

Out- of- Pocket Expenditure for Health Care Services among the Households in the Rural Field Practice Area of a Medical College in Bengaluru – A Community Based Prospective Study

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Abstract:

Background and objectives:

Health expenditure is the money spent to restore, maintain, and protect health in a country. Out-of-pocket health expenditure (OOPHE) is the direct payment made by households without insurance. In 2022, the world spent 9.8 trillion US dollars on health, about 9.9% of the global GDP. Health spending was growing slower than GDP. Although India aims for “Universal Health Coverage,” its public health spending was only 1.8% of GDP in 2021-22. Households in India pay about 62.6% of total health costs out of pocket. High out-of-pocket costs can create financial barriers for poor people and causing financial disaster or poverty in many countries. Around 100 million people worldwide fall into extreme poverty due to high out-of-pocket health costs. Therefore, this study was conducted to estimate the amount of OOPHE incurred among the rural households.

Methodology: A community based prospective study.

Results: Out of 300 households studied, only 4 (1.33%) had health insurance coverage. The prevalence of OOPHE was 97% (291 out of 300). There was no statistical difference in median annual OOPHE with gender, educational status, occupation of the head of the household and socioeconomic classes of the household.

The median (IQR) annual OOPHE was significantly higher among the households who had more than five members in the family [Rs. 7,200 (1,800-7,800)], joint families [Rs. 6,500(2,400-17,800)], those who were seeking health care from private hospitals [Rs. 23,600(12,000-78,000)], households with both acute and chronic illness (Rs.12,000) ($p < 0.005$). About 11.33% of households incurred catastrophic health expenditure, with more than 10% of household income spent on health

conclusion:

Around 97% of the households incurred Out-of-pocket health expenditure and it was significantly more among the joint families, households with both acute and chronic illness, and those who were seeking health care from private hospital. And 11.33% of households had catastrophic health expenditure.

Key words: “out of pocket expenditure” “Health expenditure” “catastrophic”

INTRODUCTION

The total global expenditure for health was 9.8 trillion US\$ which is 9.9% of global GDP in 2022.¹ In India, the health expenditure was only 1.8% of its GDP in 2021-22 and there has been no significant change since 2009.² This limited public health spending has forced the population to incur high out-of-pocket expenditure.³ Out-Of-Pocket expenditures (OOPE) on health by households is about 49.8% of the total health expenditure in the country.⁴ Excessive dependence on out-of-pocket expenditure can result in financial catastrophe and impoverishment in many countries.^{5,6} Globally, about 1 billion people face financial catastrophe and around 3.3 billion people pushed into impoverishment due to high out-of-pocket expenditure.⁷ In India alone, around 3.3% of the population go into impoverishment annually due to health related OOPE.⁸

Several factors contributing to this high OOPE including limited government spending on health, high cost of hospitalisation, cost of drugs, lack of insurance and dominance of private health facilities.⁹⁻¹¹

Studies have shown that OOPE was more prevalent in rural areas than in Urban areas, making it a significant barrier to equitable and affordable access to healthcare particularly in rural India.¹²

Though many studies were done on OOPE on health care, most of the studies were either institutional based or cross sectional based on recall method. Therefore, this community based prospective study was undertaken to estimate the amount of out-of-pocket expenditure for health care and to assess the association between socioeconomic and demographic characteristics among the rural households in Bengaluru, India.

MATERIALS AND METHODS:

Study design:

A community based prospective study.

Study area and study settings:

The study was carried out in the rural field practice area of a medical college in Bengaluru East. The Rural Health centre of the medical college consist of population of 46,232 and comes under Community Health Centre, Avalahalli, Bengaluru East. The study area consists of four subcentres, from that two subcentres were selected (Kannamangala and Doddabanhalli). From the 12 villages in the selected two subcentre six villages (Bevinamara colony, Jhaibemma Nagar, Jyothibapule nagara, Kannamangala, K Dinnur and Doddabanhalli) were randomly selected.

Study Period

The study was conducted over a period of one year and 6 months, from June 2020 to November 2021.

Study Population:

The Study was conducted among the households living in the selected villages of the study area.

Sample Size: Based on the data of National Health Accounts (2014- 2015)¹³, the percentage of Out-of-Pocket Health Expenditure from the total health expenditure is 52% in Karnataka state, sample size was calculated to be 300 households. Sample size was achieved by multi stage sampling method.

