to targeted families ratio in a particular district. The RSBY information for Andhra Pradesh and Tamil Nadu are not available but state run insurance schemes working effectively in these states. Enrolment of family under state run schemes at district level is collected from various studies and if not available average ratio of state is used.
Method	*Principle Component Analysis (PCA) method is applied to construct the index of the extent of HPI*
Extent of State's Intervention	The PCA index value of a district shows the extent of HPI in a particular district. The highest PCA score noticed to be around 21.11 and as low as 0.0000184 in a district. We normalized the total score value to be between 0 and 3 by using formula RANKi = (index value/21.11)/3 and these districts are then divided into low (rank-1), middle (rank-2) and high (rank-3) rank districts. Of the total 95,443 observations, about 25,922; 43,621 and 25,900 turned with rank 1, 2 and 3 respectively[#].

Note: # Note that the information on infrastructure and insurance were missing for some district therefore we were able to construct the index for 605 districts (less than the NSS districts). Therefore, while analyzing the impact of state interventions, of the total 99,697 households, the results for 95,443 households (around 96% of total) are presented.

Source: Data for parameter first are taken from Rural Health Statistics and Statistical Abstract of individual state for the year 2011-12; for second, from Selvaraj *et al,* (2014) and Original Budget Paper of individual state government; for third, enrolment ratio at district level is estimated from state profile on RSBY available at http://www.rsby.gov.in/Statewise.aspx? for the year 2012-13.

Prevalence of Poverty: is estimated by measuring the poverty headcount (Hp) ratio. For the purpose, first the fraction of people living below the official poverty line before health payment (pre Hp) and then the fraction of people below the same poverty line after health

payment (post Hp). For calculating the pre-payment headcount of poverty (pre Hp), we have used the basis of calculating the poverty headcount that is adopted by Planning Commission for the year 2011-12. Algebraically (Garg and Karan, 2009):

Pre poverty headcount = Pre Hp = $1/n\sum 1(Ci \leq PL)$ .....(1)

where, Ci is per capita consumption expenditure and PL is official poverty line in Rupees terms, and n is number of individuals.

The post poverty headcount is computed by netting out the health payments from households' consumption expenditure and then comparing with the official poverty line as:

Post poverty headcount= Post Hp = $1/n\sum 1((Ci\text{-}OOP) \leq PL)$ .....(2)

The difference between post Hp and pre Hp gives the poverty impact of health payment (Wagstaff and Van Doorslare, 2003) as it gives the additional number of individuals moving below the poverty line because of OOP health payment. It can be identified as:

Hp = post Hp – pre Hp

Intensity of poverty, known as poverty deepening, is assessed by measuring the poverty payment gap (G) before (pre) and after (post) health payment. The poverty gap (G) is the average shortfall of consumption below the poverty line. It is estimated as:

Pre-payment poverty gap = Pre G = $1/n\sum Xi(PL - Ci)$ .....(3), and

Post payment poverty gap = Post G = Hp = $1/n\sum Xi((PL - (Ci\text{-}OOP))$ .....(4)

The average poverty gap, or poverty deepening in terms of the average amount by which people go below the poverty line due to OOP health payment, is measured by:

Poverty Gap = G = Post G – Pre G

where, Xi =1 if $Ci \leq PL$ and is zero otherwise

Incidence of Catastrophic Health Payment: health care spending is generally considered catastrophic when it exceeds a particular threshold, defined in relation either to the household's pre-payment income or the household's capacity to pay (van Doorslaer *et al*, 2007; Shahrawat and Rao, 2012). We have explored both the definitions: That is,

1. Catastrophe-1: a household is considered to have experienced catastrophic payment for healthcare if OOP health expenditure is exceeded 10% of household's consumption expenditure.

2. Catastrophe-2: a household is considered to have experienced catastrophic payment for healthcare if health expenditure is exceeded 40% the household's non-food expenditure.

NSS 2011-12 data provides estimate on monthly per capita consumption expenditure (MPCE) of sample households. This allows us to identify the population that is below and above poverty line. In our analysis, while presenting how OOP payments have affected those below and above the official poverty line, we split total sample population into two groups on the basis of MPCE: that is, those below (BPL) and those above (APL) poverty line as presented in Shahrawat and Rao (2012). Further, APL population was divided into MPCE quintiles. BPL are identified by using official poverty line cut-offs of individual states for both rural and urban area separately which is provided by Planning Commission for reference period 2011-12 (Press Information Bureau, 2012). Results for prevalence, intensity and incidence are presented for economic quintile groups and rural-urban residents.

To examine the impact of HPI, results first are presented for low, middle and high HPI districts. However, beside HPI, catastrophic and poverty level are also affected by socio-economic-demographic factors of the households (Xu *et al,* 2003; Bonu *et al,* 2007; O'Donnell *et al,* 2005) as well as by state level instruments like political, administrative and governance indicators (Bonu *et al*, 2007). In order to capture the impact of such diversified factors, multivariate regression analysis approach is followed.

There can be range of dependent variables that can be influenced by factors explained above. We have notified five dependent variables ranging from linear to discrete form: namely, Linear: (a) log of household per capita health payments, (b) household health payments as a proportion of total household expenditures, (c) household health payments as a proportion of household non-food expenditures, Discrete: (d) households having catastrophic health payments below (0) and above (1) catastrophe-1 and (e) households above the poverty line remain above the poverty despite health payments (1), households above the poverty line that fell below the poverty line due to health payments (2) and households above the poverty line that had no health payments (3). The discrete variable (d) has two (0,1) and (e) has three (1,2,3,) categories. We therefore run linear (a, b and c), probit (d) and multinomial logit (e) models. Note that around 20 per cent of the sample households had no health payments, that is, a significant number of households had no health payments in the sample data. Therefore, to avoid any selectivity bias, the Heckman sample selection models are estimated (Baum, 2006; Bonu *et al*, 2007), particularly on first four outcome variables.

All estimations are done by using inbuilt sample weight given in NSSO data and STATA version 10.0 is used to carry out the analysis.

