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Mini Review

Obesity and Diabetes Epidemic: World Diabetes Day-2018

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Abstract

Just the other day, I wrote an Editorial for another journal on World Diabetes Day. Before that, it was the World Thrombosis Day. Think of just metabolic diseases, you have, - World Hypertension Day (May 17), World Obesity Day (Oct 11), World Heart Day (Sept 29), World Thrombosis Day (Oct 13), World Diabetes Day (Nov 14). The list keeps growing every year. Whenever I am asked to participate, in these World Observation Days or asked to write about these important annual days, I ask myself, what have we done to arrest, reduce or prevent these chronic metabolic diseases? What can be done about the raising epidemics of chronic diseases? These are hard questions to ask? Much harder, to answer.

All that we can do is, just like we do for New Year's Day, take a pledge to do something that will make a difference. Metabolic diseases, such as hypertension, excess weight, obesity, type-2 diabetes, and vascular diseases, have reached epidemic proportions worldwide. In the last three decades globally, obesity has increased two-fold and diabetes, four-fold. No country has stopped, reversed or prevented the trends, in the increase of these chronic metabolic diseases. We and others are of the opinion, that if the metabolic risks are recognized earlier, then just lifestyle modifications may be enough to prevent or postpone the development of diabetes and associated chronic clinical complications.

Abbreviations: World Hypertension Day (WHD); World Obesity Day (WOD); World Heart Day (WHD); World Thrombosis Day (WTD); World Diabetes Day (WDD); World Health Organization (WHO); World Obesity Federation (WDF); International Diabetes Federation (IDF); European Association for the Study of Diabetes (ESAD); Civil society organisations (CSOs)

Introduction

Metabolic diseases such as hypertension, excess weight, childhood and adult obesity, prediabetes, diabetes (Type-2), and vascular disease, have reached epidemic proportions worldwide [1-8]. In the last three decades, obesity has increased two-fold and diabetes four-fold worldwide [5,9]. In the same period of time in China, it has increased 17-fold. This rapid increase in the incidence of diabetes in China is attributed to urbanization, altered lifestyle, sedentary life and Western pattern diet [10]. The first World Obesity Day was observed in 2015 and the second obesity day focused on childhood obesity. World obesity day is observed globally on 11th of October with the specific purpose of promoting strategies and action plans for the prevention of obesity epidemic worldwide. It is organized by the World Obesity Federation (WDF), in collaboration with the World Health Organization (WHO). In 2017, the theme was "treat obesity now and avoid the consequences later." The fundamental cause of overweight is an energy imbalance between calories consumed and calories expended. According to current statistics, 2.7 billion adults worldwide, will suffer from overweight and obesity by 2025. World diabetes day is fast approaching. It is observed on the 14th of November, led by the International Diabetes Federation (IDF) in collaboration with the WHO. The theme for this year is "The Family and Diabetes".

The aim for the two years is, to raise awareness of the impact that diabetes has on the family, and support network of those affected. Promote the role of the family, in the management, care, prevention, and education of diabetes. In the website of IDF, the organization claims, that most of the diabetes cases are type-2 diabetes, which is largely preventable, through regular physical activity, a healthy and balanced diet, and the promotion of healthy environment. Considering the role excess weight and obesity plays, in the development of diabetes, the Global theme for the World Diabetes Day should be, "Fight Obesity-Prevent Diabetes." We can probably consider obesity as a modern-day menace; however, diabetes has been known to mankind for thousands of years [11]. Initially, these metabolic diseases were considered," diseases of affluence." As we learn more about the pathology of these diseases, it becomes evident that many metabolic alterations contribute to the development of obesity and diabetes.

For instance, a recent study from the University of Texas Southwestern Medical Center, reports that excess incidence of diabetes in South Asians living in the USA, seems to be due to micronutrient deficient diet of this ethnic groups [12]. On the other hand, another study reports that 25% of obese individuals may have a "healthy obesity" with no detectable cardiometabolic risk factors [13]. What kind of physiology is protecting these individuals from cardiometabolic risks? We do not have any answers to such questions. Then comes the role of microbiota, the gut microbes. Now it has become a whole new discipline. With trillions of gut microbes, expressing their own genes and gene products, seem to play a very important role in the host physiology and pathology [14-16].

Framingham Heart Study group contributed significantly to our understanding of modifiable risk factors, that promote the development of Cardiovascular diseases [17]. On the basis of these and other national and international studies, a new hypothesis, "Diet-Heart Hypothesis" was developed. Based on this hypothesis, regulatory organizations, developed dietary guidelines and guidance statements, about good food and bad food. Even under these headings, those working on lipids, developed the concept of good fat and bad fat. Added to this problem, food industry developed a variety of refined foods and food substitutes rich in salt and sugars. Since the time the Fat controversy made into the cover of the TIME magazine, there is an active debate going on about what is good fat and what is bad fat, adding confusion to already muddled dietary therapy. Studies in the UK have reported, that very low-calorie diet (800 Calories/day), indeed reverses diabetes [18].

