

Out-of-pocket spending on hypertension and diabetes among patients reporting in a health -care teaching institute of the Western Rajasthan

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ABSTRACT

Background: Across the globe, morbidity and mortality due to non-communicable diseases (NCDs) are major public health issues. The resulting concern is not just epidemiological but also about the economic consequences at the household level. **Objective:** To assess the various facets of out-of-pocket spending (OOPs) incurring on NCDs, namely hypertension and diabetes on patients attending a healthcare teaching institute in Rajasthan. **Methodology:** This cross-sectional study involves patients older than 18 years attending either out-patient clinics or who were admitted in the wards in a healthcare teaching institute for seeking care for diabetes or hypertension. Four hundred patients were chosen purposively and a pretested questionnaire was used to elicit information on incurring OOPs for NCDs. Descriptive statistics (like percentage, mean, median, and standard deviation) were calculated. **Results:** The study shows a significant expenditure other than out-patient, in-patient admissions, in the form of personal expenditure and loss of employment, amounting to 31.86 and 34.07%, respectively, of the mean total expenditure. In a quarter (3 months), the mean total expenditure is ₹9014.37 ± 6452.37. On average, the OOP expenditure per visit for an out-patient visit was ₹370.54 ± 237, while for the patients admitted to the hospital, the average OOPs was ₹1564.72 ± 1310.5. **Conclusions:** Health expenditures can contribute toward the impoverishment of many segments of the community. Undoubtedly, numerous people may tend to neglect the needed care for NCDs due to financial hurdles. Thus, there is a need to develop NCD care management centers with health insurance packages and make them accessible for all.

Keywords: Diabetes, health expenditures, hypertension, non-communicable diseases, out-of-pocket, outpatients, public health

Introduction

Non-communicable diseases (NCDs) are the main emerging chronic diseases within the twenty-first century causing deaths

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and long-standing disabilities with grave impact on the lives of individuals from developing as well as developed countries.^[1] The very first document on NCDs which was provided by the World Health Organization (WHO) showed that NCDs contributed to 63% of all deaths in 2008, out of which 48% were by cardiovascular diseases, 21% by cancers, 12% by chronic respiratory diseases, and 3% by diabetes.^[2]

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In India, NCDs cause 5.8 million deaths each year keeping one in four Indians at the risk of dying from non-communicable disease.^[3] Also, there is a rise in NCDs-specific deaths from 37% in 1990 to 61% in 2016.^[3] India's rapid progress through demographic and epidemiological transitions has resulted in major challenges attributed to both communicable and NCDs. The resulting concern is not just epidemiological but also financial losses at the households' level through the expenditure on healthcare.^[4]

To reduce the impact of NCDs on individuals and society, a comprehensive approach "Global NCD Action Plan 2013–2020" was structured within the WHO Global Status report 2014. In response, India adopted the national action plan aimed to reduce global premature deaths contributed from NCDs by 25% by end of the year 2025 with determined national targets and indicators.^[3] The Indian government is already implementing the 'National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Disease, and Stroke (NPCDCS)', which aims to educate the public about risk factors and conduct opportunistic screenings in primary care settings.^[3]

Ischemic heart disease and diabetes are the leading NCDs that lead households to disability-adjusted life years and high out-of-pocket (OOP) treatment costs in developing countries like India.^[5,6] Hypertension is the most typical iceberg disease and the leading reason for cardiovascular disease globally.^[7] Various studies concluded that in the Indian adult population, the health-seeking behavior for hypertension is unacceptably low.^[7] As stated by the International Diabetes Federation,^[8] India has 73 million diabetic patients, the second-largest in the world. Considering the anticipation, this figure is expected to double by 2045 which encompasses a massive economic burden.^[9]

The World Health Report on Health Systems Financing—The Path to Universal Coverage stated that almost 150 million people undergo financial suffering due to direct expenses on health care services.^[10-12]

OOP spendings are direct payments made by an individual to health care providers at the time of service. Pre-payment like taxes or insurance premiums and reimbursements are not included in OOPs.^[13]

