

## Modern Diet and its Impact on Human Health

Shridhar G<sup>1</sup>, Rajendra N<sup>2,3\*</sup>, Murigendra H<sup>1</sup>, Shridevi P<sup>1</sup>, Prasad M<sup>3</sup>, Mujeeb MA<sup>1</sup>, Arun S<sup>1</sup>, Neeraj D<sup>3</sup>, Vikas S<sup>3</sup>, Suneel D<sup>3</sup> and Vijay K<sup>3</sup>

<sup>1</sup>PG Department of Studies in Biotechnology and Microbiology, Karnatak University, Dharwad, 580003, Karnataka, India.

<sup>2</sup>Director, KLES Kidney Foundation, Professor and Head Department of Urology, India.

<sup>3</sup>KLES Kidney Foundation, KLES Dr. Prabhakar Kore Hospital & M.R.C, Nehru Nagar, Belagavi, Karnataka 590010, India.

\*Corresponding author: Rajendra N, Director, KLES Kidney Foundation, Professor and Head Department of Urology, India, Tel: 08312473777; E-mail: [shridhar.kleskf@gmail.com](mailto:shridhar.kleskf@gmail.com)

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### Abstract

The general public's view of modern diet and human health has undergone drastic changes in recent years. There is general harmony that many chronic health problems, first noted in Western countries but progressively flourished worldwide, relate mainly to diet. There is far less consensus, however, about the dietary factors implicated in such health problems. This lack of understanding has opened the door to a propagation of different recommendations as to the best diet for modern humans. Let me note that all human alive today are member of the same species, Homo sapiens, and as such, all are fully "modern" humans. Dietary fats are a key example. Since the anti-fat health education initiatives of the 1980's and early 1990's, certain dietary fats have been increasingly recognized as actually beneficial to health. Diet conscious like the mainstream populace, are now getting the message that wise dietary fat choices offer essential fatty acids, blood lipid management, maintained endocrine and immune function, inflammation control, metabolic effects and even potential body composition and performance benefits. Toward this end, many companies now sell specialty dietary fat supplements and recognized health authorities have begun recommending them to certain population. Increasingly, the average consumer has come to regard the supermarket as obstacle of conflicting and potentially dangerous dietary decisions: low fat, high fat, no fat; no meat, less fatty meat; no eggs, one egg a week, unlimited eggs; less carbohydrate, more whole grains, no cereal products; more fruit, less sugar; and so on. Too much confusing information is available, much attention is paid by the popular press and public to fad diets and preliminary dietary findings, and too little attention is paid to serious dietary recommendation. The present review of studies aims to strengthen our knowledge regarding the dietary requirements, food sources, and potential benefits, Modern food and its impact on human health. Practical suggestions for incorporating healthy fats will be made. Both food-source and supplemental intakes will be addressed with interrelationships to health throughout.

**Keywords:** Modern diet; Dietary food; Human health; Fat; Diseases; Lifestyle and junk food

### Introduction

Unfortunately, today's world has been adapted to a system of consumption of foods which has several adverse effects on human health. Lifestyle changes has compelled us so much that one has so little time to really think what we are eating is a healthy diet! Globalization has seriously affected one's eating habits and enforced many people to consume fancy and high calorie fast foods, popularly known as Junk foods [1]. Research into the possible health hazards on consumption of such high calorie foods has given an insight to avoid them, but unfortunately measures taken are not as effective as they need to be. Ailments like Obesity, food poisoning, dehydration, cardiac problems diabetes mellitus, and arthritis have seen a profound rise in developing countries and such unhealthy junk food, processed food, high fat calorie consumption are the notable factors to its contribution. This global problem of consuming unhealthy diet on a large scale and its impact on human health need to be emphasized and inculcate health education which can greatly contribute to its limited consumption and switching over to healthy eating habits for the better living. Knowledge emphasizing about the eating habits, nutritional diet, and quality of unhealthy foods, their health impact and preventive measures should be given to create awareness and render health

education for a change towards healthy food eating practices [2]. Dietary fat has both suffered and enjoyed large swings in public and scientific consensus over past decades. The fat-reduction public education initiatives of the 1980's and 1990's [3], although credited with lower cardiovascular mortality, have also been linked to over-consumption of dietary carbohydrate and the obesity epidemic facing Western culture [4].

