

# Economic Implications of Cardiovascular Diseases (CVD) at Household Level in Navi Mumbai

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**Abstract:** Cardiovascular Diseases (CVD) is a leading cause of death in India and is established to be a major threat not only in terms of morbidity and mortality but also to development and economic growth. High out of pocket expenditure (OOP) on cardiovascular diseases coupled with household's poor income leads to reduced expenditure on food and education. Cardiovascular disease as a chronic disease can lead to dwindling working age population, which in turn will affect the per capita gross domestic product. Estimating cost of illness is useful in policy making and allocation of resources to address cardiovascular diseases. **Objectives:** The study estimate the direct and indirect costs incurred by CVD patients on treatment of NaviMumbai. The study provide an estimate of the economic costs of CVD including healthcare costs, informal care costs and productivity loss and to estimate the proportion of total CVD cost attributable to CVD. Following categories of CVD healthcare services will be included; Primary care, accident care, outpatient care and medication. **Methodology:** A semi structured interview schedule in the OPD and also the hospitalized CVD patients. Suitable questionnaires and observations carried out for interviewing the patients and

the patient relatives. **Results:** Out of the total cost involved direct cost constitute the major cost as compared to indirect cost along with the productivity loss. **Conclusion:** Efforts should be made by the policy makers to bring down the direct costs associated with treatment of CVD. Also some kind of comprehensive and affordable insurance cover should be initiated and executed to intervene in order to curb or bring down the treatment costs. Coupled with this an effective mechanism to monitor the treatment cost.

**Keywords:** Cardiovascular diseases, Out of Pocket expenditure, Direct cost, indirect cost

## Introduction

Cardiovascular diseases have been gaining importance in India recently because of increased incidence of the disease. It is the first among top 5 causes of deaths in Indian population. The harms of cardiovascular disease (CVD) are not limited only to an individual's health but also create a large burden on an individual's finances. When CVD causes hospitalizations, especially in the case of an acute myocardial infarction,

commonly known as a heart attack, short term expenses are extremely high. The costs include ambulance rides; diagnostic tests, hospital stays and immediate treatment that may be include surgery. Short term costs aside, CVD remains expensive for the long term due to the price of drugs, tests to monitor the progress of the disease and frequent doctor appointments.

Cardiovascular disease (CVD) is the leading cause of morbidity and mortality among the high income countries of the industrialized world, accounting for more than one third of total deaths. CVD is the leading cause of non-communicable morbidity and mortality among the low and middle income countries, accounting for almost 25% of total deaths and by year 2030, is projected to be the leading cause of death worldwide. One of the most important advances in cardiovascular research of the 20<sup>th</sup> century was the identification of risk factors associated with the CVD with subsequent treatments developed and rigorously tested these risk factors with the goal of preventing CVD.

We now direct our attention to the second key element of the “ cost” of CVD namely an annualized measure of the indirect costs (

income losses) associated with the morbidity/disability and premature mortality from CVD that are borne by households. The main motivation for estimating these costs is to highlight the potential impact that illness can have on incomes, even if sometimes medical expenditures are limited by household resources or lack of insurance. Recent literature, Xu et al. (2003) in their work on catastrophic financial implications of ill health focus solely on medical expenditures when in fact, for some families it is the income losses that are likely paramount. Similarly, Doorslaer et al. (2006) in their analysis of the impoverishing impacts of ill health seem to suggest that in the absence of medical expenditure, the income/consumption of the household would likely have remained unaffected. In fact this would usually not be the case if ill health also affects household income levels.

### **Objectives**

The study estimates the direct cost and indirect costs incurred by CVD on treatment at Navi Mumbai.

The objective of the study is to provide the estimate of the economic costs of CVD including healthcare costs, informal care

costs and productivity loss and to estimate the proportion of total CVD cost attributable to CVD.

The following categories of CVD healthcare services will be included; in-patient, outpatient care and medication, diagnostic, food and travel, wage loss for both the patient and the attendant.

### **Methodology**

A semi structured interview schedule conducted at OPD and also the hospitalized CVD patients. Suitable questionnaires and observations carried out for patient and patient relatives.

### **Sample size**

Total 170 CVD patients (private hospital undertaking) were interviewed. A purposive sampling procedure was used to collect information.

### **Data collection**

A semi structured interview schedule was used to collect the information from CVD patients and their attendants. Schedule included the demographic, socio economic profile, treatment seeking behavior and

related expenditures, cost of wage loss and coping strategies.

### **Components of costs**

Two costs were taken in consideration viz direct cost and indirect cost. Direct costs included the cost associated with in- patient, procedure cost, medicine cost, diagnostic cost, consultation and food & transport. While the indirect costs included the wage loss for the patient himself and wage loss for the patient attendant.

