International Journal of Advanced Community Medicine

E-ISSN: 2616-3594
P-ISSN: 2616-3586
IJACM 2019; 2(3): 100-104
Received: 16-07-2019
Accepted: 19-08-2019

Dr. A Arvinth Ram
Department of Community Medicine, Rajah Muthiah Medical College and Hospital, Annamalai University, Annamalai Nagar, Tamil Nadu, India

P Kalyani
Department of Community Medicine, Rajah Muthiah Medical College and Hospital, Annamalai University, Annamalai Nagar, Tamil Nadu, India

A John William Felix
Department of Community Medicine, Rajah Muthiah Medical College and Hospital, Annamalai University, Annamalai Nagar, Tamil Nadu, India

Corresponding Author:
A John William Felix
Department of Community Medicine, Rajah Muthiah Medical College and Hospital, Annamalai University, Annamalai Nagar, Tamil Nadu, India

A study on the out of pocket expenditure among households with diabetic and hypertensive patients in Chidambaram, Tamil Nadu

Dr. A Arvinth Ram, Dr. P Kalyani and Dr. A John William Felix

DOI: https://doi.org/10.33545/comed.2019.v2.i3b.89

Abstract
Background: High oope is associated with increasing ncds [1-4]. 3.5 to 6.2% of the population in india is pushed into poverty due to high oope [7, 11, 12]. only 19% of the indian population is covered by central or state-government sponsored insurance [25]. with this background the study objective was to estimate the out of pocket expenditure among households with diabetics and hypertensive patients.
Methods and Methodology: This cross-sectional study was conducted among 100 households with diabetic and hypertensive patients in Chidambaram. Direct costs include cost of consultation, medications, and laboratory investigations. Indirect costs include hospital stay, miscellaneous costs and expenses for meals and travelling, sickness absenteeism by the patient and the family.
Results: Each household on an average spent Rs.8295 was spent annually as out of their pocket for direct medical expenditure. The average indirect expenditure incurred was Rs.5534 annually. The mean total medical expenditure incurred was Rs.13830 annually.
Conclusion: This study demonstrates the preference towards government run health care centres has helped the households not to incur catastrophic health expenditure.

Keywords: Diabetes, hypertension, OOPE, out of pocket expenditure, direct medical costs, indirect medical costs, catastrophic health expenditure, medical expenditure

Introduction
High out of pocket expenditure is associated with increasing non-communicable diseases (NCDs), increase in the number of the elderly population, increasing costs of health care, low coverage of health insurance, advancements in medical technology and decreased public spending on health care [1-4]. More than 100 million people are pushed into poverty every year due to health expenditure [5-9].
SDG 3 stresses on 'financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all' to achieve Universal Health Coverage by 2030.[10] Around 97 million people were impoverished due to expenditure on health care in 2010.[5] Globally, an estimated 588 million (9.7%) people had incurred catastrophic health expenditure in 2000 and it has increased to 808 million (11.7%) in 2010 [9]. Every year, 3.5 to 6.2% of the population in India is pushed into poverty due to high OOPE [7, 11, 12]. The impoverishment increases with hospitalization of cases [13, 14]. Similarly, about 23.4% households incurred catastrophic health spending during 2011–12.[15]
About 71.1% of the health expenses in 2004 and 67.74% in 2014 was met by the individual households' themselves in India [16] Public health spending in India is about 1% of gross domestic product (GDP), lower than many low income countries [11, 17-19]. India's health system is characterized by both public and private health care providers. Public health facilities are provided by the central government, the state governments, and local bodies [20], [21] Public health centres provide low cost care, are generally overcrowded, and largely used by the poor. Despite this low cost of health care, the poor households incur high catastrophic health expenditure and have a higher burden of diseases [21-24].
Only 19% of the Indian population is covered by central or state-government sponsored insurance, leaving the majority of the expenditure for diseases to the individuals in the form of out-of-pocket expenditure. In addition, the economic productivity of the society may decline enough to significantly impact national economic productivity as young Indians with

diabetes and hypertension, age and experience the medical complications of their diseases [25].

With this background the objective was to estimate the out of pocket expenditure among households with diabetics and hypertensive patients.

