Chapter 2

Incidence of Out-of-pocket Health Expenditure led Impoverishment among Rural Households: An Empirical Study in Himachal Pradesh

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Abstract: The healthcare system in India is characterised by high out-of-pocket (OOP) expenditure, which varies across states and different population groups. This study aims to examine the levels of impoverishment caused by OOP health payments and their determinants among rural households in Himachal Pradesh, India. The study uses cross-sectional data from a survey of 300 rural households from two districts of Himachal Pradesh. We study the level of catastrophic health expenditure (CHE) at two different thresholds i.e., 10 percent and 25 percent of households consumption expenditure. Using the state poverty line for rural areas, the study also estimates the levels of impoverishment due to high OOP payments. The study employs multiple logistic regression models to identify the factors associated with the incidence of impoverishment. The incidence of CHE due to OOP health payments at 10 per cent and 25 per cent level of total consumption expenditure is 69.33 per cent and 38.67 per cent, respectively, in Sirmaur district; and 70 per cent and 34.67 per cent, respectively, for Solan district. Similarly, the level of impoverishment is 25.33 per cent and 16 per cent in Sirmaur and Solan, respectively. Factors such as seeking outpatient care, presence of chronic disease patients and travelling for healthcare are main covariates of impoverishment. The study concludes that OOP healthcare

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payments pose a significant financial risk in Himachal Pradesh. This risk can be minimized by covering the outpatients and needs of chronic disease patients under social health insurance. In addition, the travelling-related financial risks for patients can be mitigated by increasing the participation of private healthcare providers in social health insurance schemes and government investment in strengthening the access to healthcare facilities.

Keywords: Health, expenditure, rural, households

2.1 Introduction

Keeping up with the United Nations Sustainable Development Goals (SDGs), the government of India aims to attain Universal Health Coverage. However, high out-of-pocket (OOP) expenditure poses a challenge to financial risk protection. OOP expenditure in India accounts for 48.8 per cent of total health expenditure (MOHFW, 2021). High OOP spending places a heavy financial strain on households and prevents them from having enough money for necessities like food, clothing, and education (Van Minh et al, 2013). This OOP expenditure becomes catastrophic above a certain threshold and can even impoverish a household. A household is said to be impoverished when the healthcare expenditure causes it to drop below the poverty line (Wagstaff & Doorslaer, 2003).

Health is a state subject in the Indian federal structure, where the state government plays a more significant role. Healthcare services in India are provided by public, private, for-profit, and not-for-profit providers. Most private providers are generally located in urban areas catering to secondary and tertiary needs. In comparison, the public healthcare infrastructure follows a three-tier structure based on population norms (Chokshi et al.,2016). Apart from that, tertiary care is being provided by medical colleges and super-speciality hospitals (Selvaraj et al., 2018).

Himachal Pradesh, a north-western Himalayan state of India, is a unique case with a population of 6.86 million, of which 89.97 per cent living in rural areas. At 10.2 per cent, the state has higher levels of elderly population compared to the national average (UNFPA, 2014). Despite being a Himalayan state and facing complex geographic challenges, it has improved its rural infrastructure and human development outcomes (Das et al., 2015). In terms of per-capita

government expenditure on health, the state ranks first among Indian states. Amongst all states, the utilisation of public facilities for inpatient care is highest in the state(NSS, 2015).

Conversely, the overall expenses for inpatient and outpatient care in rural areas of the state are higher than their urban counterparts (MOSPI, 2019). A 2018 study has shown the CHE level to be 21.2 per cent for the state, calculated at 10 per cent (Pandey et al., 2018). Another 2018 study has shown that the rate of increase in poverty due to OOP spending is one of the highest for the state (Sangar et al., 2019). For Himachal Pradesh, we observe that most of the available estimates of levels of OOP health expenditure and related disparities in CHE and impoverishment are based on national-level secondary data analysis. However, these mean-centric measures can offer misleading pictures in the face of various inequalities.

In recent years, various initiatives have been taken by the state and the central government to protect households against high OOP expenditures. Some important initiatives include social health insurance schemes such as Pradhan Mantri Jan Arogya Yojana (PMJAY) by the central government and the Mukhya-Mantri Himachal Healthcare Scheme (HIMCARE) by the state government. However, since the launch of such schemes there has been very little or no evidence on the levels of CHE, impoverishment and protection against such payments among rural households.

