

## On the Importance of Balanced Nutrition: Editorial Comments

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“National Nutrition Week” was initiated in March of 1973 and was embraced by the members of American Dietetic Association, now known as the Academy of Nutrition and Dietetics, for the very purpose of delivering nutrition education to the general public. Now the month of March is considered National Nutrition Month and the month of April, as Children’s Nutrition Month. The purpose of dedicating a day or a month for such public health education, emphasizes the underlying need to create general public awareness, develop novel strategies, and to implement appropriate interventions. Since the time this need to educate general public about nutrition education was recognized, metabolic diseases such as excess weight and obesity has doubled worldwide. Incidence and prevalence of type-2 diabetes has increased fourfold worldwide.

In this Global Children’s Nutrition Month, it gives me great pleasure to write this editorial comments for the journal; Acta Scientific Nutritional Health, ‘on the importance of a balanced nutrition’, on the overall health of an individual. Balanced nutrition is the most important health priority worldwide for all age groups. American Physiological Association says, “What we eat- and how we eat, directly influences our overall health.” Having said that, I would like to inform the readers, how complicated the findings and the interpretations of nutrition studies are? In view of these observations and the controversies surrounding such findings, recently this topic, - ‘Most studies on the effect of nutrition and diet are false,’ was debated in a scholarly manner by nutrition specialists, Christopher Gardner, PhD, and John Ioannidis, MD, DSc. In spite of the difference in the views expressed by researchers, most of them seem to agree, “that large, randomized, controlled clinical trials, with extensive follow-up, (such as the DIETFITS), provide useful and dependable information on nutrition science.

Since we just completed Global Children’s Nutrition Month, it is very relevant and important to discuss briefly the topic of Chil-

dren’s nutrition and the seminal studies done in the last half of a century, which have shown that factors before and during pregnancy, as well as during the first years of life, can have effects until adulthood or become evident only in adulthood. According to Pieter Sauer, “one of these factors is nutrition of the mother before or during pregnancy, and on the infant in the first years of life” [1]. Although the exact mechanisms by which altered nutrition causes, these effects in later life is not yet completely understood, epigenetics seems to be one of the factors, responsible for the so-called programming altered metabolic defects in later life. Several studies have demonstrated, that diet quality during pregnancy is associated with a reduced likelihood of an infant ‘born small for gestational age’ [2]. In countries with large populations like China and India, low birth weight children have been shown to be ‘at risk’ for developing metabolic diseases in their later life. On going studies at several research institutions in developing countries, have demonstrated that close to 30% of the children born in these countries are of low birth weight.

In 1990, David Barker a British Epidemiologist hypothesized, that intrauterine growth retardation, low birth weight, and premature birth, have a causal relationship to the origins of hypertension, coronary artery disease, and non-insulin dependent diabetes, in middle age [3]. The hypothesis has several important components; first, the effects of fetal conditions are persistent, second, the deleterious effects can remain latent and manifest later in life, as is the case with hypertension, obesity, diabetes, vascular diseases, and certain neurological diseases; third, a fetal programming that is initiated by various genetic and epigenetic mechanisms, which are the hot areas of current investigations. Professor Barker for instance, studied a cohort of 16,000 men and women born between 1911 and 1930 in Hertfordshire, England, and reported the relationship between birth weight and death rates from coronary ar-

tery disease. These data initiated a new field of medicine, known as Developmental Origins of Health and Disease (DOHaD). Research in this field, has demonstrated that various stresses experienced in the womb, - virtually all of which have roots in the social, physical and physiological environment, -alter the structure of organs in the fetus, changing the expression of regulatory genes throughout the life time. Dr Kent Thornburg of Oregon Health and Science University calls for immediate action, "There is a desperate need for effective population-level strategies, to improve life circumstances of today's "mothers in the making".

