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# ECONOMIC BURDEN OF NON-COMMUNICABLE DISEASES WITH SPECIAL REFERENCE TO DIABETES AND HYPERTENSION IN CUDDALORE DISTRICT

**S.Sivasankaran<sup>1</sup>**

<sup>1</sup>Ph.D Research Scholar (Part-Time), Department of Economics, Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India.

**Dr. (Mrs.) N. Malathi<sup>2</sup>**

<sup>2</sup>Professor and Head, Department of Economics, Annamalai University, Annamalai Nagar, Tamil Nadu, India.

## ABSTRACT

*In India, death accounts to 52 per cent due to non-communicable disease. World Health Organization (WHO) report states that India has the largest number of diabetic in the world. In India, genetic, urbanization and industrialization has changed the lifestyle and food habits of the people. As a result, diabetic has increased in more numbers in India. Given this backdrop, the present study analyses the economic burden of non-communicable disease with special reference to diabetics and hypertension in Cuddalore district. Of the various costs computed, direct cost is high as compared to direct non-medical and indirect cost. In particular, they spend more for medicines, laboratory tests and consultation. Thus, government service is very pertinent to reduce the cost of health care. The government has to provide free health care facilities with advanced treatment, medicines and laboratory tests. Good and free health care services not only eradicate NCDs but also safeguard the life and livelihood of the poor people.*

**KEYWORDS:** *Diabetics, hypertension, economic burden, non-communicable disease*

## INTRODUCTION

In the developing countries like India, the prevalence of non-communicable diseases (NCDs) is continuously increasing. World Health Organization (WHO) report states that India has the largest number of diabetic in the world. In India, genetic, urbanization and industrialization has changed the lifestyle and food habits of the people. As a result, diabetic has increased in more numbers in India. The cost of treatment is high for the diabetic and associated diseases. Joshi and Rakesh M Parikh (2007) mentions that India is the capital of Diabetes in the World. At present, it leads in hypertension too. In India, 41 million people have diabetes and stands fifth place in the world rank. With this, the problem of cardiovascular is also

increases in India. The authors suggest that education campaigns have to encourage the people to consume lower sodium and caloric content. The people have to consume higher potassium content and to increase the physical activity by reducing alcohol consumption.

A study on prevention and control of non-communicable diseases in India found that the major non-communicable diseases are cardiovascular, stroke, diabetes, cancer, chronic pulmonary diseases, mental health and injuries. The problem of non-communicable disease is high due to alcohol and tobacco consumption, less physical activity, high blood pressure, unbalanced diet and obesity. Non-health factors such as poverty, education and employment and health system

assessments are inadequate in fighting the non-communicable disease. The whole world has joined to fight the non-communicable disease but failed (Mathur, P and Bela Shah, 2011).

In India, death accounts to 52 per cent due to non-communicable disease. Since 1980s, the government has taken various measures to control the risk factors of the non-communicable disease and practitioners and scientists have also taken various efforts. But, programmes are not taken in all the districts and it has to be mandated compulsorily. The government has to increase the expenditure for health and integrated approach has to be taken for health promotion, public awareness, better diagnostics and insurance are to be implemented in all the districts. Besides, access to good health care system is pertinent to control the non-communicable disease (Srivastava and Bachani, 2011).

Given this backdrop, the present study analyses the economic burden of non-communicable disease with special reference to diabetics and hypertension in Cuddalore district.

## METHODOLOGY

As per the World Health Organization's classification, non-communicable diseases comprise: asthma, cancers, cardiovascular diseases, hypertension, chronic obstructive pulmonary disease, congenital conditions, diabetes, diseases of the digestive system, eye conditions, genitourinary conditions, neuro-psychiatric conditions, skin and musculoskeletal conditions and skin diseases. Of the non-communicable diseases, incidence of cardiovascular disease, hypertension, diabetes, chronic obstructive pulmonary disease and cancer are high in India. Especially, the number of cases and the level of mortality are huge due to cardiovascular disease (or) hypertension and diabetes (Taylor, 2010). Thus, among the non-communicable diseases cardiovascular disease, hypertension and diabetes are selected for the study.

National Non-communicable Diseases Risk Factor Surveillance Study has conducted a survey about non-communicable diseases in North, South, East, West and Central states of India. The result of the study confirms that Tamil Nadu is one of the states having more number of diabetic patients. The Chennai Urban Rural Epidemiology Study (CURES) - 2007 is one of the major surveys on epidemiology in India. In this survey, 26,001 respondents were surveyed and one fifth (20 per cent) of the respondents are identified as hypertension patient (Mohan et al., 2008). This data confirms the level of prevalence of hypertension and diabetes in Tamil

Nadu state and as a result the Tamil Nadu state is selected for the study.

In order to assess the health care services, choice of medical treatment, direct and indirect cost of treatment and economic burden of hypertension and diabetes, Cuddalore district is selected. In Cuddalore district, 8 Govt. hospitals, 50 Primary Health Centers (PHCs), 171 medium and small private hospitals and 3 Municipal dispensaries are the sources for health care services (Cuddalore District Statistical Hand Book - 2014). In case of hypertension and diabetes problems, Government hospitals and private special clinics for diabetic and hypertension and other private hospitals are the prime sources of medical treatment. The researcher has selected the sample respondents by sources of medical treatment viz., Government hospitals and private clinics in the first stage.

At the next level, the respondents are chosen from important towns of the Cuddalore district (Cuddalore, Chidambaram, Neyveli, Panruti, Viruthachalam, Nellikuppam and Thittakudi) wherein both urban and rural patients are selected for the study. By using disproportionate stratified random sampling method, 20 respondents (10 diabetic patients and 10 hypertension patients) from government hospital and 20 respondents (10 diabetic patients and 10 hypertension patients) from private hospitals are selected from each of seven towns in Cuddalore district. As a whole, 280 respondents (140 diabetic patients and 140 hypertension patients) are surveyed in Cuddalore district.

