

## Global Syndemic of Metabolic Diseases: Editorial Comments

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Editorial is usually a brief article, written by the editor that expresses publishers or journals collective views on a current issue. As an Emeritus Professor, I have taken the liberty of writing these editorial comments, at the invitation of the Editorial Board of the Journal of Diabetes and Clinical Research. I am briefly discussing collective views of the Global Health Organizations, as well as expressing my own views, on this very important subject, -Global Syndemic of Metabolic Diseases.

We and others have described, the increasing in incidence and prevalence of metabolic diseases, such as hypertension, excess weight, obesity, diabetes (type-2), and vascular diseases as pandemic, epidemic, or tsunami in our earlier publications [1-6]. A recent article in Lancet titled, "Global Syndemic of obesity, undernutrition and climate change is gravest health threat," the authors report, that unchecked production of unhealthy foods, is resulting in a double burden of obesity and undernutrition, which will be exacerbated by climate change. This 'global syndemic' is the greatest threat to human health in every part of the world, says a new report, by The Lancet Commission on Obesity [1]. Since the observations made by this commission is so very important, I have reproduced almost verbatim, the framing of the problem of obesity: "First, the prevalence of obesity is increasing in every region of the world. No country has successfully reversed its epidemic, because the systemic and institutional drivers of obesity, remain largely abated. Second, many evidence-based policies, recommendations, to halt and reverse obesity, have been endorsed by Member States at successive World Assembly Meetings, over nearly three decades, - but have not yet translated into meaningful, measurable, changes. Such patchy progress is due to, what the Commission calls

policy inertia, a collective term for the combined effects of inadequate political leadership, and governance, to enact policies to respond to the Global Syndemic."

As explained by the authors of the Lancet Obesity Commission, the pandemics of hypertension, excess weight, obesity, type-2 diabetes, constitute a syndemic or synergy of epidemics, as they drive the pathogenesis of atherosclerotic cardiovascular disease sequelae, and ultimately contribute to the development of acute vascular events, such as heart attacks and stroke. Cardiovascular disease remains the number one killer worldwide [7]. Extensive research on the developmental origin of adult diseases has shown, that fetal and infant undernutrition are risk factors for obesity-related disorders. In addition, recent studies from the researchers of Children's National Hospital (CNH), Washington DC have shown, that "biological tweets" from visceral fat, could indeed alter the programming of fetal fat metabolism [8]. A news release from the CNH claims, that the novel discovery, -that exosomal microRNA could play a role in adiposity-related diseases, can be a game changer for detecting, management, and prevention of obesity-related disorders.

Nearly half of all adults in the United States, have some type of cardiovascular disease-defined as coronary artery disease, heart failure, stroke or high blood pressure, according to the American Heart Association's annual report, "Heart and Stroke Statistics-2019". American Heart Association data shows, that more than 121 million adults had cardiovascular disease in 2016, a number which is slowly on the rise. The most advanced country in the World, the USA, has the highest prevalence of type-2 diabetes. The two Asian-giants in terms of large populations, India and China, have the highest number

of type-2 diabetic subjects. There are more than 2.2 billion individuals with excess weight world-wide. In the last three decades, obesity has increased two-fold and diabetes (type 2) by four-fold worldwide. During the same period in China, diabetes has increased by 17-fold. These increases in the incidence of metabolic diseases did not occur overnight. They have paralleled the urbanization, undernutrition, overnutrition, increased marketing of unhealthy foods, and adaptations of a sedentary lifestyle.

Most recent guidelines of Standards of Medical Care in Diabetes-2019 (American Diabetes Association) states, "There is a strong and consistent evidence that obesity management can delay the progression from prediabetes to type-2 diabetes [9-12]. In spite of this evidence-based observations, half of all adults in the U. S. have prediabetes or some form of cardiovascular disease. Having said that, we would like to suggest the clinicians, who manage obese and diabetic patients, to refer to this comprehensive guideline, published by the American Diabetes Association [9]. It is important to note, that a recent analysis of 227 randomized controlled trials of antihyperglycemia treatments in type-2 diabetes, found that A1c changes were not associated with the baseline BMI, indicating that patients with obesity can benefit from the same types of treatment for diabetes as normal-weight patients [9]. Furthermore, just lowering A1c alone, may not be sufficient, while managing diabetes subjects. It is equally important to manage, all the risks related to diabetes-related clinical complications.

We and others, have described these chronic metabolic diseases as syndemic, meaning they are cluster of metabolic risks, acting in concert with each other, in promoting the progress of atherosclerotic cardiovascular disease. In view of these observations, it is important to think in terms of managing all the metabolic risks (oxidative stress, low-grade chronic inflammation, excess weight, hypertension, obesity, endothelial dysfunction, subclinical atherosclerosis, and type-2 diabetes), that contribute to this Syndemic than to focus on just hyperglycemia. In an attempt to address the problem of unhealthy lifestyles, the World Health organization (WHO), developed a Global Strategy on Diet, Physical Activity and Health, the aim of which was to control and prevent non-communicable diseases or their risk factors [13,14]. The Lancet Commission on Obesity, urges a radical rethink of business models, food systems, civil society involvement, and national and international governance, to address The Global Syndemic of Obesity, Diabetes and Undernutrition. The commission is calling for a global treaty to limit the political influence of 'Big Food' (a proposed Framework Convention on Food Systems- modeled on Global Conventions of Tobacco Control).

Metabolic diseases such as Excess weight, hypertension,

obesity and type-2 diabetes, have reached epidemic proportions worldwide. This rapid increase was not an unexpected occurrence, like the infectious disease pandemic, or like an unexpected tsunami. Epidemiologists and public health specialists, have been following the incidence and prevalence of these non-communicable diseases worldwide for several decades. Member States of the United Nations, have indeed signed documents, which have set target deadlines, to halt these diseases by 2030. What is very evident by now is, that it is hard to stop, reduce, reverse, or prevent these lifestyle diseases, by putting out global reports, guidelines, and guidance statements. These are lifestyle diseases, and similar to tobacco consumption and HIV/AIDS, can be controlled only, by the collective efforts of all the stakeholders. Purpose of this editorial was to announce a wake-up call, and a call for immediate action, by all the public, industry, and civic bodies, to take whatever steps that are needed, to arrest the increase in the incidence of this "Syndemic of Metabolic Diseases".

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