Wilson Center

FORGOTTEN
PROBLEMS PROJECT

December 2015 | Vol. 1

GLOBAL SOCIAL AND ECONOMIC IMPACT OF SELECT NON-COMMUNICABLE DISEASES

By Badri Narayanan

Introduction

Project Introduction

The Forgotten Problems Project is a new initiative of the Science and Technology Program at the Wilson Center. The project seeks to understand why diseases and issues like cancer, depression, Alzheimer's and hypertension, which have tremendous health and economic effects, receive relatively little attention from policymakers and the media. The project will seek to increase the visibility of these high impact/low visibility issues, develop a conceptual model to explain political and social inaction, begin to understand the policy challenges surrounding this class of problems and identify ways to raise their visibility.

This brief, the first in the series, seeks to begin to understand the aggregated social and economic effects of four issues that fall into this high impact/low visibility paradigm. In additional to looking at these effects in the United States and on a global basis, the study further examines these effects in Mexico and India to understand the burden in fast-growing economies where lifestyle, income and other factors are rapidly changing.

Study Introduction

The objective of this study is to identify the social and economic impact of four non-communicable diseases (NCDs) -- diabetes, depression, Alzheimer's and hypertension -- in the United States, Mexico and India, as well as globally. The academic and policy research literature in this area is fairly mature and we achieve this objective by a thorough review of the literature and undertaking further calculations and estimations. The second section of the paper focuses on methodology, while the third section explains the results, providing an overview and some discussion on the demographic variations of social and economic impact of NCDs. The fourth section provides a very brief conclusion.

Methodology

The most authentic and widely used source of any measure of social and economic burden of any disease, at country and global level, is the Disability-Adjusted Life Years (DALY), from the National Burden of Disease manual.[1] The World Health Organization (WHO), which develops and publishes DALY statistics, says the measurement represents the loss of one "healthy" year in a life. "The sum of these DALYs across the population, or the burden of disease, can be thought of as a measurement of the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability," according to the WHO website.

The first step involved collecting this dataset for our purposes. The second step involves identifying costs associated with DALY. We follow a WHO methodology adopted by Ross and John (2010), in their pioneering study for the American Cancer Society, which involves multiplication of DALY scores by the per-capita GDP values from the World Bank dataset. A discussion is included of the demographic effects of different NCDs.

To obtain projections for the year 2030, we employ the WHO global health estimates dataset (released in July 2013).[2] We add the projected rate of growth of DALY for each disease and the projected rate of growth of per-capita income (obtained from projections from the French economics research group CEPII)[3] to obtain the total growth of social and economic impact projected in 2030. All of these reports also provide the variations of these impacts across different demographic categories in terms of gender and age.

---

1 See http://www.who.int/healthinfo/global_burden_disease/tools_national/en/

2 See http://www.who.int/healthinfo/global_burden_disease/en/

3 Jean Foure, Agnès Benassy-Quere and Lionel Fontagnge, The World Economy in 2050: A Tentative Picture, *CEPII Working paper* (2010) 27.

Results

Overall Impacts

Based on the methodology detailed above, we estimated the global economic and social impact of these NCDs as shown in Tables 1 and 2. The most striking observation from Table 1, when compared with the cancer costs estimates by Ross and John (2010), for the year 2008, is that the global cancer costs have grown more than 155 percent from a mere US$895 billion to US$2.3 trillion in just four years. Even if we account for inflation from 2008 to 2012 and express these numbers in 2008 prices, the growth is more than 133 percent. This is alarming and quite worrisome for policymakers all over the world. (Additional representations of this information can be found in Figure 1 and Figure 2.)