The present primary study aims to examine the disparities in the prevalence of OOP health expenditure generated CHE and impoverishment among the households in rural areas of Himachal Pradesh. The study provides micro level evidence of health expenditures and the level of protection against such expenditures. The study further provides, contextual determinants at the micro level. These evidence, are important for policy makers to offer improved protection against healthcare expenses. The study also adds to the existing literature of protective and risk factors against high OOP expenditure.

2.2 Literature Review

Several studies on OOP payments and their effects have recently been published in India (Nanda & Sharma, 2023); (Sangar et al., 2019). A recent study in India has shown an increase in CHE

by 2.4 times from 1995 to 2014 (Pandey et al., 2018). Another 2019 study has shown that as high as 8 per cent of India's population face impoverishment due to high OOP health payments (Sangar et al., 2019a). In addition, studies have shown households from certain vulnerable sections of society to be at greater risk of impoverishment than others (Berman et al., 2010; Sangar et al., 2019a). Also, the levels of CHE and impoverishment have shown a considerable differential among different states (Ghosh,2011; Pandey et al., 2018). Further, studies show the inequality in healthcare access and its cost being highest at the regional, district and village levels (Mohanty et al., 2018). Many studies find households in rural areas being more vulnerable to catastrophe and impoverishment than their urban counterparts (Berman et al., 2010; Ladusingh & Pandey, 2013).

In addition, some studies have further studied the determinants of catastrophic and impoverishing health expenditure. The studies show that the impoverishment is higher in homes with older members, patients with chronic conditions, and members of lower socioeconomic groups (Ahmed et al., 2022). Studies have also revealed a strong link between the traits of the head of the household and impoverishment (Van Minh et al., 2013). Studies showed that households with less educated and female heads had a higher risk of impoverishment (Choi et al., 2016). Regarding the household's residence, studies have shown that rural homes are more susceptible to developing CHE (Van Minh et al., 2013). While some studies have demonstrated a considerable impact of health insurance on CHE (Buigut et al., 2015), some studies in India have shown contradictory results (Prinja et al., 2017).

2.3 Data & Methodology

2.3.1 Data

The current study relies on primary data collected from rural areas of a Himalayan state in India. The study uses data from 300 households selected from two districts of Himachal Pradesh. The two districts are chosen based on their ranking in the healthcare infrastructure index. The healthcare infrastructure index is computed using the availability of doctors, nurses, other med-

ical staff, beds, and medical institutions per thousand population. However, the districts of Kinnaur, Lahaul and Spiti are excluded due to their complex geographic features. Among the remaining districts, Solan, ranking first, and Sirmaur, ranking last, are selected. Further, different blocks in these two districts are also ranked based on the availability of health infrastructural facilities. Finally, the first ranking block from the Solan and the block ranking last from Sirmaur are selected for the survey.

A total of 150 households have been surveyed from each block. The following criterion has been used for locating and identifying the sample households. The households are selected based on their self-reported use of outpatient care during the last month and inpatient care in the previous year. The households are identified through visits to different panchayat headquarters and interaction with different panchayat officials, village-level health workers and other key informants. Starting from the largest panchayat in the block, we kept searching until the required number of 150 households are interviewed. The households with maternity-related expenses are not considered for the study. The data on socioeconomic and demographic characteristics, consumption expenditure; insurance coverage; health and healthcare-related expenditures are collected from the households using a pretested questionnaire. The study uses consumption expenditure as a proxy for income; the recall period is 30 days for the same.

2.3.2 Method

Catastrophic health expenditure

The study uses the methodology suggested by Wagstaff & Doorslaer,2003). Any OOP expenditure turns catastrophic when it exceeds a certain threshold (Z) of total consumption expenditure (TCE). Although there are no universally accepted thresholds, we study the financial burden of OOP payments at two popular thresholds, i.e., 10 per cent and 25 per cent of TCE. The catastrophic payment headcount (HC) measures the percentage of sample households incurring catastrophic health expenditure (CHE).

