

Research Article

Economic burden of hypertension care on households of Malwani slum of Mumbai: a cross-sectional study

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ABSTRACT

Background: Hypertension is a chronic non-communicable disease that effects adversely on heart, brain and kidney. Nearly 2/3rd of all hypertensive patients live in low and middle income countries, so the economic burden of hypertension is huge. India is one of those countries which spent more than 1/3rd of all income on CVD and hypertension. This study was conceptualized to study the disease and economic burden of hypertension.

Methods: A cross-sectional study was conducted in New Collector Compound (NCC) of Malwani. Five plots of NCC were selected by simple random sampling. A list of hypertensive patients was prepared by house-to-house survey. Fifty per cent patients were selected randomly for studying economic burden.

Results: The study covered 447 households and 2360 persons. Eighty participants (3.4%) were found hypertensive. The average annual total cost of hypertension and related disorders was Rs. 7154. It was Rs. 6073 and Rs. 8235 for government and private respectively. Only 7.50% households were not incurring any cost of illness. The average annual out of pocket expenditure (OOPE) was Rs. 4042 and Rs. 7621 for government and private facilities respectively. Fifteen per cent households were incurring catastrophic expenditure at highest threshold of 40%. The catastrophic spending led to impoverishment of 34.2% households.

Conclusions: High prevalence of hypertension, high OOPE, high incidence of catastrophic spending and impoverishment among households intensively reflect the need of interventions. Early preventive measures may be a key in controlling economic and disease burden. There is need to provide the financial risk protection against the OOPE for outpatient care.

Keywords: Economic burden, Out of pocket expenditure, Hypertension, Malwani Slum, Mumbai, Non Communicable Diseases

INTRODUCTION

Developing countries like India have witnessed double burden of diseases since past few decades. The burden of non-communicable diseases (NCD) is increasing while communicable diseases (CD) like HIV, Malaria and diseases related to Nutrition are still not under control.^{1,2} NCD constitute more than 60% of deaths globally. Out of this, Cardio Vascular Diseases (CVD) i.e. Ischemic Heart Diseases and Stroke constitutes around 50% of deaths.³ CVD are now proved to be the most common causes of

deaths and disabilities worldwide.⁴ Even in Indian Subcontinent, the rates of CVDs are on higher side.¹ Among CVDs, Hypertension (HT) is a major contributory factor with subsequent morbidity and mortality. It is the only modifiable risk factor for CVD.⁵

World Health Report 2002 identified hypertension as a 3rd ranked factor for Disability Adjusted Life Years (DALYs).^{5,6} Developing Countries like India and China are facing the increasing burden of hypertension as consequences of ageing population and rapidly increasing

urbanization.⁷ Hypertension is directly responsible for 57% of all deaths due to stroke and 24% of all deaths due to coronary heart diseases in India.⁸ More than 25% of the total population was affected by hypertension in 2000 globally. This number is estimated as 29% by 2025.⁵

Around 2/3rd of all hypertensive patients live in low and middle income countries, which delineates the high economic burden of hypertension in these countries.⁹ India is one of those countries which spent more than one third of all income on CVD and hypertension. There was drastic increase in out of pocket spending due to hypertension in 2004 as compared to 1995-96. In 2004, India spent INR 44 billion out of pocket due to hypertension which was INR 6.39 billion in 1995-96.¹⁰ This implies that there is little growth of social and private health insurance in India. The high level of out of pocket expenditures increases the risk for catastrophic expenditure and may further increase the risk of impoverishment.¹¹ The so called diabetic capital, India, is now moving towards achieving highest prevalence of hypertension.¹² In Maharashtra, diseases of circulatory system like hypertension are the leading cause of death since 1991.¹³

This present paper aims to study both the disease burden and the economic burden of hypertension in New Collector Compound (NCC) of Malwani slum of Mumbai. Indicators like point prevalence, cost of illness, catastrophic spending and impoverishment among households are used for the purpose.

