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19

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(Established in 1956)

Capacity Building for Better Future

INTERNATIONAL INSTITUTE FOR POPULATION SCIENCES
Mumbai, India
Website: www.iipsindia.ac.in

November, 2020

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Design and Layout:
Publication Unit, IIPS

Suggested Citation: Mohanty S.K., Padhi B., Singh R.R. and Sahoo U. (2020). "Comparable Estimates of Household Health Spending and Out-of-Pocket Payment on Hospitalisation and Outpatient Care in India, 2004-18", Working Paper No. 19, International Institute for Population Sciences, Mumbai.

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Comparable Estimates of Household Health Spending and Out-of-Pocket Payment on Hospitalisation and Outpatient Care in India, 2004-18

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Capacity Building for Better Future

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ABSTRACT

Context

Comparable estimates of household health spending and out-of-pocket payment on health care in India is a daunting task for researchers. Often these estimates are provided for specific services such as maternal care, type of disease, hospitalisation and outpatient care, and an episode of hospitalisation. However, aggregated and comparable estimates of these variables are required at the household level and for consolidated health services.

Objective

The objective of this paper is to present comprehensive and comparable estimates of out of payment on medical spending in India over the past fifteen years.

Data and Methods

A total of 73,868 households in 2004, 65,932 households in 2014, and 113,823 households in 2018 surveyed in the 60th, 71st and 75th rounds of NSSO health surveys, respectively, were used in the analyses. Data from inpatient care (synonymous with hospitalisation) and outpatient care were aggregates at the household level for the derivation of household medical health expenditure and out-of-pocket payment (OOP). Estimates were derived at the 2018 prices using CPI state-specific rural (Agricultural labour-AL) and urban price (Industrial worker-IW) index. Estimates of OOP and medical expenditure were provided at the household level for hospitalisation (inpatient) and outpatient care at constant prices (2018). Descriptive statistics, concentration index, two-part regression and logistic regression were used in the analyses.

Results

Findings suggest that, among those who availed of medical services (either as inpatient or outpatient or both), the mean monthly medical expenditure of a household increased by 25% during 2004-14 and declined by 15% during 2014-18 (₹1950 in 2004, ₹2433 in 2014 and ₹ 2063 in 2018), at the 2018 prices. The mean OOP payment on health care for a month also showed an increase of 25% during 2004-14 and declined by 16% during 2014-18 (₹ 1910 in 2004, ₹ 2381 in 2014 and ₹ 1995 in 2018). The pattern was similar for OOP payment of a household on inpatient care (₹ 15,311 in 2004, ₹ 24,561 in 2014 and ₹ 19,574 in 2018) and outpatient care in the 15-day reference period (₹ 783 in 2004, ₹ 964 in 2014 and ₹ 883 in 2018). Over 90% of the medical expenditure was out-of-pocket payment. The OOP payment on inpatient and outpatient care was higher among households in the richest wealth quintile, urban households, households having insurance, male-headed households, self-employed and households with at least one elderly over the time-period 2004-18. The adjusted OOP payment for hospitalisation was ₹20,081 in 2004, ₹22,999 in 2014, and ₹21,610 in 2018. The medical health expenditure on outpatient care was higher than that of inpatient care and showed large inter-state variations.

Conclusion

Household health spending and OOP payment on health care increased during 2004-14 and declined during 2014-18 for both, inpatient and outpatient care. However, OOP as a share of expenditure remained high over time.

Keywords: Out-of-pocket payment, hospitalisation, health services, medical health expenditure, India.

Key Message

1. Household health spending on inpatient and outpatient care, at constant prices increased during 2004-14 and declined from 2014-18
2. The OOP payment as a share of household health spending remained high over time
3. The household health spending and OOP showed large inter-state variations
4. The household OOP payment was higher for richer consumption quintile suggesting the ability to pay for the services.

Comparable Estimates of Household Health Spending and Out-of-Pocket Payment on Hospitalisation and Outpatient Care in India, 2004-18

1. Introduction

Rising healthcare expenditure is of a global, national and regional trend. Globally, health spending accounted for 9.92% of GDP in 2014; 5.99% by public and 3.94% by private (Esteban Ortiz-Ospina and Max Roser, 2020). The variation and growth in per capita health spending are larger than that of per capita income among countries (WHO, 2019). The annual per capita spending on health care is projected to grow by over 4% in middle-income countries and 2% in low-income countries in the next two decades (Dieleman et al., 2017). Though the per capita health spending is associated with the level of economic development, the growth and pattern of health spending was distinct across countries (Lorenzoni, & Koechlin, 2017). Most of the healthcare expenditure in high-income countries was financed by the government, while households themselves were the major sources of finance for healthcare in low and middle-income countries. In the absence of universal health coverage household health care expenditure, often synonymous with out-of-pocket payment, was high and catastrophic to poor people and poor countries. The health financing transition stipulated an increase in public spending with development resulting in a shift from low per capita healthcare spending by means of high out-of-pocket (OOP) payment to a high per capita health spending and low OOP payment (Fan & Saved off 2014).The WHO Health Financing Strategy for the Asia Pacific Region 2010–2015, recommended that the OOP spending should not exceed 30-40% of the total expenditure.

The demographic and epidemiological transition in India altered the disease burden in the country, but the pattern of health spending remained unchanged. With fertility levels nearing replacement levels and increase in longevity across many states and socio-economic groups, non-communicable diseases have become the leading cause of death, hospitalisation and disability (ORGI and CGHR 2009; Engelgau et al. 2012; WHO 2018; Arokiasamy 2018). The changing disease burden largely affects working adults and the elderly, driving households into medical poverty (Kastor and Mohanty 2018). The per capita public health spending in India was lower than in many lower-middle-income countries (WHO, 2017). Despite increasing political commitment, public spending and increasing coverage of health insurance, the pattern of health spending in India remained unchanged over time. About 71% of health spending in 2004 and 69.1% in 2014 was met by households (MoHFW 2009; 2016).

The reasons for rising health spending are many; changing disease patterns, changing age-structure, use of improved technology, rising health insurance, insufficient public spending, etc. The high OOP and rising health spending are disproportionately high and catastrophic to the poor, elderly and marginalised population (Pandey et al. 2018). About 4-5% of the households accounting 33 million people were impoverished due to medical expenditure (Garg and Karan 2008). The high OOP spending and CHS was acknowledged in central and state government policy documents (MoHFW 2017). One of the effective ways of reducing OOP spending is by increasing public spending on health. The public health spending remained low; at 1.3% of the GDP in last decade and has increased to 1.4% of GDP in 2016-17 (WB, 2018) while the share of private health spending was 3.9% of the total GDP in India (NHP, 2018). The National Health Policy (NHP) has stipulated increasing the central government spending to 2.5% of GDP by 2025 (MoHFW 2017).

1.2 Need for the Study

Reliable estimates of health spending and out-of-pocket payment on health care are increasingly sought by national and state governments, developmental partners, and international organisation. Reduction in OOP payment is a measure of financial protection and one of the key monitoring indicators of SDGs. While estimates of OOP and medical expenditure are available from varying sources, they suffer from data and methodological limitations and temporal comparison. The OOP payment is not comparable due to variation in prices over time. This paper provides comparable estimates of medical expenditure and out-of-pocket payment on inpatient and outpatient services in India.