The headcount index (HC) is defined as:

$$HC = \frac{1}{N}\sum_{i=1}^{N} K$$

where K represents an indicator function, defined as:

$$K = \begin{cases} 1 & \text{if } \frac{T_i}{X_i} > Z \\ 0 & \text{otherwise} \end{cases}$$

Here, N is the sample size, X_i represents the consumption expenditure of person i, T_i is the out-of-pocket (OOP) expenditure of person i, and Z is the threshold.

Poverty Line and Impoverishment

The impoverishment effect due to OOP health expenditure is calculated in terms of poverty headcount as the difference between pre-payment and post-payment impoverishment. The poverty headcount (PHC) measures the proportion of the population falling below the poverty line.

$$PHC = HC_{\text{Post}} - HC_{\text{Pre}}$$

where PHC is the poverty headcount, HC_{Post} is the post-poverty headcount, and HC_{Pre} is the pre-poverty headcount.

Let Z_{Pre} be the pre-payment poverty line. Then,

$$HC_{\text{Pre}} = \frac{1}{N}\sum_{i=1}^{N} P_{\text{Pre}}, \quad \text{where } P_{\text{Pre}} = 1, \text{ if } x_i < Z_{\text{Pre}}$$

where x_i is the individual i's pre-payment income, and P_{Pre} is the pre-payment poverty headcount. Similarly,

$$HC_{\text{Post}} = \frac{1}{N}\sum_{i=1}^{N} P_{\text{Pre}}, \quad \text{where } P_{\text{Pre}} = 1, \text{ if } (x_i - \text{OOP}) < Z_{\text{Pre}}$$

For the measurement of poverty, the study uses the state poverty line (SPL) as per Tendulkar committee estimates. The poverty line is established in terms of per capita consumption or spending on a basket of essential items during a certain period. The methodology gives different poverty level estimates for the rural and urban populations. Here, the study uses the rural poverty line of Indian national rupees (INR) 913 (RBI, 2020). The impoverishment effect of OOP healthcare payments is measured as the change in poverty headcount calculated using household's total consumption expenditure with and without OOP payments (O'Donnell et al., 2007). Therefore, a household that is not already poor becomes one if OOP health expenses cause it to fall below the poverty threshold.

Logistic regression analysis

The study uses multiple logistic regression models to study the effect of factors associated with impoverishment. Based on the literature and our own experiences, we first identified various covariates of catastrophic health expenditure. The covariates we used are socioeconomic characteristics of the head (gender, age, education, earning); characteristics of the household (family size, elders, minors, social and economic category); characteristics of the patient (gender, type, insurance, disease); location and type of the facility etc. The model is specified as follows:

$$\text{logit}(Y_i) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots + \varepsilon_i$$

where $i = 1, 2, 3, \ldots, n$,

- Y_i represents the dependent variable with values of either 0 (household not facing impoverishment) or 1 (household facing impoverishment), - β_0 is a constant, - $X_{1i}, X_{2i}, \ldots$ denote the predictor variables, - $\beta_1, \beta_2, \ldots$ represent the coefficients of respective independent variables, and - ε_i represents the error term.

Odds ratios are calculated to study the relationship between dependent and independent variables. The following steps have been followed to choose the most significantly associated explanatory variables. First, we summarise the characteristics of all households and their district-wise distribution. We identify 15 potential covariates based on the available literature

and our own understanding. Secondly, we have checked for association between each identified covariate and the outcome variable and advanced those variables that are statistically significant for $p<0.10$ To determine the statistical significance a chi-square test, and t-test are used. Thirdly, we have tested for collinearity among variables and variables correlated with $r>0.6$ are identified, and the collinear covariates are removed. Among them, only ones more strongly associated with the outcome variable are retained. Finally, logistic regression is applied to study the determinants of impoverishment.

