

Research Article

# Quantifying the Magnitude and Composition of Out-of-Pocket Expenditure on Medicines in India 2014 to 2017-18: A Repeated Cross-Sectional Analysis

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## A B S T R A C T

**Introduction:** More than 60% of healthcare expenditure by households in India is paid as out-of-pocket expenditure and expenditure on medicines is the single largest component of these payments. Increasing longevity and rising incidence of chronic conditions is expected to further increase the utilization of medicines and aggravate the associated financial burden.

**Objectives:** This paper quantifies the magnitude of out-of-pocket expenditure on medicines and changes there in, between 2014 and 2017-18. The paper looks at the expenditure across, states, types of providers and ailments.

**Method:** Repeated cross-sectional analysis using two rounds of health surveys by National Sample Survey Organization has been used.

**Results:** The mean out-of-pocket expenditure on medicines per episode fell from ₹ 4386 to ₹ 3857 for inpatient care and from ₹ 459 to ₹ 418, in constant prices, for outpatient care. Despite the decline in the magnitude of expenditure, its share in total out-of-pocket expenditure has remained high at 49%. The out-of-pocket expenditure on medicines for private provider was higher than that for public provider.

Medication for cancer and tuberculosis have the highest expenditure and show an upward trend. A high percentage of people incur out-of-pocket expenditure on medicines for fever, respiratory and musculo-skeletal diseases. The percentage of people incurring expenditure on medication for cardio-vascular diseases and diabetes has increased.

**Conclusion:** The mean out-of-pocket expenditure on medicines per episode has fallen, yet the expenditure remains high. People rely on utilization of medicines at private providers and pharmacies. Supply side and demand side policies needed to further reduce out-of-pocket expenditure on medicines.

**Keywords:** Out-of-pocket Expenditure Medicines, National Sample Survey Organization, Repeated Cross-Sectional Analysis

## Introduction

All over the world, people incur a sizeable expenditure on medicines and the global medicine market is projected to be at \$1.6 trillion excluding COVID-19 vaccines by the year 2025.<sup>1</sup> India's domestic pharmaceutical market is also expected to grow by three times in the coming decade and likely to reach US\$ 65 billion by 2024 and ~US\$ 120-130 billion by 2030.<sup>2</sup> India is known world over as the supplier affordable, life-saving, quality medicines, yet its own population is faced with poor access and affordability to quality medicines.

The total expenditure on medicines (ME) in India at ₹ 1,82,666 crore constitutes 33.8% of Current Health Expenditure.<sup>3</sup> The Share of ME in out-of-pocket expenditure (OOPE) has continued to remain high for several years.<sup>4,5</sup> In 2014, 54.6 million people were impoverished and in 2017-18, 8.6% persons faced catastrophic expenditures at 10% threshold, due to out-of-pocket expenditure on medicines (MOOPE).<sup>6,7</sup>

Increasing longevity and rising incidence of chronic conditions<sup>8</sup> is expected to further increase the dependence of the population on regular medication. Medicines which may be consumed life-long by patients for diabetes or cardiovascular disease or newer antidiabetic, anticoagulant may cost more than ₹100 a day. Medicines for disease-modifying treatments for ailments like multiple sclerosis are even more expensive, costing from ₹30,000 to ₹100,000 a month.<sup>9</sup>

High MOOPE impedes access to medicines, leads to poor treatment adherence and becomes a barrier to attainment of Universal Health Coverage. It has been found that by removing MOOPE for outpatient care, the percentage of people falling below poverty due to health expenditure came down to 0.5%.<sup>10</sup>

Given the increasing need for incurring expenditure on medicines and its critical role in imposing a financial burden on the people of India, this paper analyses the magnitude, pattern and composition of MOOPE by types of providers and ailments in India. The paper also tracks the trends in out-of-pocket expenditure due to medicines (MOOPE) between 2014 to 2017-18. A disaggregated analysis by states to look at the regional variation in the magnitude and trends in MOOPE during the two time periods has also been carried out.

This analysis is important to unpack the factors (diseases and providers) which cause the greatest burden of medicine expenditure upon households. It will help to provide useful information to policy makers for mitigating this burden.