3. Results

3.1 Poverty Prevalence and Deepening Effects of OOP Expenditure

The OOP payments for healthcare as a share of total consumption expenditure is low among the BPL compared to APL households. OOP spending is increasing with the level of living of APL households and such increment remained high among rural as compare to the urban households (*Table-1*). The poverty headcount ratio (Hp) increased by 3.5 per cent due to OOP payments in India at the aggregate level. The increase in Hp is observed to be larger among rural (5.4%) as compare to urban (2.5%) households (*Table-1*). OOP payments for healthcare do not only worsen the economic condition of BPL households but also affected the economic condition of APL households with a considerable variation across APL expenditure quintiles groups. Among APL households, the lowest (20%) households experienced an increase in poverty headcount, due to health payments, of about 17.02 per cent. This increase in Hp is observed to be high among rural (18.63%) compared to the urban (12.10%) households. A comparison in Hp across APL quintiles show that the increase in poverty headcount is almost 6 times than that of the next APL quintile and 35 times the richest APL quintile at the aggregate level. Such comparisons, for every APL quintile across rural-urban show that the increase in poverty headcounts is greater in urban compared with the rural (*Table-1*).

Table-1: OOP Payments for Healthcare and Poverty Headcount Ratio by Economic Groups for Rural-Urban Residents

	Rural			*Urban*			*Combined*		
	OOP % to Con. Exp	*Poverty Headcount %*		*OOP % to Con. Exp*	*Poverty Headcount %*		*OOP % to Con. Exp*	*Poverty Headcount %*	
		Pre Hp	*Post Hp*		*Pre Hp*	*Post Hp*		*Pre Hp*	*Post Hp*
BPL	4.16	100	100	3.95	100	100	4.11	100	100
APL- Q1	5.03	0	18.63	4.85	0	12.10	4.97	0	17.02
Q2	5.70	0	4.06	5.24	0	0.55	5.52	0	2.96
Q3	6.64	0	1.06	5.92	0	0.19	6.32	0	0.77
Q4	8.45	0	0.75	6.24	0	0.02	7.40	0	0.49
Q5	12.16	0	0.81	6.98	0	0.01	9.24	0	0.49
APL-subtotal	7.87	0	7.27	6.2	0	2.90	7.1	0	5.89
Total	**7.38**	**25.8**	**31.18**	**6.09**	**13.7**	**16.21**	**6.82**	**22.3**	**26.92**
Diff. (% point)		**5.40**			**2.50**			**3.5**	

Source: Author's Estimates from NSS 2011-12.

The increase in poverty headcount ratio varies considerably across states of India. It is noticed to be high in low income states like Uttar Pradesh and Bihar, followed by Orissa, Madhya Pradesh and Chhattisgarh. The increase in poverty headcount is observed to be larger among rural as compare to the urban households across these states (*Table-2*).

Table-2: Poverty Headcounts (in Per Cent) and Regressing People Below Poverty Line due to Health Payments for Rural-Urban Residents across States

	Rural				*Urban*				*Combined*				
	Pre Hp	*Post Hp*	*Hp*	*PRB*	*Pre Hp*	*Post Hp*	*Hp*	*PRB*	*Pre Hp*	*Post Hp*	*Hp*	*PRB*	*Dis*
Sikkim	9.9	10.0	0.16	1	3.6	3.6	0.00	0	8.8	8.9	0.13	1	0.0
Nagaland	19.9	20.5	0.54	4	16.5	16.8	0.30	1	18.7	19.2	0.46	5	0.0
ArP	39.0	40.0	0.99	8	20.3	21.3	0.97	2	35.3	36.3	0.99	10	0.0
Mizoram	35.5	37.7	2.26	12	6.4	6.6	0.25	1	22.0	23.4	1.33	13	0.0
Meghalaya	12.5	13.2	0.72	15	9.2	9.2	0.00	0	11.8	12.4	0.57	15	0.0
Goa	6.8	11.9	5.06	32	4.1	5.3	1.19	8	5.4	8.5	3.08	39	0.1
Manipur	38.8	43.0	4.21	72	32.5	34.9	2.38	15	37.1	40.9	3.72	87	0.2
Delhi	12.9	16.9	3.93	39	9.8	10.6	0.71	83	10.1	11.1	0.97	123	0.2
Tripura	16.5	20.2	3.65	108	7.4	13.2	5.81	31	15.1	19.1	3.98	139	0.3
HP	8.5	11.2	2.76	162	4.3	6.7	2.42	17	8.0	10.8	2.73	179	0.4
J & K	11.5	13.5	1.96	149	7.2	8.8	1.63	36	10.6	12.5	1.88	185	0.4
Uttarakhand	11.7	13.8	2.06	147	10.5	13.9	3.44	83	11.4	13.8	2.41	230	0.5
Haryana	11.6	13.9	2.26	394	10.3	11.4	1.07	81	11.2	13.1	1.90	475	0.9
Assam	33.9	36.5	2.66	669	20.6	22.5	1.91	56	32.5	35.1	2.58	725	1.4
Punjab	7.7	11.1	3.46	565	9.2	12.2	3.00	279	8.2	11.5	3.29	843	1.7
Jharkhand	40.8	44.2	3.38	740	24.8	27.2	2.37	135	37.5	40.7	3.17	875	1.7
Chhattisgarh	44.6	49.3	4.64	881	24.8	29.7	4.97	256	40.4	45.1	4.71	1137	2.2
Karnataka	24.5	27.7	3.15	1137	15.3	17.6	2.31	474	21.2	24.0	2.85	1611	3.2
Kerala	9.2	15.7	6.53	1513	5.0	7.9	2.94	243	8.1	13.7	5.58	1756	3.5
Rajasthan	16.1	19.4	3.37	1579	10.7	12.6	1.88	273	14.8	17.8	3.02	1852	3.7
Gujarat	21.5	26.2	4.69	1553	10.2	11.9	1.69	382	17.0	20.4	3.47	1935	3.8
Orissa	35.7	41.7	5.98	1886	17.3	20.2	2.95	165	32.9	38.4	5.52	2052	4.1
Tamil Nadu	15.8	19.8	4.00	1499	6.6	8.6	1.99	599	11.7	14.8	3.10	2099	4.2
MP	35.7	41.5	5.75	2809	21.0	23.3	2.25	377	32.0	36.8	4.86	3186	6.3
AP	16.7	21.8	5.10	2743	5.8	7.9	2.05	537	13.2	17.3	4.10	3280	6.5
WB	22.5	27.1	4.62	2888	14.7	16.9	2.27	515	20.4	24.4	4.00	3404	6.7
Maharashtra	24.2	29.6	5.40	3086	9.1	11.8	2.65	1276	17.3	21.5	4.14	4362	8.6
Bihar	34.4	41.4	7.04	5974	31.2	33.9	2.66	241	34.1	40.7	6.62	6215	12.3
UP	30.4	38.7	8.34	12032	26.2	30.5	4.35	1701	29.5	37.0	7.49	13733	27.2
All States	**25.8**	**31.2**	**5.40**	**42696**	**13.7**	**16.2**	**2.50**	**7868**	**22.3**	**26.9**	**4.57**	**50565**	**100**

Note: PRB: People Regressing Below the Poverty Line due to Health Payment in ('000); Dis: Percentage Distribution of Combined PRB

Source: Same as *Table-1*.