Ethical Considerations:

The ethical approval for the study was obtained from Institution Ethics Committee. Written informed consent was obtained from the households included in the study.

Data was collected using semi-structured, pre-tested data collection tool. The information on the health care expenditure was obtained using diary method over a period of 3 months. A household member was trained to fill the diary. The households were contacted telephonically every week to ensure the data completeness and the data was collected at the end of each month.

Statistical analysis:

The data were entered in Microsoft excel and analyzed using SPSS statistics version 25. Descriptive statistics such as frequencies, percentages, medians, and interquartile ranges (IQR) were used to summarize socio-demographic variables and patterns of OOPHE. The association between OOPHE and categorical variables using Kruskal Wallis H test and Mann Whitney U test wherever appropriate. A p-value of less than 0.05 was considered statistically significant.

DEFINITIONS

Out of pocket Health expenditure: It includes direct and indirect health expenditure. Doctor's / surgeon's fee, medicines, diagnostic test, bed charges, attendant charges, physiotherapy, personal medical appliances, blood, oxygen cylinder and other expenses. Transport charges, food, lodging charges and other incidental charges paid and expenses incurred due to hospitalisation which excludes the expenditure coverage comes under insurance or reimbursement.

Catastrophic health expenditure: Financial catastrophe is known as when out of pocket payments exceeds 10% of household's total income.⁵

RESULTS

Among the 300 surveyed households, the majority, comprising 267 households (89%), consisted of 1-5 members. This was followed by 32 households (10.6%) with 6-10 members, and a single household (0.3%) with 11-15 members. The heads of these households were predominantly male, numbering 264, compared to 36 female heads. Regarding educational attainment, the largest group, 89 individuals (30%), had completed high school. This was followed by 65 individuals (22%) who were illiterate, 62 (21%) who had completed middle school, 46 (15%) who had completed primary school, 32 (11%) who had graduated, 4 (1%) who had completed intermediate