2.4 Data analysis and Interpretation

2.4.1 Characteristics of households

Table 2.1 gives information about selected household characteristics from both districts of the state. For Sirmaur, in terms of characteristics of the head, it is observed that a male member heads most households (80.67 per cent). The head of a household is mostly (78 per cent) an earning member and is rarely elderly (32 per cent). On average, the head of a household has 6.36 years of formal education. The family characteristics of households show that only 36.67 per cent of families have one or more elderly members and only 22.67 per cent of families have members below five years of age. While only 12 per cent of families live below the poverty line, the distribution of consumption expenditure looks skewed as 71.33 per cent of households belong to the bottom half of consumption quartiles. The table shows 36 per cent of families belonging to either one or the other reserve categories. Interestingly, 56 per cent of sample households have some form of health insurance. The average family size in Sirmaur looks on the larger side, as 47.79 per cent families have over six members. The table further show that 63.33 per cent households in Sirmaur district received outpatient treatment and 35.33 per cent are suffering from chronic diseases. While 75.33 per cent of households use public healthcare facilities, 33.67 per cent of patients visited other districts to seek treatment.

In comparison, slightly lesser, that is 75.33 per cent households are headed by a male member in Solan. In 44.67 per cent of sample households, the head of the household is an elderly

person and 80.67 per cent of heads are earning members in Solan. The household heads have a mean of 7.67 years formal education. In terms of the family characteristics of the households, it is observed that 50.67 per cent of households in Solan have at least one elderly member, and only 16 % of families have at least one member below five years of age. The consumption expenditure in Solan looks on the higher side, as 70.1 per cent of families lie on the upper half of consumption expenditure quartiles and 20 per cent families reported living below poverty line.

The table 2.1 shows 24.67 per cent families belong to some reserved category. In Solan, 59.33 per cent families report being insured under some type of health insurance. Family sizes seems smaller as 50 per cent families have up to 4 members only. Opposite to Sirmaur, in Solan 72 per cent families report using inpatient care and 42.67 per cent families have at least one member suffering from chronic disease. While 65.33 per cent families use public healthcare services, 41.33 per cent families report visiting other states for treatment.

Table 2.1: Overall and district wise breakdown of selected characteristics of sample households (in percentage)

Characteristics	Variable	Definition	Category	Total (%)	Sirmaur(%)	Solan (%)
Head	Head is elderly	Yes	38.33	32	44.67	
	Head is earning	Yes	79.33	78	80.67	
	Gender of Head	Male	79	80.67	77.33	
	Head's education years	Years	7.01	6.36	7.67	
Family	Family members above 58	Yes	43.67	36.67	50.67	
	Family members below 5	Yes	19.33	22.67	16	
	Economic category	BPL	16	12	20	
	Consumption expenditure quartiles	Poor	26	31.33	20.67	
		Not-so-poor	24.67	40	9.33	
		Not-so-rich	24.33	18	30.67	
		Rich	25	10.67	39.33	
	Insurance	Yes	57.67	56	59.33	
	Family size	Upto 4	35.81	21.24	50	
		5 to 6	32.75	30.97	34.48	
		Above 6	31.44	47.79	15.52	
	Social category	Unreserved	69.67	64	75.33	
Patient	Patient Type	Outpatient	45.67	63.33	28	
	Chronic ailment	Yes	39	35.33	42.67	
	Healthcare facility	Public	70.33	75.33	65.33	
	Location	Same district	48.33	52	44.67	
		Other district	39	36.67	41.33	
		Other state	12.67	11.33	14	

2.4.2 Catastrophic Health Expenditure and Impoverishment Effects

Table 2.2 presents the presence CHE and level of impoverishment in both districts, and its distribution among households in different consumption quartiles. In Sirmaur, the households in the rich consumption quartile face the least percentage of CHE. In contrast, in Solan, the households from the not-so-poor consumption quartile constitute the least percentage of households with CHE.

The table 2.2 also shows the overall level of impoverishment among households in the two districts. In Sirmaur district, 25.33 per cent of sample households experience due to OOP health expenditures. Among those facing impoverishment, around 79 per cent belong to the poor and not-so-poor consumption quartiles. No households from rich consumption quartile face impoverishment in Sirmaur. In Solan district, 16 per cent of the sample population experience impoverishment. Among households impoverished by OOP expenditure, 50 per cent are from the poor consumption quartile, while others are almost equally distributed.

Table 2.2 Consumption quartile-wise distribution of households facing catastrophic health expenditure (CHE) and impoverishment across the two districts.