Based on the success of these studies at the Newcastle University, National Health Service of UK has funded a large one of a kind studies, to validate the effect of low-calorie diet on reducing or reversal of diabetes. Indeed, these observations have created such a hype, there are reports claiming, that in the near future, you may not need a "doctor or a pill, - just diet." On the other hand, an NIH (USA) funded study, reported that both high and low percentage of carbohydrates were associated with increased mortality, with minimal risk observed at 50-55% carbohydrate intake [19]. A recent study from the UK researchers, published in the journal Lancet reports, that there is an association with BMI and most causes of death including cardiovascular. They conclude that maintaining a BMI range 21-25kg/m^2 is linked to the lowest risk of dying from most diseases [20].

Discussion

Early signs leading to the development of future diabetes, can be identified more than 20 years before the diagnosis of diabetes, according to a new research finding presented, at this year's European Association for the Study of Diabetes (ESAD) Annual Meetings in Berlin, Germany (1-5 October 2018). The researchers reported, that increase in fasting glucose levels, BMI, and insulin resistance, could detect probabilities of developing future diabetes, 10 years prior to the detection of prediabetic state. Since one can have prediabetic state for almost ten years, the researchers claim, that this new approach can detect the predisposal to diabetes, 20 years ahead of its occurrence. Similarly, new approaches are available to detect probability of developing overweight or obesity, even at the infancy. New data from the University of Colorado suggests, that evaluating the gut micro biodata has a multitude of health condition and disease states, including the prediction of future obesity [21].

At the level of individual, there are very many ways to manage obesity and diabetes and prevent the development of chronic clinical complications or comorbidities. However, at the population level, it is hard and depends upon multiple levels of interventions, including implementation of policies, which address obesogenic food environments, improving the availability and access to nutritious food, and reducing exposure to marketing of less healthy options. Introduction of policies and town planning protocols, which improve urban environments, ensuring they are walkable, have green space, and are conducive to more activity as part of people's daily lives.

Consideration of health in all policies, to ensure action is taken in all relevant sectors from health, to education, to media and culture, to development and deployment of needed social services. In view of the fact, that I am writing this special theme-based article on World Diabetes Day, I would like reproduce the Declaration of the Third High-level Meeting of the General Assembly on the prevention and control of non-communicable diseases; "We, Heads of State and Government and representatives of States and Government, assembled in the United Nations on the 27th of September 2018 to undertake a comprehensive review of the challenges and opportunities to implement our existing commitments for the prevention and control of NCDs." Following are the comments made by the Civil Society Organizations post this Declaration.

Civil society organisations (CSOs) did a great job of dropping their 'civil' image, and called out:

a. The poor performance of countries in tackling the NCD problem, despite multiple high-level meetings and plenty of technical guidance on what is needed.

b. The commercial determinants of NCDs and the woeful lack of control of industry interference, with a missed opportunity to introduce robust accountability measures and governance mechanisms to manage conflicts of interest.

c. The inability of Member States to commit to anything robust or meaningful with the Political Declaration – missing the opportunity that the UN HLM presented to shift the NCD landscape seismically. What a pity. We are sure that collectively we can do better. But to how to motivate all the stakeholders?

Conclusion

It gives great pleasure for me, to write this invited review and express my view points, on this very important subject of public

health interest, -Obesity and Diabetes Epidemic. It is very well recognized now, that all the metabolic diseases have reached epidemic proportions worldwide. Having said that, it pains me to report, that no country has taken this warning seriously and developed serious prevention strategies and action plans. As mentioned above, all the participating countries have signed a declaration to do their very best to stop these epidemics by 2030. However, according to global experts in this field, chances of stopping, reducing or reversing these epidemics of chronic diseases by 2030, is very little. What can be done? It is a good question.

At the level of the individual, everyone should do their best to maintain a healthy and active lifestyle, and follow dietary guidelines recommended by various professional societies or the personal clinicians. To put this message in better terms, I quote the recommendation of Dr. John Armato of the Providence Little Company, Cardiometabolic Center, Torrance, California, USA; "Our study demonstrates that a personalized preventive strategy based upon physiology combining lifestyle modification and targeted medications can be extremely effective in preventing progression to diabetes," said lead study author Dr. John Armato of the Providence Little Company of Mary Cardiometabolic Centre in Torrance, California. "It is always recommended that patients embrace regular exercise, targeted weight loss, limitation of alcohol intake, and getting adequate sleep because, if implemented consistently and maintained, this may be all that is needed to restore ideal health,".