## Materials and Methods

### Data

The study uses 71st and 75th rounds of national household

cross-sectional surveys on health, for the years 2014 and 2017-18, conducted by National Sample Survey Organization.<sup>11,12</sup> The surveys contain information about 3,33,104 and 5,55,352 individuals respectively with respect to their socio-economic characteristics, types of ailments, health care utilization and expenditure for each episode of illness for a reference period of last 365 days for hospitalization cases and last 15 days for non-hospitalized cases. The surveys use a stratified multi-stage sampling design, with the census villages / urban frame survey blocks being the first stage units and households being the ultimate stage units.

### Methodology

Repeated cross section analysis is used to track the trends in the magnitude of MOOPE between 2014 and 2017-18. Repeated cross-sectional surveys help to measure prevalence and change over time at the population level for data sets that do not measure the same subjects at different points of time. Disaggregated analysis of MOOPE across states for the two time-periods has been carried. Composition of MOOPE by types of providers and types of ailments has also been estimated. For comparability of the estimates across the two time periods, while the estimates for 2017-18 are reported in current prices, the estimates for 2014 have been converted into constant (2017) prices by using the Consumer Price Index (2012=100).<sup>13</sup> The nature of expenditure incurred, financial support and free services received is different for inpatient and outpatient care that patients receive, so the analysis has been carried out separately for both types of care. Sampling weights have been used to obtain the nationally representative estimates.

## Results

### Trends in MOOPE

Table 1 shows that medicine is a significant component of expenditure among people using inpatient and outpatient healthcare services. For inpatient care more than 70% users incurred MOOPE while for outpatient care 84% users incurred MOOPE. Between 2014 and 2017-18 OOPE in constant prices saw a fall both for inpatient and outpatient care by more than 10% each. The mean MOOPE per episode (in 2017 prices) fell from ₹ 4386 to ₹ 3857 for inpatient care and from ₹ 459 to ₹ 418 for outpatient care, during this period. Despite the decline in the magnitude of MOOPE, its share in OOPE has remained steady at 49%, indicating that about half of the total out-of-pocket expenditure is comprised of expenditure in medicines. Though the financial burden of MOOPE, measured by the share of MOOPE in monthly per capita consumption expenditure (MPCE) of households, has declined both for inpatient and outpatient care by 0.3 and 1.3 percent points respectively. Of the total expenditure on medicines, 80% expenditure is incurred on medicines for outpatient care during the entire time-period.

**Table I. Mean Expenditure and Proportion Incurring Expenditure 2014 To 2017-18 Current and Constant (2014) Prices- All India**

Indicator	2017-18 (1)	2014 (2)	Change (1-3)
Patients Reporting Payments (%)			
Inpatients incurring ME	72 [71.4-72.0]	74 [73.5-74.2]	-2 % points
Outpatients incurring ME	85 [84.3-85.0]	84 [83.8-84.6]	+1% points
Mean Expenditures per episode (₹) (In 2017 prices)			
OOPE -Inpatient	16556 [16294- 16817]	19458 [19043-19874]	-14.9%
OOPE-Outpatient	681 [662-700]	762 [741- 782]	-10.6%
MOOPE- Inpatient	3857 [3773-3941]	4386 [4267-4505]	-12.0%
MOOPE- Outpatient	418 [406-429]	459 [448-471]	-8.9%
Mean Monthly Per Capita Expenditure Ratios (%)			
MOOPE-Inpatient to Total OOPE	7.4 [7.3-7.6]	7.8 [7.6-7.9]	-0.4 % points
MOOPE-Outpatient to Total OOPE	41.6 [41.3-41.9]	41.2 [40.9-41.5]	+0.4 % points
Total MOOPE (inpatient +outpatient) to Total OOPE	49.1 [48.8-49.4]	49.0 [48.7-49.3]	+0.1 % points
MOOPE – Inpatient to MPCE	0.53 [0.51-0.54]	0.8 [0.79-0.82]	-0.27 % points
MOOPE – Outpatient to MPCE	2.9 [2.8-3.0]	4.2 [4.1- 4.3]	-1.3 % points
Total MOOPE (inpatient +outpatient) to MPCE	3.4 [3.39-3.49]	5.0 [4.9-5.1]	-1.6 % points
Share of MOOPE- Outpatient in Total MOOPE	83.3 [83.1-83.5]	84.1 [83.8-84.4]	-0.8 % points
Users receiving free or partly free medicines (%)			
Outpatient	19 [18.7-19.5]	14 [13.6-14.3]	+5.0 % points
Inpatient	43 [42.7-43.4]	33 [32.0-32.9]	+10.0 % points