Materials and Methods

This descriptive cross-sectional study was conducted among 100 households with diabetic and hypertensive patients residing in Chidambaram for a period of 6 months (june18-jan19) in the field practice area under urban health centre, Department of Community Medicine, RMMCH. The 100 households were selected by convenient sampling and only the households with either diabetics and/or hypertensives were included in this study. The details of this study were explained to the study population in their local language, and after getting their informed consent, the data for this study was collected by house to house survey using a semi structured interview schedule. The interview schedule included details such as demographic and socio-economic data, type of morbidity, modality of treatment and expenses met towards direct and indirect costs. After data collection, data was entered in Microsoft Excel and analysed using SPSS version 23. Descriptive analysis was done as the statistical test.

The following definitions were used to measure the OOP health expenditure of the families:

1. Out of pocket expenditure: It was defined as the health spending by households on medical goods and services and maintenance of good health.
2. Catastrophic health expenditure: It was defined as the household's annual health expenditure when exceeds 10 per cent of the total annual household income.
3. Direct health expenditure: It includes all annual medical expenditure towards treatment which includes doctor's fee, purchase of medicine, diagnostic charges and hospital charges.
4. Indirect health expenditure: It includes the other annual expenses incurred by a household which includes transportation charge, lodging charges and loss of wages for both the patients and the family members.
5. Monthly per capita consumer expenditure (MPCE) was calculated as the household's consumption expenditure in a month divided by the size of the household.

Results

Out of these 100 households surveyed, 345 participants were identified and among them 119 were having the disease. Of them 50 had diabetes mellitus, 25 had hypertension and 44 had both diabetes and hypertension (Fig: 1) 42.5% of males and 26.3% of the females were having the disease. Majority (40.8%) of the diseased belonged to the age group of 31-60 years. The diseased member of the households had the disease for an average of 1.8 years.

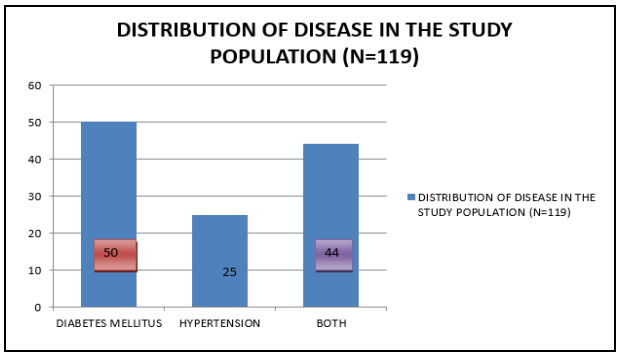

Fig 1: The distribution of type of disease among the study population

Table 1: Socio demographic description of the study population

Variables	Frequency	Percentage
Age (N=345)		
<5	8	2.3
6-10	27	7.8
11-19	38	11
20-29	31	9
30-60	172	49.9
>61	69	20
Sex (N=345)		
Male	174	50.4
Female	171	49.6
Family Size (N=100)		
1	5	5
2	25	25
3	17	17
4	30	30
5	19	19
6	4	4
Education of Head of Household (N=100)		
Illiterate	4	4
Primary School	32	32
Middle School	12	12
High School	29	29
Intermediate/Diploma	10	10
Graduate	12	12
Profession/Honors	1	1
Occupation of The Head (N=100)		
Unemployed	6	6
Elementary Occupation	32	32
Machine Operator	7	7
Craft/Trade Worker	17	17
Skilled Agri/Fishery Worker	4	4
Skilled Workers & Sales Worker	19	19
Clerks	12	12
Professionals	3	3

Table 2: Per capita income and mean per capita expenditure per month of the households under study

Variables (Inr)	Frequency (N=100)	Min (Inr)	Max (Inr)	Mean (Inr)	Sd (Inr)
Per Capita Income					
<4000	69				
4001-6000	15	400	21933	4096	3693
>6001	16				
Mean Per Capita Expenditure					
<1700	50			2146	
1701-2750	24				
>2751	26	500	5570		1246

Table 3: Out of pocket expenditure (oope) per year among the study households

Variable (INR)	Frequency (N=100)	Minimum (Inr)	Maximum (Inr)	Mean (Inr)	Sd (Inr)
Total Direct Oope					
<2400	50				
2401-7000	24	0	225199	8295	24125
>7001	26				
Indirect Oope					
<100	59				
101-400	25	0	67200	461	1080
>401	16				
Total Oope					
<5000	51				
5001-10000	20	0	225199	13830	27267
>10001	29				