METHODS

The study was conducted in New Collector Compound (NCC) in Malwani slum in February-March 2013. 5 plots (namely plot number 2, 37, 42, 62 and 59) out of 73 plots of NCC were selected by simple random sampling. Complete coverage was achieved in these 5 plots by doing house to house survey. Patients suffering from hypertension or related disorders were included in the study. The confirmation of patients was done by checking their medicines and prescriptions of drugs.

Disease burden

Point prevalence was used to show the disease burden on the community under study. House to house survey was done for identifying the hypertensive patients in the selected 5 plots. Information related to household size, presence of hypertensive patient in the household and sex of that hypertensive patient was collected during this survey to calculate sex specific prevalence of the disease in consideration. Total population covered was calculated by adding the household size. The point prevalence was calculated by multiplying the division of number of people suffering from hypertension or related disorders and total population by 100.

Economic burden

The list of people suffering from hypertension or related disorders was prepared and patient number was given while preparing the list. Fifty per cent of the patients were selected by simple random sampling for assessing the economic burden of hypertension on households. Following indicators were studied for assessing the economic burden of hypertension or related disorders.

1. Cost of illness

Cost of illness is classified as direct costs and indirect costs. Direct cost is the expenditures incurred because of the illness i.e. out of pocket expenditure.¹⁴ It includes cost of consultation, cost of medicine, travel cost, diagnostic cost etc. Indirect costs includes wage lost etc.¹⁵ In this study, the cost of medicines, cost of consultation or registration cost, transportation cost for visiting health care centre and cost of food & refreshment incurred during visit to health centre were included under direct cost of illness. While patient's wage lost for visiting health centre and costs related to companion i.e. companion's cost of transportation, cost of food & refreshment and wage lost for visiting health centre were included under indirect cost of illness.

2. Catastrophic spending

Expenditure is said to be catastrophic if it exceeds to a certain suitably defined threshold of household's consumption or non-food consumption. Let T be the total out of pocket expenditure due to hypertension, x be the total household expenditure and f(x) be the household expenditure on food. If this is the condition then the household is said to have incurred catastrophic payments when T/x or $T/x-f(x)$ exceeds a defined threshold.^{16,17} This threshold may vary from 5% to 20%.¹⁸ Some studies use higher threshold of 40%.^{11,18} We calculated the incidence of catastrophic expenditure and used $x-f(x)$ i.e. non-food consumption and various thresholds from 5% to 40% for this purpose.

3. Impoverishment among households due to OOPE and Hospitalization

A household is said to be impoverished due to catastrophic spending if the subtraction of total out of pocket spending due to particular illness from overall household's expenditure is less than the household poverty line.^{11,18} We calculated the incidence of impoverishment due to catastrophic spending on hypertension or related disorders on outpatient care. We used official poverty line for calculation.²⁰

RESULTS

Findings from study are presented under the sections disease burden and economic burden.

Disease burden

The study covered 447 households and 2360 persons from the 5 selected plots (Table 1). Eighty participants out of 2360 were found to have hypertension. So, the prevalence of hypertension was found to be 3.39%. The estimated prevalence of hypertension for year 2011-12 in Malad west was 1.5%.¹⁹ The ratio of male hypertensive patients (37 i.e. 46.25%) to female hypertensive patients (43 i.e. 53.75%) was found to be 0.86. There were 17.90 cases of hypertension per 100 households.

Table 1: Distribution of hypertensive cases in the study area, revealed in house to house survey.

Plot No.	Households	Population	No. of Hypertensive patients
2	93	463	11
37	93	460	17
42	79	471	19
59	88	434	16
62	94	532	17
Total	447	2360	80

Table 2: Socio-demographic characteristics of the participants included for studying economic burden of hypertension.