An increased recognition of the types of dietary fat has broadened scientific understanding beyond simply saturated and unsaturated fatty acids. Further, researchers have referred to the potency of various dietary lipids as pharmaceutical in nature [5]. For instance, monounsaturated fatty acids, as common to the Mediterranean diet, may reduce cardiovascular risks beyond any effects on plasma lipids, such as via blood pressure normalized glucose tolerance [6]. Highly unsaturated omega-3 fatty acids found in cold water fish reduce inflammation, mediate psychiatric function [7], alter neuro-endocrine activity, and decrease cardiac mortality [8]. A less common fatty acid found in dairy and beef, conjugated linoleic acid (CLA), has the ability to dramatically alter body composition in animal models [9]. This type of Understanding is leading to changes in both dietary recommendations, and a wide variety of dietary lipid supplements [10]. Traditional nutrition is a science to provide basic nutrients to the body. However, when nutrition especially absorption of energy substances exceeds the demands of the body or even accumulates

excessively in the body more energy consumption is required to dispose the superfluous storage. The body has a perfect nutrition sensing and counting system to maintain a balance among caloric absorption, storage, and utilization. This forms the nutritional sensing system as the major components that absorb and control nutrition through calcium channels, sodium-potassium pumps, and autonomic nervous system. Nutrient-sensing system with mammalian target of rapamycin (mTOR) as the major component can control nutrition storage, distribution, and utilization in-vivo. Disordered control can lead to metabolic diseases and even cancer. Excessive nutrition is closely correlated with appetite disorders. Appetite control depends on dietary structure and lifestyle, autonomic nervous and Gastro Intestinal (GI) mucosa sensing systems, and interactions between various ingredients in foods and corresponding receptors. Therefore, understanding the interfaces between Modern food and its impact on health have been reviewed from various resources and have been systematically presented, so as to emphasize its ill effects and measures to be adapted towards healthy living.

## Modern Diet

Basic nutrients, such as carbohydrates, fats, and proteins, are the basis of all life activities. They constitute the carbon skeleton of various functional molecules, and provide energy through oxidative decomposition. Traditionally, the main aim of nutrition is prevent and treat nutritional deficiencies. However, when nutrition is adequate or excessive, the body faces the problems of quantitative control of the nutrients absorption and storage. Over nutrition, especially absorption and storage of energy, can not only affect health but also cause many diseases such as diabetes, cardiovascular diseases, obesity, hypertension, and hyperlipidemia. Further, over nutrition reduces reproductive capacity and promotes the development of various cancers that will seriously affect quality of life, survival, and reproduction in human beings. Because of over nutrition, nutriology based on nutritional requirements cannot make recommendations for nutrient intake in daily life because nutrient absorption, energy storage, and oxidative energy supply control vary from person to person. Even during evolution, nutritional experience seems to be recorded in the nucleosomes and DNA, which involves all aspects of nutrient sensing, cell communication, metabolic regulation, gene expression, and epigenetic modifications. However, food intake is a fundamental activity of the human body and is a source of energy.

Modern diet relates to 'junk food' that simply means an empty calorie food. An empty calorie food is a high calorie or calorie rich food which lacks in micronutrients such as carbohydrates, proteins, vitamins, minerals, or amino acids, and fiber but has high energy (calories). These foods do not contain the nutrients that your body needs to stay healthy. Hence, this food that has poor dietetic values is considered unhealthy and may be called as junk food [11]. Junk food is an informal term applied to some foods which are perceived to have little or no nutritional value, but which also have ingredients considered unhealthy when eaten regularly, or to those considered unhealthy to consume at all. The term junk food was coined as slang in the public interest in 1972 by Michael Jacobson, Director of the Center for Science, Washington DC [12]. What makes these foods to be called as Junk is that it contains high levels of refined sugar, white flour, trans fat and polyunsaturated fat, salt, and numerous food additives such as monosodium glutamate and tartrazine at the same time it is lacking in proteins, vitamins, essential minerals, fiber, among other healthy attributes. These foods have little enzyme producing vitamins and

minerals and but contain high level of calories in their place. A food that is high in fat, sodium, and sugar and provides high calories yet useless in value is generally known as a junk food which the present generation has adapted it as modern diet. On the contrary, junk food is easy to carry, purchase and consume [13]. Generally, a modern diet is given a very attractive appearance by adding food additives and colors to enhance flavor, texture and for increasing long shelf life.