2. Data and Methods

2.1 Data

The National Sample Survey Organisation (NSSO) is the only data source that provides an opportunity to estimate OOP, CHS, and impoverishment periodically based on nationwide population-based health surveys. However, estimating these indicators from various rounds of National Sample Survey (NSS) is a daunting task for researchers. Conventionally, the NSS health surveys provided expenditure on health for each episode of hospitalisation, the spell of outpatient visits and expenditure on maternal care (antenatal, natal, post-natal and

immunisation) for members of households located at different levels. A comprehensive measure should include all these expenditures at the household level. In case of hospitalisation, the 60th round of survey (25) did not provide expenditure on maternal care as a part of hospitalisation but included it in the maternal care section while the 71st(25) and 75th(25) rounds provided expenditure on delivery care as a part of hospitalisation. Data was used primarily from three rounds of health surveys, namely, schedule 25.0 of the 60th round held in 2004-05, 71st round held in 2014 and 75th round held in 2017-18. Data from inpatient care (synonymous with hospitalisation) and outpatient care was aggregated at the household level while deriving the total health expenditure, reimbursement and OOP payment of a household. Antenatal, natal, post-natal care and immunisation were spread over a year and included in inpatient care. Only households that paid for maternal care services were included. The variable for medical expenditure included expenditure on medicine, diagnostic test, bed charges, physicians' fees, transportation and other expenses. Estimates of inpatient care were available for each episode of hospitalisation in a 365 days' reference period while that of outpatient care was available for a 15 days' reference period uniformly in all three rounds of the survey. The health schedule of 2014 and 2018 are similar while that of 2004 is comparable. Appendix 2 presents the questions canvassed on health care expenditure to individuals in 2004, 2014 and 2018 on inpatient care in a 365 days' reference period while Appendix 3 presents that of outpatient care in a 15 days' reference period. In 2004, 31,830 of 73,868 households availed of inpatient care (IPD) while 26, 970 households availed of some outpatient care (OPD). In 2014,47,921 out of 65,932 households had availed of IPD and 25,286 had availed of OPD care. Estimates were provided on the basis of those who availed of services, including maternal care. Similarly, in 2017-18, a total of 113,823 households were covered of which 83,349 had availed of IPD and 31,303of OPD care. The details of the findings from the survey are available in national reports (NSS 2006a, NSS 2006b; NSS 2014; NSS 2016)

2.2 Methods

2.2.1 Medical expenditure

Medical expenditure is defined as the sum of total expenditure on medicine, diagnostic test, bed charges, physicians' fees, transportation and other expenses. The estimates were provided for each episode of hospitalisation in a reference period of 365 days and that of

outpatient care in a reference period of 15 days. We have used medical expenditure as synonymous and health expenditure.

2.2.2 Out-of-pocket payment

Out-of-pocket payment is defined as total expenditure less of reimbursement. The OOP was provided for inpatient care for a reference period of 365 days and outpatient care for a reference of 15 days and standardised for health care on a monthly basis at the household level. The analyses were limited to those households that availed of medical care.

2.2.3 Consumer price index

Consumer Price Index in India used state-specific price indices of agricultural labour (AL) for rural areas and industrial worker (IW) for urban areas to convert nominal prices to real prices. In the present study CPI-AL and CPI-IW were used to convert the health expenditure variables of the nominal price of 2004 and 2014 at the 2018 prices. The base year (2001-02=100) was taken uniformly for rural and urban areas. All variables related to health expenditure were adjusted at the 2018 prices and estimates were presented at the 2018 prices.

2.2.4 Two-part regression model

The two-part regression model was used to estimate the predicted OOP across states over time. In the two-part model, in the first step a logit model was estimated followed by ordinary linear regression. The predicted OOP was estimated following OLS estimation. The estimates of OOP payment and medical expenditure were adjusted for MPCE quintile, place of residence, age, sex, religion, insurance coverage and presence or absence of elderly member(s) in the households.

[1]The CPI- Agricultural Labour [1]The CPI- (AL) base-1986-87 =100) data sets are given in monthly format at the all India- and state- levels separately. To calculate the CPI-AL yearly estimates, we have taken an accounting year approach, i.e., the CPI-AL data collected by taking the average from April of one year to March of the next year and so on. Accordingly, the yearly CPI-AL (base-2001-02=100) estimates were calculated for a particular year by converting the CPI-AL (Base 1986-87=100) to (Base 2001-02=100) for the rural area.

[2]The CPI- IW data sets are given in monthly format for all India- and state- level (across centres) separately. To compute the yearly estimates of CPI-IW, accounting year approach was adopted. To calculate the CPI-IW (2001-02 base) yearly estimates, accounting year approach was adopted for all India, i.e., the CPI-IW data collected by taking the average from April of one-year to March of the next year and so on. While estimating the state wise yearly CPI-IW estimates a two-step approach was followed. First, for each state the values were aggregated and the average of the centre wise estimates was taken to get the state's total monthly CPI-IW estimates. Secondly, an accounting year approach was taken for all states to get the yearly CPI-IW figures, i.e., the CPI-IW data collected by taking the average from April of one-year to March of the next year and so on.

2.2.5 Logistic regression

Two logistic regression models were used to understand the significant predictors of total healthcare expenditure. The independent variables used were time, place of residence (rural/urban), MPCE quintile, household size, age, sex, a household with and without an elderly member, household with and without health insurance, type of main employment of household (labourer, regular wage/salary, self-employed and others) and religion of the head of household.

Results

3.1 Sample characteristics

Table 1 presents the number of households surveyed, the percentage of households that availed of hospitalisation services, outpatient care and sample characteristics of individuals and households availing of health services in 2004, 2014 and 2018. A total of 73,868 households were surveyed in 2004, 65,932 in 2014 and 113, 823 in 2018. Of the total households surveyed, 43% availed of hospitalisation services in 2004 and 73% each in 2014 and 2018. The median age of hospitalisation declined by two years over time. The average household size also declined over time while that of real MPCE increased by 45% in the past 15 years..

Table 1: Number of episodes, individuals and households covered in the health survey, India, 2004-18

Variables	2004	2014	2018
Percentage of households with any hospitalisation *	43.09	72.68	73.23
Percentage of households with only outpatient care	36.31	38.35	27.5
The median age of hospitalisation	37.01	36.17	35.28
Mean household size	4.82	4.51	4.35
Monthly Per capita Consumption Expenditure (mean) at 2018 prices	1707	2185	2466
Number of hospitalized episodes (without maternal care)	32,665	57,456	93,924
Number of households spent on maternal care	10,937	16,862	28,163
Number of outpatient spells	31,106	33,911	39,901
Number of households with at least one -member avail ed outpatient care	26,970	25,286	31,303
Number of households surveyed	73,868	65,932	1,13,823

Source: Authors own computation based on, Survey on Morbidity and Health Care: NSS 60th Round (January 2004 - June 2005), Social Consumption - Health Survey: NSS 71st Round (June 2014) and Key Indicators of Social Consumption in India: Health, NSS 75th Round (July 2017-June 2018)
*Hospitalisation includes maternal care

3.2 Medical expenditure and OOP payment on hospitalisation and outpatient care

Table 2 presents the trends in estimated mean and median of medical expenditure and OOP payment on inpatient and outpatient care of households at current and constant prices, respectively and reimbursement at current and constant prices among those who availed of the services. The mean medical expenditure of households at a constant price increased by 62% during 2004-14 and declined by 18% during 2014-18. The increase in medical expenditure also increased by 22% during 2004-14 and declined by 8% during 2014-18. The increase in OOP on outpatient care was 23% during 2004-14 and declined by 16% during 2014-18. The mean OOP payment of a household in a 30 days' reference period on health care was ₹1910 in 2004, ₹2381 in 2014 and ₹1995 in 2018. Reimbursement at constant process increased more than twice during this period. The median values were lower but showed a similar pattern as that of the mean. The median value of reimbursement was 0 overtime, there by suggesting that a majority of the population was not covered by any insurance. Fig 1 compares the mean OOP payment of households at current and constant prices for inpatient care. The mean OOP payment of households increased during 2004-14 and declined during 2014-18.

Fig 1: OOP payment of households on hospitalisation (365 days) at current and constant (2018) prices in India, 2004-18

Source: Authors own computation based on, Survey on Morbidity and Health Care: NSS 60th Round (January 2004 - June 2005), Social Consumption - Health Survey: NSS 71st Round (June 2014) and Key Indicators of Social Consumption in India: Health, NSS 75thRound (July 2017-June 2018). Estimates are for households which availed of health services.