Characteristics	Category	Freq. (Per) (N=40)
Sex	Male	16 (35)
	Female	24(65)
Age	30-45	13(32.5)
	46-60	14(35)
	60+	13(32.5)
Marital Status	Married	31(77.5)
	Widow/Widower	9(22.5)
Religion	Hinduism	9(22.5)
	Islam	30(75)
	Buddhism	1(2.5)
Educational Status	Illiterate	14(35)
	Primary	5(12.5)
	Secondary	19(47.5)
	Higher Secondary	1(2.5)
	Graduation	1(2.5)
Household Size	Up To 4	9(22.5)
	5 To 6	23(57.5)
	More Than 6	8(20)
Employment Status	Yes	14(35)
	No	26(65)

Economic burden:

Table 2 indicates the socio-demographic characteristics of the participants included for studying economic

burden. More than 60% participants were females. The composition of age groups was mostly in similar proportion. Majority population belonged to Islam religion. Educational status of the participants was poor as 35% of them were illiterate. More than 57% of the study participants belonged to big household size of 5 to 6 members in the family. Only 35% participants were employed. The employed participants were involved in occupations like driver, labour, pan shop, painter, peon, or in shop of different items and some were community health volunteers working for NGOs.

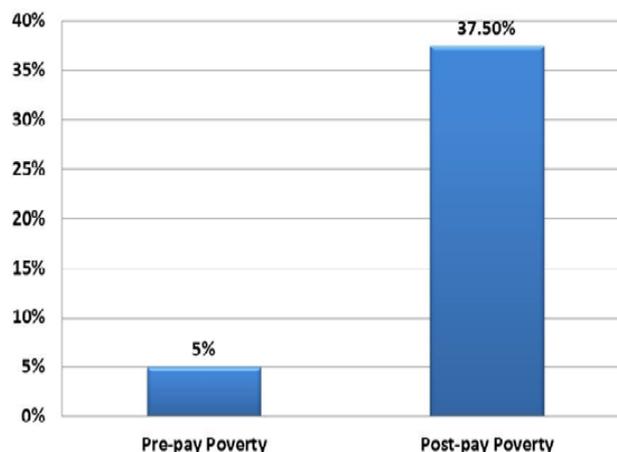


Figure 1: Impoverishment among households before and after OOPE on HT.

1) *Cost of illness & OOPE*

The average annual total cost of hypertension and related disorders was Rs.7154 as revealed in Table 3. It was Rs. 6073 and Rs. 8235 for government and private respectively. Only 7.50% households were not incurring any cost of illness. The share of cost of medicines to the total cost of HT was highest (61.33%). It was 49.23% and 65.63% for the government and private facilities respectively. Share of cost of medicines and consultation to the total cost of hypertension was 55.62% for government and 88.63% for private facilities.

The average annual out of pocket spending was Rs. 4042 and Rs. 7621 for government and private facilities respectively. The total average annual OOPE was Rs. 5831.5. The share of cost of medicines to the total OOPE was 64.98%. It was 73.97% for government and 70.90% for private facilities.

2) *Catastrophic spending*

Table 4 presents the results regarding with number of household and percentage of households incurring the catastrophic spending at various thresholds. Seventy per cent households were incurring catastrophic spending at 5% threshold. The percentage of the household incurring

catastrophic expenditure decreases as we substantially increases the threshold. At highest threshold i.e. 40%, the percentage of households incurring catastrophic spending was 15%.

This means 15 households out of 100 were spending more than Rs. 40 if the non-food consumption was Rs. 100.

Table 3: Economic burden of hypertension care on households.

		Government	Private	Both
Average Annual Total Cost of HT (in Rs.)		6063	8234	7154
Average annual Cost of medicine	In Rs.	2989.74	5404.97	4387.55
	% of share	49.23	65.63	61.33
% of Share of Cost of Medicine & Consultation to Total Cost of HT		55.62	88.63	-
Average annual OOPE (in Rs.)		4042	7621	5831.5
% of Share of Cost of Medicine to OOPE		73.97	70.9	64.98

3) *Impoverishment among households due to OOPE and hospitalization*

The incidence of poverty without considering the spending on hypertension or related disorders was 5% in the community which increased to 37.50% after out of pocket spending on hypertension (Figure 1). This means that 34.21% households were pushed into the poverty line due to catastrophic spending on hypertension or related disorders.