Table 1: Results on economic costs estimated from the latest available dataset (Billions of US$ in 2012 prices)

2012	GLOBAL	USA	Mexico	India
Cancer	2323.2	766.6	21.2	36.1
Depression	795.1	221.6	11.9	21.8
Alzheimer	138.0	194.5	1.7	1.3
Hypertension	189.2	72.1	4.1	6.0

Table 2 shows the projections of social and economic impact of these NCDs for the year 2030. Even in 2012 prices, the global social and economic impacts of cancer are expected to double by 2030. For the United States and Mexico, this would be almost double the current estimates, while for India it could be three-fold growth. Similar projections are seen in this table for other diseases, as well. In short, India's economic burden from these NCDs is likely to triple, while both globally and in United States and Mexico, the burden is expected to double.

Table 2: Projections of economic costs for the year 2030 (Billions of US$ in 2012 prices)

2030	GLOBAL	USA	Mexico	India
Cancer	4635.2	1298.1	41.5	107.7
Depression	1426.6	330.7	20.9	60.6
Alzheimer	270.3	322.2	3.3	3.8
Hypertension	346.3	110.2	7.4	16.9

Demographic Variations of Impact

Beyond these projected economic and social impacts, we also provide a short discussion on how these four NCDs affect different demographic groups at the global level using the same sources described in section 2.

Cancer

According to the National Cancer Institute, “cancer” refers to a set of related diseases where the cells in a body begin to divide without stopping, spreading into surrounding tissue. It can begin anywhere in the body. Among both males and females, about 80-88 percent of impact of cancer is due to the incidences of cancer among people who are older than 50 years of age. Males aged 30-49 years of age carry about 10 percent of the impact, while women of this same age group account for more than 13 percent. About 44 percent of total impact due to cancer can be attributed to women. For the age group of 30-49, females constitute a major part of the burden. By 2030, the impact is expected to be more associated with older people than younger ones. For example, the percent male cancer impact from men aged 30-49 would drop from 10 percent to 7 percent.

Depression

Depression refers to a major mood disorder that results in feelings of sadness and overarching loss of interest, which may require long-term treatment involving medication, psychological counseling or a combination of both, according to the Mayo Clinic. About 61 percent of the global impact of male depression is due to elderly males (70+ years), while about 25 percent is due to slightly younger males (50-69 years). Older women (70+ years) represent 77 percent of impact, while slightly younger woman (50-69 years) represent 16 percent. Thus depression is a predominantly an issue most relevant for elderly females. Among males, about 11 percent of global depression impact comes from men aged 30-49, while for females in this age group this number stands at less than 6 percent. On the other hand, 63 percent of all impact from depression could be traced down to females. Therefore, in short, depression has been much more prominent among older females. Such a trend would get strengthened in future, according to our projections to 2030. For example, the percentage of impact among males associated with the age group of 30-39 could go down from the current level of 11 percent to 8 percent in 2030.

Alzheimer

Alzheimer’s disease is the most common form of dementia, according to the Alzheimer’s Association, which develops slowly and impairs thinking, behavior and memory. The disease is more visible in the elderly than in the younger population.

Notably, 67 percent of all impact due to this disease can be traced to women. While trends are largely the same in our 2030 projections, females might form a slightly smaller part of the overall impact in the future, registering at 65 percent.

Hypertension

Hypertension is another term for high blood pressure, a common condition where the force of blood against the walls of a person's arteries is great enough to cause health problems like heart disease, according to the Mayo Clinic. About 57 percent of total impact from hypertension involves females, indicating that they are the more vulnerable gender in this context as well. Further, about 90-95 percent of the impact is from people who are older than 50. Similar demographic trends remain in 2030 projections as well.