Figures in brackets indicate 95% confidence interval Source: Author's estimates

### MOOPE Per Episode Across States

Figure 1, is a scatter plot of the percentage changes in MOOPE per episode for inpatient and outpatient care. For most states the mean MOOPE per episode (in constant prices) for both inpatient and outpatient care has gone down. The state of Chhattisgarh exhibits a curious trend with largest decline in MOOPE per episode for outpatient

care and the largest increase for inpatient care, similarly Meghalya shows the largest increase in MOOPE per episode for outpatient care while MOOPE for inpatient care has registered a decline. Delhi, Haryana, Andhra Pradesh, Bihar, Karnataka and Punjab are some of the notable states where MOOPE has gone down for both inpatient and outpatient care. While MOOPE for both types of care has gone up for Assam and Jharkhand. For some states such as Tamil

Nadu, Kerala, Uttaranchal, Rajasthan opposing trends are observed for MOOPE across the two types of healthcare.

A deeper state level analysis is needed to uncover the trends observed at state level.

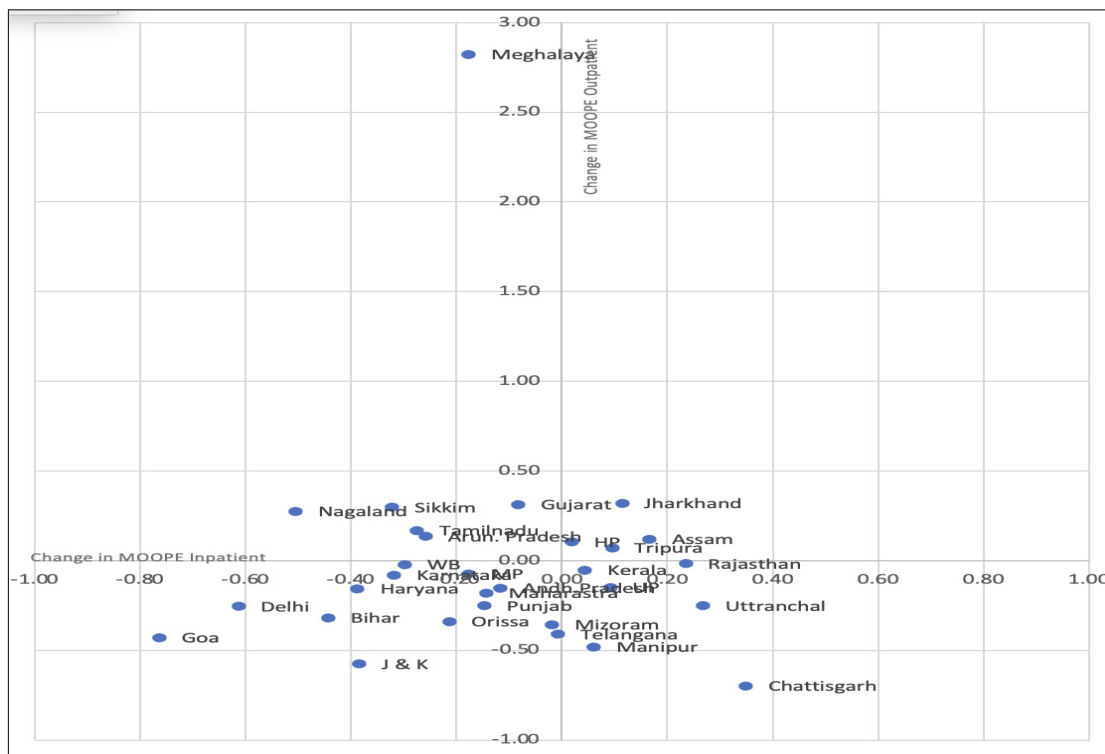


Figure 1. Scatter Plot of Changes in MOOPE Inpatient and MOOPE Outpatient Across States 2014 to 2017-18