education, and 2 (1%) who had completed post-graduation. In terms of occupation, the majority of household heads, 135 (45%), were unskilled workers. This was followed by 43 (14%) skilled workers, 39 (13%) semi-skilled workers, 33 (11%) clerical workers, 31 (10%) unemployed individuals, 17 (6%) shop owners, and 2 (1%) professionals. The majority of households, 219 (73%), were nuclear families, followed by 58 (19.3%) three-generation families, 20 (6.6%) joint families, and 3 (1%) single-member households. Socioeconomically, the majority, 169 households (56%), belonged to class II according to the modified BG Prasad classification, followed by 99 households (33%) in class III, 25 (8%) in class I, and 7 (2%) in class IV. The majority 154 (51.3%) had acute illnesses in the family, followed by 134 (44.6%) had chronic illnesses in the family, 12 (4%) had both acute and chronic illness in the family. Among the 300 households surveyed, the most prevalent condition was diabetes (Table 1), affecting 78 households (26%). This was followed by musculoskeletal disorders in 56 households (18.6%), hypertension in 46 households (15.3%), and acute respiratory infections in 44 households (14.6%). Additionally, 23 households (7.6%) reported obstetric and gynaecological issues, 14 households (4.6%) had thyroid disorders, and 12 households (4%) experienced gastritis. Skin problems and COVID-19 were each reported by 11 households (3.6%), while eye problems were noted in 10 households (3.3%). Furthermore, 8 households (2.6%) each reported ENT problems and soft tissue injuries, 9 households (3%) had diarrhoea, and 6 households (2%) experienced typhoid fever. Urinary tract infections were reported by 5 households (1.6%), dental issues by 4 households (1.3%), and vascular problems by 2 households (0.6%). Finally, hernia, epilepsy, and fatty liver were each reported in 1 household (0.3%). Upon analysing the patterns of healthcare-seeking behaviour, it is evident that a predominant segment, comprising 220 individuals (73%), preferred private clinics. This is succeeded by 41 individuals (14%) who chose private hospitals, 24 individuals (8%) who accessed services at pharmacies, 14 individuals (5%) who visited primary health centres (PHC), and one individual seeks health care from district hospital. Among 300 households, majority 291 (97%) households incurred out of pocket expenditure and only 9 (3%) had not incurred out of pocket health expenditure. The distribution of mean annual health expenditure among the households is depicted in table 2. The mean annual health expenditure was Rs. 624 (\pm SD 619) for consultation, Rs. 2,259 (\pm 15,214) for lab investigations, Rs. 2,182 (\pm SD 21,938) for other diagnostics, Rs. 12,030 (\pm SD 94,231) for drugs, RS. 2,080 (\pm 15,934) for surgeries, Rs. 138 (\pm SD 1065) for other therapeutic expenditures, Rs. 24,886 (\pm SD 2,72,750) for inpatient admissions, Rs. 20 (\pm SD 199) for loss of income, Rs. 153 (\pm SD 154) for food expenditure during hospital visits, Rs. 347 (\pm 849) for travel to and from the hospital in a household. Table 3 illustrates the correlation between various sociodemographic and health-related factors and the total out-of-pocket health expenditure among 300 rural households. The median health expenditure demonstrated significant variation based on family size, family type, type of illness, and the location of healthcare services sought. Households with a greater number of family members exhibited higher median health expenditures. The median health expenditure was Rs. 3,400 for families comprising 1 to 5 members, Rs. 7,100 for those with 6 to 10 members, and Rs. 17,800 for families with 11 to 15 members. A significant difference was observed, indicating that households with 1 to 5 members incurred lower health expenditures compared to larger households. ($p < 0.005$) The gender of the head of the household did not show a significant association with health expenditure. The median health expenditure for households headed by males was Rs. 3600, with a range from Rs. 1,800 to Rs. 8,500. In contrast, the median health expenditure for households headed by females was Rs. 5400, with a range from Rs. 1,900 to Rs. 9,200. ($p = 0.680$). The median health expenditure was Rs. 3000 for nuclear families, Rs. 6500 for joint families, and Rs. 5900 for three-generation families. This shows a significant difference, that individuals living alone and in nuclear families spending less compared to others. The educational attainment and occupational status of the household head did not demonstrate a statistically significant association with expenditure levels. Nevertheless, it was observed that households headed by individuals who are illiterate (₹4,800) and unemployed (₹6,800) exhibited higher expenditure compared to other categories. The median health expenditure varied between ₹3,000 and ₹3,800 across different socioeconomic classes. The median health expenditure was Rs. 2800 for acute illnesses, Rs. 5400 for chronic illnesses, and Rs. 12,000 for individuals suffering from both conditions. This reveals a significant difference, indicating that those afflicted with both acute and chronic illnesses incurred higher health expenditures. Among individuals seeking healthcare from Primary Health Centers (PHC) or Community Health Centers (CHC), 50% do not incur any health expenditure. A significant difference was observed, indicating that those utilizing services from PHC/CHC incur lower expenses compared to others. The median health expenditure for private clinics was Rs. 3,800, with a range from Rs. 2,200 to Rs. 7,200. In contrast, the median expenditure for private hospitals was Rs. 23,600, ranging from

Rs. 12,000 to Rs. 1,10,600, demonstrating a significant difference, as individuals seeking care from private hospitals spend more compared to others. For pharmacies, the median health expenditure was Rs. 800, with a range from Rs. 600 to Rs. 1,000, and a significant difference was found, indicating lower spending compared to other sources. Notably, no expenditure was reported for those seeking healthcare from district hospitals.

Among the 300 households surveyed, 11.33% (n=34) encountered catastrophic health expenditure, characterized by health-related spending that surpasses 10% of the household's total income. Conversely, the majority of households, 88.67% (n=266) (Table 4), reported allocating less than 10% of their income to health care. This suggests that although a relatively small proportion of families experience financial distress due to health-related expenses, a significant segment still bears a considerable economic burden.

