The Economic Impact on Households and Nations of NCDs\textsuperscript{1}: A Review of Existing Evidence

Michael Engelgau\textsuperscript{a}, Sandra Rosenhouse\textsuperscript{a}, Sameh El-Saharty\textsuperscript{a}, Ajay Mahal\textsuperscript{b}.

\textsuperscript{a} South Asia Human Development Unit, World Bank, Washington, DC

\textsuperscript{b} Global Health Unit, Menash University, Melbourne, Australia

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Monash University

Correspondence details: Michael M Engelgau – mxe1@cdc.gov

\textsuperscript{1} Noncommunicable diseases (NCDs) include chronic diseases (largely cardiovascular disease, diabetes, cancer, and chronic respiratory disease), injuries, and mental health.
Abstract

In developing countries, the NCD disease and risk factor burdens are shifting toward the poor. Treating chronic diseases can be expensive. In developing countries where generally much health care costs are borne by patients themselves, for those who live in poverty or recently escaped severe poverty, when faced with large, lifelong out-of-pocket expenses, impoverishment persists or can reoccur. These patterns have implications for national economic growth and poverty reduction efforts. NCDs can change spending patterns dramatically and result in significantly reducing nonmedical related spending on food and education. In India, about 40 percent of household expenditures for treating NCDs are financed by households with distress patterns (borrowing and sales of assets). NCD short- and long-term disability can lead towards a decrease in working-age population participation in the labor force and reduce productivity and, in turn, reduce per capita GDP growth. To fully capitalize on the demographic dividend (i.e., aging of the population resulting in less dependent children, not yet more dependent elderly, and greater national productivity), healthy aging is necessary, which in turn, requires effectively tackling NCDs. Finally, from an equity standpoint, the economic impact of NCDs, evident at both the household and at the country level, will disproportionately affect the poor and vulnerable populations in the developing world.

Introduction

Noncommunicable diseases (NCDs) include chronic diseases (largely cardiovascular disease, diabetes cancer, and chronic respiratory disease), injuries, and mental health and are an emerging health issue for developing countries. Our main goal with this review is to examine the economic impact that NCDs can have in developing countries, both at the household and national levels. While information is scant for developing countries, here we review key studies from the peer reviewed
literature and key reports from global institutions including the World Health Organization, World Bank, and World Economic Forum.

The NCD Burden is Shifting Towards the Poor in Developing Countries

Currently, NCDs cause most of the disease burden in developed countries where they are concentrated among the poor. In developing countries, the current NCD disease burden may be greater among the rich, but in the near future, if not already, it will concentrate among the poor, similar to the pattern already found in developed countries. In developing countries, NCD risk factors, such as tobacco use, are already more common among the poor. Adding to the many challenges that NCDs bring, their treatment can be expensive to those affected because, first, they require drug, inpatient, and outpatient treatment, over a much longer period (lifelong) than acute communicable diseases and, second, existing health financing patterns in developing countries have a large proportion of the costs paid out of pocket, which can result in individual and household impoverishment. In general, compared to rich countries, poor countries have larger out of pocket expenses and higher fractions of health costs borne by patients themselves (Gottret and Schieber 2006). In developing countries, even for those who have escaped severe poverty, faced with large, lifelong out-of-pocket expenses, impoverishment can reoccur. These patterns can impact national economic growth and poverty reduction efforts.

Household Costs and Lost Income from NCDs are Impoverishing

NCDs can change spending patterns dramatically and result in significantly reducing nonmedical related spending on food and education and lead to liquidation of accumulated wealth and assets to pay for care. In addition, risk behaviors, such as tobacco use, may also change household consumption patterns, where tobacco purchases can displace spending for education and food. While the literature is limited,
here we focus on studies from India, a low income country which has nationally representative data on medical expenditures among households and financing for health care. In India, NCDs generally incurred significantly higher treatment costs (about double) in terms of out-of-pocket expenditures than other conditions and diseases, and hence implied a higher financial risk on affected individuals and households (Mahal et al. 2010). About 40 percent of household expenditures for treating NCDs were financed by households with distress patterns such as borrowing and sales of assets. Others have examined the impact of NCD risk factors, such as smoking had on household finances and found the risk of distress borrowing and distress selling of assets increases significantly for hospitalized patients if they are smokers (Bonu et al. 2005). In addition, the economic burden at the household level is increasing. In India, the amount of out-of-pocket expenditures attributable to NCD treatment during 12 months in 1995–96, and again in 2004, was estimated to increased from 32 percent to 47 percent in 2004, suggesting a growing importance of NCDs in terms of their financial impact on households (Mahal et al. 2010).