Source: Author’s Estimates

Table 2. Mean Drug Expenditure (₹) (2017 Prices) Per Hospital Admission and Outpatient Visit by Types of Providers and Disease Category

Provider	Hospital Admissions		Outpatient Visits	
	2017-18	2014	2017-18	2014
All Diseases				
Public	1545 [1491-1599]	2051 [1965-2135]	275 [244-306]	350 [326-374]
Private	6259 [6098-6420]	6329 [6122-6536]	531 [519-543]	567 [553-583]
Informal provider (including pharmacies)	-	-	444 [307-580]	179 [155-203]
Chronic diseases				
Public	3309 [3086-3533]	3488 [3235-3740]	277 [231-322]	365 [328-401]
Private	8847 [8490-9205]	8823 [8332-9317]	532 [519-546]	608 [584-632]
Informal provider (including pharmacies)	-	-	752 [393-1112]	184 [141-226]

Figures in brackets indicate 95% confidence interval Source: Author’s Estimates



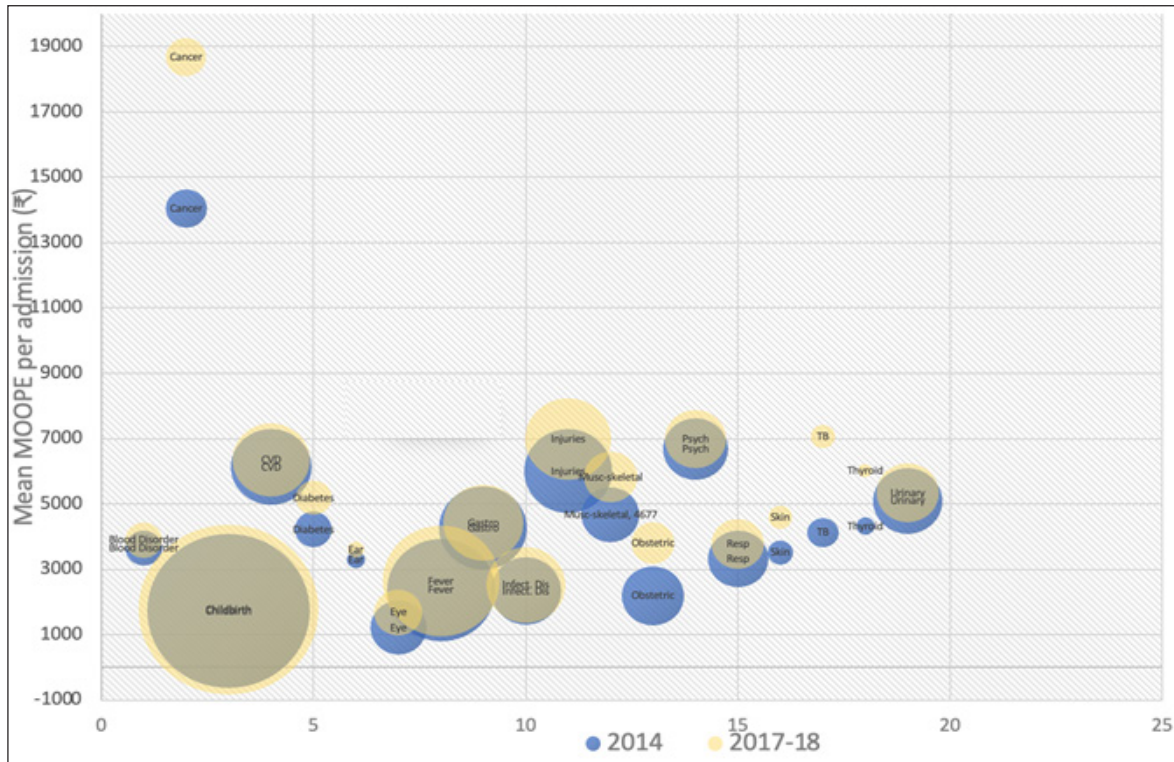


Figure 2.MOOPE for Major Ailments in patient Care: 2014 and 2017-18  
Source: Author's estimates

