



## RAPID INCREASE IN THE NCDs: A CASE STUDY OF SIKKIM

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### Abstract

Present review article highlights the diseases that are growing at a rapid rate. This paper examines the reason for such an increase. Today, there is a prevalence of non-communicable diseases (NCDs) growing at an alarming rate. Each day number of people are diagnosed with NCDs, making a curative treatment as one of the top challenges for pharmaceutical companies. Almost three quarters of NCD deaths- 28 million people occur in low and middle income countries. Cardiovascular diseases amount for most NCD deaths or 17.5 million people annually, followed by, respiratory diseases (4 million), and diabetes (1.5 million). Non-communicable diseases have become a major public health issues and are emerging as a pandemic. While prevention of diabetes may become possible in the future, there is considerable potential now to better utilize existing treatments to reduce diabetes complications. In the past 20 years, the rates of obesity have tripled in developing countries that have been adopting a Western lifestyle involving decreased physical activity and over-consumption of cheap, energy-dense food. Such lifestyle changes are also affecting children in these countries. In addition to several features of urban life such as physical inactivity and unhealthy dietary practices, outdoor and indoor air pollution tends to increase the prevalence of diabetes and cardiovascular disease (CVD) and respiratory diseases. In this context, the objective of this paper is to identify whether there is a rapid increase in the manufacturing and marketing of drugs related to diabetes, cardiovascular and respiratory diseases as these are the ailments that are rapidly rising among all other therapeutic areas. The role of doctors and pharmacists become all the more important in understanding whether there is an increase in such diseases.

**Key Words: NCDs, Pharmaceutical Companies, Lifestyles, Social Impact and Economic Impact.**

### Introduction

Despite recent treatment advances and clinical methods available, there is an increase in cardiovascular diseases (CVD) mortality cases every year.<sup>i</sup> In contrast to the United States, the cardiovascular disease epidemic continues to rapidly evolve on a global level and is currently responsible for twice as many death in developing compared to developed countries. In low- and middle income countries, cardiovascular risk factors especially smoking and obesity continue to increase in prevalence and affect a larger proportion of younger patients.<sup>ii</sup> Between 2008 and 2030, the global population is projected to grow by twenty per cent from 6.7 billion to 8.1 billion people. The crude death rate is expected to remain more or less or less stable at around 8.4 deaths per thousand. However, a major shift is currently underway in the overall disease burden in the world. Figure 1 depicts that in the year 2008, five out of the top ten causes for mortality worldwide, other than injuries, were non communicable diseases; this will go up to seven out of ten by the year 2030. By then, about 76 per cent of the deaths in the world will be due to non-communicable diseases.(NCDs)<sup>iii</sup>

2008	2030
Cardiovascular diseases	Cardiovascular diseases
Cancers	Cancers
Chronic Respiratory diseases	Chronic Respiratory diseases
Respiratory Infections	Respiratory Infections
Perinatal Conditions	Diabetes Mellitus
Diarrhoeal diseases	Digestive diseases
Digestive diseases	Perinatal Conditions
HIV/AIDS	Neuropsychiatric disorders
Tuberculosis	Genitourinary diseases
Neuropsychiatric conditions	HIV/AIDS

**Fig 1: Top 10 causes of mortality**

Source: Deloitte. (2011, September). International Heart protection Summit. Retrieved June 5, 2016, from <https://www2.deloitte.com/content/dam/Deloitte/in/Documents/life-sciences-health-care/in-lshc-cardio-noexp.pdf>

Cardiovascular diseases (CVDs), also on the rise, comprise a major portion of non-communicable disease. In 2010, of all projected worldwide deaths, 23 million are expected to be because of cardiovascular diseases. In fact, CVDs would be the single largest cause of death in the world accounting for more than a third of all deaths.<sup>iv</sup>