As per the latest National Health Accounts report, households pay 64.2% of the total health expenditure (THE) as OOP spending.^[14] Households incurring catastrophic health expenditure (%) in 2017–2018 was 62.18 [56.08–67.91] in Rajasthan which pushed 11.68% of the households under poverty due to OOPs.^[15]

As there is a dearth of literature on OOPs of patients suffering from hypertension (HTN) and diabetes within the Indian context, this study aims to collect preliminary data from the patients arriving at the health care teaching institute on OOPs which can help policymakers and healthcare providers to plan financial protection schemes and preventive strategies to push the health of the millions. In planning adequate policies, identifying

the population at risk of high OOPs will be an essential step to prevent catastrophic expenditure due to specific NCDs. However, there is a paucity of studies conducted from an economic viewpoint that estimates the gross financial burden imposed by NCDs on local households.^[16]

Our study, therefore, aimed at describing various facets of OOP-pocket expenditures (OOPs) incurring on non-communicable diseases (hypertension and diabetes mellitus) on households of patients attending a healthcare teaching institute at Jodhpur in western Rajasthan.

The timing of the study is incredibly pertinent, as currently, India is moving toward the implementation of universal health coverage as a key strategy for Pradhan Mantri Ayushman Bharat Yojana.^[17]

Materials and Methods

Study design and participants

Jodhpur is the second-largest city in the state of Rajasthan. The prevalence of hypertension in the urban area in southern Rajasthan was 32.67% in 2015.^[18] Also, 18.40% of the population in the urban area was affected by diabetes mellitus in Rajasthan in 2017.^[19]

This cross-sectional study involves patients (age above 18 years) attending a healthcare teaching institute in Jodhpur for seeking care for diabetes mellitus (DM) and hypertension during the study. The patients were chosen purposively who were attending either out-patient clinics or were admitted in the wards and volunteered for this study.

Inclusion criteria

The patients who were diagnosed as diabetic patients according to the WHO guidelines on diabetes^[20] or those who had been diagnosed as hypertensive patients according to the 2017 guidelines for hypertension in adults given by the American Heart Association (AHA),^[21] or those patients who had been diagnosed as both by a physician were included in the study.

Sample size

For sample size calculation, we have assumed a prevalence of 44.46% of hypertensive patients among all chronic illnesses attending an out patient department (OPD),^[7] with the power of 80% and absolute error of 5%, the sample is found to be 395 (approximately 400).

Study tools

A pretested questionnaire was used to fill in the details provided by the patient about their disease condition and the OOP expenditure incurred. Information was sought on demographic details (age, gender, distance traveled from home to hospital, education, occupation of the head of the family, and monthly income of the family), in-hospital expenditures (fees, travel cost, room rent, medicines), out-patient visit expenditure (times

of visit, fees, travel cost, tests cost, medicines), expenditure on paramedical services (like physiotherapy), personal expenditure (like private treatment, cost of equipment purchased), and loss of employment. The socioeconomic status of the person was calculated using a modified Kuppuswami scale.

Ethical committee approval

Ethical considerations for the study were obtained from the Institutional Ethical Committee. (Ref: AIIMS/IEC/2018/551)

Data management and statistical analysis

The entry of data and subsequent statistical analysis were performed using the Statistical Package of Social Sciences (SPSS vs. 21). Descriptive statistics (mean, median, and standard deviation) were calculated on quantitative variables. Data were presented in numbers and percentages with the help of graphs, pie charts, and tables.

Results

A total of 400 patients participated in the study. Out of all the respondents, 54.5% were men and 45.5% were women. Around 65% of the participants were adults (age group 20–59 years), 35% were elderly (age greater than 60 years).

The majority belonged to class II (33.75%) and class IV (25%) socioeconomic status (SES) as per the modified Kuppuswami scale [Figure 1].