### **Estimation of Direct and indirect costs**

Study was conducted at Navi Mumbai private hospitals, department of cardiology. Patients visiting for the cardiologist consultations were tapped and also the patients whose cardiac procedure was done. Along with this also laboratory department conducting the tests associated with CVD was selected. Food and transport expenses was collected and the medicines cost incurred by the patients.

<b>Direct and indirect costs incurred by the patients</b>
<b>Components of costs (in rupees)</b>
Direct Cost: Rs 4, 97, 21,250
Indirect Cost: Rs 43, 35,000
<b>Gross Total cost: Rs 5, 40, 56,250</b>

<b>Break up of direct cost (A)</b>
Procedure cost: Rs. 2, 69, 49,250
Medicine cost: Rs. 2, 16, 75,000
Diagnostic cost: Rs.8, 25,000
Consultation: Rs. 1, 70,000
Food and transportation: Rs.1, 02,000
<b>Total: Rs.4, 97, 21,250</b>

<b>Break up of indirect cost (B)</b>
Wage loss of patient: Rs. 38, 25,000
Wage loss of attendant; Rs. 5, 10,000
<b>Total: Rs. 43, 35,000</b>

**Gross total cost (T) =Direct cost (A)**

**+**

**Indirect Cost (B)**

**= 5, 40, 56,250**

### Cost Analysis

Direct cost constituted about 92% of the total cost and indirect cost constituted about 8% of the total cost. For in patient care, we can observe that the procedure cost constituted about 50% , which is the largest share followed by medicines which constituted at about 40% of the total cost. With this the diagnostic cost had a share of about 1.5%. Consultation cost incurred was at 0.3% of the total cost. Along with this the food and transportation cost constituted about 0.2% of share.

If we focus on indirect costs, which includes the wage loss of patients seeking CVD treatment and also the patient attendant it can be observed that share of wage loss for patient is at 7% of the total cost incurred for the treatment by the patient and 1% wage loss for the patient attendant.

All respondents incurred out of pocket (OOP) expenses without any insurance cover.

The above costs was estimated using WHO methodology proposed by Xu.(13). Analysis was done using SPSS for windows, version 20.0

### **Result**

Out of the total cost incurred, direct cost constitutes the largest share than the indirect cost, which included both wage loss for patient as well as the patient attendant.

### **Conclusion**

Households bear significant expenses on treatment of CVD. It is extremely important to frame logical and realistic policies by the policy makers for the treatment of CVD. It is not only in framing the policies but at the same time real time execution and monitoring of it. Affordable premium should be brought in place for the non-insured and at the same its proper utilization. Introducing the drugs associated with CVD in essential drugs list and incorporation of generic drugs. With this the unnecessary diagnostic tests which hold no specification with the CVD should be avoided. Timely

diagnosis of CVD should be established at early stage so as to curb the further complications.

### **References**

1. **D. Abegunde,C.Mathers., T.Adam, M.Ortegon.K.Strong.2007. “The burden and costs of chronic diseases in low and middle income countries.” The LANCET 370( December8):1929-38**
2. **A.Boutayeb,S.Boutayeb, 2005; “The burden of non-communicable diseases in developing countries” International journal for family in health 4(2):1-8**
3. **A.Ghaffar;S.Reddy,M.Singh.2004: “Burden of non-communicable diseases in south Asia” British Medical Journal 328 (April 3): 07-10**
4. **Gupta,S.Kandamuthan, D Upadhaya 2006; :Economic impact of cardiovascular diseases in India”; Institute of economic growth, university of Delhi**

5. Goyal A; Yusuf S. The burden of cardiovascular disease in the Indian sub-continent. The Indian Journal of Medical Research. 2006;124(3):235-44
6. WHO. Global Atlas on cardiovascular disease prevention and control. Geneva: WHO, 2011
7. Sharma M, Ganguly NK. Premature coronary artery disease in Indians and its associated risk factors. Vascular health and risk management 2005;1(3):217-25
8. Gupta R. Recent trends in coronary heart disease epidemiology in India. Indian Heart Journal. 2008;60(2 suppl B):4-18
9. Suhrcke M, Nugent RA, Stuckler D et al. Chronic disease: An economic perspective. London: Oxford Health Alliance, 2006
10. Srinath Reddy K, Shah B, Varghese C, et al. responding to the threat of chronic diseases in India. The Lancet 2005;366(9498):1744-49
11. Daivadnam M, Thankappan KR, Sarma PS, et al. Catastrophic health expenditure and coping strategies associated with the acute coronary syndrome in Kerala, India. The Indian Journal of Medical Research 2012;136(4):585-92