### Indian Perspective

India has seen a rapid transition in its disease burden (number of cases/lakh) over the past couple of decades. The load of communicable and non-communicable diseases (NCDs) is projected to get reversed in 2020 from its distribution in 1990. This is largely because, with India's economic growth and urbanization over the past decades, a large section of the population has moved towards unhealthy lifestyles with decreasing physical activity, increasing stress levels, and increasing intake of saturated fats and tobacco. The average life span has increased due to improvements in medical care; the rapidly ageing population, more prone to NCDs, will also fuel the growth of NCDs over the next few decades. Finally, most NCDs share common risk factors, whose prevalence is high in India and they generally occur as comorbidities. Cardiovascular diseases are the largest cause of mortality, accounting for around half of all deaths resulting from NCDs. Overall, CVDs accounted for around one-fourth of all deaths in India in 2008. CVDs are expected to be the fastest growing chronic illnesses between 2005 and 2015, growing at 9.2 per cent annually, and accounting for the second largest number of NCD patients after mental illnesses. A more worrying fact is that the incidences of CVDs have gone up significantly for people between the ages 25 and 69 to 24.8 per cent, which means the country is losing more productive people to these diseases. The interdependence between health and economic well-being is well established and there is a huge impact of cardiovascular diseases on economic growth and development. Between 2005 and 2015, India is projected to cumulatively lose USD 236.6 billion because of heart disease, stroke, and diabetes, shaving 1 per cent off the GDP. Further, in the absence of any national program for 2030, more than nine times the corresponding figure for the US. The estimates above do not include the indirect losses, such as losses incurred from not investing the same amount in other areas of human development such as education.<sup>v</sup> The leading causes of NCD deaths in 2012 were: cardiovascular diseases (17.5 million deaths or 46.2 per cent of NCD deaths), cancers (8.2 million, or 21.7 per cent of NCD deaths), respiratory diseases, including asthma and chronic obstructive pulmonary disease (4.0 million, or 10.7 per cent of NCD deaths) and diabetes (1.5 million, or 4 per cent of NCD deaths). Thus, these four major NCDs were responsible for 82 per cent of NCD deaths. (W.H.O, 2014)<sup>vi</sup>

A quarter of all mortality is attributable to cardiovascular disease (CVD). Ischemic heart disease and stroke are the predominant causes and are responsible for 80 per cent of CVD deaths. The Global Burden of Disease study estimate of age-standardized CVD death rate of 272 per 1 lakh population in India is higher than the global average of 235 per 1 lakh population. Despite wide heterogeneity in the prevalence of cardiovascular risk factors across different regions. CVD has emerged as the leading cause of death in all parts of India, including poorer states and rural areas. In India, out of the estimated population of more than 1.27 billion dispersed across various geographical regions, about 45 million people suffer from coronary artery disease. According to current estimates, India will soon have the highest number of cases of cardiovascular disease in the world. It is estimated to account for 35.9 per cent deaths by the year 2030. Diabetes and hypertension have increased heart disease cases. The population of diabetics in India is about 50.8 million, which according to the International Diabetes Federation is by far the highest number reported among all parts of the world. The prevalence is higher in urban areas (6-8 per cent) compared to rural areas (2-3 per cent). Indians fall prey to diabetes at a relatively young age (about 45 years), which increases their lifetime risk of heart disease. Apart from diabetes, high blood pressure is also responsible for increased number heart disease cases. The increase in hypertension prevalence has been steady over the last 50 years, more in urban than in rural areas. Hypertension is 25-30 per cent in urban and 10-15 per cent in rural areas.<sup>vii</sup> NCDs are the leading causes of death globally. They are strongly influenced by four main behavioural risk factors: tobacco use, insufficient physical activity, harmful use of alcohol, and unhealthy diet, which lead to elevated blood pressure, raised blood glucose and cholesterol levels, and excess body weight. Age-specific death rates due to NCDs are generally higher in countries with low-income levels. Almost half of deaths caused by NCDs in low and middle income countries occur under the age of 70, and almost 30 per cent below the age of 60, with potentially serious consequences for productivity and socioeconomic development.<sup>viii</sup>

