

The High Price of Sedentary Behaviour

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The rise of non-communicable diseases (NCDs) including obesity has reached an epidemic proportion worldwide. It is increasing with galloping pace. Morris's studies¹⁻³ of London bus drivers and Paffenbarger's studies⁴⁻⁹ of longshoremen and college alumni were the first to link physical activity and exercise to a lower risk of heart disease. The medical and scientific community initially met these results with skepticism, but by the 1970s it became an accepted notion that men who exercised regularly had a lower risk of death from heart disease and stroke, independent of obesity, diet, and blood pressure. In 1953 Morris et al¹⁰ showed that the incidence of heart attack was 50% less in London bus conductors who climbed the stairs of double-decker buses as part of their daily tasks, compared to bus drivers who spent most of the time sitting. In another study of 16-year follow-up of 3263 San Francisco longshoremen, Paffenbarger and colleagues⁴ reported that the most active group of cargo handlers, who expended over 1000 kilocalories (kcal) more than other longshoremen, had CAD death rates significantly lower than their sedentary colleagues. Since these two pioneering works, a large body of evidence has clearly documented many health benefits of physical activity.¹¹⁻¹³ Years of observational and experimental studies have confirmed the role of physical activity in preventing cardiovascular, metabolic, musculo-skeletal and mental health-related morbidity and mortality.¹⁴

Despite all out efforts to contain the NCDs, they are growing up very fast. Currently heart disease, stroke, cancer, diabetes, chronic lung disease, are collectively responsible for almost 70% of all

deaths worldwide. Almost three-quarters of all NCD deaths, or 82% of the 16 million people who died prematurely occur in low- and middle-income countries. The rise of NCDs has been driven primarily by four major risk factors: tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets¹⁵ The epidemic of NCDs poses devastating health consequences for individuals, families and communities, and threatens to overwhelm health systems. The socioeconomic costs associated with NCDs make the prevention and control of these diseases a major development imperative for the 21st century.¹⁵ It is estimated that sedentary behavior or physical inactivity is responsible for 6% of the world burden of disease from CHD (range: 3.2% in South-east Asia to 7.8% in the Eastern Mediterranean region); 7% of type 2 diabetes, 10% of breast cancer, and 10% of colon cancer. Inactivity is responsible for 9% of premature mortality, or >5.3 of the 57 million deaths that occurred worldwide in 2008. If inactivity were not eliminated, but decreased instead by 10% or 25%, >533,000 and >1.3 million deaths, respectively, may be averted each year. By eliminating physical inactivity, life expectancy of the world's population is estimated to increase by 0.68 years.¹⁶ Sedentary behaviors (e.g., sitting, watching TV, playing games on computer or mobile and other low-energy activities) have been associated with increased risk for obesity, metabolic syndrome, type 2 diabetes, breast and colon cancer and all-cause mortality. Sedentary behaviors may replace time spent in higher-intensity activities and contribute to lower levels of overall energy use. Even among individuals who meet current physical activity

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guidelines (meeting the physical activity guidelines of at least 2.5 to 5 hours of moderate intensity or “huff and puff” physical activity per week), high levels of sedentary activity might lead to negative health outcomes.¹⁷

Globally, people are spending more and more time engaged in sedentary activities. This trend is likely to increase given the availability and popularity of computers, television, smart-phone and other electronic devices that encourage physical inactivity coupled with an increase in sedentary jobs and availability of transportation at the door-steps. It is particularly a cause of concern, when one sees that most active sections of the society (children, adolescents and youths) are engaged in most sedentary behaviors. Among the multitude of dietary and lifestyle behaviors that contribute to the obesity epidemic, are centred upon sleep behaviors, sedentary behaviors (sitting or lying while awake) and diminished low-level physical activities of everyday life, with each category of behaviors apparently presenting an independent risk for obesity and/or cardiometabolic diseases. These behaviors are highly complex, operate in synergy with each other, disrupt the link between regulation of the circadian clock and metabolic physiology and impact on various components of daily energy expenditure and feeding behaviors to promote obesity and hinder the outcome of obesity control therapy. As such, this behavioral triad (nutrition, movement and sleep) presents plenty of scope for intervention and optimization in the context of body weight regulation and lifestyle-related disease prevention.¹⁸

The cost of sedentary behavior is immense in terms of direct health-care costs (both private and public) and indirect costs (productivity losses, and disability-adjusted life-years or DALYs). High-income countries bear a larger proportion of economic burden, whereas low-income and middle-income countries have a larger proportion of the disease burden.¹⁹ Thus, a considerable amount of resources is drained from each country every year. The direct health-care costs,

productivity losses, and DALYs attributable to sedentary life-style available for majority of the world's population is estimated to be \$ 53.8 billion worldwide in 2013.¹⁹ In the United States alone 14.7 billion (which amounts 10% of total medical spending in the country), is attributed to obesity and being overweight.²⁰

Despite this knowledge, a large proportion of the world's population remains physically inactive. To quantify the impact of physical inactivity on the world's major non-communicable diseases (NCDs), it is to be estimated how much of these diseases could be averted in the population if those inactive were to become active, as well as how much gain in life expectancy could occur at the population level.¹⁶ The major NCDs recently highlighted by the United Nations as threats to global health²¹ are coronary heart disease (CHD), cancer, specifically breast and colon cancers and type 2 diabetes, which are convincingly related to physical inactivity. During the last decade, a growing number of systematic reviews have been published. However, most of them have focused on one particular sedentary behavior (i.e. television viewing), age group or health outcome and have drawn divergent conclusions.²²

All these findings justify prioritization of resource allocation for promotion of regular physical activity worldwide as part of a comprehensive strategy to reduce non-communicable diseases. To reduce the burden of non-communicable diseases attributed to physical inactivity, WHO has developed a Global Strategy on Diet, Physical Activity, and Health in 2004.²³ Since then many countries has adopted and adapted this guideline and launched program of their own to promote physical activity and control obesity. In many countries, there are a number of programs to this end. Despite the activities of these programs, prevalence of sedentary behavior and obesity is increasing with all its hazardous complications. So evaluation of these programs is of utmost importance to assess the need for further modification (if necessary) of the existing programs in order to address the issue rationally

and cost-effectively.

The wind of sedentary behavior is now blowing in Bangladesh as well. The children and adolescents who once passed their leisure time playing football, cricket, volley-ball or playing games like running, swimming, high jump, long jump and other locally popular 'plays' are now passing most of their time sitting at computer or mobile phone or watching TV. Side by side, their food behavior has changed a lot. Once the people of Bangladesh used to take fish, milk and plenty of fresh fruits and vegetables which helped them maintaining a healthy life. Now the fast-food, processed food, beverages and soft drinks have mostly replaced their healthy food behaviors. This unhealthy life-style (physical inactivity and unhealthy food habit) has even reached to our rural community. These days soft drinks are more or less common item for guest entertainment in rural community replacing the delicious milk products like gruels and cakes. Even the children who like to play outdoor games can't do so for most of the public and private open places have already shrunked. Due to improved road-connectivity, manually-run bikes are gradually replaced by mechanically-run easy-bikes. All these evolutions are contributing to the sedentary life-style of the people and its consequences, the so-called non-communicable diseases. Whatever the causes of sedentary behavior be, we can't blame anybody. We all are responsible for the grave situation and we all should put all out efforts to avert the situation so that the future citizens of the country can lead an economically productive life and thus contribute to the social and economic development of the country.

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