The odds of incurring catastrophic hospitalization expenditures among households with affected individuals were nearly 160 percent greater for cancer and 30 percent greater for cardiovascular disease (CVD) than when hospitalization is due to a communicable disease (Mahal et al. 2010). In addition, the impoverishing effect of hospitalization due to NCDs had a similar pattern to catastrophic expenditures – much more common for those with NCD-related hospitalizations than for those with hospitalizations due to other conditions.

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2 Health care spending for hospitalization was “catastrophic” when such spending exceeded 30 percent of their ability to pay, that is, household consumption spending less combined survival income for all household members. Survival income was defined as the poverty-line level of expenditure multiplied by household size.

3 Hospitalization spending was considered “impoverishing” if, after subtracting it from total household spending, a household would fall below the poverty line.
When those ill with NCDs are the main income earner or rearing the children, NCD-related short- or long-term disability or premature death can result in forgone personal and household income. In India, the duration of illness for hospitalization ranged from 50 to 70 days for some NCDs, greater than other conditions. (Figure 1) (Mahal et al. 2010) For outpatient illnesses, the days when people could not work was also greater for some NCDs than for other conditions. (Figure 1)

**NCDs Impedes Economic Development**

NCDs can hamper development and poverty reduction efforts in developing countries (Figure 2). A decrease in working-age population participation in the labor force, due to short and long term disability, will reduce productivity and, in turn, reduce per capita GDP growth. Government budgets will be squeezed as tax revenues fall because of a decline in the size of the working-age population and an increase in the needs and demands of a disabled and aging population. In addition, as the elderly population rises, the overall rate of saving and investment in a society will decline as more resources need to go to pensions, health care, and long-term residential care (IMF 2004). The result will be higher dependency ratios (i.e., to unhealthy to work resulting in becoming dependent) ultimately leading to lower economic growth, deepening poverty, and greater inequity. In Sri Lanka, where life expectancy has increased much faster than other developing countries, a recent World Bank study found that chronic illness is an important cause of withdrawal from the labor market and lowers potential productivity (World Bank 2008).

According to WHO estimates, the Russian Federation in 2005 lost US$11.1 billion of national income as a result of deaths from heart disease, stroke and diabetes on labor supplies and savings, which amount to one percent reduction in GDP (WHO 2005a). In 2015, the percentage reduction in GDP would be over 5 percent of GDP, far higher than the estimated reduction of 1 percent of GDP in other countries such as
Brazil, China and the United Kingdom. These huge losses in Russia are largely due to higher rates of CVDs, the leading killer of the Russian working-age population, than in other countries (WHO 2005a). Similarly, projections suggest that in 2015, deaths from heart disease, stroke, and diabetes may lower GDP in low income countries also, such as India and Pakistan, by 1 percent (WHO 2005b).

Using country-level data, Suhrcke and Urban (2010) have shown that high CVD mortality rates slowed economic development, especially among high-income countries between 1960 and 2000, consistent with the expectation of the Commission on Macroeconomics and Health (WHO 2001). Among developing countries, where data are limited, the findings are less convincing. Rocco and Suhrcke (forthcoming) used another approach and, addressing data limitations, conclude that a reduction in global CVD deaths by 10 (out of 100,000 population) added 7 percent to per capita income over the observation period 1970–2000. In addition, analyses by Mahal et al. (2010), estimated that in India if NCDs were completely eliminated, estimated GDP would increase by 4–10 percent. While elimination is not feasible nor a current, realistic goal, these findings give a sense of the impact that reductions might have. This new analytical approach complements the previous studies on economic losses from NCDs to suggest the potential economic gains from reducing the burden from NCDs on economic growth.