Table 2.2: Catastrophic Health Expenditure and Impoverishment by Quantile

	Catastrophic at 10%			Catastrophic at 25%			Impoverishment		
	Sirmaur	Solan	Total	Sirmaur	Solan	Total	Sirmaur	Solan	Total
Overall	70	69.33	69.67	38.67	34.67	36.67	25.33	16	20.67
Poorest	30.48	25	27.75	25.86	26.92	26.36	34.21	50	40.32
Second	40	7.69	23.92	39.66	7.69	24.55	44.74	16.67	33.87
Third	19.05	30.77	24.88	25.86	26.92	26.36	21.05	12.5	17.74
Richest	10.48	36.54	23.44	8.62	38.46	22.73	0	20.83	8.06

2.4.3 Identification of determinants of impoverishment using bivariate and correlation analysis

To identify the determinants of impoverishment, a bivariate analysis was undertaken. From the bivariate analysis in, we identify various variables significantly associated with the outcome variable. The characteristics significantly associated in either one or both the districts are: Head being elderly; head is earning; gender of the head; education years of the head; family members above 58; the consumption expenditure quartile; level of health insurance; family size; patient type; members suffering from chronic disease; type of healthcare facility; location of facility. The characteristics like social category, economic category and having members below five years of age were not significantly associated at the chosen p-value.

Following the bivariate analysis, the identified variables are then tested for collinearity in each model, using Pearson's R test, at r>0.6. From the collinearity matrix, the variables highly correlated with each other were identified and one of them, usually the least associated one, is dropped. Two significant variables (members above 58, gender of head) are then dropped from the list of covariates. This procedure gives us the list of potential non-collinear variables for multivariate analysis.

2.4.4 Determinants of impoverishment

Table 2.3 shows the determinants of impoverishment using the state poverty line for rural areas. For households in Sirmaur district, the results of the model show that if the head of the household had more than four years of education, it is less likely to face impoverishment (OR=0.85). In households with one or more members below five years of age were more likely (OR=3.20) to face impoverishment than those with no members below five years.

Further, households with members seeking outpatient care are more likely (OR=13.20) to face impoverishment. Similarly, households with at least one member suffering from a chronic disease are more likely (OR=4.57) to face impoverishment. Also, for households, with at least one member travelling to other districts (OR=5.73) and other states (OR=21.57) for treatment were more likely to impoverish, compared to those seeking treatment in their home district.

For sample households in Solan district, the results of the model showed that, for households having at least one member below five years of age are more likely (OR=4.48) to face impoverishment. Further, households in the not-so-rich and rich consumption quartiles face (OR=0.07 and 0.12 respectively) were less likely to impoverish when compared to those from the poor consumption quartile. Also, households with at least one member receiving outpatient care were more likely (OR=5.77) to impoverish than those seeking inpatient care. Similarly, for households with at least one member treated at a public facility were more likely (OR=4.56) to impoverish than those treated at a private facility.

Table 2.3: Characteristics associated with impoverishment related to OOP spending

	Sirmaur			Solan		
Characteristics	Coeff	OR	CI	Coeff	OR	CI
Head is elderly = Yes	0.43	1.53	0.28 - 8.32	0.45	1.57	0.37 - 6.64
Head is earning money = Yes	0.67	1.95	0.54 - 7.05	0.51	1.67	0.53 - 5.23
Education years of the head	-0.16**	0.85**	0.73 - 0.99	-0.02	0.98	0.86 - 1.12
Member below 5 = Yes	1.16*	3.20*	0.88 - 11.62	1.50**	4.48**	1.10 - 18.33
Consumption exp. = Not-so-poor	-0.32	0.73	0.23 - 2.28	-0.34	0.71	0.12 - 4.16
Consumption exp. = Not-so-rich	-1.17	0.31	0.05 - 1.80	-2.72***	0.07***	0.01 - 0.34
Consumption exp. = Rich				-2.16***	0.12***	0.03 - 0.45
health insurance = Yes	0.56	1.75	0.58 - 5.29	0.34	1.4	0.45 - 4.35
Patient type = Outpatient	2.58***	13.20***	3.48 - 50.01	1.75***	5.77***	1.74 - 19.13
Chronic disease = Yes	1.52***	4.57***	1.64 - 12.77	0.46	1.59	0.55 - 4.61
Healthcare facility = Public	0.27	1.31	0.42 - 4.09	1.52*	4.56*	0.93 - 22.27
Hospital = Other district	1.75***	5.73***	1.56 - 20.96	0.12	1.12	0.34 - 3.65
Hospital = Other state	3.07***	21.57***	3.35 - 138.98	0.37	1.45	0.21 - 9.80
Constant	-4.68***	0.01***	0.00 - 0.16	-3.42***	0.03***	0.00 - 0.44
Observations	134			150		