Overall, around 50.6 million above poverty line people were pushed into poverty due to OOP health payments, with 42.7 million in rural and 7.9 million in urban area. The incremental effect remained high in rural area, as 84 per cent of rural people pushed below poverty line in rural area as compare to the 16 per cent in urban area. Of the 50.6 million, around 40 per cent people are regressed below poverty line due to health payments in two poorer states namely Uttar Pradesh (27%) and Bihar (12%). In Bihar, a major proportion of the people that are regressing below the poverty line come from the rural area, while low from urban. Any health policy change, directed towards rural and low income states will have strong impact.

The poverty gap increased by ₹8.7 due to OOP payments for healthcare at the national level, indicating monthly per capita consumption level of people dips by on average ₹8.7 due to OOP payments. The reduction in monthly per capita consumption noticed to be high (₹9.5) in rural as against ₹6.3 in urban area. The monthly per capita consumption level of BPL groups dips by on average ₹28 as against the APL just around ₹2.86, indicating increase in intensity of poverty substantially higher (10 times) among BPL compared to APL. Though, the poverty gap large in rural compared to the urban, but the increase in poverty gap among urban BPL recorded around 20 times higher than their APL counterpart, while such gap remained low (8 times) among rural (*Table-3*). The poverty deepening effect of OOP payments again noticed to be high in poor states namely Uttar Pradesh (₹11.8), Bihar (₹9.9), Orissa (₹8.9) and Madhya Pradesh (₹8.9). The intensity of poverty gap is recorded one of the high in rural (₹12.7) as well as in urban (₹9.1) area of Uttar Pradesh.

Table-3: Poverty Gaps by Economic Groups and States for Rural-Urban Residents (₹)

	Rural			*Urban*			*Combined*		
	Pre G	*Post G*	*G*	*Pre G*	*Post G*	*G*	*Pre G*	*Post G*	*G*
Below poverty line	141.5	168.8	27.3	179.9	210.7	30.8	148	175.9	27.9
APL- Q1	0	9.11	9.11	0	7.19	7.19	0	8.64	8.64
Q2	0	2.78	2.78	0	0.62	0.62	0	2.12	2.12
Q3	0	0.86	0.86	0	0.13	0.13	0	0.61	0.61
Q4	0	0.57	0.57	0	0.02	0.02	0	0.37	0.37
Q5	0	0.92	0.92	0	0.01	0.01	0	0.55	0.55
APL-subtotal	0	3.51	3.51	0	1.5	1.5	0	2.86	2.86
Total	**29.4**	**38.9**	**9.5**	**16.8**	**23.1**	**6.3**	**25.5**	**34.2**	**8.7**
States									
Sikkim	6.4	6.5	0.1	2.4	2.7	0.3	5.5	5.6	0.2
Meghalaya	11.3	11.8	0.5	10.3	10.9	0.6	11.1	11.6	0.5
Delhi	9.9	11.8	1.8	11.8	13.0	1.1	11.7	12.9	1.2
Nagaland	42.7	44.5	1.8	19.9	21.1	1.1	34.2	35.7	1.6
Himachal Pradesh	6.7	9.6	2.9	5.1	7.1	2.0	6.5	9.2	2.7
Uttarakhand	7.9	11.1	3.2	11.2	14.5	3.3	8.8	12.0	3.2
Haryana	16.3	20.7	4.4	13.7	16.7	3.0	15.4	19.3	3.9
Punjab	9.3	13.8	4.5	12.6	16.2	3.7	10.6	14.8	4.2
Andhra Pradesh	11.0	16.5	5.5	7.0	9.4	2.4	9.6	14.1	4.5
Gujarat	24.0	30.1	6.1	12.1	14.7	2.5	18.6	23.1	4.5
Tamil Nadu	18.7	25.6	6.9	7.5	10.0	2.5	13.5	18.4	4.9
Assam	40.3	45.3	5.1	30.4	34.9	4.4	39.0	44.0	5.0
West Bengal	22.4	29.2	6.7	16.6	20.3	3.6	20.8	26.6	5.8
Karnataka	22.0	28.8	6.8	23.2	27.9	4.7	22.5	28.5	6.0
Rajasthan	24.4	31.6	7.2	11.6	14.5	2.9	21.2	27.3	6.1
Goa	5.3	17.7	12.4	7.1	8.4	1.4	6.2	12.9	6.7
Kerala	13.6	22.0	8.5	6.8	10.9	4.1	11.7	18.9	7.2
Madhya Pradesh	53.4	63.6	10.2	27.1	32.4	5.3	46.6	55.5	8.9
Orissa	43.7	53.3	9.6	20.3	25.7	5.4	39.8	48.7	8.9
Bihar	39.6	49.7	10.1	46.5	54.8	8.3	40.3	50.2	9.9
Uttar Pradesh	36.0	48.7	12.7	35.3	44.4	9.1	35.8	47.7	11.8

Source: Same as *Table-1*.