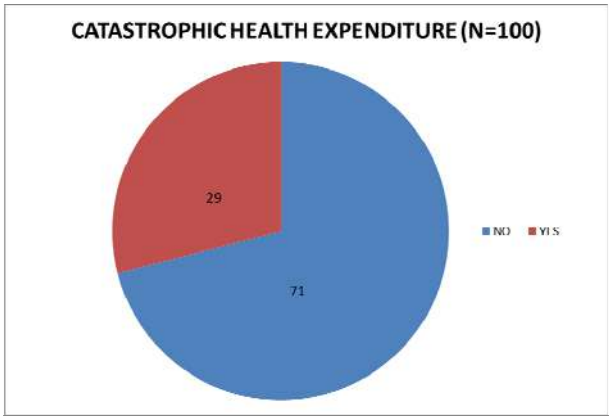

Fig 2: Distribution of Households Based on Catastrophic Health Expenditure

Table 4: Description of mean oope and mean catastrophic expenditure annually based on type of disease in the study households

Households With Type Of Disease	Oope (INR) (N=100)				Catastrophic Expenditure (Inr) (N=29)			
	Min	Max	Mean	SD	Min	Max	Mean	SD
Diabetes Mellitus	0	64700	13631	16435	2044	57500	14027	17615
Hypertension	0	49800	7995	13056	200	40800	20348	22594
Both	0	225200	18195	41612	1080	195200	37597	56711

Out of 345 participants, 164 belonged to the age group of 31-60 years and there was equal distribution of males and females. 32% of the head of the households had a primary school education and were employed in an elementary occupation. 30% of the households had a family size of 4 members (table: 1). Out of 100 households, 75 were own houses, 45 households had an income in the range of Rs.3908-11707 and 57 households belonged to the upper lower socio economic class based on modified Kuppuswamy scale. 69% of the households had a per capita income less than Rs.4000. 79% of the households paid a rent of less than Rs.500. 88% of the households had less than Rs.500 as their debt. The mean per capita expenditure (MPCE) of the households was Rs.2146 (table: 2).

65% of the diabetics and hypertensives were diagnosed for the first time in a government run hospital. 75% continued their treatment in a government health facility. Only 34% of the population under study switched to a different health care provider during their course of `treatment; of these 19% switched from a private facility to a government run centre. 26% of the household paid more than Rs.50 as a doctor's fee per month. 33% of the population paid more than Rs.200 per month for their medicines, while 99% did not exceed Rs.500 for their surgical expense. The households spent an average of Rs.304 for their hospitalisation per month. The average diagnostic test per month costs Rs.41 for every household. Every household annually spent on an average of Rs.8295 as out of pocket expenditure for their direct medical costs. The mean expenditure per month towards the travel and food of the patient and attendee were Rs.95 and Rs.39 respectively. On an average the patient lost 1 day of work due to their illness and Rs.269 due their absence at work. The mean total indirect expenditure incurred by the household was Rs.5534 annually. The mean total medical expenditure incurred by the study population was Rs.13830 annually (table: 3). The mean OOPE was high among households with both diabetics and hypertension, spending on an average Rs.18195 annually (table: 4).

29% of the households under study spent more than 10% of their household income towards medical expenditure (fig no: 2) and households having both diabetics and hypertensives had on an average a catastrophic expenditure of Rs.37597 (table no: 4). 64% of the households were insured under one form of insurance out of which 54% were insured under free government health insurance schemes like CMCHIS and PMJAY.

Discussion

164 participants belonged to the age group of 31-60 years and there was equal distribution of males and females. 32% of the head of the households had a primary school education and were employed in an elementary occupation.

30% of the households had a family size of 4 members. 75 had own houses. 45 of the households had an income in the range of Rs.3908-11707. 57 of the households belong to the upper lower socio economic class based on modified Kuppuswamy scale. A study conducted by Karthiyayini Loganathan *et al* in Maharashtra showed similar findings [26].

