

Reduction, Reversal, and Prevention of Cardiometabolic Diseases

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It gives me great pleasure, to write this invited Editorial, for the journal of EC Endocrinology and Metabolic Research. Framingham heart studies started over seventy years ago (1948) identified modifiable risks, responsible for the development of promotion of vascular diseases [1]. Based on this seminal study and other multinational clinical trials, risk assessment, risk prediction analytics and algorithms were developed [2]. Seven Countries Study (SCS) launched in 1958, explored the research on the relationship between dietary pattern and the prevalence of coronary artery disease in Greece, Italy, Spain, South Africa, Japan, and Finland [3]. In a recent critical review on this study, authors Dr Pett and associates conclude, "While legitimate debate exists about the details of optimal dietary patterns for health, there is no evidence that the SCS was conducted in bad faith or violated standards of good science. Further direct evidence refutes, the popular allegations used to discredit the study, the work of Professor Ancel Keys of the University of Minnesota, and related research that ensued [3]". According to these authors, those findings (SCS) were applied with fidelity, in North Karelia, Finland. Replacement of saturated fats (mainly dairy fats), by unsaturated fats and vegetable oils, led to a dramatic reduction in serum cholesterol and incident of heart disease.

North Karelia Project has been described as "An unrepeatably success story in Public Health." The North Karelia Project, conducted from 1972 to 1999, was an immense health policy intervention for the prevention of Coronary artery disease at the population level. The communitywide intervention reduced Coronary mortality in middle aged population by 84% from 1972 level to 2015. About 2/3 of the mortality decline was explained, by risk factor changes and 1/3 by improvement of new treatment developed since 1980s [4]. The author of this article concluded, "The North Karelia experience, from epidemiology to public health action, is a powerful demonstration of how epidemic of cardiovascular diseases (CVDs) can be reduced, when population risk factors and determinants change. Population-based prevention, through changes in lifestyle and environment is, indeed the most cost-effective and sustainable way of controlling cardiovascular and other major noncommunicable (NCD) diseases". When it comes to reduction of CVD events, other two major studies are worth mentioning. The INTERHEART study done in 52 countries, emphasizes the role of behavioral and conventional risk factor management in the prevention of premature mortality due to CVDs [5]. Khera and associates from Harvard reported, that across four studies involving over 50,000 participants, genetic and lifestyle factors were independently associated with susceptibility to coronary artery disease. Among participants with high genetic risk, a favorable lifestyle was associated with a nearly 50% lower relative risk for CAD, than was an unfavorable lifestyle [6]. When it comes to reduction of acute events associated with vascular disease, these are some major earlier studies [1-6]. In 1978, the Bethesda conference emphasized the need, to develop surveillance of selected populations, to better understand the trends in specific and national populations. At the same time, a much larger effort began through the World Health Organization (WHO), a Multinational monitoring of Trends and Determinants in cardiovascular Disease, known as WHO- MONICA. This project enrolled investigators from 26 countries [7]. Several Original MONICA investigators are still continuing these investigations. One investigation that is

of great importance to our discussion is from Nilsson and associates in Sweden, on the use of complementary and alternative medicine remedies in Sweden [8].

Now that we have briefly discussed large clinical studies, that demonstrated the benefits of robust management of modifiable risk for CVD in reducing the morbidity and mortality associated with these diseases, we will discuss some studies related to the reversal of metabolic diseases, such as hypertension, excess weight, obesity and type-2 diabetes. In a retrospective study called NEWSTART (Nutrition, Exercise, Water, Sunlight, Temperance etc.), the interventions reversed systolic and diastolic blood pressure rapidly and two thirds of the subjects were no longer hypertensives within 18 days [9]. The authors of this study, concluded, that the interventions with a whole-foods, vegan diet containing moderate levels of fat and salt, are effective as a first line treatment of hypertension, as recommended by the evidence-base guideline for adults, reported by the V111 joint National Committee (JNC8). Based on 2003 - 2004 NHANES studies, approximately 66 million American adults are obese, and additional 74 million are overweight. According to the experts, -reaching Healthy People 2010 goals of 15% prevalence of obesity in adults, and 5% prevalence in children, may be beyond our reach for several decades to come [10]. According to Professor Roy Taylor of Newcastle University, UK, the primary care-based Diabetes Remission Clinical Trial (DiRECT) showed, that 46% of people with type-2 diabetes, could achieve remission at 12 months, and 36% at 24 months, mediated by weight loss [11]. The emphasis on robust management of modifiable risk factors has resulted in the decrease of CVD-related mortality in high-income countries, and diabetes mortality on the other hand, has increased in these countries [12]. No country has reduced, or reversed, metabolic diseases like hypertension, obesity, and diabetes at the population level.

Noncommunicable disease burdens are increasing worldwide, especially in low and middle -income countries. Cardiovascular diseases and type-2 diabetes contribute for nearly 50% of NCD-related deaths. We the members of South Asian Society on Atherosclerosis and Thrombosis (www.sasat.org) met in 2006 in Bengaluru, India, and discussed the possibilities of establishing an Institute of Integrative Medicine. With these thoughts in mind, we started Global Alliance of Traditional Health Systems. Currently, we are in the process of establishing an Institute of Integrative Medicine (IIM) in Bengaluru, India. At Bengaluru, under the leadership of Dr Roopa Mahender, Founder, MD of Wellbeing, Aurazia wellness Pvt. Ltd, some preliminary studies have been initiated to study the benefits of a structured intervention that includes, naturopathy, Ayurveda, yoga, diet, and lifestyle education. Such an intervention (www.wellbeing.in) has indeed lowered significantly, the HbA1c levels in high-risk individuals (HbA1c 8 and above). It also has lowered the dose of diabetic medication needed to manage glycemic load, significantly in this cohort. The results of these studies will be reported by the investigators soon. We also have studied the benefits of structured lifestyle education on the overall wellness with our collaborators in Sweden (www.wellness-screening.se). Previous studies have shown a high prevalence of users of complementary and alternative medicine (CAM) in Anglo-Saxon countries [8,16]. We would like develop collaborative initiatives with countries, that are interested in taking advantage of integrative therapies as complementary interventions.

Harvard health beat dated January 25th 2020, reports, “that 90% of all doctor visits are linked to stress-related problems. Yoga can be perfect remedy. It has been shown that Yoga can lower the need for diabetes medications by as much as 40%”. At Vivekananda Yoga University (www.svaysa.edu), Jigni, Bengaluru, Dr Nagendra and associates have been advocating the Yoga-based lifestyle for managing type-2 diabetes [17]. A bilateral project with the US researchers, demonstrated that an 8-week yoga intervention resulted in greater weight loss and reduction in waist circumference, when compared to a walking control [18]. We have been trying to establish collaborative projects with both ‘svyasa’ and Wellbeing in Bengaluru, India, to standardize the way integrative therapies are validated. We have articulated the benefits of complementary and alternative medicine in our earlier articles [19-21]. We would like to introduce a variety of noninvasive diagnostic technologies, in the proposed collaborative studies, to monitor metabolic risks such as, oxidative stress, altered blood flow, endothelial dysfunction, hardening of the arteries, sub-clinical atherosclerosis [22,23]. We are of the opinion, that a robust integrative therapy program, aimed at primary prevention of metabolic risks, will to a great extent reduce or reverse the trends in the increased incidence and prevalence of cardiometabolic diseases in countries like, China and India with large populations and greater NCD burden.

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