3.2 Incidence of Catastrophic Health Payments

The proportion of people affected due to C-1 and C-2 is round 17.3 per cent and 4.66 per cent respectively, which constitute around 19.2 million and 5.15 million people respectively. Interestingly, the proportion of below and above poverty line people facing incidence of catastrophe-1 is around 10.9 per cent (2.69 million) and 19.2 per cent (16.47 million) respectively, indicating incidence of catastrophic is high on APL than BPL people. But, the impoverishment impact of C-1 would be high on BPL, as BPLs are generally identified on the basis of calorie intake consumption expenditure. Any single money spent on health will certainly lead them toward impoverishment. The incidence of catastrophic health payments varies substantially across states of India. The proportion of people affected by C-1 is recording as high as 31.3 per cent, 22.6 per cent and 22.2 per cent in different setting of states namely Kerala, Utter Pradesh and Punjab respectively (*Table-4*). Kerala has high health seeking behaviour with adequate public as well as private facilities, therefore people affected due to catastrophe-1 is high. While in Punjab, because of high per

Table-4: People Facing Catastrophe Health Payment by States (In Per Cent)

States	*People Affected due to Catastrophe-1*				*People Affected due to Catastrophe-2*			
	*PA**	*PA***	*BPLA***	*APLA***	*PA**	*PA***	*BPLA***	*APLA***
J & K	903	9.21	6.82	9.49	238	2.43	0.74	2.62
HP	1017	15.50	4.43	16.46	209	3.19	0.29	3.44
Punjab	5680	22.18	10.35	23.24	1154	4.51	0.69	4.85
Uttarakhand	968	10.12	6.27	10.62	177	1.85	0.04	2.08
Haryana	2662	10.65	10.65	10.65	640	2.56	0.91	2.77
Delhi	872	6.87	0.00	7.64	176	1.39	0.00	1.54
Rajasthan	9190	14.96	12.43	15.40	2577	4.20	1.48	4.67
UP	41476	22.62	14.63	25.95	13551	7.39	1.99	9.65
Bihar	12292	13.10	10.58	14.39	3490	3.72	3.00	4.09
West Bengal	17722	20.82	7.32	24.29	5902	6.93	1.64	8.29
Jharkhand	2939	10.67	7.60	12.51	482	1.75	1.20	2.08
Orissa	6168	16.59	10.60	19.52	1799	4.84	0.84	6.80
Chhattisgarh	3339	13.84	9.38	16.86	670	2.78	0.37	4.40
MP	9448	14.40	8.74	17.06	2140	3.26	0.93	4.36
Gujarat	7429	13.34	6.89	14.66	1741	3.13	0.85	3.59
Maharashtra	20439	19.40	13.78	20.58	4636	4.40	1.32	5.05
AP	16492	20.61	14.10	21.60	4217	5.27	0.94	5.93
Karnataka	8184	14.46	8.12	16.16	1288	2.28	0.67	2.71
Goa	166	13.00	4.49	13.49	33	2.56	0.00	2.71
Kerala	9859	31.35	20.31	32.32	2783	8.85	4.96	9.19
Tamil Nadu	12684	18.75	15.59	19.17	3309	4.89	1.76	5.31
NE states	1775	4.41	3.18	4.91	309	0.77	0.23	0.99
All States	**191705**	**17.34**	**10.91**	**19.19**	**51522**	**4.66**	**1.52**	**5.56**
All in no. '000		191705	26957	164747		51522	3754	47768

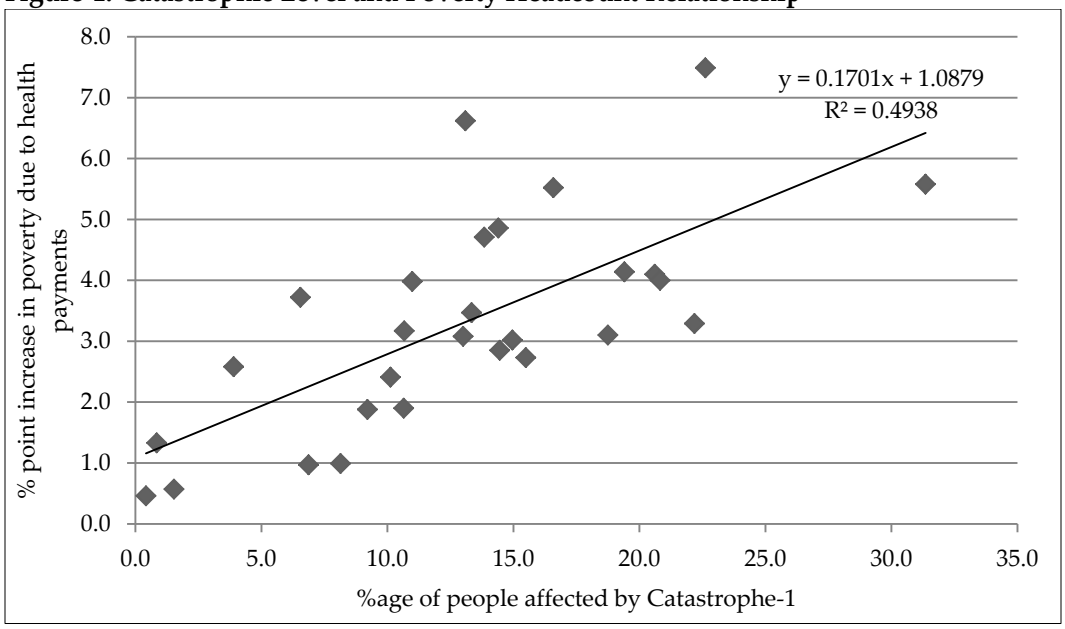
Note: PA: People Affected; BPLA: Below Poverty Line Affected; APLA: Above Poverty Line Affected; * in thousands; ** in per cent

Source: Same as *Table-1*.

capita income, people probably prefer costly private health facility which results in high C-1. Whereas in Uttar Pradesh, not only their per capita income is low but availability of public facility is also very low. The people in the state are probably bound to avail private health facility and leading to high catastrophic (*Table-4*).

The proportion of people affected due to catastrophe-1 and percentage point increase in poverty are positively associated. The scatter plot of states, presented in *Figure-1*, indicate that percentage point increase in poverty is found to be high in states where proportion of people affected due to catastrophe-1 is high. The R2 value turned around 0.49, indicating that around 49 per cent proportion in poverty is explained by high catastrophe. The poverty level and catastrophe health payment may also be affected by various factors ranging from extent of health policy intervention and socio-economic-demographic background of the households, which is presented in following section.