Table 1 explains the healthcare expenditure in patients suffering from hypertension or diabetes in the last 3 months. The average out-patient expenditure was ₹3518.30 ± 2133.05 in the last 3 months which included hospital fees, travel cost, cost of tests, and cost of medicines consumed in 3 months. We also found that 132 patients (33%) needed hospitalization in the last 3 months and their mean expenditure on admission fees, travel, room rent, food, and other expenses was ₹7405.18 ± 5152.86 in 3 months. Around 220 patients (54%) spent money on personal expenditures like private treatment, purchasing equipment (glucometer, blood pressure (BP) cuff, Physiotherapy instruments), modifications to their house/buying walking support averaged to ₹3774.17 ± 2856.9 in 3 months. Also, 101 patients (25.25%) had some employment loss averaging to ₹3973.33 ± 2166.22 in 3 months.

The mean total expenditure of 400 patients suffering from hypertension or diabetes in 3 months was ₹9014.37 ± 6452.37 in 3 months. On average, the OOP expenditure per visit for an out-patient visit was ₹370.54 ± 237. While for the patients admitted to the hospital, the average OOP was ₹1564.72 ± 1310.5. Out of the total expenditure, in availing in patient department (IPD) services, 30% of the expenditure of the total was for transportation, the rest of the proportion was including room rent, food, and medicines. As this was a public sector hospital, the doctor fee was not part of the expenditure.

Figure 2 explains the patients' expenditure based on the distance traveled to attend an NCD clinic at the tertiary care center and classifies them as 52% traveled less than 20 km to come to the hospital, 34% traveled between 20 and 150 km and 14% traveled more than 150 km.

Table 2 describes the average cost to the patient per out-patient visit including the various costs incurred between visits like personal expenditure and loss of employment: ₹2458.34.

Figure 3 illustrates a line trend in out-patient expenditure and total expenditure (including personal expenditure and employment loss) depicting the increasing OOP expenditure per visit.

The financial burden for the utilization of healthcare facilities was analyzed on different socioeconomic groups. These have been made into classes according to the modified Kuppuswami scale and the mean financial burden (total expenditure and

Table 1: Healthcare expenditures in patients suffering from hypertension or diabetes in the last 3 months

	Number (n=400)	Mean expenditure in the last 3 months	Standard deviation
Out-patient expenditure	400	₹3518.30	±2133.05
In-patient expenditure	132	₹7405.18	±5152.86
Personal expenditure	220	₹3774.17	±2856.9
Loss of employment	101	₹3973.33	±2166.22
Total expenditure	400	₹9014.37	±6452.37

Table 2: Average cost to the patient per out-patient visit

	Total expenditure in the last 3 months	Number (n=400)
1	₹4192±2901	54
2	₹5988±3791	86
3	₹6147±3917	157
4	₹6580±2560	42
5 or more	₹8912±5658	61

Average expenditure per visit = ₹ 2458.34

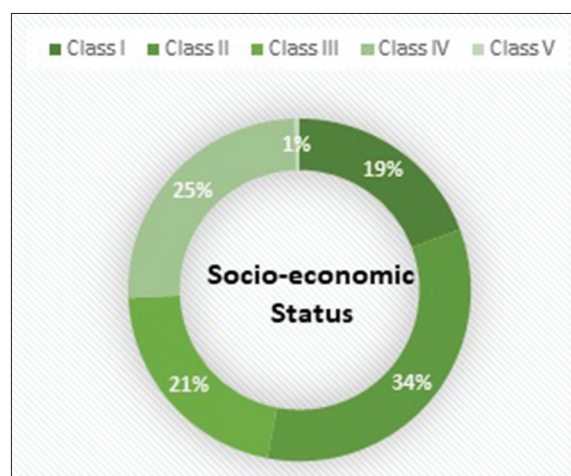


Figure 1: Pie chart representing the socioeconomic status of patients according to the modified Kuppuswami scale

personal expenditure in 3 months) is calculated as described in Figure 4.

Table 3 explains the employment loss of the patients visiting the tertiary care center over the last 3 months. A total of 96 people (24%) reported some financial loss due to unpaid sick leave for OPD visits or absence from work due to hospitalization. The majority loss is faced by people belonging to class II (33.75%) and class IV (25.5%), according to the modified Kuppuswami scale.