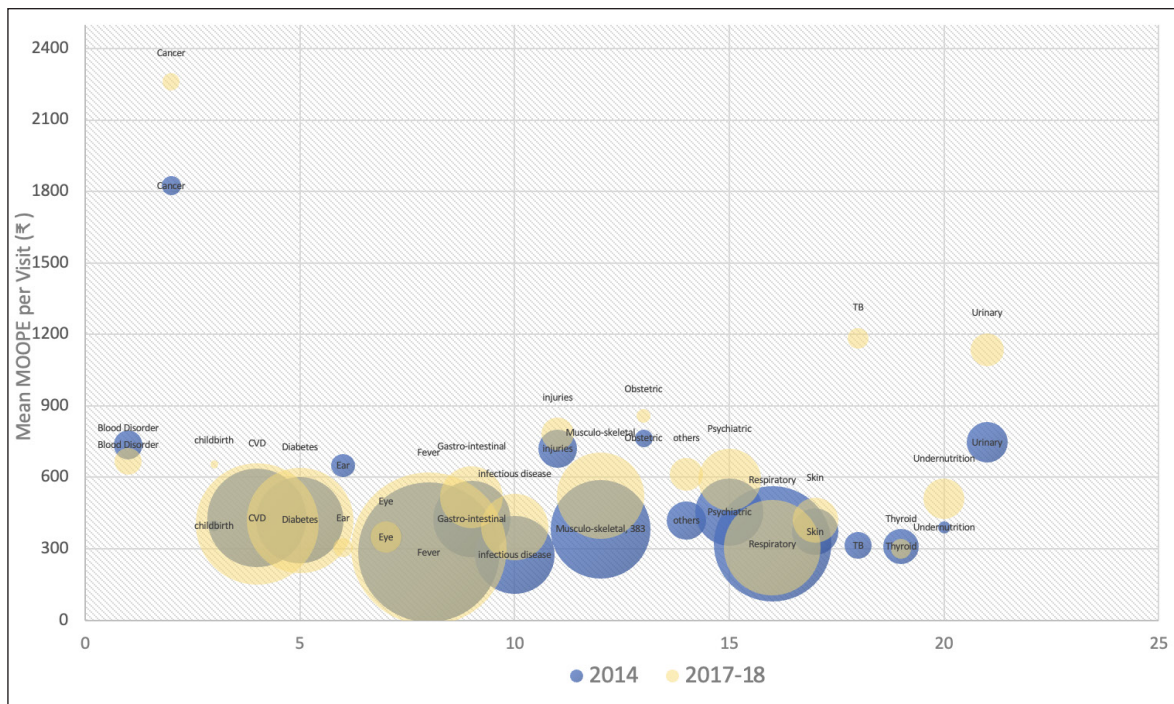


Figure3.MOOPE for Major ailments Outpatient Care: 2014 and 2017-18  
Source: Author's estimates

**MOOPE by Types of Providers**

MOOPE per hospital admission is greater at private providers for chronic diseases, and is almost four times

higher than that for public provider for all diseases and for chronic diseases Table2, for outpatient visits, the mean drug expenditure by informal provider (self care or chemist shops) is four times greater in 2017-18 as compared to 2014,

partly because till 2014, informal care covered expenditure undertaken without medical advice by self care or by consulting chemist shops only. In 2017-18, a separate category of providers classified as informal providers was added over and above the expenditure incurred through self care/ pharmacies etc. and the expenditure reported for informal providers covers both these categories of expenditure. MOOPE on chronic diseases for outpatient care is the highest at informal providers in 2017-18, indicating that people rely on chemist shops/ informal providers for medicines for diseases that require prolonged/ life-long medication Table 2.

### MOOPE by Types of Ailments

Figures 2 and 3, show the MOOPE episode for types of ailments. The height of the bubble shows the value of MOOPE and the size of the bubble shows the frequency of users incurring MOOPE. Cancer has the highest MOOPE for both inpatient and outpatient care, followed by Tuberculosis. MOOPE for these diseases also shows an increase overtime The other conditions involving high drug expenditure are injuries, psychiatric and cardio-vascular diseases (CVD) for inpatient care and genito-urinary, injuries and blood disorders for outpatient care.

Expenditure on medicines is taken by most outpatients for fever, CVD, respiratory diseases, and diabetes. CVD has moved to being the second most common disease for which users are incurring MOOPE, indicating the rise of non-communicable diseases and the dependence on continuous medication by people. Childbirth, fever, injuries, gastro-intestinal diseases, infectious diseases, and CVD are the inpatient ailments with highest frequency of expenditure on medicines.