Figure-1: Catastrophic Level and Poverty Headcount Relationship



Source: Author's design from NSS 2011-12.

3.3 Impact of Health Policy Interventions

Though the pre Hp level is noticed to be low in high HPI area (15.37%) compared to low HPI area (24.59%). But, the poverty headcount ratio increased to 4.08 per cent and 5.30 per cent in high and middle HPI areas compared to as low as 3.92 per cent in low HPI areas. Similarly, increase in poverty headcount ratio noticed to be high in high HPI compared to low HPI areas across rural-urban residents (*Table-5*). Around 17.3 per cent poorest APL pushed into poverty in high HPI area compared to the 15.4 per cent in low HIP, indicating high poverty headcount in high HPI area. However, the poverty impact analysis measured through increase in Hp shows that the increment in Hp among lowest APL took place very

high around 13 per cent points in low and middle HPI districts compared to as low as 2.16 per cent point in high HPI districts. Similar results are exhibit across rural urban resident (*Table-5*, Col.11). This reflects that impacts of health policy changes are negligible on BPL but significantly high on lowest APL quintiles groups. This may be because the health access and insurance benefits are limited for poor, whereas lowest APL groups would be getting more benefits of such policies.

Table-5: State Intervention and OOP Payments Induced Poverty: Poverty Headcounts by Economic Groups (In Per Cent)

Extent of HPI	*Pre Hp*	*Post Hp*							*Hp*	
	BPL People	*APL-Q1*	*APL-Q2*	*APL-Q3*	*APL-Q4*	*APL-Q5*	*APL-subtotal*	*Total*	*Col. (9-2)*	*Col. (9-3)*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
Aggregate	**22.62**	**17.09**	**3.08**	**0.80**	**0.52**	**0.53**	**6.03**	**27.28**	**4.66**	**10.20**
Low	24.59	15.44	2.27	0.75	0.06	1.17	5.19	28.51	3.92	13.07
Middle	25.20	17.66	3.24	0.91	0.75	0.18	7.08	30.50	5.30	12.83
High	15.37	17.29	3.52	0.67	0.55	0.55	4.83	19.46	4.08	2.16
Rural Total	**25.65**	**18.74**	**4.16**	**1.07**	**0.76**	**0.83**	**7.31**	**31.09**	**5.43**	**12.34**
Low	27.64	17.09	2.98	1.00	0.08	1.84	6.26	32.18	4.53	15.09
Middle	28.03	18.83	4.32	1.23	1.11	0.30	8.48	34.13	6.10	15.30
High	18.36	20.60	5.04	0.90	0.82	0.81	6.03	23.28	4.92	2.68
Urban Total	**14.48**	**11.97**	**0.55**	**0.21**	**0.02**	**0.01**	**3.04**	**17.08**	**2.60**	**5.11**
Low	15.55	10.00	0.52	0.11	0.00	0.04	2.48	17.65	2.09	7.64
Middle	17.29	13.51	0.71	0.26	0.04	0.00	3.70	20.36	3.06	6.85
High	8.58	10.56	0.33	0.21	0.01	0.00	2.38	10.75	2.18	0.19

Source: Same as *Table-1*.

In low HPI districts, monthly per capita consumption of BPL households dips by ₹25.7, while it dips by ₹29.1 in high HPI districts, indicating poverty deepening impact increase with the level of HPI. Similar trends are exhibits across rural-urban residents (*Table-6*). In low HPI districts, the increase in poverty gap among BPL however is noticed to be around 26 times higher than the APL groups, while BPL-APL gaps reduced to 22 times in the high intervention districts (*Table-6*). At the aggregate level the average monthly per capita consumption level dips by ₹7.6 and ₹8.3 in low and middle HPI districts respectively while it dips by only ₹5.6 in high HPI districts (*Table-6*). This indicates that poverty deepening impact will reduce if state provides adequate health infrastructure and comprehensive coverage of poor people under health insurance protection along with high government spending on medicine.

The Wald's test of independence confirms that the Heckman selection model is appropriate for the present exercise. The analysis shows that the monthly per capita health payment, health payment as a share of household total as well as non-food expenditure is negatively associated with household size, indicating that these three outcomes of health payments is declining significantly as the size of household increase (*Table-7*). The health payment (all three outcomes) of rural households is found significantly lower than the urban households. The per capita health payments increase significantly with the level of living

(measured through MPCE) of households, however the proportion of health payments in total and non-food expenditure is declining significantly with the level of living of the households. All three type of health payments are increasing with the age of the head of the households. That is, the health payments are higher among higher age households. The outcome variable of health payments are found to be significantly higher among low educated (primary and below primary) households compared to the highly educated (graduate/diploma and above) head of household. The health payments of Schedule Castes/Tribes are significantly lower than the Other Castes (OC), while the health payment of Other Backward Castes households is higher than the OC. The outcome indicators are significantly high among those households whose head reporting both institutional and non-institutional medical spending as compared to the households whose medical spending is on only one component.

Table-6: State Intervention and Poverty Gaps by Economic Groups (₹)

Extent of HPI	*BPL*		*Overall*								*G=Diff*	
	Pre G	*Post G*	*G*	*Post G*							*BPL*	*ALL*
				APL-Q1	*Q2*	*Q3*	*Q4*	*Q5*	*APL-sub total*	*Total*	*Col. (3-2)*	*Col. (11-4)*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
Aggregate	**148**	**175.8**	**26.8**	**8.64**	**2.12**	**0.61**	**0.37**	**0.55**	**2.86**	**34.2**	**27.9**	**7.4**
Low	165.6	191.3	34.3	8.08	1.86	0.93	0.13	1.66	2.87	41.8	25.7	7.6
Middle	146.3	174.8	29.4	9.01	2.19	0.65	0.44	0.17	3.29	37.8	28.5	8.3
High	129.9	159	16.6	8.27	2.2	0.35	0.43	0.37	2.19	22.2	29.1	5.6
Rural Total	**141.5**	**168.8**	**30.3**	**9.11**	**2.78**	**0.86**	**0.57**	**0.92**	**3.51**	**38.9**	**27.3**	**8.6**
Low	162.6	187.9	39.2	8.86	2.4	1.28	0.2	2.87	3.65	48.1	25.3	8.8
Middle	138.5	166.1	32.3	9.31	2.77	0.94	0.68	0.29	4	41.8	27.6	9.5
High	121.9	150.8	19.2	8.81	3.09	0.46	0.68	0.57	2.64	26	29	6.8
Urban Total	**179.9**	**210.6**	**18.6**	**7.19**	**0.62**	**0.13**	**0.02**	**0.01**	**1.5**	**23.1**	**30.7**	**4.5**
Low	182.3	210.3	21.1	5.3	0.52	0.13	0	0.03	1.09	25.3	27.9	4.2
Middle	182.2	214.4	22.5	7.94	0.88	0.13	0.04	0.01	1.79	28	32.3	5.5
High	170.8	200.3	11.1	7.18	0.31	0.13	0	0	1.33	14.2	29.5	3.1

Source: Same as *Table-1*.

