Tallying the global economic burden of physical inactivity

Peter T. Katzmarzyk, PhD, Associate Executive Director for Population and Public Health Sciences, Pennington Biomedical Research Center

Introduction

Physical inactivity has been established as a major risk factor for several chronic diseases, as well as for early death. Indeed, it has been estimated that 9% of premature deaths globally, or more than 5.3 million deaths annually, are directly related to low levels of physical activity. Based on an analysis of global data, a significant number of cases of several chronic diseases are directly attributable to physical inactivity as outlined in the table below. If we were successful with our public health efforts and everyone in the world became physically active, we could theoretically prevent 6% of coronary heart disease, 7% of type 2 diabetes, and 10% of breast and colon cancers.

It follows that if physical inactivity increases the risk for chronic diseases, we can attribute a portion of medical expenditures associated with these diseases to physical inactivity. By using this approach, it is possible to estimate the economic burden of physical inactivity for a given province or country, or even for the global economy.

<table>
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<tr>
<th>Portions of Major Chronic Diseases Attributable to Physical Inactivity</th>
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<tbody>
<tr>
<td>Coronary Heart Disease</td>
<td>6%</td>
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<tr>
<td>Type 2 Diabetes</td>
<td>7%</td>
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<tr>
<td>Breast Cancer</td>
<td>10%</td>
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<td>Colon Cancer</td>
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SUMMARY

Understanding the economic burden of behavioural risk factors, such as physical inactivity in relation to other risk factors, is essential for prioritization of health promotion efforts. This article highlights an approach to understanding the economic burden of behavioural risk factors; shares new data about the global health and economic burden of physical inactivity and chronic disease; and provides a new insight for physical activity practitioners to explore and advocate for increased attention on physical inactivity as a major risk factor for chronic disease.
Major Chronic Diseases Strongly Associated with Physical Inactivity

- Coronary Heart Disease
- Stroke
- Type 2 Diabetes
- Breast Cancer
- Colon Cancer

It is important to understand the economic burden of behavioural risk factors, such as physical inactivity in relation to other risk factors, in order to better prioritize public health efforts, especially in times of scarce fiscal resources. To date, economic evaluations of the public health burden of physical inactivity are sparse, and analyses have been limited to a few countries. The purpose of this article is to introduce exciting new data about the global health and economic burden associated with physical inactivity.

Estimating Economic Costs

Quantifying the economic cost of risk factors is one way to determine their burden on society. Economic costs associated with a risk factor such as physical inactivity can generally be divided into two broad categories:

1. **Direct medical costs.** These include expenditures which are directly related to taking care of people in healthcare settings, such as hospital care, physician care, drugs, etc.

2. **Indirect costs.** Although a bit more difficult to estimate, these include the economic output that is lost due to illness, injury, or premature death. Items may include work absenteeism, presenteeism (being at work but not being productive), and future lost work productivity to society from someone dying prematurely.

In some cases, indirect costs are higher than direct medical expenditures and take a greater toll on society as a whole.

One can estimate the proportion of diseases that can be directly attributable to physical inactivity at the population level by using estimates of the number of physically inactive people, along with the relative risks for different diseases associated with physical inactivity. Then applying economic cost estimates from the health care system for treating the associated chronic diseases, an overall estimate of the economic costs that are attributable to physical inactivity can be derived.

The Canadian Perspective

Using population-based approaches, several estimates of the economic burden of physical inactivity have been derived for Canada, ranging from 1.4% to 3.7% of total healthcare expenditures. These estimates were up or down based on the year the data were collected, as well as the group of diseases that each study ascribed as being related to physical inactivity.
An interesting study published two years ago simultaneously estimated the economic costs associated with tobacco smoking, excess weight and physical inactivity in Canada. The authors concluded that the combined effects of smoking, excess weight and physical inactivity amounted to $50.3 billion in direct ($15.4B) and indirect ($34.9B) costs in 2012. The total economic impact of smoking ($21.3B) and excess weight ($19B) were comparable, whereas the costs associated with physical inactivity were $10 billion.

Overall, the direct medical costs associated with all three risk factors amounted to 7.4% of total health care expenditures in Canada in 2012, which highlights the importance of public health efforts to reduce their prevalence.

Given the significant public health efforts that have addressed the issue of smoking in recent decades, these results support the contention that similar efforts should be brought to bear on tackling physical inactivity and obesity.

The Global Perspective

For the first time, a recent study has tackled the difficult issue of attempting to estimate the economic burden of physical inactivity at the global level. Using consistent methods, the authors estimated direct health-care costs and indirect productivity costs for physical inactivity across 142 countries, representing 93% of the world's population.

As a starting point, the authors first had to identify the major chronic diseases that are definitively related to physical inactivity, which included coronary heart disease, stroke, type 2 diabetes, breast cancer and colon cancer. Note that since the publication of the global burden of physical inactivity article by Lee and colleagues in 2012 described above, stroke has now been added to the list. Although physical inactivity has been associated with several other diseases and conditions such as high blood pressure, depression, metabolic syndrome, etc., relying on a limited number of diseases with overwhelming evidence was viewed as a conservative but more easily defendable approach.

The results of this study indicate that physical inactivity costs healthcare systems $53.8 billion (international dollars) worldwide in 2013, of which $31.2 billion was paid by the public sector, $12.9 billion by the private sector, and $9.7 billion by households (Figure 1). Furthermore, premature deaths related to physical inactivity contributed to $13.7 billion in productivity losses (indirect costs). Taken together, these results demonstrate the severity of the world-wide physical inactivity pandemic, and that the impact goes beyond personal health by extending the burden to entire health systems and global economies.

Figure 1: Breakdown of global direct costs of physical inactivity ($53.8 billion) by source of payments.
The global estimates of the economic costs of physical inactivity are staggering, but some interesting trends are also revealed upon closer examination of the results. For example, the burden of chronic diseases was estimated to be greatest in low- and middle-income countries (i.e., these countries experience a greater number of people with chronic diseases); however, the economic burden was substantially higher in high-income countries. One would expect that as the economies of low- and middle-income countries develop through the socio-economic transition, their share of the economic burden will also increase, placing an even greater burden on their public health and medical care systems.

Conclusion

Overall, physical inactivity is contributing to increasing health expenditures in Canada and the rest of the world. Given that the anticipated trajectory of continually increasing health expenditures is not sustainable, the development of effective interventions to address the high levels of physical inactivity in the population is a public health priority.

Although the type of information provided in this article may not provide actionable strategies for many people working directly as practitioners in the field of physical activity, it should provide important new insights that we can all use as we advocate (fight) for increasing attention for physical inactivity as a major risk factor for chronic diseases.

References


ABOUT THE AUTHOR

Peter T. Katzmarzyk, PhD, is a research scientist in the area of physical activity epidemiology. He has a special interest in global health and has a record of building research capacity in developing countries. Dr. Katzmarzyk has published more than 400 scholarly articles and books, and he has delivered over 160 invited lectures. He is also an ACAL Research Affiliate.