DISCUSSION

In our study, out of 300 households studied, only 4 (1.33%) households had health insurance coverage, with none having received financial benefits from insurance during the study period. This low level of coverage aligns with the findings of Sharma D et al.⁹, who documented a health insurance coverage rate of 2.2% in similar contexts. However, more recent data from a nationwide study by Ambade M et al.¹⁴ suggest a substantial increase in health insurance coverage, reaching 41% across India. The prevalence of out-of-pocket health expenditure (OOPHE) in our study was 97%, which is comparable to the findings of Harish BR et al.¹⁵, who reported prevalences of 83.81% and 95.1%. However, our study's prevalence was significantly higher than those reported by Archana R et al.¹⁶ (41.9%) and Sangar S et al.¹⁷ (39.1%). This elevated prevalence in our study may be attributed to the COVID-19 pandemic lead to increased reliance on the private sector, and consequently elevated out-of-pocket costs, further exacerbated by inadequate insurance coverage. In this study, the median (IQR) annual out-of-pocket health expenditure was Rs. 3700 (IQR 1,800-8,600). This finding is comparable to the cross-sectional study conducted by Dalui A et al.¹⁸, where the median OOPHE was Rs. 3870 (IQR 2156-4952). However, studies conducted by Sharma D et al.⁹, and Nandi S et al.,¹⁹ reported higher median OOPHE values of Rs. 8000 and Rs. 10000, respectively. Conversely, the study conducted by Loganathan K et al.,²⁰ reported a significantly lower median out-of-pocket health expenditure of Rs. 863 compared to our study. For consultations, the median annual out-of-pocket health expenditure was Rs. 400 (0-600). However, in studies conducted by Sharma D et al.⁹, Loganathan K et al.,²⁰ and Dalui A et al.,¹⁸ the median annual out-of-pocket health expenditure for consultation was Rs. 200, Rs. 163, and Rs. 7, respectively, which are lower than the findings of this study.

In our study, the median annual out-of-pocket health expenditure (OOPHE) for medicine was Rs. 2,400 (IQR 100-6150). This finding is comparable to the study conducted by Sharma D et al.⁹, where the median OOPHE for medicine was Rs. 2,500. However, studies conducted by Loganathan K et al.²⁰, and Dalui A et al.¹⁸, reported median OOPHE for medicine as Rs. 424 and Rs. 327, respectively, which are lower than our study. The median (IQR) annual out-of-pocket health expenditure (OOPHE) was significantly higher among households with both acute and chronic illnesses, amounting to Rs. 12,000 (8,600-28,700), compared to those with only acute or chronic illnesses. Additionally, the median (IQR) annual OOPHE for households with chronic illnesses was Rs. 5,400 (1,800-8,400), in contrast to Rs. 2,800 (1,800-6,400) for those with acute illnesses. This finding aligns with the study conducted by Shwetha NB et al.²¹, which reported that the mean OOPHE was greater for chronic illnesses (Rs. 1,155) compared to acute illnesses (Rs. 567). Furthermore, a cross-sectional study by Bhojani U et al.²², reported that OOPHE was higher (69.6%) among households with chronic conditions, with a median OOPHE of Rs. 415 for chronic conditions. In the current study, the median annual out-of-pocket health expenditure (OOPHE) was notably higher among individuals utilizing healthcare services in private hospitals. Approximately 50% of households that accessed government health services reported no expenditure. In contrast, the median OOPHE for households seeking care from private hospitals was significantly higher, amounting to ₹21,500 (IQR ₹12,000–₹78,000). This finding is consistent with the results of Pradhan J et al.²³ (₹23,309) and Sharma D et al.⁹ (₹10,000), underscoring the financial burden associated with private sector healthcare. About 34 households, representing 11.33% of the sample, experienced catastrophic health expenditure, defined as spending 10% of total income on healthcare. Previous research by Shwetha NB et al.²¹, and Dalui A et al.¹⁸, identified the prevalence of catastrophic health expenditure as 14.86% and 16.2%, respectively. Additionally, studies by Loganathan K et al.²¹ and Agarwal R et al.²⁴, reported a high prevalence of catastrophic health expenditure, at 18.9% and 80.9%, respectively.

CONCLUSION

The present study findings remain highly relevant in light of recent National Sample Survey Office (NSSO) data, which continue to highlight the significant burden of out-of-pocket health expenditure (OOPHE) in India. Our study highlights the persistently high burden of out-of-pocket health expenditure (OOPHE) among rural households with limited financial protection through health insurance. Most households incurred healthcare costs directly, with expenditures significantly influenced by illness type, healthcare facility utilized, and family structure. Notably, households seeking care in private facilities and those with chronic or combined illnesses experience a substantially higher financial burden. Despite the national progress in expanding health insurance coverage in recent years, the study found a delay in adoption and impact at the grass root level during the study period. The study results underscore the need to improve the reach and utilization of health insurance schemes, and implement targeted interventions to reduce financial hardships among vulnerable rural populations.