Researchers at the CSI Holdsworth Memorial Mission Hospital, Mysore, India, as well as at the KEM Hospital Pune, India, have demonstrated the role of micronutrients in DOHaD. Professor Yajnik's group at Pune, India, in their "Pune Maternal Nutrition Study", have demonstrated that Indian babies have low muscle mass but preserve fat, which may predispose them to an insulin resistant state [4]. In view of our interest in these early observations on the DOHaD, which date back to several decades, we have initiated a bilateral study between the research staff or the Children's National Hospital (CNH), Washington DC and the researchers at the KEM Hospital Pune, India. Dr. Robert Freishtat and associates at the CNH have demonstrated that visceral adipocytes shed exosomal-mediators (micro RNAs) predicted to regulate key end-organ inflammatory and fibrotic pathways [5]. Dr. Freishtat describes exosomes as "biological tweets" - short messages, shed by all cells that allow for intercellular communication and modulation of gene expression. According to him, "as the visceral fat grows, somewhere on the path of obesity the fat cell changes and begins to release different exosomes than the lean adipose cells do." Preliminary studies are encouraging, and these studies are funded by the Prestigious, National Institutes of Health, USA.

Professor Bhutta and associates of the Lancet Nutrition Interventions Group (the Maternal and Child Nutrition Study Group), report that maternal undernutrition contributes to 800,000 neonatal deaths annually through 'small for gestational age births' [6]. In addition to this observation, millions of children are born worldwide, prematurely or with low birth weight. These children are 'at risk' for cardiometabolic risks as well as for other neurological diseases. Fetal origin of adult diseases (FOAD), to a large extent are preventable. A meta-analysis on this subject by the researchers of the Harvard School of Public Health concluded that multiple micronutrient supplementation was more effective, than iron and folic acid supplementation, at reducing risk for low birth weight [7-10]. An analysis of 23 systematic reviews by a group of international experts including the staff of World Health Organi-

zation (WHO), concluded, "Improving women's nutritional status positively affected low birth weight (LBW), small for gestation age and preterm birth [11]. However, they recommend further studies to explore the evidence of nutrition-specific and nutrition sensitive interventions in order to reach the WHO's goal of a 30% reduction in the global rate of LBW by 2025.

When it comes to nutrition of the adolescents, young adults, and the elderly, what exactly is a balanced diet? One size fits all recommendation, does not hold good at all. The best diet for preventing heart disease according to Harvard researchers is, one that is full of fruits and vegetables, whole grains, nuts, fish, poultry and vegetable oils. The Nutrition science group of Harvard recommend that fifty percent of your daily diet plate should be fruits and vegetables. American Heart Association on the other hand, has been recommending a low-fat diet with less than 300 mg cholesterol per day and 30% of calories from fat. The Atkins diet has actually 68% of total calories from fat. DASH (Dietary Approaches to Stop Hypertension), is similar to much admired Mediterranean-type diet and the Harvard heart-healthy diet in that, it includes high amounts of fruits, vegetables, low-fat dairy products, whole grains, nuts, fish and poultry. Recently, there is considerable interest in ketogenic diets, especially for achieving weight loss. What then is the common sense approach to a balanced diet? Food is fuel, and people will lose weight, if they burn more calories than they consume. Portion size and total calorie intake is more important than the mixture of foods that one consumes.

Harvard Medical Schools trusted advice for a healthier life includes, four relatively simple recommendations; decrease your carbohydrate intake, especially of refined and high glycemic-index carbohydrates; increase your consumption of fruits, vegetables, and whole grains; increase your intake of polyunsaturated fats by increasing the amount of plant oils and fish in your diet; limit yourself to moderate amounts of low-fat dairy products and nuts. Good nutrition is an important part of leading a healthy life, especially when lifestyle diseases are rapidly increasing in epidemic proportions worldwide [12]. A balanced nutrition is vital, for a healthy body and all of its systems to function properly. A balanced nutrition, will help one achieve a healthy weight, reduce body fat, provide the needed energy, promote good sleep, and feel better. In spite of the fact that National Nutrition Week was recognized by the professional societies in 1973, we have seen a rapid increase in the incidence and prevalence of lifestyle diseases. It is high time, we recognized the importance of balanced nutrition at all stages of life and incorporate healthy lifestyle and moderate physical activity to reduce, reverse, or prevent cardiometabolic diseases.

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