Note: Data from field survey conducted by author. *** p<0.01, ** p<0.05, * p<0.1

2.5 Discussion and Suggestions

The present study provides evidence on the magnitude of the OOP payments; their catastrophic and impoverishing effect on; and their determinants in rural households of Himachal Pradesh, India. The study also yields insight into the level of financial protection the healthcare system offers and its barriers.

Using the state poverty line for rural areas for the state, we measure the OOP-related impoverishment risk in Himachal Pradesh, India. We find 25 per cent of the sample households in Sirmaur district (lowest available public infrastructure) and 16 per cent sample in Solan district (highest available public infrastructure) face impoverishment risk due to OOP health expenditure. Different studies have also measured poverty using international poverty lines (Sharma et al., 2017). We find households with members using outpatient care, and those having larger family sizes face higher risk of impoverishment in both study areas. A similar finding is also reported by (Kumar e al., 2015). Whereas for households in rich consumption quartile the risk of impoverishment is lower. This finding is similar to (Li et al., 2012).

Those households in Sirmaur who travel to other districts and states for treatment and suffer from chronic diseases, face higher risk of impoverishment, whereas households with heads having at least four years of formal education face lesser risk of impoverishment. These results are also corroborated by other studies like (Kumar et al. 2015). Similarly for households in Solan district, who seek care in a public hospital and has family size more than five, face higher risk of impoverishment.

The present study has certain data-related limitations. The study uses cross-sectional data and can only give a point estimate of CHE and impoverishment; and cannot estimate what percentage of households face persistent impoverishment. We also observe exaggeration of healthcare expenditure by the respondents. Also, the timing of the study, which takes place soon after the covid-19 disruptions can affect the results of the study.

2.6 Conclusion

The present study examines the levels of impoverishment from out-of-pocket health payments and their determinants in Himachal Pradesh. The study draws attention towards addressing some significant healthcare-related covariates for improving financial protection. The study finds households with patients seeking outpatient care at greater risk of experiencing OOP related impoverishment. In addition, the households with patients undergoing treatment for chronic disease are also at higher risk. Travelling to a health facility is an important covariate of the impoverishment risk (especially in a low infrastructure location). The needs of outpatients and chronic disease patients must be addressed either via social health insurance or other systemic means. While taking policy decisions the government should pay more attention to addressing healthcare needs at local levels. This requires a multifaceted approach, which involves the rationalisation and expansion of public healthcare infrastructure. The increasing role of social health insurance and the participation of private players are steps in the right direction. The involvement of private players can fill the gaps and protect households from long and expensive travel for treatment.

References

Ahmed, S., Ahmed, M. W., Hasan, M. Z., Mehdi, G. G., Islam, Z., Rehnberg, C., Niessen, L. W., & Khan, J. A. M. (2022). Assessing the incidence of catastrophic health expenditure and impoverishment from out-of-pocket payments and their determinants in Bangladesh: evidence from the nationwide Household Income and Expenditure Survey 2016. International Health, 14(1), 84–96. https://doi.org/10.1093/inthealth/ihab015

Berman, P., Ahuja, R., & Bhandari, L. (2010). The impoverishing effect of healthcare payments in India: New methodology and findings. Economic & Political Weekly, 45(16), 65–71. https://www.jstor.org/stable/25664359

Buigut, S., Ettarh, R., & Amendah, D. D. (2015). Catastrophic health expenditure and its determinants in Kenya slum communities. International Journal for Equity in Health, 14(46),

1–12. https://doi.org/10.1186/s12939-015-0168-9

Choi, J. W., Kim, T. H., Jang, S. I., Jang, S. Y., Kim, W. R., & Park, E. C. (2016). Catastrophic health expenditure according to employment status in South Korea: A population-based panel study. BMJ Open, 6(7), 1–7. https://doi.org/10.1136/bmjopen-2016-011747

Chokshi, M., Patil, B., Khanna, R., Neogi, S. B., Sharma, J., Paul, V. K., & Zodpey, S. (2016). Health systems in India. Journal of Perinatology, 36(S3), S9–S12.