Conflict of interest: The authors declare that there is no conflict of interest related to the publication of this manuscript.

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Table 1: Distribution of morbidity pattern among households (n =300)

Sl. No.	Morbidity	Number	Percentage
1.	Diabetes	78	26.00%
2.	Hypertension	46	15.33%
3.	Acute respiratory tract infections	44	14.67%
4.	Gastritis	12	04.00%
5.	Thyroid problems	14	04.76%
6.	Musculoskeletal problems	56	18.67%
7.	Skin problems	11	03.67%
8.	Obstetric and gynaecological problems	23	07.67%
9.	ENT problems	08	02.67%
10.	Soft tissue injury	08	02.67%
11.	Typhoid fever	06	02.00%
12.	Diarrhoea	09	03.00%
13.	Covid 19	11	03.67%
14.	Eye problems	10	03.33%
15.	Cardiovascular problems	01	00.33%
16.	Dental problems	04	02.33%
17.	Vascular problems	02	00.67%
18.	Urinary tract infections	05	01.67%
19.	Epilepsy	01	00.33%
20.	Hernia	01	00.33%
21.	Fatty liver	01	00.33%

Table 2: Distribution of health expenditure among the households annually (in Rupees)

Sl. No.	Health expenditure	Mean (INR)	Standard Deviation (SD)	Median (INR)	Inter Quartile Range (IQR)
1	Consultation	624.00	±619.16	400	0-600
2	Lab Investigations	2259.33	±15214.99	0	0
3	Other diagnostics	2182.66	±21938.58	0	0
4	Drug expenditure	12030.80	±94231.00	13200	1600-3300
5	Surgical expenditure	2080.00	±15934.44	0	0
6	Other therapeutic expenditure	138.66	±1065.71	0	0

7	Admission charges	24886.66	±272750.34	0	0
8	Loss of Income	20.00	±199.33	0	0
9	Food	153.33	±934.20	0	0
10	Travel	347.33	±849.48	0	0
11	Total	44722.80	±387354	2600	17100-50600

Table 3: Factors associated with out of pocket health expenditure (n= 300)

Sl. No.	variable	Category	Total	Total health expenditure Median (IQR) (Rs.)	p value
1	No of members in the family	1-5	267	3400 (1800-7800)	<0.005
		6-10	32	7100 (2900- 17300)	
		11-15	1	17800 (0)	
2	Gender of the head of the household	Male	264	3600 (1800-8500)	0.680
		Female	36	5400 (1900-9200)	
3	Type of Family	Nuclear	222	3000 (1800-7400)	0.028
		Joint	20	6500 (2400-17800)	
		Three generation family	58	5900 (2000-12800)	
4	Education of the head of the family	Illiterate	65	4800 (1800-9400)	0.685
		Primary	46	2400 (1400-6400)	
		Middle	62	4000 (2160-8000)	
		Higher secondary	89	3600 (2000- 12200)	
		Intermediate	4	4400 (2200- 5900)	
		Graduate	34	3000 (1800- 1000)	
5	Occupation of the head of the family	Unemployed	31	6800 (3000-21600)	0.204
		Un Skilled	135	3600 (1800-7200)	
		Skilled	43	3800 (1400-13600)	
		Semiskilled	39	2600 (1800- 4000)	
		Shop owner	17	6000 (2200-7400)	
		Clerical	33	3600 (2000-13200)	
		Professional	2	7400 (4800-10000)	
6	Socioeconomic status	Class I (>7770)	25	3000 (1800- 10000)	0.989
		Class II (3808-7769)	169	3800 (1800- 10400)	
		Class III (2253- 3808)	99	3800 (2000- 7400)	
		Class IV (1166- 2253)	7	3600 (2200- 7200)	
7	Type of illness in the family	Acute	154	2800	<0.005
		Chronic	134	5400	
		Both	12	12000	
8	Place of health care	CHC/ PHC	14	0 (2200- 7200)	<0.005
		District Hospital	01	0	
		Private clinic	24	3800 (2200-7200)	

		Private Hospital	221	21500 (12000-78000)	
		Pharmacy	40	800 (600-1000)	

Table 4: Proportion of households experienced catastrophic expenditure

Sl. No.	Health expenditure as % of total income	Number	Percentage
1	<10%	266	88.67%
2	>10%	34	11.33%
Total		300	100.00%

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