Discussion

NCDs like hypertension and diabetes lead to very high OOP expenditures for households due to the lack of affordable

health care services and financial coverage. In urban areas, the proportion of households reporting OOP health, spending increased from 65% in 2005 to 78% in 2012.^[22] This affected household economics at large and hindered future development.^[5] Hence, our study highlights how hypertension and diabetes might become an overwhelming burden on common household economics.

In this study, the main focus is to acknowledge the OOP expenditures which include out-patient, in-patient, hospital fees, cost of tests, cost of medicines, admissions fees, travel expense, expenditure on paramedical services, personal expenditure (private treatment, purchasing equipment, and modifications to their house/buying walking support), and loss of employment in the last 3 months visiting a healthcare teaching institute.

This study explores OOP expenditures in different domains incurred by individuals during the utilization of services on NCDs in a healthcare teaching institute at Jodhpur. Following previous studies, our study confirms that despite the public health system which provides essential primary health care at no cost, a notable population faces relatively high OOP expenditure.^[16,23]

The current study at Jodhpur revealed that the patient has to bear a considerable OOP for attending the OPD as well as IPD (if needed) even when the services are available at the public sector hospitals. On average, the OOP expenditure per visit for an out-patient visit was ₹370.54 ± 237. Spending is even higher for hospitalization-related expenditure.^[24] While for the patients admitted to the hospital, the average OOP was ₹1564.72 ± 1310.5. Out of the full expenditure in availing IPD services, 23.7% expenditure of the total was for transportation, the remainder of the proportion was including room rent, food, and medicines. As this was a public sector hospital, so doctor fee was not a part of the expenditure. In a similar study conducted by R Archana *et al.*^[4] at Puducherry, it was found that the mean total expenditure per hospitalization was found to be ₹1340 ± 1192.9. So, it is high time that social insurance schemes be placed when India goes through the transition of getting a high burden of NCDs as an important cause of morbidity and deaths.

In our study, a majority of the patients (54%) have spent on personal expenses. Thus, it is plausible to assume that the gaps in financial protection and inefficient service delivery force

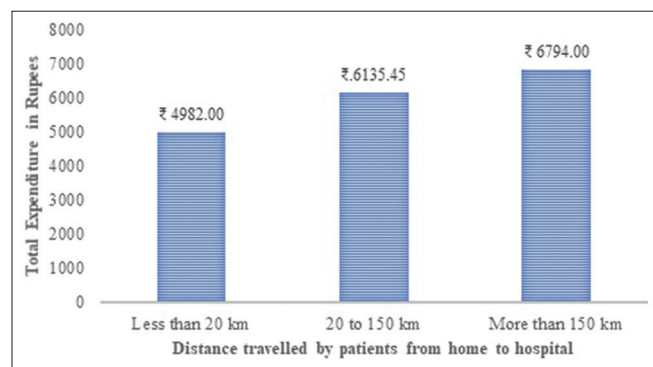


Figure 2: Median total expenditure occurred to patients classified according to distance traveled

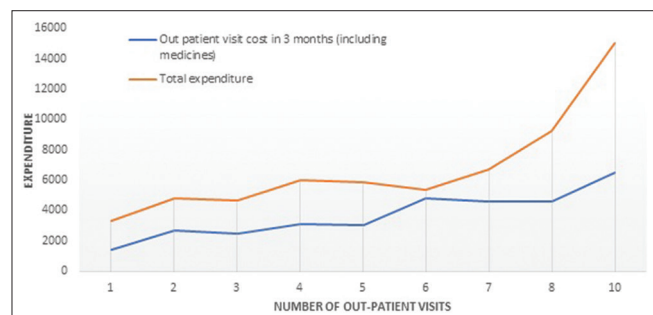


Figure 3: Line graph showing median out-patient expenditure vs. total expenditure incurred to patients (inclusive of personal expenditure and loss of employment)

