

Total semiannual treatment related expenditure of a patient due to hypertension

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Abstract:

Background: *Economic cost of hypertensive disease was estimated at \$76.6 billion in 2010. Low income is one of the important causes of drop out of the hypertensive patients from follow up and treatment.*

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Materials and Methods: *This was a cross sectional study, carried out in Hypertension and Research Center, Rangpur. Among the daily visited patients every odd patient was taken. Cost was calculated from the number of drugs use & its cost, investigation cost from receipt copy, service fee (fixed service charge & specialist consultation fee), transport cost from directly from the patient's / attendant's verbal opinion and hospitalization cost was calculated from medications used other than regular antihypertensive & investigations during hospital staying.*

Results: *We have studied 324 hypertensive patients, male were found preponderance (72.2% vs 27.8%). Mean age of the study population was 47.19 years (SD±8.406). In this study 97.8% of the patients taking the antihypertensive drug regularly, 62% of the patients used to come to regular follow up. Mean semiannual treatment related expenditure of a hypertensive patient was 4795.61 BDT. The mean expenditure was more in complicated hypertensive patients than uncomplicated hypertensive patients (5929.88 BDT vs 4671.99 BDT). The expenditure became very high who was admitted in hospital 8121.42 BDT. Among the treatment related expenditure investigation cost (1403.32 BDT) remained the highest, followed by drug cost (1197.17 BDT).*

Conclusion: *Mean semiannual treatment related expenditure of hypertensive patient was high in relation to income. Reduction of the cost of the investigation, drugs may be helpful for the hypertensive patients.*

Key words: Semiannual, expenditure, hypertension

INTRODUCTION

Bangladesh has been experiencing an epidemiological transition from communicable disease to NCDs¹ due to economic development and increased level of control and treatment of infectious diseases.² In Bangladesh 51% of deaths are due to non-communicable diseases and other chronic health

conditions.³ NCDs were estimated to have contributed to almost 60% of deaths in the world and among them about 80% occur in the developing countries.⁴ Among the NCDs hypertension is the main risk factor for developing ischemic heart disease, stroke, heart and renal failures and peripheral vascular diseases.⁵ Hypertension affects nearly 26 per cent of the adult population worldwide. Kearney and colleagues estimated that the prevalence of hypertension in 2000 was 26% of the adult population globally and that in 2025 the prevalence would increase by 24% in developed countries and 80% in developing countries.⁶ A marked increase in prevalence of hypertension (from 11.3% to 17.9%) was observed in Bangladesh from 1999 to 2010.^{7,8} In Rangpur division (Northern part) of Bangladesh prevalence of hypertension and pre-hypertension is 33.3% and 29.9% respectively.⁹ Because of the high prevalence of this condition and the increased morbidity and mortality associated with this condition, the economic cost of hypertensive disease was estimated at \$76.6 billion in 2010.¹⁰ Hypertension and research center Rangpur, Bangladesh reported¹¹ that monthly income of the hypertensive patient was less than 5000 BDT in 37.72% whereas a community based study⁹ of rural people of Rangpur of Bangladesh has shown that monthly income less than 5000BDT in 86.5%. Among the hypertensive patients 68.03% drop out from follow up, one of the important causes of drop out was low income.¹¹

Therefore this study will be carried out to determine the total semiannual treatment related expenditure of a hypertensive patient of hypertension and Research center Rangpur, Bangladesh.

METHODOLOGY

This was a cross sectional study, carried out in Hypertension and Research Center, Rangpur, which was established on 14th

November, 2008. This center serves only hypertensive patients and working enormously to generate awareness of hypertension. Till date more than 14 thousand patients registered in this center. A sample size of 384 will be calculated with a precision of 5% with 95% of confidence level. On an average about 50 patient visit to Hypertension and Research Center, Rangpur daily. From the daily visited patients every 3rd patient will be taken to generate sample of 384. The first patient was chosen randomly from hypertensive patients 1 to 10.

Data collection

An informed consent was obtained. The following data were collected; socio-demographic details, duration of disease, medication history, complications. Cost was calculated from the number of drugs use & its cost, investigation cost from receipt copy, service fee (fixed service charge & specialist consultation fee), transport cost from directly from the patient's / attendant's verbal opinion, and hospitalization cost was calculated from medications used other than regular antihypertensive & investigations during hospital staying. The antihypertensive drugs used by the patients in first 3 months and last 3 months were recorded according to their classes and drugs used for other co-morbidities were also documented. After collection of 384 data, these were checked, incomplete and partially filled data were excluded, finally 324 data were analyzed.

Operational definitions:

Expenditures:

Medications cost: means the cost needed for the drugs prescribed by the consultant

Investigations cost: means the cost needed for investigations advised by the consultant

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Service fee: means the token charge taken for the services of the patient in Hypertension & the Research Centre, Rangpur.

Transport cost: this is the amount of cost required for a patient to reach at Hypertension & the Research Centre, Rangpur for their consultation in each visit.

Hospitalization cost: this is the amount of cost required for a patient during hospital staying for hypertension related complications.

RESULTS

In this study we have studied 324 hypertensive patients of both sexes. Male were found preponderance (72.2% vs 27.8%). Mean age of the study population was 47.19 years (SD±8.406). (Table 1 shows the socio-demographic characteristics of the study population).