References

1. Forouzanfar M, Liu P, Roth GA (2017) Global burden of hypertension and systolic blood pressure of at least 110 to 115 mmHg,1990-2015. JAMA 317(2): 165-182.
2. Van Gaal LF, Mertens IL, De Block CE (2006) Mechanisms linking obesity with cardiovascular disease. Nature 444(7121): 875-880.
3. GBD 2015 Risk Factors Collaborators (2016) Global, regional, and national comparative risk assessment of 79 behavioral, environmental and occupational, and metabolic risk or clusters of risks, 1990-2015: a systematic analysis for the Global Burden of Diseases Study 2015. Lancet 388(10053): 1659-1724.
4. Zheng X, Jin C, Liu Y, Zhang J, Zhu Y, et al. (2015) Arterial stiffness as a predictor of clinical hypertension. J Clin Hyperten (Greenwich) 17(8): 582-591.
5. Ng M, Fleming T, Robinson M, Thomson B, Graetz N, et al. (2013) Global, regional, and national prevalence of overweight and obesity in children and adults during 1980-2013: a systematic analysis for the Global Disease Study 2013. Lancet 384(9945): 766-781.
6. Lu Y, Hajifathalian K, Ezzati M, Woodward M, Rimm EB, et al. (2014) Metabolic mediators of the effect of body-mass index, overweight and obesity on coronary heart disease and stroke: a systematic analysis of 97 prospective cohorts with 1.8 million participants. Lancet 383(9921): 970-983.
7. Zommet P, Magliano D, Matsuzawa Y, Alberti G, Shaw J (2005) The metabolic syndrome: a global public health problem and a new definition. J Atheroscler Thromb 12(6): 295-300.
8. Global Report on Diabetes: World Health Organization (2016) 1. Diabetes Mellitus(DM)-Epidemiology. 2. DM-prevention and control. 3 Diabetes, Gestational. 4. Chronic Diseases. 5. Public Health.
9. NCD Risk Factor Collaboration (2016) Worldwide trends in diabetes since 1980: a pooled analysis of 751 population-based studies with 4.4million participants. Lancet 387(10027): 1513-1530.
10. Shen X, Vaidya A, Wu S, Gao X (2016) The diabetes epidemic in China: An integrated review of National Surveys. Endocrinol Pract 22(9): 1119-1120.
11. Lakhtakia R (2013) The history of diabetes mellitus. Sultan Qaboos Univ Med 13(3): 368-370.
12. Shah M, Vasandani C, Adams Huet B, Garg A (2018) Comparison of nutrient intakes in South Asians withype-2 diabetes mellitus and controls living in the United States. Diab Res Clin Pract 138: 47-56.
13. Acharya S, Shukla A (2018) Metabolic healthy obesity-A Paradoxical fallacy? J Clin and Diag Res 12(10): OE07-OE10.
14. Musso G, Gambino R, Cassader M (2010) Obesity, diabetes and gut microbiota: The hygiene hypothesis expanded. Diab Care 33(10): 2277-2284.
15. Wu X, Ma C, Han L, Nawaz M, Gao F, et al. (2010) Molecular characterization of the fecal microbiota in patients with type-2 diabetes. Curr Microbiol 61(1): 69-78.
16. Kalliomaki M, Collado MC, Saliminen S, Isolauri E (2008) Early differences in fecal microbiota in children may predict overweight. Am J Clin Nutr 87(3): 534-538.
17. Tsao CW, Vasan R (2015) Cohort Profile: The Framingham Study (FHS): overview of milestones in cardiovascular epidemiology. Int J Epidemiol 44(6): 1800-1813.
18. Taylor R (2013) Type-2 diabetes: Etiology and Reversibility. Diab Care 36(4): 1047-1055.
19. Seidelmann SB, Claggett B, Cheng S, Henglin M, Amil S, et al. (2018) Dietary carbohydrate intake and mortality: a prospective cohort study and meta-analysis. Lancet 3(9): PE419-E428.
20. Bhaskaran K, dos Santos Silva I, Leon DA, Ian J Douglas, Liam Smeeth (2018) Association of BMI with overall and cause-specific mortality: a population-based cohort study of 3.6 million adults in the UK. Lancet.
21. Stanislawski MA, Dabelea D, Wagner BD, Nina I, Marci KS, et al. (2018) Gut microbiota in the First years of life and the association with body-mass index at age 12 in a Norwegian birth cohort. mBio 9(5).

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