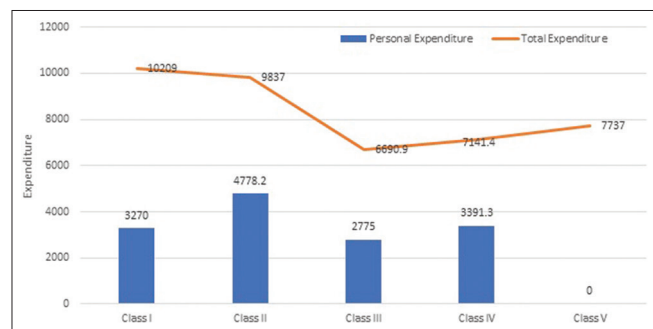


Figure 4: Combination graph showing mean personal expenditure vs. total expenditure (inclusive of personal expenditure and loss of employment)

Socioeconomic status (modified Kuppuswami scale)	Number (n=96)	%	Days lost	Average days lost
Class I	5	19	35	7
Class II	21	33.75	116	5.5
Class III	31	21.25	138	4.4
Class IV	38	25.5	210	5.5
Class V	1	0.5	3	3

people to buy private services. The incurred higher expenditure on specific treatment, medicines, equipment, and diagnostics marks the fragile public system which is well aligned with the findings of rural Malawian study.^[25]

The majority of patients (65%) during this study represent the productive age group (20–59 years) with a male predominance of NCD cases. This in relation increases the indirect cost because of employment loss for visiting hospitals. Nearly 25% of the patients suffered financial loss due to absence from work. The likely economic impact is very similar to the findings in a Sri Lankan study.^[23] The average days lost in visiting a clinic were the highest for people belonging to class I (7 days per person), followed by those belonging to class IV (5.5 days per person). In contrast, with the available literature, SES has an insignificant role in determining the OOP expenditure.^[26]

The median total expenditure rises proportionally as the distance traveled by a patient to access the essential care increases. Also, when compared according to the distance traveled, the highest employment days lost was for patients traveling from outside the Jodhpur district (greater than 150 km) which is 6.05 days per person.

Various studies concluded that a household spends a substantial amount of income on the care of NCDs.^[16,27] In a research conducted in Kerala, it was discovered that 74% of the people have health insurance. As many as a quarter of the population are still uninsured. This led nearly 70.8% of the people to take loans for hospitalization.^[28] Due to the enormous spending, they may face catastrophic health expenditure and impoverishment.^[29] Besides this, households' financial status is also adversely affected through the accumulation of debt and trap into a vicious cycle thereafter.

This present study was conducted in a public hospital setting and does not show the variations that might occur with a change in the season, at a different time of the year, and in the private sector which forms the main contributor in the OOP expenditure. Moreover, qualitative research is needed to explore the reason behind the higher OOP expenditure such as patients being charged informal fees or sent to private facilities for seeking healthcare.^[27]

The study's core findings revealed that spending on health and common NCDs is done by a financial pool that comprises government health budgets, insurance packages, donor monies, and a significant contribution from OOP spending by individuals.^[13] OOP payments impose a major financial strain on patients visiting hospitals, particularly the poorest. This shows that the existing coverage policy has significant financial protection gaps.^[25] These findings have important policy implications and can be used to ensure higher financial protection against the economic impact of NCDs. The data would be handy for policy formulators to provide insurance coverage considering NCD as collateral damage to these patients at the grass-root level.^[30-33]

This aligns in a similar strategic viewpoint to the Pradhan Mantri Ayushman Bharat Yojana in which the target is to provide health insurance to at least 40% of the country's population.^[17]

Conclusion

The current research on OOP spending throws light on the financial aspects of the struggle done by the patients of these chronic diseases, namely hypertension and diabetes. Undoubtedly, numerous people may tend to neglect the needed care for NCDs as a result of financial hurdles. Health expenditures can contribute toward the impoverishment of many segments of the urban locality. Thus, there is a dire need to develop NCD care management centers with health insurance packages and make them accessible for all. Periodic assessment to keep track of the trends in OOPs on various NCDs will lay the foundation for the policymakers. Further, more multi-centric studies are required to co-relate the role of health finance protection schemes in alleviating the various OOP expenditures for chronic NCDs.

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Conflicts of interest

There are no conflicts of interest.

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