Based on various studies and health care experts in the field of diabetes and hypertension, interview schedule was prepared and tested in the study region. Monthly direct and indirect costs are taken into account for calculation and annual total cost is derived. The major components of the interview schedule are treatment particulars, system of medical treatment, direct and indirect cost for treatment and social and economic burden of hypertension and diabetic problems. The data is collected in the year of 2014 through direct personal investigation.

## DIRECT COST

Economic burden of non-communicable disease is computed under direct cost, direct non-medical cost and indirect cost. The table 1 examines the average annual medical private direct cost of hypertension and diabetes.

**Table - 1**  
**AVERAGE ANNUAL MEDICAL PRIVATE DIRECT COST OF HEALTH CARE ACCORDING TO TYPE OF NCDs (in Rs.)**

Details	Type of Disease		Overall
	Hypertension	Diabetes	
	(n=140)	(n=140)	(n=280)
Consultation fees	555 (11.7)	512 (9.8)	533 (10.7)
Cost of Medical/Lab tests	499 (10.6)	427 (8.2)	463 (9.3)
Cost Medicine	3315 (70.0)	3764 (72.4)	3539 (71.2)
Cost of Treatment for Co-Morbidities	366	498	432
	(7.7)	(9.6)	(8.7)
<b>Total</b>	<b>4735</b> <b>(100)</b>	<b>5202</b> <b>(100)</b>	<b>4969</b> <b>(100)</b>

Source: Computed

Note: Figures in parentheses denotes percentages to respective column total

On an average, Rs. 4969 is the direct cost of NCDs where it is high for diabetes (Rs. 5202) as compared to hypertension (Rs. 4735). Among the sources, the patients have spend more for medicine, which is 71.2 per cent in total which is Rs. 3764 for diabetics and Rs. 3315 for hypertension. The cost of spend on consultation fees, lab tests and treatment for co-morbidities are meagre. Thus, direct cost creates huge burden to the diabetic patients as compared to hypertension.

#### **DIRECT NON-MEDICAL COST**

The table 2 examines the average annual direct non-medical cost of the respondents. The

non-medical costs are fee for special consultation, expenditure on supplementary food, food expenses during visit of hospital, fee for accompany person and transport cost. On an average, the direct non-medical cost is Rs. 1457, which are Rs. 1644 for diabetics and Rs. 1270 for hypertension patients. In total, transportation cost and expenses on food during hospital visits are high, which is 46 and 38.5 per cent respectively. As a whole, transportation and food expenses during hospital visit is high for both diabetic and hypertension patients.

**Table - 2**  
**AVERAGE ANNUAL DIRECT NON-MEDICAL COST OF THE RESPONDENTS (IN RS.)**

Details	Type of Disease		Overall
	Hypertension	Diabetes	
	(n=140)	(n=140)	(n=280)
Fee for Special Consultation	95	138	116
	(7.5)	(8.4)	(8.0)
Expenditure on Supplementary Food	534	589	561
	(42.1)	(35.8)	(38.5)
Food Expenses during visit of Hospital	95	90	92
	(7.5)	(5.5)	(6.3)
Fee for Accompany Person	17	18	18
	(1.3)	(1.1)	(1.2)
Transport Cost	530	810	670
	(41.7)	(49.3)	(46.0)
<b>Total</b>	<b>1270</b> <b>(100)</b>	<b>1644</b> <b>(100)</b>	<b>1457</b> <b>(100)</b>

Source: Computed

Note: Figures in parentheses denotes percentages to respective column total

## INDIRECT COST

The annual indirect cost of NCDs is given in the table 3 and the indirect costs are personal loss of income, income loss of accompanying person and family members. This cost stood at Rs. 1209, where it is marginally high for the patients of hypertension (Rs. 1214) as compared to diabetics

(Rs. 1204). Personal income loss is high (59.5%) than the income loss of accompanying person (25.8%) and family members (14.6%). The loss created due to the NCDs is high for the surveyed patients. Juxtaposing the various costs, direct cost of health care is high as compared to direct non-medical and indirect costs.

**Table - 3**  
**AVERAGE INDIRECT COST: AVERAGE ANNUAL INCOME LOSS OF PATIENTS, ACCOMPANYING PERSON AND FAMILY MEMBERS (in Rs.)**

Details	Type of Disease		Overall (n=280)
	Hypertension	Diabetes	
	(n=140)	(n=140)	
Personal Loss of Income	728	711	720
	(60.0)	(59.1)	(59.5)
Accompanying Person's Loss of Income	289	335	312
	(23.8)	(27.9)	(25.8)
Family Members Loss of Income	196	157	176
	(16.2)	(13.1)	(14.6)
<b>Total</b>	<b>1214</b>	<b>1204</b>	<b>1209</b>
	<b>(100)</b>	<b>(100)</b>	<b>(100)</b>

Source: Computed

Note: Figures in parentheses denotes percentages to respective column total

## CONCLUSION AND POLICY SUGGESTIONS

Economic burden of the NCDs affects the development of the victims in terms of health and monetary. This may affect the household expenditure of the patients and they may force to spend more for their health. As various costs computed, direct cost is high as compared to direct non-medical and indirect cost. In particular, they spend more for medicines, laboratory tests and consultation. Thus, government service is very pertinent to reduce the cost of health care. The government has to provide free health care facilities with advanced treatment, medicines and laboratory tests. Good and free health care services not only eradicate NCDs but also safeguard the life and livelihood of the poor people.

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