Table 2: Estimated OOP payment on each episode of hospitalisation and outpatient care (in ₹) of householdsin India, 2004-18 (at 2018 prices)

Variables	Mean			Median		
	2004	2014	2018	2004	2014	2018
Medical Expenditure on hospitalisation in 365 days reference period at constant prices (2018)	15969	25799	21157	4092	9295	6700
Medical Expenditure on outpatient visit in 15 days reference period at constant prices (2018)	793	968	888	311	419	380
Medical expenditure on hospitalisation 30 days reference period	1950	2433	2063	747	950	790
OOP of household on hospitalisation in 365 days reference period at current prices	5924	20642	19574	1575	7600	6390
OOP payment of household on hospitalisation in 365 days reference period at constant prices (2018)	15311	24561	19574	3993	8895	6390
OOP payment of households on out -patient visit in 15 days reference peri od at current prices	307	817	883	120	350	380
OOP payment of households on out -patient visit in 15 days reference period at constant prices (2018)	783	964	883	306	416	380
OOP payment of household on hospitalisation and outpatient care in 30 days at const ant prices (2018)	1910	2381	1995	736	942	773
Reimbursement on medical care at current prices	119	465	731	0	0	0
Reimbursement on medical care at 2018 prices	306	554	731	0	0	0

Source: Authors own computation based on, Survey on Morbidity and Health Care: NSS 60th Round (January 2004 - June 2005), Social Consumption - Health Survey: NSS 71st Round (June 2014) and Key Indicators of Social Consumption in India: Health, NSS 75thRound (July 2017-June 2018)

Table 3: Medical expenditure on inpatient and outpatient care (in ₹) of households at 2018 prices in States of India, 2004-18

State	Expenditure on inpatient and outpatient care in 30 days			Expenditure on Inpatient care in 365 days			Expenditure on Outpatient care in 15 days		
	2004	2014	2018	2004	2014	2018	2004	2014	2018
Andaman & Nicobar	798	1649	1845	8705	12782	29832	240	730	440
Andhra Pradesh	1628	2265	1942	14486	31169	24272	666	775	770
Arunachal Pradesh	2508	2462	1866	8000	8888	6054	1566	1391	1455
Assam	1417	1918	1454	6915	15028	11554	680	1050	778
Bihar	1333	1999	1212	6956	15222	9907	571	987	649
Chandigarh	2429	2561	4746	32278	50217	49335	642	897	2265
Chhattisgarh	1637	2147	1448	12565	15694	20225	702	1149	495
Dadra & Nagar Haveli	1119	1134	791	11676	10945	5613	229	466	423
Daman & Diu	1246	1499	1584	10980	20179	21233	517	581	674
Delhi	530	2657	2446	5132	34133	29611	121	940	1059
Goa	1134	2783	2127	15327	35459	23130	413	1079	663
Gujarat	1911	1948	1595	16777	23694	19206	727	670	658
Haryana	2613	3042	2313	24515	34366	25612	910	1192	929
Himachal Pradesh	2453	2664	2700	20592	30197	26080	1002	985	1194
Jammu & Kashmir	1775	2491	1145	9607	13521	10520	847	1346	519
Jharkhand	1222	1567	1799	5798	11757	14558	539	789	883
Karnataka	2066	2660	1898	17130	29194	20273	846	990	793
Kerala	2339	3191	3057	21024	38876	33708	837	943	1049
Lakshadweep	2777	1964	1827	42216	30811	22001	475	507	560
Madhya Pradesh	1629	2071	1780	12136	18047	13174	689	967	999
Maharashtra	2325	2998	2159	21490	35011	26777	931	1055	799
Manipur	1348	2037	1778	8354	13440	15598	548	1371	1045
Meghalaya	686	738	619	4548	7299	6459	256	323	217
Mizoram	876	1792	1448	7734	14624	12256	399	1014	828
Nagaland	1147	1315	1020	5529	18041	8787	543	484	530
Odisha	1345	2020	1493	10508	17406	15380	601	942	688
Pondicherry	1826	2503	1832	16432	22480	21071	743	1072	781
Punjab	2781	3181	2344	34530	40023	33505	956	1207	877
Rajasthan	2577	2210	2219	18426	18585	18027	1094	1066	1164
Sikkim	1127	1016	1248	7476	12998	10955	526	357	696
Tamil Nadu	1905	2368	2002	21223	33213	22660	676	792	819
Telangana	2646	2981	2200	22463	30298	28503	1040	1250	809
Tripura	1606	2904	1991	12933	12667	10244	764	2364	1841
Uttar Pradesh	2025	2667	2371	12918	25332	22064	883	1149	1068
Uttarakhand	2029	2014	1698	12983	14855	20563	850	1018	661
West Bengal	1663	2096	2118	13210	22623	20617	729	852	923
India	**1950**	**2433**	**2063**	**15969**	**25799**	**21157**	**793**	**968**	**888**

Source: Authors own computation based on, Survey on Morbidity and Health Care: NSS 60th Round (January 2004 - June 2005), Social Consumption - Health Survey: NSS 71st Round (June 2014) and Key Indicators of Social Consumption in India: Health, NSS 75th Round(July 2017- June 2018). Estimate are for households who availed the health services.

3.3 State variation in medical expenditure on inpatient and outpatient care

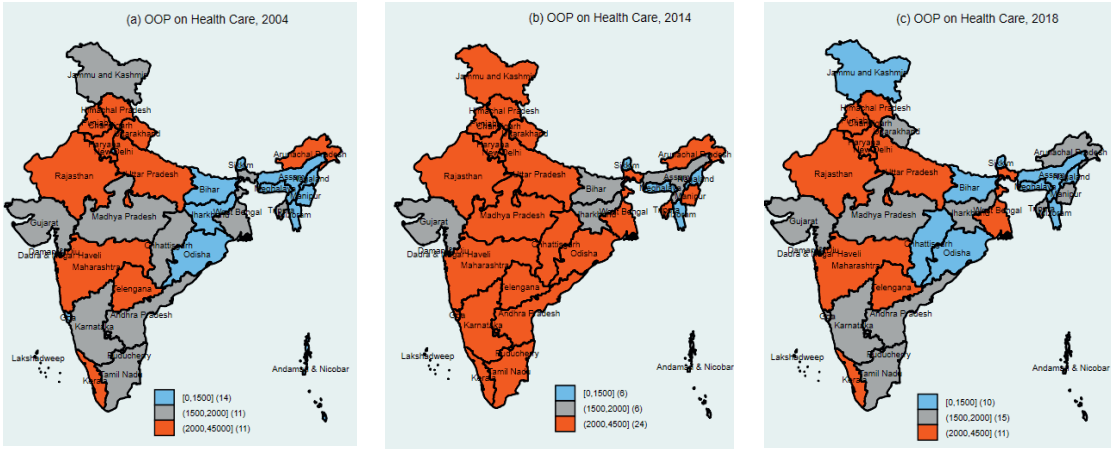
Table 3 presents the trends in mean expenditure on inpatient and outpatient care of households at 2018 prices in states of India. The mean expenditure on inpatient care in India was ₹1950 in 2004 and increased to ₹2063 by 2018, and the mean expenditure on outpatient care was ₹793 in 2004 and increased to ₹888 by 2018 (Table 2). Variations in medical expenditure among states for inpatient and outpatient care were considerable over time (Table 3). In 2004, for inpatient care, the medical expenditure was lowest in Meghalaya followed by Delhi and highest in Lakshadweep followed by Punjab. The medical expenditure in Lakshadweep was over eight times that of Delhi. By 2018, it was highest in Chandigarh followed by Kerala, and lowest in Dadra & Nagar Haveli followed by Arunachal Pradesh. In 2004, for outpatient care, the medical expenditure was highest in Arunachal Pradesh followed by Rajasthan and lowest in Delhi followed by Dadra & Nagar Haveli. By 2018, it was highest in Chandigarh followed by Tripura and lowest in Meghalaya followed by Dadra & Nagar Haveli. In 2004, for inpatient and outpatient care, the medical expenditure was highest in Punjab followed by Lakshadweep and lowest in Delhi followed by Meghalaya. By 2018, it was highest in Chandigarh followed by Kerala and lowest in Meghalaya followed by Dadra & Nagar Haveli. During 2004-14, the average real inpatient and outpatient expenditure increased in many states and declined during 2014-18.