The current and future NCDs burdens also put a strain on service delivery and upward pressure on national health budgets. Programs and services need to be reoriented toward efficient and effective NCD prevention and control, while also tackling the substantial remaining burden from communicable diseases, and maternal-child health and nutrition conditions. Combating NCDs with comprehensive and effective strategies requires a balanced package in four key areas. First, evidence-based environmental, regulatory, and behavioral interventions at both the population and individual levels will be needed.
New organizational structures with new focus areas may be needed. Second, reconfiguring the health care infrastructure and workforce to an integrated primary care system that ensures continuity of care across the service delivery levels, will be needed. Health service delivery is mostly tailored towards the acute infectious disease treatment and will need retooling for chronic care. Third, empowering patient and families to manage their conditions is a critical area. Achieving desired clinical goals and outcomes required both the health system and patients to work together. Key components of chronic disease care are self administered (e.g., taking drugs regularly, following dietary recommendations). Finally, restructuring the financing and insurance systems to reduce the financial burden resulting from the ongoing lifelong treatment needs to be aggressively addressed. Effective health financing will make the basic services accessible and affordable. In addition, it will properly align the incentives that foster quality and good outcomes among the health system and health providers.

The interaction between chronic diseases and communicable diseases presents another challenge because many developing countries still have a large communicable diseases burden. Persons with communicable disease complicated by chronic diseases tend to have worse outcomes. A well recognized example is tuberculosis which tends to have a worse clinical course among those with diabetes (Stevenson, Forouhi et al. 2007). Diabetes during pregnancy also worsens outcomes (Kitzmiller, Wallerstein et al.).

Multiple chronic diseases together and their risk factors also make treatment more challenging. Cardiovascular disease, diabetes, and obesity, for example are often clustered. In addition, depressive disorders that accompany (or are a result of) chronic diseases much be addressed for successful management of coexisting chronic diseases (Dismuke and Egede).

To fully capitalize on the demographic dividend (i.e., aging of the population resulting in less dependent children, not yet more dependent elderly, and greater national productivity), healthy aging is necessary,
which in turn, requires effectively tackling NCDs. Experience from developed countries indicates that the increase in CVD with aging could be blunted and even dramatically reduced by changes in risk levels within the population and through primary care for NCDs. In the United States, as in other developed countries, disability rates among the surviving elderly population have been declining by 0.5–1.5 percent annually (Cutler and Sheiner 1998; Maton and Gu 2001). More recent examples are also evident. In Poland in the decade following the collapse of the Soviet Union, a shift from subsidized dietary saturated fats derived from animal sources to more unsaturated fats from plant sources resulted in a dramatic reduction in CVD deaths (Zatonski and Willett 2005). All this information has led the World Economic Forum’s Global Risks Report for both 2009 and 2010 (WEF 2009 and 2010) to put chronic NCDs and their impact on both advanced and developing economies high on its Global Risk Matrix because of their connection to other global risks such as financial crises and underinvestment in infrastructure.

Conclusion

While the literature we have cited does not represent all developing countries, and in a large way we have used studies from India because of their availability, it does suggest a pattern by which NCDs impact developing countries. The impact on economic growth likely holds across countries. However, for developing countries with less out of pocket financing for health care, the impact at the household level may be reduced. The economic impact of NCDs is evident at both the household and at the country level and will disproportionately affect the poor and vulnerable populations while slowing development. Escaping poverty will become more difficult and the yield from national development efforts to reduce poverty will be muted if NCDs are not tackled effectively.

Acknowledgements
None
References


Figure 1  Duration of illness\textsuperscript{a} for hospitalized surviving persons and for outpatients, by disease or condition, India, 2004


\textsuperscript{a} Days when could not work.
Figure 2 Illustration of the country-level effects of NCDs

Chronic Diseases  
Diminished health

- Reduced labor force from mortality, absenteeism, disability and early retirement
- Depleted lifetime expectations. Increased social rate of time preference

Higher dependency ratio

Diminished labor productivity

Reduced access to factors of production

Increased consumption and reduced savings and investment in physical capital

May ultimately discourage foreign direct investment in country

Low (stagnant) economic growth

Deepening poverty and inequality

Lower GDP per capita

Source: Abegunde and Stanciol 2006.