The multivariate analysis confirm that the per capita health payments as well as health payments as a share of total and non-food expenditure of households is found to be significantly low in states where government spending on medicine is high compared to low spending states. As far as the role of health insurance is concerned, as compared to the districts where enrolment ratio under PFHI is high, health payment noticed to be significantly low and found high in districts where either the scheme is not implemented or families are not enrolled. Thus, enrolling the eligible poor families under PFHI is important. These outcomes variables of health payments found to be significantly low in high as well as middle level of HPI area as against the low HPI areas (*Table-7*).

The probability of having health payments over 10 per cent thresholds is declined significantly as the size of households increase. That is, higher size households are less

Table-7: Correlates of Catastrophic Health Payments: Multivariate Regression Results of Heckman Selection Model

	Linear Regression Estimates						*Probit Estimates*	
	lnMPCHP		*lnHPiTE*		*lnHPiNFE*		*HA-C1#*	
	Coef.	*SE*	*Coef.*	*SE*	*Coef.*	*SE*	*Coef.*	*SE*
Log of HH Size	-0.47***	0.010	-0.47***	0.010	-0.52***	0.009	-0.28***	0.040
Rural (Urban)	0.06***	0.009	0.06***	0.009	0.08***	0.009	0.14***	0.014
Log of MPCE	0.89***	0.009	-0.11***	0.009	-0.32***	0.009	0.18***	0.030
Log of Age of head	0.06***	0.004	0.06***	0.004	0.06	0.004	0.06***	0.006
Head-Edu (≥graduate)								
Below-primary	0.15**	0.017	0.15***	0.017	0.16***	0.017	0.28***	0.029
Primary	0.06	0.017	0.06***	0.017	0.08***	0.017	0.11***	0.024
Secondary	-0.003	0.017	0.00	0.017	0.00	0.017	0.06**	0.024
Social Status: (Other)								
SC/ST	-0.07***	0.010	-0.07***	0.010	-0.09***	0.010	-0.03**	0.015
OBC	0.10***	0.009	0.10***	0.009	0.07***	0.009	0.10***	0.013
Drugs spending (low)	-0.09***	0.009	-0.09***	0.009	-0.12***	0.008	-0.12***	0.013
RSBY E-ratio: (high)								
Low	-0.01	0.011	-0.01	0.011	-0.03**	0.011	-0.03**	0.016
No enrolment	0.05**	0.018	0.05**	0.018	0.04**	0.018	-0.01	0.028
Extent of HPI: (low)								
High	0.31***	0.018	0.31***	0.018	0.31***	0.017	0.36***	0.027
Middle	0.11***	0.014	0.11***	0.014	0.12***	0.013	0.17***	0.021
I+NI spending (otherwise)	1.17***	0.011	1.17***	0.011	1.06***	0.011	1.20***	0.014
Constant	-6.22***	0.120	2.99***	0.120	6.37***	0.118	-3.46***	0.487
Selection								
Rural (Urban)	0.11***	0.010	0.11***	0.010	0.10***	0.010	0.10***	0.010
Log of HH Size	0.53***	0.009	0.53***	0.009	0.52***	0.009	0.57***	0.009
Log of MPCE	0.46***	0.009	0.46***	0.009	0.47***	0.009	0.44***	0.010
Head-Edu (≥graduate)								
Below primary	0.32***	0.018	0.32***	0.018	0.30***	0.017	0.32***	0.019
Primary	0.15***	0.018	0.15***	0.018	0.15***	0.017	0.15***	0.018
Secondary	0.14***	0.018	0.14***	0.018	0.13***	0.017	0.14***	0.019
Constant	-5.59***	0.122	-5.59***	0.122	-5.67***	0.119	-5.45***	0.129
/athrho	-1.08***	0.018	-1.08***	0.018	-1.35***	0.017	0.00***	0.000
/lnsigma	0.20***	0.004	0.20***	0.004	0.21***	0.004	-0.02	0.165
rho	-0.79	0.007	-0.79	0.007	-0.87	0.004		
sigma	1.22	0.005	1.22	0.005	1.23	0.005	-0.02	0.165
lambda	-0.97	0.012	-0.97	0.012	-1.08	0.008		
Wald chi2	773		773		1735		0.01	
Prob>chi2)	0.00		0.00		0.00			

Note: The reference category is given in parenthesis against the independent variables. lnMPCHP: Log of Monthly Per Capita Health Payment; lnHPiTE: Log of Health Payment as a Share of Total Household Expenditure; lnHPiNFE: Log of Health Payment as a Share of Household Non-food Expenditure; HA-C1: Households Affected by Catastrophe-1: (HHs below & above C-1); # if household health spending exceeds to 10 per cent of total spending of households then the outcome variable takes value 1 and zero otherwise. I+NI is households representing both institutional as well as non-institutional spending. *** & ** are 1 and 5 per cent significant level.

Source: Same as *Table-1*.

likely to suffer such catastrophic level. The probability of having high catastrophe impact is significantly more in rural as compare to the urban people. That is, the rural households are more likely to suffer with high catastrophe health payment. The probability of suffering with catastrophic health payment is increasing with the increase in standard of living and age of head of households. The low educated households are more likely to suffer catastrophe health payments compared to the highly educated households. The marginalized sections of the society (SCs/STs) are less likely to suffer with catastrophe health payment as compare to other affluent section (other castes) of the society.