69% of the households had a per capita income less than Rs.4000. 79% of the households paid a rent of less than Rs.500. 88% of the household had less than Rs.500 as their debt. The mean per capita expenditure (MPCE) of the household was Rs.2146. This is comparable with studies done by Vikas Bajpai *et al* and Anshul Kastor *et al*. [27, 28]

Majority (40.8%) of the diseased belonged to the age group of 31-60 years. The study participants had the disease for an average of 1.8 years.14.5% of the population had only diabetes mellitus while 7.2% had only hypertenstion.12.8% of the population had both diabetes mellitus and hypertension. These findings were comparable to a study conducted by Biplab Kumar Datta *et al*. [29]

In this study 65% of the participants were diagnosed first in a government run hospital. 75% continued their treatment in the government health facility. Only 34% of the population under study switched to a different health care provider during their course of treatment; of these 19% switched from a private facility to a government run centre. However in a study conducted by Indrani Gupta *et al* 79% were first diagnosed in a private institution and 58% switched from public to private hospital [30].

In this study 54% of the households were insured under government sponsored health insurance schemes like CMCHIS and PMJAY. The individuals covered under health insurance schemes is higher in this study when compared to a study conducted by Jayakrishnan T *et al*. [31]

In the current study the mean total medical expenditure incurred by the study population was estimated to be Rs.13830 annually. 29% of the household in the current study spent more than 10% of their household income towards medical expenditure and had catastrophic medical expenditure. This is comparable to a study conducted by Bharat S. Thakare *et al* and another study done by Anshul Kastor *et al*. [28, 33]

limitation of the study

The study asks questions based on the income of households, the reliability of the responses related to the income variable is questionable because many participants were reluctant to reveal their real income. The estimate of the medical expenses of the participants was calculated approximately and it was not cross checked with their medical bills. Due to the non responsiveness of the population to the questionnaire, a convenient sampling was done to gather the study participants and hence results cannot be generalised.

Conclusion

Most of the study participants preferred government health centres for their treatment which helped them not to incur catastrophic health expenditure and 29% of the households experienced catastrophic health expenditure. The OOPE was less in this study population when compared to other studies. The process of bringing the whole population (from the current 54%) under the health insurance schemes may reduce OOPE further in this population. This will bring the population a step closer towards universal health coverage.

Reference

1. Li Y, Wu Q, Xu L, Legge D, Hao Y, Gao L *et al*. Factors affecting catastrophic health expenditure and impoverishment from medical expenses in China: policy implications of universal health insurance. Bull World Health Organ. 2012; 90(9):664-71.
2. Kumara AS, Samaratunge R. Patterns and determinants of out-of-pocket health care expenditure in Sri Lanka: evidence from household surveys. Health Policy Plan. 2016; 31(8):970-83.
3. Molla AA, Chi C, Mondaca ALN. Predictors of high out-of-pocket healthcare expenditure: an analysis using Bangladesh household income and expenditure survey, 2010. BMC Health Serv Res. 2017; 17(1):94.
4. Pandey A, Ploubidis GB, Clarke L, Dandona L. Trends in catastrophic health expenditure in India: 1993 to 2014. Bull World Health Organ. 2018; 96(1):18-28.
5. WHO. Health systems financing: The path to universal coverage. World Health Organization, 2010.
6. WHO. World health statistics: monitoring health for the SDGs. 2018. [http:// apps.who.int/iris/bitstream/handle/10665/272596/9789241565585-eng. pdf?ua=1]. Accessed 20 Jan 2019.
7. Van Doorslaer E, O'Donnell O, Rannan-Eliya RP, Somanathan A, Adhikari SR, Garg CC *et al*. Effect of payments for health care on poverty estimates in 11 countries in Asia: an analysis of household survey data. Lancet. 2006; 368(9544):1357-64.
8. O'Donnell O, van Doorslaer E, Rannan-Eliya RP, Somanathan A, Adhikari SR, Harbianto D *et al*. The incidence of public spending on healthcare: comparative evidence from Asia. World Bank Econ Rev. 2007; 21(1):93-123.
9. Wagstaff A, Flores G, Hsu J, Smitz MF, Chepynoga K, Buisman LR *et al*. Progress on catastrophic health spending in 133 countries: a retrospective observational study. Lancet Glob Heal. 2018; 6(2):e169-79.
10. Bose M, Dutta A. Health financing strategies to reduce out-of-pocket burden in India: a comparative study of three states. BMC Health Serv Res. 2018; 18(1):1-10.
11. Garg CC, Karan AK. Reducing out-of-pocket expenditures to reduce poverty: a disaggregated analysis at rural-urban and state level in India. Health Policy Plan. 2009; 24(2):116-28.
12. Berman P, Ahuja R, Bhandari L. The impoverishing effect of healthcare payments in India: new methodology and findings. Econ Politcal Wkly. 2010; 45(16):65-71.
13. Xie X, Wu Q, Hao Y, Yin H, Fu W, Ning N *et al*. Identifying determinants of socioeconomic inequality in health service utilization among patients with chronic non-communicable diseases in China. PLoS One. 2014; 9(6):e100231.
14. Mukherjee S, Haddad S, Narayana D. Social class related inequalities in household health expenditure and economic burden: evidence from Kerala, South India. Int J Equity Health. 2011; 10(1):1.
15. Mohanty SK, Kim R, Khan PK, Subramanian SV. Geographic variation in household and catastrophic health spending in India: assessing the relative importance of villages, districts, and states, 2011-2012. Milbank Q. 2018; 96(1):167-206.