Further, NCDs threaten progress towards the UN Millennium Development Goals and post-2015 development agenda. Poverty is closely linked with NCDs. The rapid rise in NCDs is predicted to impede poverty reduction initiatives in low-income countries, particularly by increasing household costs associated with health care. Vulnerable and socially disadvantaged people get sicker and die sooner than people of higher social positions, especially because they are at greater risk of being exposed to harmful products, such as tobacco or unhealthy food, and have limited access to health services. In low resource settings, health-care costs for cardiovascular diseases, cancers, diabetes or chronic lung diseases can quickly drain household resources, driving families into poverty. The exorbitant costs of NCDs, including often lengthy and expensive treatment and loss of breadwinners, are forcing millions of people into poverty annually, stifling development. In many countries, harmful drinking and unhealthy diet and lifestyles occur both in higher and lower income groups. However, high-income groups can access services and products that protect them from the greatest risks while lower-income groups can often not afford such products and services.<sup>ix</sup>



To lessen the impact of NCDs on individuals and society, a comprehensive approach is needed that requires all sectors, including health, finance, foreign affairs, education, agriculture, planning and others, to work together to reduce the risks associated with NCDs, as well as promote the interventions to prevent and control them. An important way to reduce NCDs is to focus on lessening the risk factors associated with these diseases. Low-cost solutions exist to reduce the common modifiable risk factors (mainly tobacco use, unhealthy diet and physical inactivity, and the harmful use of alcohol) and map the epidemic of NCDs and their risk factors. Other ways to reduce NCDs are high impact essential NCD interventions that can be delivered through a primary health care approach to strengthen early detection and timely treatment. Evidence shows that such interventions are excellent economic investments because, if applied to patients early, can reduce the need for more expensive treatment. These measures can be implemented in various resource levels. The greatest impact can be achieved by creating healthy public policies that promote NCD prevention and control and reorienting health systems to address the needs of people with such diseases. Lower-income countries generally have lower capacity for the prevention and control of non-communicable diseases. These diseases are driven by forces that include ageing, rapid unplanned urbanization, and the globalization of unhealthy lifestyles. For example, globalization of unhealthy lifestyles like unhealthy diets may show up in individuals as raised blood pressure, increased blood glucose, elevated blood lipids, and obesity. These are called intermediate risk factors which can lead to cardiovascular diseases, a NCD.<sup>x</sup>Senior Sales Manager, (CIPLA), has an opinion that, India has become a hub for a diabetes following with ailments such as cardiovascular and respiratory diseases among all other therapeutic areas. He further adds that CIPLA produces more of a drugs related to these diseases.(Chakrabarti, 2016)<sup>xi</sup>

### Objectives of the Study

The main objectives of the study are as follows:

1. To study the growth of NCDs in Sikkim.
2. To ascertain whether the doctors, pharmacists and the patients have a similar view regarding the rapid increase of NCDs.

### Hypothesis

H<sub>1o</sub> Drugs for NCDs (Cardiovascular diseases, Diabetes and Central Nervous System) are not expected to see the rapid growth among all other areas. Therefore, these drugs are not manufactured most.

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### Research Methodology

This study is based on exploratory research methods. The primary data collected through the questionnaire including 50 doctors, 50 patients, and 60 pharmacists from the state of Sikkim, India. Further, the samples were selected in a random basis from the different parts of the state. The data collected through the questionnaire were analysed using the Chi-square test.

### Analysis and Findings

In order to test the above hypothesis, the respondents are surveyed about the diseases they see patients mostly suffering from these days. Their responses are analyzed statistically to evaluate whether there is equanimity and significant correlation in their responses. The major observations from this analysis are briefly explained and statistically substantiated in the subsections below.

Figure 3 (below) shows that the survey respondents, doctors, patients, and pharmacists, agree that these days patients complain more about diabetes, cardiovascular, and respiratory diseases than all other diseases combined. Chi-square test ( $X^2=37.181$ ,  $P=0.000$ ) showed that although the three respondents vary in the distribution of patients across these three diseases, most patients still suffer from one of the three.