3.4 State variation in OOP payment on inpatient and outpatient care

Table 4 presents mean OOP payment on inpatient and outpatient care at 2018 prices in states of India. The mean OOP payment on inpatient care (365 days reference period) of households in India was ₹15,311 in 2004 and increased to ₹19,574 by 2018 and the mean OOP payment on outpatient care (15 days reference period) was ₹783 in 2004 and increased to ₹883 by 2018. The state variations in OOP payment for inpatient and outpatient care were large over time. In 2004, for inpatient care, the OOP payment was lowest in Meghalaya followed by Delhi and highest in Lakshadweep followed by Punjab. The mean OOP payment of households in Punjab was over seven times that of Delhi. By 2018, it was the highest in Chandigarh followed by Punjab and lowest in Meghalaya followed by Dadra & Nagar Haveli. The mean OOP payment for hospitalisation was comparatively lower in North-eastern states of India. Similarly, in 2004, the mean OOP payment on outpatient care was

lowest in Delhi, followed by Dadra & Nagar Haveli and highest in Arunachal Pradesh followed by Rajasthan. In 2018, it was lowest in Meghalaya followed by Dadra & Nagar Haveli and highest in Chandigarh followed by Tripura. The mean OOP payment on hospitalisation and outpatient visit in a 30 days' reference period was also the lowest in Meghalaya followed by Dadra & Nagar Haveli and highest in Chandigarh followed by Kerala. Most of the states registered an increase in OOP payment during 2004-18 but it declined during 2014-18. The positioning of states in terms of real average OOP expenditure growth for both inpatients and out patients showed increasing trends in OOP in many states during 2004-14 and its decline by 2014-18

Fig 2: Mean OOP payment on health care (in ₹) in 30 days' period in states of India, 2004-18



Source: Authors own computation based on, Survey on Morbidity and Health Care: NSS 60th Round (January 2004 - June 2005), Social Consumption - Health Survey: NSS 71st Round (June 2014) and Key Indicators of Social Consumption in India: Health, NSS 75th Round (July 2017-June 2018)

Table 4: OOP payment on inpatient and outpatient care (in ₹) of households at 2018 prices in states of India, 2004-18

States	Inpatient and outpatient care (30 days)			Inpatient care (365 days)			Outpatient care (15 days)		
	2004	2014	2018	2004	2014	2018	2004	2014	2018
Andaman & Nicobar	773	1587	1751	8293	10557	27585	240	730	440
Andhra Pradesh	1622	2253	1884	14306	30760	22257	666	775	768
Arunachal Pradesh	2441	2347	1852	7609	8225	5951	1530	1332	1447
Assam	1385	1900	1419	6664	14616	10844	667	1050	777
Bihar	1318	1989	1211	6922	14978	9889	564	987	649
Chandigarh	1992	2230	4154	22825	32796	36740	618	886	2074
Chhattisgarh	1551	2132	1389	10579	15380	18984	689	1149	488
Dadra & Nagar Haveli	1115	1087	778	11619	9842	5287	229	459	423
Daman & Diu	1231	1493	1535	10714	19932	19661	517	581	674
Delhi	488	2430	2114	4754	29236	22433	110	940	1015
Goa	1133	2690	1972	15303	31656	20164	413	1079	660
Gujarat	1882	1874	1511	16175	22131	17016	726	662	653
Haryana	2547	2873	2169	23175	31128	22487	905	1170	923
Himachal Pradesh	2291	2478	2568	18711	26707	24021	948	961	1155
Jammu & Kashmir	1749	2485	1139	8874	13415	10407	846	1346	518
Jharkhand	1186	1563	1774	5677	11631	13761	522	789	883
Karnataka	1978	2563	1807	15489	26938	18407	834	984	792
Kerala	2303	3127	2938	20354	37407	30924	833	938	1040
Lakshadweep	2589	1964	1783	38367	30811	21015	474	507	560
Madhya Pradesh	1612	2011	1760	12042	16663	12783	681	966	998
Maharashtra	2239	2861	2055	19852	32285	24172	916	1042	792
Manipur	1341	2023	1767	8238	13227	15409	548	1371	1045
Meghalaya	675	712	518	4471	6781	5251	252	323	202
Mizoram	810	1059	1128	6721	6907	6534	399	692	792
Nagaland	1113	994	1005	4915	9609	8557	536	484	530
Odisha	1330	2008	1469	10156	17048	14697	600	941	688
Pondicherry	1763	2475	1825	14878	22125	20943	743	1062	781
Punjab	2641	3147	2277	33399	38720	31156	898	1207	876
Rajasthan	2534	2182	2168	18063	18009	17026	1077	1065	1162
Sikkim	1117	1004	1188	7269	12712	9739	525	357	693
Tamil Nadu	1849	2310	1938	20517	31323	21096	659	792	819
Telangana	2597	2958	2137	21334	29821	26917	1038	1246	809
Tripura	1593	2784	1967	12917	12324	9849	756	2256	1841
Uttar Pradesh	2012	2647	2343	12678	25087	21372	880	1141	1067
Uttarakhand	2022	2010	1543	12837	14770	17456	850	1016	643
West Bengal	1642	2048	2018	12749	21019	18281	725	850	906
India	**1910**	**2381**	**1995**	**15311**	**24561**	**19574**	**783**	**964**	**883**

Source: Authors own computation based on, Survey on Morbidity and Health Care: NSS 60th Round (January 2004 - June 2005), Social Consumption - Health Survey: NSS 71st Round (June 2014) and Key Indicators of Social Consumption in India: Health, NSS 75th Round (July 2017-June 2018). Estimates are for households who availed the health services.

Table 5: Percentage change in OOP payment on inpatient and outpatient care of households by states of India, 2004-18

	Change in OOP on inpatient & outpatient care (30 days)		Change in Inpatient care (365 days)		Change in Outpatient care (15 days)	
	2004-14	2014-18	2004-14	2014-18	2004-14	2014-18
Andhra Pradesh	39	16	115	28	16	-1
Arunachal Pradesh	-4	21	8	28	-13	9
Assam	37	25	119	26	57	-26
Bihar	51	39	116	34	75	-34
Chandigarh	12	-86	44	-12	43	134
Chhattisgarh	37	35	45	-23	67	-58
Dadra & Nagar Haveli	-3	28	-15	46	100	-8
Daman & Diu	21	-3	86	1	12	16
Gujarat	0	19	37	23	-9	-1
Haryana	13	25	34	28	29	-21
Himachal Pradesh	8	-4	43	10	1	20
Jammu & Kashmir	42	54	51	22	59	-62
Jharkhand	32	-13	105	-18	51	12
Karnataka	30	29	74	32	18	-20
Kerala	36	6	84	17	13	11
Lakshadweep	-24	9	-20	32	7	10
Madhya Pradesh	25	12	38	23	42	3
Maharashtra	28	28	63	25	14	-24
Manipur	51	13	61	-16	150	-24
Meghalaya	5	27	52	23	28	-37
Mizoram	31	-7	3	5	73	14
Nagaland	-11	-1	96	11	-10	10
Odisha	51	27	68	14	57	-27
Pondicherry	40	26	49	5	43	-26
Punjab	19	28	16	20	34	-27
Rajasthan	-14	1	0	5	-1	9
Sikkim	-10	-18	75	23	-32	94
Tamil Nadu	25	16	53	33	20	3
Telangana	14	28	40	10	20	-35
Tripura	75	29	-5	20	198	-18
Uttar Pradesh	32	11	98	15	30	-6
Uttarakhand	-1	23	15	-18	20	-37
West Bengal	25	1	65	13	17	7
India	25	16	60	20	23	-8

3.5 Variations in OOP payment on inpatient and outpatient care based on selected Socio-economic and demographic characteristics

Table 6 presents the variations in OOP payment on inpatient and outpatient care based upon socio-economic and demographic characteristics over time. The OOP payment for both inpatient and outpatient increased with MPCE quintile. It was the lowest among the poorest, followed by poorer and highest among the richest over time. The OOP payment for both inpatient and outpatient care increased for each quintile during 2004-14 and declined during 2014-18. The pattern was similar for outpatient care. The OOP payment on inpatient and outpatient care in 30 days was higher in urban than in rural areas throughout the period. However, the rural-urban differences in OOP payment were large in 2014. The OOP payment was higher among households having some insurance coverage compared to households without any insurance coverage. Male-headed households had higher OOP payment compared to female-headed households over time. Similarly, households with no education had lower OOP payment on inpatient and outpatient care throughout the time period. OOP payment was higher in households with self-employed members and lower in households having members with regular wage and salary for both inpatient and outpatient care over the time period. Households with elderly members had higher OOP for inpatient and outpatient care compared to those without elderly members during the period 2004-18. Christian households had higher OOP payment for both inpatient and outpatient care in 30 days, followed by Sikh households in 2004, and this declined in 2018 in the same order. OOP was highest among Sikh households on inpatient care in 2004 and declined in 2018. Overall, the OOP payment on inpatient and outpatient fora30 days' period increased from 2004-14 and declined drastically from 2014-18.