The likelihood of suffering with high catastrophic is found to be low among households living in states where government spending on medicine is high compare to the low spending states. The likely impact of health insurance in reducing the impact of catastrophe health payments finds opposite. The role of HPI in reducing the incidence of catastrophic level found to be ineffective, as the households suffering with catastrophic-1 recorded high in high/middle intervention areas as compared to the low intervention areas. The households having both inpatient and outpatient spending are more likely to suffer catastrophe-1 compared to the household whose spending is only on one component (*Table-7*).

The multinomial logistic regression estimates show that the larger size households have higher changes of falling below the poverty line compare to the smaller households. Though, as per earlier estimates, the large households have high health payment than smaller size, but their probability of falling below poverty line due to health payment is high. Similarly, though the health payments of rural households noticed to be significantly higher than the urban (*Table-7*), but their probability of falling below poverty line is low (*Table-8*). That is, the rural areas are less likely to have households that fell below the poverty line due to health payments after adjusting for other factors in the model. Interestingly, the health payments of richer households recorded significantly higher than the poorer one (*Table-7*), but the change of falling below the poverty line was higher in relatively poorer households compared to the households above the poverty line that had no health payments (*Table-8*). Age of the household head is turned significant for falling the household below the poverty line. The change of falling below the poverty line is declining significantly with low level of education (less than secondary education) as compare to the households whose heads' education status is above secondary.

The probability of falling below poverty line will decline if state government spends more on medicine (*Table-8*). The impact of health insurance in reducing the people falling below poverty line due to health payment is not convincing, as the probability of falling below the poverty line is declining with low/no enrolment ratio. Interestingly, with the increase in the extent of HPI, the chance of households falling below the poverty line due to health payment, after adjusting for other factors in the model, is declined compared to the households above the poverty line that had no health payments.

Table-8: Multinomial Logit Estimates for Households Above and Below Poverty Line

	Households Remain APL#		*Households Slipped BPL#*	
	Coef.	*Std. Err.*	*Coef.*	*Std. Err.*
Log of HH Size	1.056***	0.041	1.119***	0.082
Rural (Urban)	0.344***	0.041	-1.821***	0.09
Log of MPCE	0.641***	0.046	-10.33***	0.288
Log of age of head	0.138***	0.021	0.165***	0.034
Edu below secondary (≥secondary)	-0.305***	0.044	-0.291***	0.088
Social Status: (Other)				
SC/ST	-0.096*	0.053	0.023	0.09
OBC	-0.079*	0.046	-0.061	0.083
Drugs spending (low)	-0.417***	0.047	-0.317***	0.077
Insurance coverage ratio: (high)				
No enrolment	-0.413***	0.096	-0.499***	0.154
Low enrolment	-0.162**	0.072	-0.064	0.107
Extent of HPI (rank value)	-0.056	0.045	-0.203**	0.073
Constant	-7.661***	0.583	11.184***	3.354

Note: # The dependent variable has three categories. 1= households above the poverty line remain above the poverty despite health payments; 2= households above the poverty line that fell below the poverty line due to health payments; 3= households above the poverty line that had no health payments (reference category). Number of obs. are 91,414; Wald chi2(22)=2636.84; Prob > chi2=0.00; Pseudo R2=0.3754. ***, ** & * are 1, 5 and 10 per cent significant level.

Source: Same as *Table-1*.

4. Conclusion and Discussion

The purpose of the present study was to examine the impact of health policy changes on prevalence, intensity and incidence of catastrophic health payment.

It is noticed that during the reference period of survey, around 80 per cent of all households and 70 per cent of below poverty line households have made out-of-pocket payments for health care. High reporting for healthcare however a positive indication - as it reflects the health seeking behaviour of the people, but turning high OOP payment for health care at the same time is directly responsible for increase in overall poverty headcount ratio (by 3.5%) in the country. The rural households are bearing the high (5.4%) brunt of such increment compared to urban (2.5%) counterparts. The health payments have worsened the economic condition of lowest above poverty line quintile households the most. Of the total 50.6 million (42.7 million in rural and 7.9 million in urban) above poverty line people that were pushed into poverty due to OOP health payments, around 40 per cent comes from two poorer states namely Uttar Pradesh (27%) and Bihar (12%) and 68 per cent from six low and middle income states like Uttar Pradesh, Bihar, Maharashtra, West Bengal, Andhra Pradesh and Madhya Pradesh. The poverty deepening effects of OOP payments for healthcare are also noticed to be high on

BPL, first quintile group of APL, rural and low income states compare to their other counterparts. Further, high incidence of catastrophic level does not only deepen the poverty effect but also impoverishing the living standard of households which directly affect the households well-being, as they pay for healthcare at the expenses of meeting their other basic consumption needs. Such situation further makes national poverty reduction objective difficult to achieve.

The HPI turned ineffective in reducing the prevalence, intensity and incidence effects of OOP health payments from below poverty line people and rural residents of the country, however found effective in reducing such impoverishing effect from lowest APL quintile groups. The role of HPI, after adjusting for other factors, in influencing the per capita health payments, health payments as a share of total and non-food expenditure, saving people falling below poverty line due to health payments is found to be weak. Similar to the earlier studies observations that have reported that the health policy changes which were initiated during early 1990s to 2004-05, rather than reducing, have significantly increased both catastrophic expenditure and impoverishment in India (Selvaraj and Karan, 2009; Ghosh, 2010). The health policy interventions, initiated during 2004-05 also translate the same results. That is, even after a decade of health policy initiations both proportion and number of people falling below the poverty line increased due to health payment. This pose a serious question: what went wrong with our health policy reforms?

There can be several reasons of ineffectiveness of health policy interventions ranging from financing, institutional mechanism (delivery system and governance) and provisioning. Amongst the other, provisioning of adequate physical health services (including primary, secondary and tertiary) and human resources for health are more important. India is suffering from inadequate health facilities including shortage of medicine/drugs, equipment, basic amenities, health staffs in hospital and primary health centre (Reddy *et al*, 2011b). The National Commission of Macroeconomic and Health (2005) of India proposed the required level of resources to meet the adequate level of basic health services in the country, by every state government by the end of 2009-10. An assessment shows that the state government spending remained less than the requirements in most of the Indian states (Hooda, 2013a). To provide equitable, accessible and affordable health services, the High Level Expert Group (2011) further recommended that the central and state governments spending on health together should increase from its current 1.2 per cent level to at least 2.5 per cent of GDP by the end of 12th Five Year Plan. The past experience regarding fulfilment of health policies commitments, even since the time of independence have remained far from satisfactory and never been achieved (Hooda, 2013a). Given these facts, it is not surprising that the health policy interventions failed in achieving the desired objectives.