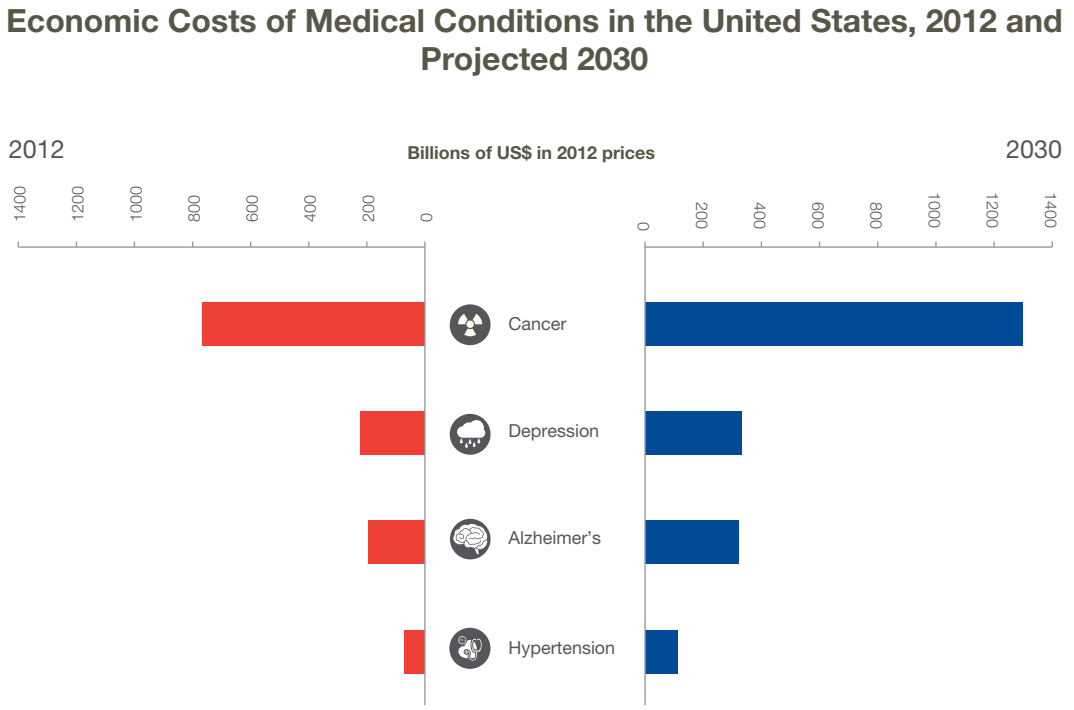
Conclusion

The global economic and social impact of these NCDs is quite considerable and has increased in recent years. Such an impact is going to rise further in the future, although the demographic details could vary. Particularly, we might see most of the future impact coming from the elderly population.

About the Author

Dr. Badri Narayanan is a Research Economist at the Center for Global Trade Analysis at Purdue University in West Lafayette, Indiana. Narayanan's broad research interests lie in the area of trade policy modeling in relation to industrial, labor, energy/environmental and health issues, both from economic and inter-disciplinary perspectives. He has published three books and dozens of research papers in reputed journals, books and other outlets. He has been a consultant with several organizations including the World Bank, United Nations Food and Agricultural Organization, World Health Organization, European Commission, International Trade Center, the Commonwealth of Nations and the governments of India, the United States, Finland and others. He is a board member of Young Professionals Chronic Diseases Network.

Figure 1: Economic Costs of Medical Conditions in the United States, Mexico and India (2012 and 2030 Projected)