Table 6: Variations in OOP payment on inpatient and outpatient care (₹) of household based on selected socio-economic and demographic characteristics of households in India, 2004-18

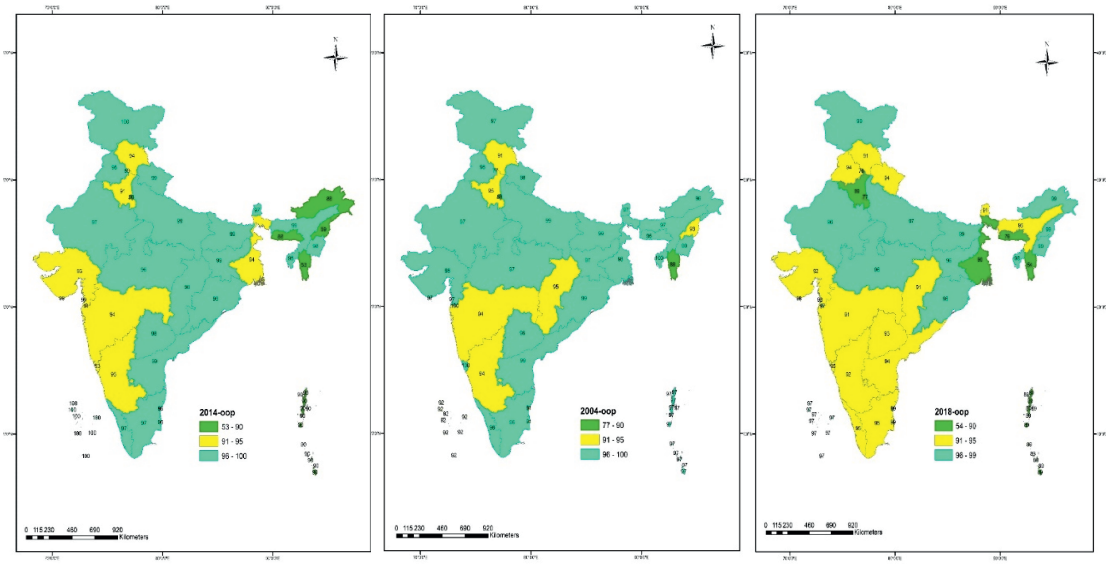
Variables	OOP on inpatient and outpatient care in 30 days			OOP on inpatient care in 365 days			OOP on outpatient care in 15 days		
	2004	2014	2018	2004	2014	2018	2004	2014	2018
MPCE Quintile									
Poorest	1801	14040	854	1801	14040	854	1520	12715	741
Poorer	2074	18281	901	2074	18281	901	1884	16846	867
Middle	2116	20599	878	2116	20599	878	2084	19699	940
Richer	2726	26447	1099	2726	26447	1099	2146	21511	914
Richest	3965	45656	1386	3965	45656	1386	2779	29343	1118
Place of residence									
Rural	1786	13615	749	2071	20410	865	1765	16699	808
Urban	2215	19378	870	3002	33679	1149	2459	25718	1023
Covered by any health insurance schemes									
No insurance coverage	1891	14746	782	2418	24766	991	1984	19341	891
Any Insurance coverage	1972	17000	786	2242	23701	869	2036	20557	853
Age of head of household									
Lt 30	1215	7761	492	1447	13020	628	1244	10949	592
30-44	1678	13223	711	2093	22743	855	1669	16064	769
45-59	2113	17192	874	2407	24954	983	2044	20334	904
60+	2463	23009	972	3132	33676	1184	2716	29860	1092
Sex of the head of household									
Male	1922	15169	789	2410	24429	983	2007	19309	896
Female	1800	16852	730	2180	25640	836	1908	22109	795
Educational Attainment of the head of household									
No education	1476	10387	635	1891	17612	821	1608	15249	732
Up to Primary	1733	14368	703	2166	22820	853	1812	17972	790
Middle/Secondary	2254	17771	934	2620	26066	1068	2041	19969	900
higher secondary	2901	26590	1102	3299	39599	1245	2758	27623	1208
Type of employment of household									
Labour	1969	14998	831	1825	15971	806	1472	12877	697
Self Employed	1986	16489	787	2783	30074	1080	2060	20243	920
Wage/salary	1591	12234	657	2773	30368	1065	2338	23172	994
Others	2184	18950	882	2365	24571	971	2484	32672	971
Any elderly member in the household									
No	1667	12616	693	2034	20757	848	1702	16213	783
Yes	2421	22023	966	3035	32302	1159	2618	28226	1061
Religion of household									
Hindu	1874	14849	773	2303	24601	924	1984	19623	882
Muslim	1875	13825	792	2490	21510	1058	1886	17081	841
Christian	2598	24360	944	3053	26262	1260	2450	24993	975
Sikh	2567	31402	907	3692	44943	1385	2346	30230	951
Others	1961	15810	783	2634	27154	1003	2515	22480	1164
Total	**1910**	**15311**	**783**	**2381**	**24561**	**964**	**1995**	**19574**	**883**

Source: Authors own computation based on, Survey on Morbidity and Health Care: NSS 60th Round (January 2004 - June 2005), Social Consumption - Health Survey: NSS 71st Round (June 2014) and Key Indicators of Social Consumption in India: Health, NSS 75th Round(July 2017-June 2018).

3.6 OOP payment as a share of medical expenditure (%) in states of India, 2004-18

Figure 3 shows the OOP payment as a percentage share of medical expenditure in states of India during 2004-18. In 2004, at the national level, the OOP payment was 97% as a share of medical expenditure. The share of OOP has declined by only 1% in 2004-14 and 3% in 2014-18. In 2004, the OOP payment as the percentage share of medical expenditure was the least in Chandigarh (77%), followed by Delhi (88%) and Mizoram (88%). By 2018, it became the least in Mizoram (54%), followed by Meghalaya (76%). Appendix 1 presents the estimated value of OOP as a share of medical expenditure by states over time.

Fig 3: OOP payment as a share of medical expenditure (%) in states of India, 2004-18



3.7 Regression results of medical expenditure on inpatient and outpatient care from a two-part model

Table 7 shows the regression results of medical expenditure on inpatient and outpatient care based on socioeconomic and demographic characteristics in India. Results indicate that the probability of incurring medical expenditure for both inpatient and outpatient care for 30 days was positively associated with MPCE quintiles, household size and educational attainment of the head of household and negatively associated with households covered by a health

insurance scheme. The likelihood of incurring medical expenditure was 45% higher among households in the richest quintile compared to the poorest. Similarly, the likelihood of incurring medical expenditure was 99% higher in households comprising eight or more individuals compared to those with 1 to 4 individuals. Further, households comprising members with secondary and higher secondary education were significantly less likely to incur medical expenditure compared to a household with illiterate members. Households covered with an insurance scheme was 49% less likely to incur medical expenditure for both inpatient and outpatient care compared to households without insurance coverage. Similarly, the probability of incurring medical expenditure on inpatient care for 365 days was negatively associated with place of residence, coverage with an health insurance scheme and type of employment by members of households. Urban households were 82% less likely to incur medical expenditure than rural households. Furthermore, households covered by an insurance scheme were 97% less likely to incur medical expenditure. Similarly, households with regular wage or salary were 48% less likely to incur medical expenditure compared to households comprised of labourers. The likelihood of incurring medical expenditure on outpatient care was positively associated with MPCE quintile, place of residence, household with an elderly, age of head of households, educational qualification of the head of household and time period and negatively associated with household size, insurance coverage of households and religion.