The OOP expenditure on purchasing medicine is very high (around 70%), this can also be another major responsible factor for pushing people below poverty line. Our estimates show that to reduce such burden, the increase in government spending on drugs/medicine so as to provide free/ low price medicine to patients, can be one of the significant policy objective. As high government spending on medicine not only helps in

reducing the per capita health payments, health payments as a share of total and non-food expenditure and high catastrophic burden but also protect the people falling below the poverty line. A change/high spending of government on drugs/medicine will minimise the impoverishing effect of health payment.

For providing and distribute the free/low price medicine, country needs an efficient procurement, storage and distribution (PSD) system. The Tamil Nadu Medical Services Corporation have emerged as one of the efficient PSD systems model in the country which currently supply about 268 drugs/medicines to Government hospitals/dispensaries and Primary Health Centres throughout Tamil Nadu. Tamil Nadu whose drugs PSD system is known not only an efficient procurement and effective delivery of drugs, but also has been constantly spending a relatively large share of its public spending (around 12.2%) on drugs. While government spending on procuring drugs, supplies and consumables of several states is around 5 per cent of overall public health spending (Selvaraj *et al*, 2014). As a result, the OOP spending on drugs in the state of Tamil Nadu is recorded one of the lowest (56% in 2011-12), which is considerably lower than the national average during the same period. Thus increase in government spending directed towards drugs purchase became important. However, it is important to note that alone high government allocation on drugs procurement *per se* may not suffice if overall governance, institutional delivery system, supply change management system is week or inefficient. For instance, an efficient procurement supply chain management system is predicated upon the principle of transparency in the process of selection of drugs, qualification of drugs, procurement process (like tendering process, bid opening process, award conditions, payment mechanism) and quality control procedures. Inefficiency in any one of these areas can leads to sub-optimal performance of the system.

The impact of another component of health policy changes like publically financed health insurance (PFHI) schemes however are convincing to the some extent but not strong. The impacts of PFHI in reducing catastrophic and protecting people falling below poverty line due to health payment turn insignificant but with expected sign. The per capita health payments as well as health payments as a share of total and non-food expenditure of the households on the other hand are found to be significantly low in districts where enrolment under PFHI schemes is high as against the districts where families are not enrolled under PFHI. Thus what is important for checking the impoverishing impact of health payment is to increase the enrolment of eligible families under PFHI umbrella. A study on the implementation status of RSBY reveals that though the scheme has been rolled-out in all districts and states of India, but the enrolment ratio is found to be lower than the national average (49.6%) in more than the half (around 355) of the districts of India out of 656 districts under study (Hooda, 2013b).

Recently, RSBY is extended to other disadvantage groups and people working in informal sector. This however can be a welcome step for reducing OOP health payments, but appropriate implementation, enrolment and oversight/regulation even more important. As per the some studies observations, insurance leads to moral hazard problems emerge either due to over-prescription or over-utilization of the facilities. In

Indian case, it has been noticed that the insured person to incur less on preventive care and leading to costly tertiary care treatments and some time in excess of what is medically considered an optimal treatment. This may emerge because providers indulging in providing unnecessary and expensive care. In other cases it may lead to increase in the level of inappropriate care, unnecessary treatment, excessive laboratory tests or overcharging and results in increasing the overall health care cost (Reddy *et al*, 2011a; Hooda, 2013b). This may be one of the reasons, discussed above, that PFHI schemes are turned ineffective in reducing the high catastrophic level and saving the people falling below poverty line due to health payment. As regards to the promotion of other third party private health insurance (as increase in FDI cap in health insurance from 26 per cent to 49 per cent is discussed recently in Indian parliament) is concerned, it has been noticed that third part insurance schemes do not seems to be having any effect in checking impoverishment effect of health payments (Berman *et al*, 2010).

Furthermore, in India, outpatient spending as a proportion of total OOP expenditure for healthcare is stood around 67 per cent in 2011-12. The spending for outpatient care leaves greater impoverishing effect than inpatient spending (Wagstaff and van Doorslaer, 2003; van Doorslaer *et al*, 2007; Berman *et al*, 2010). Therefore, any financial risk protection strategy provided through health insurance (like RSBY) would greatly address the impoverishing effect, if outpatient spending covers under the scheme. The benefits coverage under RSBY is limited to inpatient care payments. Possibly, this also limits the PFHI (RSBY) to be effective in protecting people falling below poverty line due to health payment. Thus, comprehensive coverage of medical (inpatient and outpatient) expenses under PFHI schemes became important. However, given the high existence of moral hazard problems and asymmetric information between providers-insurers-patients, the proper government oversight/regulation of both private and public financed health insurance schemes is required otherwise it would lead to adverse financial consequences for both governments as well as for households.

In India, there is high discrepancy in the identification of the poor. The households that are having BPL cards may not be poor and many of the poor may not receive BPL cards, thus excluding them from programme (RSBY) benefits. It is reported that 61 per cent of the households identified as poor by the Planning Commission standard did not possess a BPL card (Himanshu, 2008). Form 2011-12 NSS data, we noticed that in India around 37 per cent households possessing below poverty line (including ANTYODYA) ration card. Of which, about 35 per cent households are from first quintile group followed by 27 per cent second, 20 per cent third, 12 per cent forth and 6 per cent fifth income quintiles groups households possesses BPL card, indicating illegal possessing of BPL cards by some of the richer households. Therefore, in order to have the likely impact of such government sponsored schemes on targeted (poor) population such discrepancy needs to be resolved.

Overall, the findings suggest that to protect families falling below poverty line India needs to adopt a comprehensive approach for achieving universal health coverage in the country. The traditional tax financing system is one of the best option under which the

people will get affordable, accessible and equitable health care access. The effectiveness of publically financed pro-poor health insurance schemes to a large extent is also depend on health services access, comprehensively spreading across regions and states, failing which the likely impact would be low.

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