Table 4: Households incurring catastrophic spending at various thresholds.

Thresholds	5%	10%	15%	20%	40%
No. of HH	28	22	19	16	6
% of HH	70	55	47.5	40	15

DISCUSSION

It is clear from the results that hypertension was highly prevalent in the community. Every 30th person was hypertensive in the community. The prevalence of hypertension in study area was far more than that of estimation of Praja organization for Malad West for the year 2011-12. This shows that hypertension is now becoming a major problem. Same trend continues in case of economic burden. The average annual cost of illness in government health centre shows that the government health centre was unable to reduce the cost of the treatment. The average annual total cost of hypertension care in government health centre was Rs. 2161 less than that of private health centre. There is important role of private health centre in provisioning health services, but the cost of illness incurred while utilizing services from private health centre was much higher than government health centre.

The share of cost of medicines was highest for both government and private health centre. The share of cost of medicines to the total cost of illness for government

health centre reflects that the government health centres have very high tendency to prescribe medicines from outside. In case of private health centre if a patient is spending his/her Rs.100 on the treatment then he/she will spend Rs. 66 on medicines only.

The out of pocket expenditure for private health centre was almost double of the government. The share of cost of medicines to the out of pocket expenditure shows that medicines were the costliest part of the treatment. So, proper supply of anti-hypertensive medicines to the government health centre will help to reduce the OOPE by more than 70% for government health centre users. The OOPE was mostly catastrophic in nature. The incidence of catastrophic spending was 15% at highest threshold of 40%. Fifteen per cent people were spending more than Rs. 40 on hypertension or related disorders if their income was Rs. 100. The high incidence of catastrophic spending leads to high incidence of people falling into the poverty line. More than 34% of the households are falling into the poverty line every year due to the catastrophic spending on hypertension or related disorders. There are some schemes running in the community to provide financial risk protection e.g. Rashtriya Swasthya Bima Yojana and Rajiv Gandhi Jeevandayee Arogya Yojana. But both the insurance schemes covers expenditure incurred due to hospitalization only. It is clear from the findings that the expenditure for outpatient care is leading to fall 34.21% of the households into the poverty line every year. So, there is a serious need to provide the financial risk protection against the OOPE for outpatient care.

All the above discussion shows that the primary aim of health system is not fulfilled. One of the primary aims of any health system is to provide the financial risk protection. This purpose of the health system is not fulfilled here. Firstly, only 7.50% of the households were not incurring out of pocket expenditure. So, we can say that the health system is successful in ensuring financial risk protection to only 7.50% of households. Secondly, according to government policy medicines should be distributed from government health centre only. But 46.15% of the patients visiting to government health

centre purchase medicines from outside. This is leading to high out of pocket expenditure for government health centre. Finally, the coverage of government health centre is very low. Only 32.5% of the hypertensive patients were using services from government health centre. This is leading to increase in utilization from private health centre. This in turn leads to increase in total cost of illness and out of pocket expenditure.

CONCLUSION

High prevalence of hypertension, high out of pocket expenditure, high incidence of catastrophic spending and high incidence of impoverishment among households intensively reflects the need of the interventions. As many hypertensive cases remain unnoticed, the proper prevalence of the hypertension in the community should be calculated. Hypertension is preventable and controllable disease.⁹ So early preventive measures should be applied to control the burden of hypertension. The coverage of the schemes like RSBY and RGJAY should be extended to expenditure on outpatient care. There are various barriers in controlling the disease burden and economic burden of hypertension like drug cost, structural barriers, policy barriers etc.⁷ Policy barriers are the most important barrier to address. In developing countries like India, more focus is on communicable diseases and diseases related to malnutrition. But now, there is need to understand the importance of the problems like hypertension and address these issues through various policies and programs. Strategies like extension of screening program, extension of insurance scheme, construction of parks and walking trails, involvement of local government bodies in awareness campaign, focus on drug availability etc. should be incorporated in the agenda to reduce the disease as well as economic burden of hypertension on the community.

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