3.8 Regression results of OOP payment on inpatient and outpatient care from a two-part model

Table 8 shows the OLS regression of OOP payment on inpatient and outpatient care by socio-economic characteristics in India. The probability of incurring OOP payment on both inpatient and outpatient care for 30 days was 77% higher among the richest households compared to households belonging to the poorest quintile. Urban households had a 35% higher probability of incurring OOP payment compared to rural households. Households covered with some health insurance scheme were 5% less likely to incur OOP payment compared to households with no coverage by insurance schemes. The probability of incurring OOP payment was 34% higher among households having elderly member compared to those without elderly. Furthermore, the likelihood of incurring OOP payment in 2014 was 37% higher compared to 2004. Similarly, the probability of incurring OOP payment for inpatient care of 365 days was positively associated with MPCE quintile, place

of residence, household size, presence of an elderly member in the household, age of head of household, education of the head of households and time period. The likelihood of incurring OOP payment for inpatient care was 32% higher in urban households compared to rural households. Households with heads aged 45-59 years had 55% higher probability of incurring OOP payment compared to those aged less than 30 years. The probability of incurring OOP payment on outpatient care for 15 days was negatively associated with coverage by health insurance schemes, sex of head of household and time period. Female-headed households were 15% less likely to incur OOP payment on outpatient care compared to male-headed households. Compared to 2004, the probability of incurring OOP payment was 6% less in 2014 and 14% in 2018.

Table 7: Regression results of medical expenditure on inpatient and outpatient care from a two-part model

Variables	Inpatient and Outpatient care in 30 days		Inpatient care in 365 days		Outpatient care in 15 days	
	β (logit)	95% CI	β (logit)	95% CI	β (logit)	95% CI
MPCE Quintile						
Poorest®						
Poorer	0.375**	[0.129- 0.620]	0.067	[-0.321-0.455]	0.190**	[0.070-0.310]
Middle	0.355**	[0.095-0.616]	0.305	[-0.144-0.753]	0.334**	[0.208-0.460]
Richer	0.476**	[0.211-0.742]	0.226	[-0.205-0.658]	0.352**	[0.221-0.483]
Richest	0.448**	[0.180-0.717]	0.089	[-0.440-0.618]	0.552**	[0.414-0.690]
Place of residence						
Rural®						
Urban	0.085	[-0.107-0.277]	-0.821**	[-1.238, -0.404]	0.125**	[0.031-0.218]
Household Size						
1--4®						
5--7	0.420**	[0.226-0.614]	0.239	[-0.052-0.529]	-0.177**	[-0.273, -0.082]
8+	0.992**	[0.706-1.279]	0.358	[-0.075-0.790]	-0.406**	[-0.527, -0.285]
Covered by any health insurance schemes						
No insurance coverage®						
Any Insurance coverage	-0.492**	[-0.672-0.312]	-0.966**	[-1.232, -0.700]	-0.210**	[-0.307, -0.112]
Any elderly member in the household						
No®						
Yes	-0.054	[-0.314-0.205]	-0.204	[-0.671-0.263]	0.793**	[0.662-0.924]
Type of employment of household						
Labourer®						
Wage/salary	0.199	[-0.024-0.421]	-0.484**	[-0.850, -0.118]	0.122**	[0.009-0.234]
Self Employed	0.132	[-0.091-0.354]	-0.012	[-0.420-0.397]	0.016	[-0.094-0.126]
Others	-0.043	[-0.288-0.201]	-0.292	[-0.848-0.264]	0.015	[-0.109-0.140]
Age of head of household						
Lt 30®						
30-44	-0.010	[-0.309-0.290]	-0.168	[-0.768-0.431]	0.919**	[0.796-1.042]
45-59	-0.259	[-0.555-0.037]	-0.365	[-0.995-0.266]	1.040**	[0.918-1.162]
60+	-0.174	[-0.554-0.205]	-0.073	[-0.884-0.739]	0.662**	[0.487-0.836]
Sex of the head of household						
Male®						
Female	-0.160	[-0.372-0.052]	-0.211	[-0.647-0.224]	0.115	[-0.024-0.254]
Educational Attainment of the head of household						
No education®						
up to Primary	0.337**	[0.129-0.544]	-0.191	[-0.577-0.194]	0.310**	[0.205-0.416]
Middle/Secondary	0.481**	[0.258-0.705]	0.177	[-0.263-0.617]	0.252**	[0.141-0.363]
higher secondary	0.415**	[0.130-0.700]	-0.074	[-0.591-0.443]	0.075	[-0.063-0.212]
Religion of household						
Hindu®						
Muslim	0.290**	[0.044-0.537]	0.296	[-0.112-0.704]	0.155**	[0.030-0.279]
Christian	-0.241	[-0.580-0.098]	-0.365	[-1.212-0.483]	-0.151	[-0.360-0.059]
Sikh	0.576	[-0.133-1.285]	-0.583	[-1.869-0.702]	0.656**	[0.337-0.975]
Others	-0.818**	[-1.443, -0.192]	-1.753**	[-2.751, -0.755]	-0.584**	[-0.950, -0.219]
Time						
2004 ®						
2014	-0.075	[-0.251- 0.101]	0.119	[-0.203- 0.441]	0.996**	[0.891-1.101]
2018	0.224**	[0.033-0.414]	0.719**	[0.386-1.051]	0.986**	[0.882-1.091]

Note: ***p< 0.01, **p< 0.05, *<0.10 (indicates statistically significant)

Source: Authors own computation based on, Survey on Morbidity and Health Care: NSS 60th Round (January 2004 - June 2005), Social Consumption - Health Survey: NSS 71st Round (June 2014) and Key Indicators of Social Consumption in India: Health, NSS 75thRound(July 2017-June 2018)

Table 8: Regression results of OOP payment on inpatient and outpatient care of households from a two-part model