### Discussion

The use of drugs is found to be the most dominant form of intervention while seeking healthcare with more than 70% users incurring expenditure on medicines. Preponderant share (80%) of ME is incurred during outpatient care. The period from 2014 to 2017-18 has seen a reduction in inpatient MOOPE by 15% to ₹3857 and outpatient MOOPE by 11% to ₹418. Though MOOPE in constant prices has come down, the burden of medicine expenditure continues to remain high and poses a threat of poor access to medicines and financial stress on the population while being an impediment to the attainment of Universal health Coverage and Sustainable Development Goals.

Government policies related to provision of affordable drugs in India have largely been based upon supply side interventions via price regulation of pharmaceutical products by the National Pharmaceutical Pricing Authority. The Government of India also has a National List of Essential Medicines (NLEM) that are mandated to be available at

affordable price with assured quality at all public sector facilities. Another supply side intervention by the Union Government has been the launch of Jan Aushadhi Yojana in 2008, (rechristened and revamped to Pradhan Mantri Bharatiya Jan Aushadhi Pariyojana (PMBJP) in 2015) to sell generic medicines through private drug stores (Jan Aushadhi Kendras).

The demand side policies have hitherto been absent. The various publicly financed health insurance schemes that exist since 2007 at the state level (Rajiv Aarogyasri Health Insurance Scheme, Andhra Pradesh; Rajiv Gandhi Jeevandayee Arogya Yojana, Maharashtra; Chief Minister's Comprehensive Health Insurance Tamil Nadu) are focused on providing insurance for hospitalized care only. The impact of Pradhan Mantri Jan Arogya Yojana (PM-JAY) that was introduced in 2018 are yet to be captured in the data. There is a need to provide expenditure support for outpatient care and expenditure on medicines. In the supply of generic medicines via PMBJP too, there is a need for a demand side push by encouraging the prescription of generic drugs by physicians and building trust on these medicines among the users. This is especially important, given the reliance of users on procuring over-the-counter medicines from pharmacies.

State level changes in MOOPE per episode for inpatient and outpatient care show varying trends across states. While some states registered a decline in MOOPE for both inpatient and outpatient care, some exhibited an increase in MOOPE for both services, yet some other states show an opposing trend in MOOPE for both types of care. Health being a state subject, states follow idiosyncratic policies regarding the list of essential medicines, procurement and supply of free drugs and public health insurance schemes. An analysis of health policies and infrastructure at the state level is needed to understand the reasons for these variations.

The MOOPE for private provider was almost four times as high as that for public provider for all diseases per hospital admission. A large proportion of the Indian population is found to be dependent on the private market for medicines, because of stock-outs and an unreliable supply-chain management system in the public sector by other studies<sup>14</sup> For chronic diseases also, the gap in MOOPE between public and private is large. For outpatient care, MOOPE for all diseases is high for informal providers and highest for chronic diseases (in 2017-18) in comparison to formal public or private providers. This indicates heavy reliance on pharmacies, self-care and informal providers, for outpatient care, particularly for diseases requiring prolonged or life-time medication. Poor availability of medicines at public facilities leads to poor access to medicines.

Medication for cancer and tuberculosis continue to have the

highest expenditure for both outpatient and inpatient care in both the time periods and show an upward trend. While fever is most common type of ailment for which medicine expenditure is incurred, the percentage of people incurring MOOPE on respiratory and Musculo-skeletal diseases is also very high. Emergence of CVD (which includes hypertension) as the second most common disease on which outpatients incur MOOPE along with the large percentage of people incurring expenditure on diabetes medication, indicates the rise in the burden of MOOPE for non-communicable diseases among the Indian population.

### Conclusion

The study has found a downward trend in MOOPE, yet the high magnitude of MOOPE continues to remain a challenge for financial protection against health expenditures and achievement of the health system goals. High economic growth<sup>15</sup> growing incidence of non-communicable diseases is further expected to increase expenditure on healthcare and medicines. Both demand side and supply side policies are needed to ameliorate the expenditure and improve access to medicines.

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