16. MOHFW. National health accounts estimates for India. 2017. https://mohfw.gov.in/sites/default/files/National%20Health%20Accounts%20Estimates%20Report%202014-15.pdf].
17. MoHFW. Health insurance expenditure in India. 2016. Available from: https://mohfw.gov.in/sites/default/files/6691590451489562855.pdf.
18. Hooda SK. Out-of-pocket payments for healthcare in India. J Health Manag. 2017; 19(1):1-15.
19. Karan A, Yip W, Mahal A. Extending health insurance to the poor in India: an impact evaluation of rashtriya swasthya Bima yojana on out of pocket spending for healthcare. Soc Sci Med. 2017; 181:83-92.
20. Balarajan Y, Selvaraj S, Subramanian S. Health care and equity in India. Lancet. 2011; 377(9764):505-15.
21. Levesque JF, Haddad S, Narayana D, Fournier P. Outpatient care utilization in urban Kerala. India Health Policy Plan. 2006; 21(4):289-301.
22. Kastor A, Mohanty SK. Disease and age pattern of hospitalisation and associated costs in India: 1995-2014. BMJ Open. 2018; 8(1):e016990.
23. Peters DH. Better health systems for India's poor : findings, analysis, and options. World Bank, 2002.
24. Mohanty SK, Kastor A. Out-of-pocket expenditure and catastrophic health spending on maternal care in public and private health centres in India: a comparative study of pre and post national health mission period. Health Econ Rev. 2017; 7(1):31.
25. Sharma KM, Ranjani H, Zabetian A, Datta M, Deepa M, Anand Moses CR *et al*. Excess cost burden of diabetes in Southern India: A clinic-based, comparative cost-of-illness study. Glob Heal Epidemiol Genomics. 2016; 1:4-11.
26. Karthiyayini Loganathan, Pradeep R Deshmukh, Abhishek V. Raut Socio-demographic determinants of out-of-pocket health expenditure in a rural area of Wardha district of Maharashtra, India Indian J Med Res. 2017; 146:654-661 DOI: 10.4103/ijmr.IJMR_256_15
27. Vikas Bajpai, Namrata Singh, Hardik Sardana, Sanjana Kumari, Beth Vettiyil, Anoop Saraya. Economic and social impact of out-of-pocket expenditure on households of patients attending public hospitals The National Medical Journal of India. 2017; 30:1,
28. Kastor A, Mohanty SK. Disease- specific out-of-pocket and catastrophic health expenditure on hospitalization in India: Do Indian households face distress health financing? PLoS ONE. 2018; 13(5):e0196106. https://doi.org/10.1371/ journal. pone.0196106
29. Biplab Kumar Datta, Muhammad Jami Husain, Samira Asma. Assessing the relationship between out-ofpocket spending on blood pressure and diabetes medication and household catastrophic health expenditure: evidence from Pakistan Datta *et al*. International Journal for Equity in Health. 2019; 18:9 https://doi.org/10.1186/s12939-018-0906-x
30. Gupta I, Chowdhury S, Prinja S, Trivedi M. Out-of-Pocket Spending on Out-Patient Care in India: Assessment and Options Based on Results from a District Level Survey. PLoS ONE. 2016; 11(11): e0166775. doi:10.1371/journal. pone.0166775
31. Jayakrishnan T, Jeeja MC, Kuniyil V, Paramasivam S. Increasing Out-Of-Pocket Health Care Expenditure in India-Due to Supply or Demand? Pharmacoeconomics. 2016; 1:105. doi:10.4172/pe.1000105
32. International Journal of Research in Medical Sciences *Thakare BS et al.* Int J Res Med Sci. 2015; 3(9):2376-2381