Variables	Inpatient and Outpatient Care in 30 days		Inpatient Care in 365 days		Outpatient Care in 15 days	
	β (OLS)	95% CI	β (OLS)	95% CI	β (OLS)	95% CI
MPCE Quintile						
Poorest®						
Poorer	0.178**	[0.119-0.238]	0.258**	[0.193-0.323]	0.060	[0.193-0.323]
Middle	0.321**	[0.261-0.382]	0.438**	[0.373-0.503]	0.150**	[0.373-0.503]
Richer	0.493**	[0.434-0.552]	0.607**	[0.541-0.674]	0.314**	[0.541-0.674]
Richest	0.775**	[0.713-0.837]	0.978**	[0.911-1.045]	0.493**	[0.911-1.045]
Place of residence						
Rural®						
Urban	0.250**	[0.209-0.291]	0.326**	[0.281-0.371]	0.158**	[0.281-0.371]
Household Size						
1--4®						
5--7	0.201**	[0160-0.243]	0.137**	[0.090-0.185]	0.258**	[0.090-0.185]
8+	0.349**	[0.292-0.406]	0.284**	[0.220-0.348]	0.467**	[0.220-0.348]
Covered by any health insurance schemes						
No insurance coverage®						
Any Insurance coverage	-0.059**	[-0.102,-0.016]	-0.012	[-0.058-0.035]	-0.108**	[-0.058-0.035]
Any elderly member in the household						
No®						
Yes	0.345**	[0.286-0.404]	0.333**	[0.269-0.396]	0.116**	[0.269-0.396]
Type of employment of household						
Labour®						
Wage/salary	0.052**	[0.002-0.101]	0.104**	[0.047-0.160]	0.020	[0.047-0.160]
Self Employed	0.008	[-0.046- 0.062]	0.039	[-0.023-0.101]	0.001	[-0.023-0.101]
Others	0.044	[-0.014-0.102]	0.090**	[0.025-0.155]	0.044	[0.025-0.155]
Age of head of household						
Lt 30®						
30-44	0.301**	[0.238-0.363]	0.303**	[0.235-0.370]	0.035	[0.235-0.370]
45-59	0.462**	[0.400-0.524]	0.552**	[0.486-0.618]	0.120**	[0.486-0.618]
60+	0.446**	[0.362-0.531]	0.500**	[0.411-0.590]	0.198**	[0.411-0.590]
Sex of the head of household						
Male®						
Female	-0.043	[-0.104-0.018]	0.025	[-0.048-0.097]	-0.147**	[-0.048-0.097]
Educational Attainment of the head of household						
No education®						
Up to Primary	0.134**	[0.087-0.182]	0.234**	[0.181-0.288]	0.018	[0.181-0.288]
Middle/Secondary	0.233**	[0.184-0.283]	0.352**	[0.296-0.408]	0.123**	[0.296-0.408]
higher secondary	0.344**	[0.283-0.406]	0.467**	[0.399-0.535]	0.283**	[0.399-0.535]
Religion of household						
Hindu®						
Muslim	0.138**	[0.088-0.188]	-0.010	[-0.071-0.050]	0.143**	[-0.071-0.050]
Christian	0.126**	[0.036-0.216]	-0.006	[-0.090-0.079]	0.118**	[-0.090-0.079]
Sikh	0.232**	[0.132-0.332]	0.345**	[0.203-0.487]	0.120**	[0.203-0.487]
Others	0.002	[-0.148-0.152]	-0.182**	[-0.337 -0.026]	0.150	[-0.337, -0.026]
Time						
2004 ®						
2014	0.376**	[0.331-0.420]	0.828**	[0.776-0.879]	-0.067**	[0.776-0.879]
2018	0.146**	[0.104-0.187]	0.520**	[0.466-0.573]	-0.149**	[0.466-0.573]

Note: ***p< 0.01, **p< 0.05, *<0.10 (indicates statistically significant)

Source: Authors own computation based on, Survey on Morbidity and Health Care: NSS 60th Round (January 2004 - June 2005), Social Consumption - Health Survey: NSS 71st Round (June 2014) and Key Indicators of Social Consumption in India: Health, NSS 75th Round (July 2017-June 2018)

3.9 Adjusted OOP payment on inpatient and outpatient care from the two-part regression model.

Table 9 shows the results of a two-part regression model and adjusted mean OOP payment on inpatient and outpatient care by 2018 constant price in the states of India. In 2004, the adjusted mean OOP payment on both inpatient and outpatient care for 30 days was the highest in Chandigarh followed by Lakshadweep, and it was the least in Chhattisgarh followed by Odisha in both 2004 and 2018. The adjusted mean OOP payment was comparatively higher in 2014 than in 2004 and 2018. In 2018, the mean OOP payment on both inpatient and outpatient care was higher in Chhattisgarh followed by Punjab. The adjusted mean OOP payment on inpatient care of 365 days was highest in Chandigarh followed by Punjab and lowest in Chhattisgarh followed by Bihar during 2004-2018. Similarly, in 2004 the adjusted mean OOP payment on outpatient care of 15 days was highest in Chandigarh, followed by Nagaland and lowest in Chhattisgarh followed by Odisha. In 2018, it was the highest in Chandigarh followed by Punjab and lowest in Chhattisgarh followed by Odisha. Nationally the adjusted mean OOP payment followed a constant pattern during 2004-18, although it was higher in 2014 compared to 2004 and 2018 across different states of India.

Table 9: Adjusted OOP payment on inpatient and outpatient care (in ₹) of households from two-part regression model at 2018 prices in states of India, 2004-18

States	Inpatient and outpatient care (30 days)			Inpatient care (365 days)			Outpatient care (15 days)		
	2004	2014	2018	2004	2014	2018	2004	2014	2018
Andaman & Nicobar	2851	2984	3030	26960	28889	30341	1191	1220	1202
Andhra Pradesh	2000	2280	2066	18363	22201	19688	879	933	856
Arunachal Pradesh	2052	2026	1971	16118	16395	15951	985	953	931
Assam	2339	2279	2109	20347	20588	18924	1046	1000	942
Bihar	1829	1921	1747	15156	16554	14999	862	890	834
Chandigarh	3768	3560	3630	42843	39439	40716	1428	1371	1331
Chhattisgarh	1675	1775	1589	14133	16135	14389	792	792	718
Dadra & Nagar Haveli	2313	2486	1861	21513	25085	16818	961	1058	823
Daman & Diu	2116	2505	2346	20969	26033	23838	862	1022	991
Delhi	2996	3165	3015	30150	33082	30979	1223	1259	1194
Goa	3089	3534	3045	30013	35749	30151	1227	1341	1177
Gujarat	2282	2682	2682	21419	26111	26159	931	1107	1113
Haryana	2691	2871	2797	25073	28427	27250	1154	1181	1171
Himachal Pradesh	2562	2921	2761	24238	29568	27866	1087	1176	1117
Jammu & Kashmir	2783	2854	2725	24302	25819	24146	1224	1208	1179
Jharkhand	1915	2077	1831	16521	18238	15950	866	938	855
Karnataka	2032	2453	2393	18754	23532	23187	845	1027	1011
Kerala	3021	3350	3135	28918	33352	30912	1203	1251	1193
Lakshadweep	3369	2764	3309	29631	23571	30304	1362	1200	1282
Madhya Pradesh	1928	2068	1937	16488	18929	17543	890	922	884
Maharashtra	2462	2691	2555	23069	26308	24693	1048	1112	1067
Manipur	2737	2401	2437	24208	21622	22078	1188	1042	1067
Meghalaya	2425	2564	2505	19284	21605	21373	1077	1086	1050
Mizoram	3191	2854	2970	27048	25377	26779	1317	1106	1149
Nagaland	3349	2936	2774	28520	25877	23717	1405	1191	1171
Odisha	1747	1883	1717	15158	17369	15635	806	835	778
Pondicherry	2453	3079	2679	24975	32039	26395	942	1190	1102
Punjab	3060	3437	3390	30346	36244	36305	1258	1335	1320
Rajasthan	2065	2441	2329	18605	22652	21790	881	1045	1001
Sikkim	2144	2205	2360	19082	20841	22395	960	972	1039
Tamil Nadu	2107	2604	2499	20395	25977	24853	850	1043	1014
Telangana	2067	2300	2323	18989	22558	23001	909	939	957
Tripura	2041	2293	2384	18755	22338	23142	901	962	996
Uttar Pradesh	2156	2276	2046	18477	20601	18263	986	1012	935
Uttarakhand	2384	2359	2479	21963	22799	24358	1037	1008	1055
West Bengal	2262	2288	2278	20756	21807	21414	976	962	968
India	**2207**	**2416**	**2283**	**20081**	**22999**	**21610**	**957**	**1019**	**977**

Source: Authors own computation based on, Survey on Morbidity and Health Care: NSS 60th Round (January 2004 - June 2005), Social Consumption - Health Survey: NSS 71st Round (June 2014) and Key Indicators of Social Consumption in India: Health, NSS 75th Round(July 2017-June 2018)

4. Discussion and Conclusion

This paper provides comparable estimates of medical spending and OOP payment using appropriate survey data for over a decade and a half in India. Although other studies provided estimates of OOP, they were often by episode or for specific ailments and incomplete. The estimates in the present study are comprehensive as all medical expenditures of households including hospitalisation, maternal care and outpatient visit have been included and presented using constant prices. The present investigation is the first study providing comprehensive and comparable estimates of OOP and medical expenditure at the household level. The following are the main findings of the study.