What are the ailments patients mostly suffer from these days?				
Responses	Doctors	Patients	Pharmacists	Grand Total
Diabetes	28	44	45	117
Respiratory Diseases	28	3	20	51
Cardiovascular diseases	23	7	4	34
Grand Total	79	54	69	202
<b>Test statistics:</b>		<b><math>X^2 =37.181</math>; <math>P=0.000</math></b>		

**Table 1: Observed data and statistical analysis result**



This observation is further reinforced by the analysis of ailment-wise break-up of patients surveyed. Figure 2 demonstrates that more than 50% of the patients are suffering from an ailment that has roots in one of the three severe diseases viz. diabetes, cardiovascular, and respiratory. It shows the break-up of patients according to the diseases they think most people are suffering from. As shown in the figure, most people seem to be suffering from ailments related to diabetes, cardiovascular or respiratory functions. A little over half of the people are suffering from diabetes, cardiovascular or respiratory ailments and the other half seem to be suffering from all the remaining diseases (taken together). This observation is especially important since one of the objectives of the survey is to understand if pharmaceutical companies produce more of the drugs related to one of the three diseases mentioned above.

### Half of the patients suffer from Diabetes, Cardiovascular or Respiratory ailments

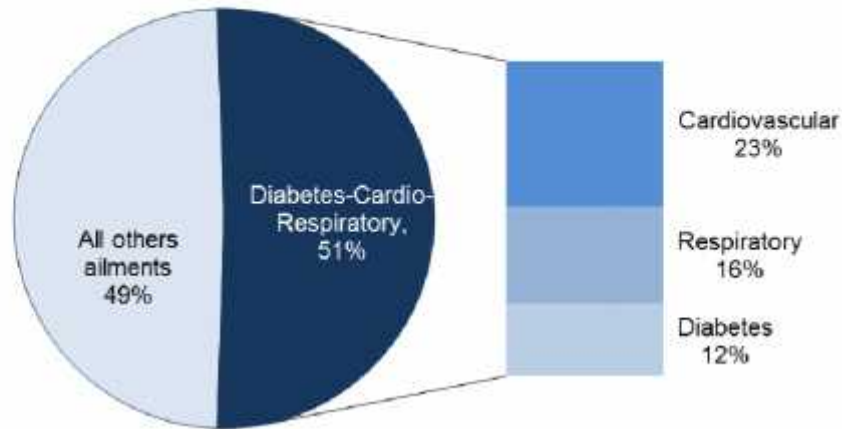


Figure 2 Ailment-wise distribution of patients

### Doctors, Patients, and Pharmacists concur that people mostly suffer from Diabetes, Cardiovascular, and Respiratory diseases