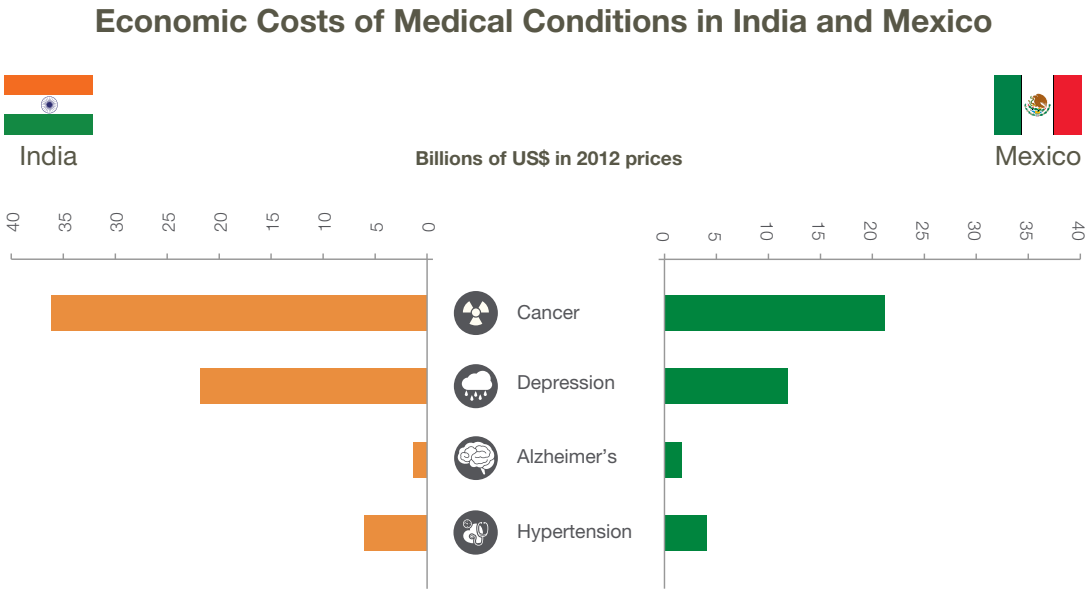
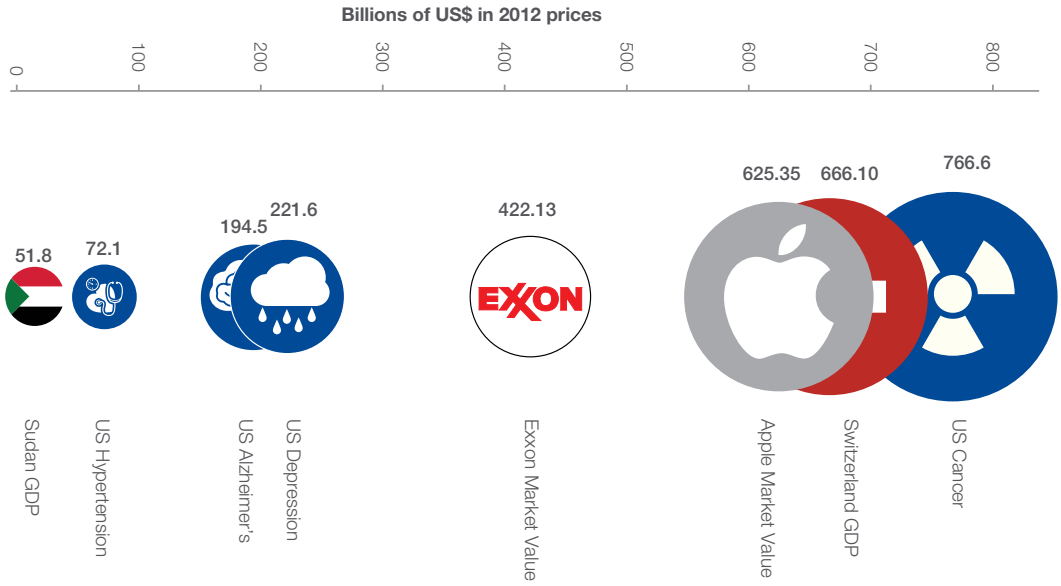


Figure 2: Economic Costs of Medical Conditions

Economic Costs of Medical Conditions in the United States Compared to National GDPs and Corporate Market Valuations in 2012



Sources:

GDP numbers from UN Statistics Division: National Accounts Main Aggregates Database (http://unstats.un.org/unsd/snaama/dnllist.asp)

Corporate numbers from FT Global 500 Sep 2012 (http://im.ft-static.com/content/images/c2a82f60-138b-11e2-9cc7-00144feabdc0.pdf)

FORGOTTEN
PROBLEMS PROJECT

Wilson Center

One Woodrow Wilson Plaza
1300 Pennsylvania Ave., N.W.
Washington, DC 20004-3027

T 202/691/4000
F 202/691/4001
www.synbioproject.org