Firstly, the results suggest that medical expenditure and the OOP payment of households increased during 2004-14 and declined thereafter from 2014-18. This pattern was consistent for both inpatient and outpatient care. Secondly, medical expenditure and the OOP payment for inpatient care was higher than those for outpatient care. Thirdly, the economic gradient of OOP payment and medical expenditure was strong. The OOP and medical expenditure was higher among the richer and richest sections of the population. This was because the OOP payment depended on income and hence, was associated with the ability to pay for health care. Fourthly, the OOP payment as a share of medical expenditure was almost constant over time. Fifthly, the state variation in medical expenditure and OOP payment was large over time. Sixthly, urban households, households without insurance coverage, households having an elderly member, female-headed households, poor households and households comprising labourers were more likely to incur medical expenditure. Besides, time was a significant predictor suggesting that medical expenditure increased during 2004-14 but declined during 2014-18.

Globally, introduction of health protection schemes and increasing access to health care insurance reduce the medical care cost and OOP payment. The introduction of co-payments for hospital care in Kyrgyzstan had reduced the OOP payment on inpatient care (Falkingham et al., 2010). The national health insurance program had reduced the OOP payment but the beneficiaries still incurred large OOP in Philippines (Tobe et al., 2013). OOP payments for medical services seemed equally widespread for both inpatient and outpatient care in Russia (Zasimova, 2016).

The present study provides some plausible explanation in support of the findings. The OOP on medical care remained high with large variations across states of India. Among others, the high OOP may be attributed to increasing non-communicable diseases, increasing utilisation of health services, low quality of care in public health centres, low insurance coverage and lack of tertiary care facilities in rural areas (Roy and Howard, 2007). The state variations in each of these variables may be attributed to per capita public spending on health, public health infrastructure and regulation of private health services. It may be mentioned that health is a state subject and largely regulated by the state government. Studies suggest that the provision of free medicine at public health facilities, quality of care in public health services and public-private partnership contribute to a reduction in OOP (Das and Mohanty 2020; Das et al 2016). Reduction of OOP payment during 2014-18 may possibly be due to the introduction of health protection schemes by the central and state government in the past decade. The National Health Mission is the single largest conditional cash transfer scheme worldwide and has been successful in reducing the CHS on maternal care (Mohanty and Kastor 2017). Besides, the RSBY was launched by the Government of India to provide financial protection to the poor. A number of state specific schemes were introduced and would, to some extent, explain the variation in OOP across states.

We outline the following limitations of the study. The study could not capture the effect of Ayushman Bharat launched in 2018 to provide financial protection to the poor and needy. Secondly, reasons for variation in OOP at the state level could not be explored. Despite these limitations, the findings provide comprehensive information on key indicators that may be used for monitoring health-related SDGs. Efforts need to be intensified to reduce high OOP payment, medical expenditure in poorer states and among disadvantaged sections of the population.

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Acknowledgements

This paper is part of research project entitled “Trends in out-of-pocket payment and Catastrophic Health Spending”, carried out at IIPS, Mumbai. Authors thank Prof K.S. James, Director & Sr. Professor, Prof R.B. Bhagat, research co-ordinator, Prof Usha Ram, Prof Archana Roy and Dr P.Murugesan of publication unit and two anonymous reviewers for their comments, suggestions and timely execution of the manuscript.

Appendix 1: Trends in share of OOP on medical expenditure in states of India, 2004-18

States	2004	2014	2018
Andaman & Nicobar	97	90	89
Andhra Pradesh	99	99	94
Arunachal Pradesh	96	88	99
Assam	97	99	95
Bihar	99	99	99
Chandigarh	77	83	79
Chhattisgarh	95	98	91
Dadra & Nagar Ha	100	91	97
Daman & Diu	97	99	98
Delhi	88	90	77
Goa	100	93	95
Gujarat	98	93	92
Haryana	95	91	89
Himachal Pradesh	91	94	91
India	**97**	**96**	**93**
Jammu & Kashmir	97	100	99
Jharkhand	97	99	96
Karnataka	94	95	92
Kerala	98	97	95
Lakshadweep	92	100	97
Madhya Pradesh	97	96	96
Maharashtra	94	94	91
Manipur	99	98	99
Meghalaya	96	88	76
Mizoram	88	53	54
Nagaland	93	59	99
Orissa	99	98	96
Pondicherry	91	96	99
Punjab	98	98	94
Rajasthan	97	97	96
Sikkim	97	97	91
Tamil Nadu	96	97	95
Telangana	96	98	93
Tripura	100	96	98
Uttar Pradesh	99	99	97
Uttarakhand	98	99	94
West Bengal	98	94	90

Appendix 2: List of question asked on medical expenditure in NSS health surveys 2004, 2014 and 2018 (Inpatient care)

Expenses incurred for treatment of members treated as in-patient of hospital during the last 365 days.				
Sl. No	**Description of Questions**	**2004**	**2014**	**2018**
1.	Srl. no. of hospitalisation case	√	√	√
2.	Srl. no. of member hospitalised	√	√	√
3.	Age(years)	√	√	√
4.	Whether any medical service provide free by employer (yes: Govt.-1, pvt.-2; no-3, not applicable-4)	√	√	√
	Expenditure during stay at hospital			
5.	Package component (in ₹)	X	√	√
	Non –package component (₹)			
6.	Doctors/ surgeon fee (Hospital staff/other specialists)	√	√	√
7.	Medicines (From hospital/outside)	√	√	√
8.	Diagnostic tests	√	√	√
9.	Bed charges	√	√	√
10.	Attendant charges	√	√	√
11.	Physiotherapy	√	√	√
12.	Personal medical appliances	√	√	√
13.	Food and other materials	√	√	√
14.	Blood, oxygen cylinder, etc.	√	√	√
15.	Services (ambulance etc.)	√	√	√
16.	Expenditure not elsewhere reported	√	X	X
17.	Other medical expenses	√	√	√
18	**Medical expenditure (₹)**	√	√	√
19.	Transport (other than ambulance)	√	√	√
20.	Lodging charges of escort(s)	√	√	√
21.	Others	√	√	√
22.	**Total non-medical expenses**	√	√	√
23.	**Total expenditure**	√	√	√
24	Total amount reimbursed by medical insurance companies or employer	√	√	√
25	Major sources of finance for expenses	√	√	√
26.	Other agencies	√	√	√
27.	Place of hospitalization	X	√	√
28.	Loss of household income, if any, due to hospitalization (₹)	X	X	√

Appendix 3: List of question asked on medical expenditure in NSS health surveys 2004, 2014 and 2018 (outpatient care).

Expenses incurred during the last 15 days for treatment of members (not as in-patient of medical institution)				
Question Number	**Description of Questions**	**2004**	**2014**	**2018**
1.	Srl. no of spell of ailment			√
2.	Srl no of member reporting ailment	√	√	√
3.	Age (years)	√	√	√
4.	Whether any medical service provided free (yes: Govt.-1, Pvt. - 2; no - 3, not applicable - 4)	√	√	√
	Details of medical services received			
5.	Surgery	√	√	√
6.	Medicine received (AYUSH)	√	√	√
7.	Medicine (other than AYUSH)	√	√	√
8.	X-ray/ECG/EEG/Scan	√	√	√
9.	Other diagnostic tests	√	√	√
	Medical expenditure for treatment (in Rs)			
10.	Doctors /surgeons fee (hospital staff/other specialists)	√	√	√
11.	Medicine received (AYUSH)	√	√	√
12.	Medicine (other than AYUSH)	√	√	√
13.	Diagnostic tests	√	√	√
14.	Other medical expenses (attendant charges, physiotherapy, personal medical appliances, blood , oxygen etc.)	√	√	√
15.	Expenditure not elsewhere reported	√		
16.	**Medical expenditure (in Rs) (total)**	√	√	√
17.	Transport for patient	√	√	√
18.	Other expenses incurred by household (registration fee, food, transport for others, expenditure on escort, etc.	√	√	√
19.	**Total expenditure (in Rs)**	√	√	√
20.	Major sources of finance expenses	√	√	√
21.	Total amount reimbursed by medical insurance company or employer	√	√	√
22.	Other agencies	√	√	√
23.	Place of treatment	X	√	√
24.	Loss of household income, if any, due to treatment (in Rs)	X	X	√

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