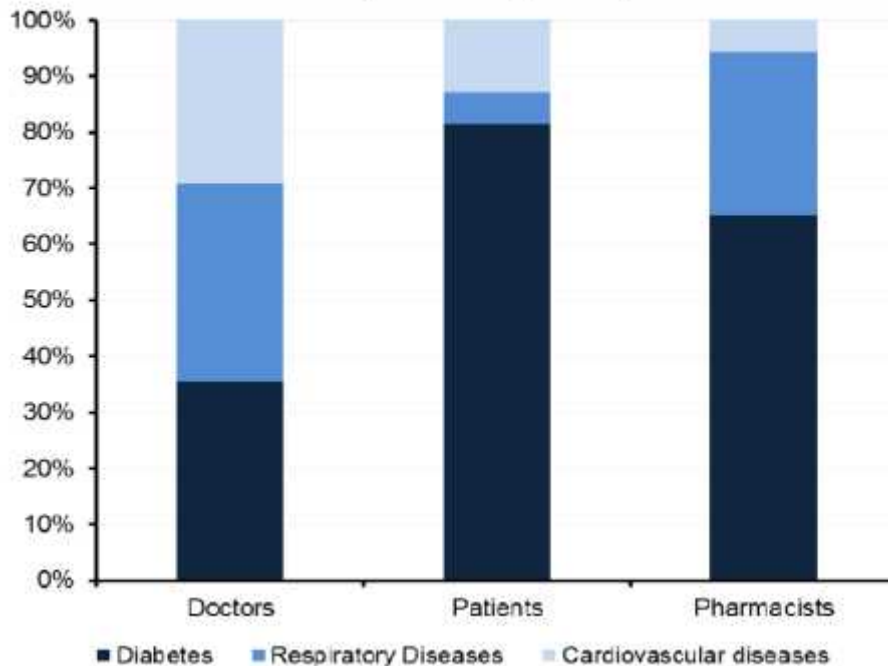


Figure 3 Diseases most people suffer from



Every two in three doctors buttress this fact by mentioning that they have patients complaining about severe diseases viz. diabetes, cardiovascular diseases, and respiratory diseases. The three data points illustrated above further reinforce the observation that patients are indeed suffering from these three severe ailments. Therefore, new and more drugs are introduced primarily to cater to the need of the growing number of patients with these severe ailments.

Therefore, from the above analyses it can be said that the Null Hypothesis is rejected and the Alternative Hypothesis is accepted.

### Conclusion

From the perusal of the above analyses and results, it is evident that the drugs for NCDs are rapidly rising. Hence, it can be said that such drugs are manufactured most following by other ailments. It is very interesting to note that the doctors and the pharmacist have the same opinion that among all other diseases NCDs are the leading diseases that is taking toll in people's health. The patients view have varied among the two respondents as they have a little knowledge regarding the ailments people suffer from. The prevention measures such as healthy lifestyles, exercises and a food habits should be an ongoing process in an individual's life. With such initiatives taken from individuals will result in the positive social and economic growth. Further, with such initiatives there will be a reduction of such ailments in the future years. This study will further help the pharmaceutical companies to develop a comprehensive analysis of the forecast of such an increase in the diseases and thereby set a standard for the production of such drugs which are rising at a faster pace or divert their present activities in the needful areas.

### End Notes

<sup>i</sup>Upadhyay, R. K. (2015). *Journal of Lipids*. Retrieved February 2, 2017, from <http://dx.doi.org/10.1155/2015/971453>.

<sup>ii</sup>Maguy Chiha, M. N. (2012). *International Journal of Hypertension*. Retrieved February 2, 2017, from <http://dx.doi.org/10.1155/2012/697240>.

<sup>iii</sup>Deloitte. (2011, September). *International Heart protection Summit*. Retrieved June 5, 2016, from <https://www2.deloitte.com/content/dam/Deloitte/in/Documents/life-sciences-health-care/in-lshc-cardio-noexp.pdf>.

<sup>iv</sup>*Ibid.*,

<sup>v</sup>*Ibid.*,

<sup>vi</sup>W.H.O. (2014). *Global Status Report on Non-communicable diseases*. Retrieved from [http://apps.who.int/iris/bitstream/10665/148114/1/9789241564854\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/148114/1/9789241564854_eng.pdf).

<sup>vii</sup>Shekhar, S. (2016, Dec 9). *Non-communicable diseases are the leading killer in India*. Retrieved Feb 2, 2017, from <https://www.yourhealth-key.com/single-post/2016/12/09/Non-Communicable-Diseases-are-the-leading-killer-in-India>.

<sup>viii</sup>(n.d.). Retrieved February 2, 2017, from [http://www.who.int/nmh/publications/ncd\\_report\\_chapter1.pdf](http://www.who.int/nmh/publications/ncd_report_chapter1.pdf).

<sup>ix</sup>World Health Organisation. (2015, January ). Retrieved October 6, 2016, from <http://www.who.int/mediacentre/factsheets/fs355/en/>.

<sup>x</sup>*Ibid.*

<sup>xi</sup>Chakrabarti, S. (2016, April Thursday). Changes in Marketing Practices of Pharmaceutical Firms. (S. Sapkota, Interviewer) S.F Road, Siliguri, West Bengal , India.