Table 1: Socio-demographic characteristics of the study people at baseline (n=324)		
Variables	Frequency	Percentage (%)
Age		
Mean age (SD)	47.19 years (SD±8.406)	
Age range	28-69 years	
Sex		
Male	234	72.2%
Female	90	27.8%
Level of education		
Illiterate	97	29.9%
5 or less class	57	17.6%
>5-10 class	54	16.7%
>10-12 class	38	11.7%
Graduate and above	78	24.1%
Occupation		
Housewife	75	23.14%
Agriculture	79	24.4%
Business	60	18.5%
Service	100	30.86%
Retired	1	0.3%
Others	9	2.78%
Monthly income		
<5000 taka*	153	47.2%
5001-10000 taka	61	18.8%
10001-15000 taka	52	16%
>15000 taka	58	17.9%

*1 dollar = 82 taka.

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Mean duration of hypertension was 5.93 years and 97.8% of the patients taking the antihypertensive drug regularly. 62% of the patients used to come to regular follow up, more than half of the patients 56.8% used to come to follow up after 1 month.

	First 3 months	Last 3 months
Medication cost	1197.17	1107.69
Investigation cost	1403.32	00
Service fee	40.74	41.14
Transportation cost	503.33	502.22
Total cost	3144.56	1651.05

Total semiannual treatment related expenditure of a hypertensive patient was 4795.61 BDT. History of hospital admission was in only 2.16% (7) patients. Mean expenditure of each patient due to hospital admission was 8121.42 BDT (minimum 700 to maximum 13500 BDT). Among the hospital admission patients 42.85% (3) patients admitted due to complications of hypertension (IHD).

Target organ damage was present in 9% of the patients. Table III showing the target organ damage of the hypertensive patients.

Target organ damage	Frequency/ Percentage
IHD	7 (2.16%)
Stroke	2 (0.60%)
CKD	1 (0.30%)
Hypertensive retinopathy	19 (5.86%)

Total semiannual cost of the complicated hypertensive patient was 5929.88 BDT and in uncomplicated hypertensive patient was 4671.99 BDT. Table IV showing treatment related expenditure complicated hypertensive vs uncomplicated hypertensive patients.

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Table IV: Treatment related expenditure complicated hypertensive vs uncomplicated hypertensive patients

	Complicated hypertensive patients		Uncomplicated hypertensive patients	
	First 3 months	Last 3 months	First 3 months	Last 3 months
Medication cost	1439.13	1466.87	1173.38	1066.64
Investigation cost	1582.30	00	1384.09	00
Service fee	40	40	40.81	41.28
Transportation cost	681.03	680.55	485.86	479.93
Total cost	3742.46	2187.42	3084.14	1587.85

DISCUSSION

High blood pressure and associated diseases may be responsible for up to 7 million deaths annually worldwide.¹² In the Eastern European and Central Asian regions, high blood pressure is estimated to directly or indirectly account for 25% of all health expenditures.¹³ At present the outpatient economic burdens of hypertension in Bangladesh have not been estimated precisely. In addition, studies on the topic are scarce. The present study is the first to estimate the total semiannual treatment related costs of hypertensive outpatients in Hypertension and Research Center Rangpur. In this study, we have studied the mean treatment related costs in the relevant table. Mean semiannual treatment related expenditure of a hypertensive patient was 4795.61 BDT. The mean expenditure was more in complicated hypertensive patients than uncomplicated hypertensive patients (5929.88 BDT vs 4671.99 BDT). The expenditure became very high who was admitted in hospital 8121.42 BDT. Among the treatment related expenditure investigation cost remained the highest, followed by drug cost. But investigation cost required only in first visit, in the subsequent visit less investigation usually require. In Southwest China, a cost of illness analysis from the societal perspective in 2010 estimated the cost of hypertension to be US\$9,393 per patient.¹⁴ In the Philippines, a health insurance company reported reimbursement for hypertension related diagnoses during 3.5 years to be US\$56 million for 360,016 patients. This equals to

34% of their financial budget for hospital spending.¹⁵ One study at the community health station level of Vietnam, on the cost of drug treatment for the whole population over a 10-years period estimated costs of 9,808 billion VND associated with grade 1 hypertension and 11,192 billion VND associated with grade 2 and 3 hypertension.¹⁶ The sum of these figures represent approximately 14% of the total health expenditure in 2010.^{17,18}

The importance of illness and healthcare costs as major contributors to poverty have been increasingly recognized in recent years.^{19,20,21} Health economists at the World Health Organization have defined 'catastrophic health expenditures' as expenditures for health care totalling 40% of a house hold's income after basic subsistence.¹⁹ In our study, almost half of the patients had monthly income of less than 5000 BDT per month (semiannual income 30000 BDT), but they have to spend 4795.61 BDT, almost 16% of the income. The present findings must be interpreted in the context of potential limitations. Firstly, the study was conducted in non-profitable center; the real expenditure may be higher in private sectors across the country. Due to the high expenditure in comparison to income patient become drop out the treatment and follow up.

In a community based study 78.34% patient did not come to follow up and 46.67% hypertensive patients used to take the drugs regularly.⁹ But in this study 97.8% of the patients taking the antihypertensive drug regularly. 62% of the patients used to come to regular follow up. This may be due to services provided from specialized hypertension care center, every patient individually counseled here. In a hospital based study in the department of Medicine among the all death cases 54.60% died due to complications of hypertension (stroke, CKD and CAD).²² Ratindra et al has shown that Majority (71.2%) of the hypertensive patients died due to hypertension related complications (detected from verbal autopsy); 33.3% due to stroke, 20.3% CAD and 17.8% chronic kidney disease.²³

Patients, who are not treated and have uncontrolled high blood pressure, are at higher risks of complications requiring hospitalization, which add to the economic burdens for the health care system.

CONCLUSION AND RECOMMENDATION

Mean semiannual treatment related expenditure of hypertensive patient was high in relation to income. Reduction of the cost of the investigation, drugs may be helpful for the hypertensive patients.

Conflict of interest: None

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