Das, M. B., Kappor-Mehta, S., Tas, E. O., & Zumbyte, I. (2015). Scaling the heights: social inclusion and sustainable development in Himachal Pradesh. World Bank Group. http://hdl.handle.net/10986/21316

Garg, C. C., & Karan, A. K. (2009). Reducing out-of-pocket expenditures to reduce poverty: A disaggregated analysis at rural-urban and state level in India. Health Policy and Planning, 24(2), 116–128. https://doi.org/10.1093/heapol/czn046

Ghosh, S. (2011). Catastrophic payments and impoverishment due to out-of-pocket health spending. Economic & Political Weekly, 46(47), 63–70.

Hooda, S. K. (2017). Out-of-pocket Payments for Healthcare in India: Who Have Affected the Most and Why? Journal of Health Management, 19(1), 1–15.

Kumar, K., Singh, A., Kumar, S., Ram, F., Singh, A., Ram, U., Negin, J., & Kowal, P. R. (2015a). Socio-Economic Differentials in Impoverishment Effects of Out-of-Pocket Health Expenditure in China and India: Evidence from WHO SAGE. PLOS ONE, 10(8), e0135051. https://doi.org/10.1371/journal.pone.0135051

Kumar, K., Singh, A., Kumar, S., Ram, F., Singh, A., Ram, U., Negin, J., & Kowal, P. R. (2015b). Socio-Economic Differentials in Impoverishment Effects of Out-of-Pocket Health Expenditure in China and India: Evidence from WHO SAGE. PLOS ONE, 10(8), e0135051. https://doi.org/10.1371/journal.pone.0135051

Ladusingh, L., & Pandey, A. (2013). Health expenditure and impoverishment in India. Journal of Health Management, 15(1), 57–74. https://doi.org/10.1177/0972063413486031

Li, X., Shen, J. J., Lu, J., Wang, Y., Sun, M., Li, C., Chang, F., & Hao, M. (2013). Household catastrophic medical expenses in eastern China: determinants and policy implications. BMC Health Services Research, 13(1), 506. https://doi.org/10.1186/1472-6963-13-506

Li, Y., Wu, Q., Xu, L., Legge, D., Hao, Y., Gao, L., & Wan, G. (2012). Factors affecting catastrophic health expenditure and impoverishment from medical expenses in China: policy implications of universal health insurance. Bull World Health Organ, June, 664–671. https://doi.org/10.2471/BLT.12.102178

Mohanty, S. K., Kim, R., Khan, P. K., & Subramanian, S. V. (2018). Geographic Variation in Household and Catastrophic Health Spending in India: Assessing the Relative Importance of Villages, Districts, and States, 2011-2012. The Milbank Quarterly, 96(1), 167–206. https://doi.org/10.1111/1468-0009.12315

MOHFW. (2021). National health accounts estimates for India 2017-18 (pp. 1–88). Ministry of Health & Family Welfare, Government of India.

Mondal, S., Lucas, H., Peters, D., & Kanjilal, B. (2014). Catastrophic out-of-pocket payment for healthcare and implications for household coping strategies: evidence from West Bengal, India. In Economics Bulletin (Vol. 34, Issue 2, pp. 1303–1316).

