

Global Economic Burden of Preventable Diseases: Diabetes Mellitus

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According to a summary of a report published in the recent Harvard Gazette (June 2018), "eight million largely preventable deaths from various diseases, costed six trillion dollars in lost economic welfare, in the low- and middle-income countries. Noncommunicable diseases (NCDs) task force reported, that if the present rate of increase in the incidence of obesity and diabetes continues, chances of meeting Millennium Development Goals (MDGs) for maintaining the rate of increase in the incidence of these diseases at 2025 at the level of 2020, is unlikely [1-3]. Obesity has increased two-fold and diabetes four-fold worldwide, in the last three decades. China and India keep competing with each other for the number one spot in the ranking, when it comes to the increase in diabetes incidence. When I visited Beijing in the early 90s, almost everyone was using bicycles for commuting and diabetes prevalence was less than 1%. During the past three decades, seven national surveys have been conducted in China and incidence of diabetes has increased by 17-fold [4]. No country in the world has reduced or reversed, the increase in the incidence of obesity and diabetes. What went wrong? Is this the price that we pay for socioeconomic progress? What are we going to do about this observation? Who is in charge of this global public health menace?

When I was growing up in India half a century ago, diabetes was considered the disease of the affluent. In fact, even the appearance of the central abdominal obesity in adults was considered an indication of the affluence. There were considerable discussions about these observations, and no definitive statements have appeared about the final judgment of this debate, in the elite scientific journals. But if we just think about this problem carefully, and analyze what is happening in the developing countries, it becomes evident, that socioeconomic transitions, have accelerated the increase in the incidence of diabetes and other metabolic diseases, such as hypertension, excess weight, obesity, metabolic syndrome, endothelial dysfunction, subclinical atherosclerosis, and vascular diseases. These diseases indeed, are really lifestyle diseases.

Framingham Heart Study, initiated by the National Institutes of Health, (NIH), USA and supported by collaborators from the Boston University School of Medicine (BUSM), over 70 years has developed a large body of information on modifiable risk factors that promote the development of cardiovascular disease (CVD). Several clinical studies have demonstrated that robust management of modifiable risk factors such as smoking, sedentary habits, elevated blood glucose and lipids, can indeed reduce or prevent acute vascular events, such as heart attacks and stroke. In a study done in 26 industrialized nations, it was shown that effective management of observed risks, induced a decline in CVD-deaths. The same study reported that in spite of this observed decline in CVD-related deaths, there was a significant increase in diabetes-related deaths [5]. In spite of the fact this report noticed a decline in the CVD-related deaths in these industrialized

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nations, CVD is considered the number one killer worldwide, for over 100 years. How do we address these issues that currently are beyond our control?

In a recent issue of the prestigious journal, *New England Journal of Medicine*, Bill Gates, whose foundation supports the work on infectious diseases, makes a case for the “Innovations for Pandemics” [6]. In this article, he articulates about the progress we have made in tackling infectious diseases. He makes a note of the more than 50% decrease in child mortality, over the years, and eradication of Polio worldwide, due to the discovery and use of effective vaccines. The reason I bring up this article is, wherever death is the immediate end point, people, policymakers and Governments pay attention. Take for example the case of HIV/AIDS, or Cancer, there is lot of attention, fund raising and concern. Whereas, hypertension, obesity, diabetes, which are grouped under “silent killers” takes years to reach that end point. Therefore, what we need is an intense awareness and education program, similar to what is being done for smoking prevention.

Since metabolic diseases are lifestyle diseases, similar to the CVDs, it is possible to reduce, reverse or prevent these diseases. Researchers at the University of Newcastle, UK, have indeed demonstrated, that just the low-calorie diet will reverse the diabetic conditions. Several national and international clinical trials have demonstrated that effective management of modifiable risk factors, such as, smoking hypertension, blood glucose, and lipid levels with appropriate changes in lifestyle, diet, and physical activity, resulted in the reduction of the risk of coronary artery disease [7,8]. Both genetic and lifestyle factors, contribute to the increased level of risk for coronary artery disease. Adherence to a healthy lifestyle (no current smoking, no obesity, regular physical activity, healthy diet), among participants with high genetic risk, was associated with 50% lower risk of coronary artery disease, compared to unhealthy lifestyle [98]. We and others have advocated lifestyle changes, but it is hard to convince adult population to change their acquired or inherited lifestyles [7-10].

I am happy to write this editorial to the *Journal of Archives of Endocrinology and Diabetes Care*. We the members of the South Asian Society on Atherosclerosis and Thrombosis (SASAT) recommend that those interested in leading a healthy life, should follow the strategic goals of the American Heart Association (AHA)- abstain from smoking, keep body mass index less than 30 (prevent developing excess weight), increase physical activity, and follow a healthy diet pattern [9-11].

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Table 1: Phytochemicals found in *G. sylvestre* [15].