MOSPI. (2019). Key indicators of social consumption in India: Health (p. 127). Ministry of Statistics and Programme Implementation, Government of India. http://mail.mospi.gov.in/index.php/catalo

Nanda, M., & Sharma, R. (2023). A comprehensive examination of the economic impact of out-of-pocket health expenditures in India. Health Policy and Planning, 38(8), 926–938. https://doi.org/10.1093/heapol/czad050

NSS. (2015). Key indicators of social consumption in India: Health (pp. 1–99). Ministry of Statistics and Programme Implementation, Government of India

O'Donnell, O., van Doorslaer, E., Wagstaff, A., & Lindelow, M. (2007). Analyzing Health Equity Using Household Survey Data. The World Bank. https://doi.org/10.1596/978-0-8213-6933-3

Pal, R. (2012). Measuring incidence of catastrophic out-of-pocket health expenditure: With application to India. International Journal of Health Care Finance and Economics, 12(1), 63–85. https://doi.org/10.1007/s10754-012-9103-4

Pandey, A., Kumar, G. A., Dandona, R., & Dandona, L. (2018a). Variations in catastrophic health expenditure across the states of India: 2004 to 2014. PLOS ONE, 13(10), e0205510. https://doi.org/10.1371/journal.pone.0205510

Prinja, S., Chauhan, A. S., Karan, A., Kaur, G., & Kumar, R. (2017). Impact of Publicly Financed Health Insurance Schemes on Healthcare Utilization and Financial Risk Protection in India: A Systematic Review. PLOS ONE, 12(2), e0170996.

RBI. (2020). Handbook of statistics on Indian economy 2019-20. Reserve Bank of India.

Salari, P., Di Giorgio, L., Ilinca, S., & Chuma, J. (2019). The catastrophic and impoverishing effects of out-of-pocket healthcare payments in Kenya, 2018. BMJ Global Health, 4(6), 1–13. https://doi.org/10.1136/bmjgh-2019-001809

Sangar, S., Dutt, V., & Thakur, R. (2019a). Burden of out-of-pocket health expenditure and its impoverishment impact in India: evidence from National Sample Survey. Journal of Asian Public Policy, 15(1), 60–77. https://doi.org/10.1080/17516234.2019.1601065

Sangar, S., Dutt, V., & Thakur, R. (2019b). Economic burden, impoverishment, and coping mechanisms associated with out-of-pocket health expenditure in India: A disaggregated analysis at the state level. The International Journal of Health Planning and Management, 34(1). https://doi.org/10.1002/hpm.2649

Sangar, S., Dutt, V., & Thakur, R. (2019c). Economic burden, impoverishment, and coping mechanisms associated with out-of-pocket health expenditure in India: A disaggregated analysis at the state level. The International Journal of Health Planning and Management, 34(1), 4–7. https://doi.org/10.1002/hpm.2649

Selvaraj, S., Farooqui, H. H., & Karan, A. (2018). Quantifying the financial burden of households' out-of-pocket payments on medicines in India: a repeated cross-sectional analysis of National Sample Survey data, 1994–2014. BMJ Open, 8(5), e018020.

Shahrawat, R., & Rao, K. D. (2012). Insured yet vulnerable: out-of-pocket payments and India's poor. Health Policy and Planning, 27(3), 213–221. https://doi.org/10.1093/heapol/czr029

Sharma, D., Prinja, S., Aggarwal, A. K., Bahuguna, P., Sharma, A., & Rana, S. K. (2017). Out-of-pocket expenditure for hospitalization in Haryana State of India: Extent, determinants & financial risk protection. Indian J Med Res, 759–767. https://doi.org/10.4103/ijmr.IJMR

UNFPA. (2014). Status of Elderly in Himachal Pradesh: Pointers for Policy Response. 1–4.

Van Minh, H., Kim Phuong, N. T., Saksena, P., James, C. D., & Xu, K. (2013). Financial burden of household out-of pocket health expenditure in Viet Nam: Findings from the

National Living Standard Survey 2002-2010. Social Science and Medicine, 96, 258–263. https://doi.org/10.1016/j.socscimed.2012.11.028

Wagstaff, A., & Doorslaer, E. van. (2003). Catastrophe and impoverishment in paying for health care: with applications to Vietnam 1993-1998. Health Economics, 12(11), 921–933. https://doi.org/10.1002/hec.776

Xu, Y., Gao, J., Zhou, Z., Xue, Q., Yang, J., Luo, H., Li, Y., Lai, S., & Chen, G. (2015). Measurement and explanation of socioeconomic inequality in catastrophic health care expenditure: Evidence from the rural areas of Shaanxi Province. BMC Health Services Research, 15(1), 1–10. https://doi.org/10.1186/s12913-015-0892-2