Recent variations and trends in food, nutrition, physical activity, overweight and obesity. People's diets reflect the times and situations in which they live. It is only relatively recent in history that urban-industrial ways of life have evolved, with many or most people living in towns and cities rather than in the countryside. In much of Asian and African countries most people still live in rural communities, and farmworker-agricultural and urban-industrial ways of life still coexist in most countries. Such patterns change very rapidly as countries become increasingly urbanized and industrialized. The different food systems and diets that are part of these diverse ways of life affecting people's levels of physical activity, their body composition and physique, their life expectancy, and patterns of disease, including cancer. With the move to urban-industrial ways of life, populations have become taller and heavier, their life expectancy has increased, and they are usually adequately nourished (although poverty, and even destitution, remains a major problem in most big cities). On the other hand, urban populations are at increased risk of chronic diseases such as obesity, type 2 diabetes, coronary heart disease, and also some cancers.

## Human Health

Health does not simply mean 'absence of disease' or 'physical fitness'. It could be defined as a state of complete physical, mental and social well-being. When people are healthy, they are more efficient at work. This increases productivity and brings economic prosperity. Health also increases longevity of people and reduces infant and maternal mortality. Balanced diet, personal hygiene and regular exercise are very important to maintain good health. Awareness about diseases and their effect on different bodily functions, vaccination (immunization) against infectious diseases, proper disposal of wastes, control of vectors and maintenance of hygienic food and water resources are necessary for achieving good health. Diseases can be broadly grouped into infectious and non-infectious. Diseases which are easily transmitted from one person to another are called infectious diseases. Infectious diseases are very common and every one of us suffers from these at some time or other. Some of the infectious diseases like AIDS are fatal. Among non-infectious diseases, cancer is the major cause of death. Drug and alcohol abuse also affect our health adversely. Modern diet has certainly carved up the third World due to globalization [14]. It is an integral part of life in the developed and also the developing world, and coming with it is a massive increase in obesity and associated problems. The key to eating these junk foods is moderation, occasional consumption and preferably in small portions. It is not impossible to win battle with junk foods against healthy foods [15]. However, one must beware entice is so strong that you will be addicted.

In term of the relationship between modern diet and health, the following four key problems have to be addressed: (I) Under-nutrition causes nutrition deficiency, and over nutrition leads to obesity, hypertension, hyperlipidemia, diabetes, and cancer. It also highlights that nutritional requirements of the body may vary among different individuals with different heredity and family backgrounds, different

dietary habits, and living in different countries. Even different gut microbes may affect the requirement of nutrition. Although a research on personalized nutrition and nutritional genomics is proposed, results from epigenetic studies have shown that dietary habits and experience of a person can change epigenetic characteristics through DNA imprinting and histone modification. This indicates that dietary requirements are not decided by genome. Diets determine the expression, regulation, modification, imprinting, and heredity of the genome without altering DNA sequences. Obviously, this is a challenge for nutritional genomics. Thus, the problem seems to be at the origin, i.e., how to provide a scientific diet and formula for different individuals? (II) Contribution of foods and nutrition to the immune system is apparent, which is also a hot topic of research on functional foods. However, increasing number of studies indicate that immune defense is the first priority of nutrition. Hypo-immunity is only observed in infants, children, and elderly and in individuals with diseases and serious nutrition defects. Thus, when nutrition is abundant, even commonly redundant, excessive immunity can cause inflammation, autoimmune diseases, and metabolic syndromes. Like a double-edged sword, immunity can cause diseases when it is too low or too high. Therefore, the question is what is the appropriate immunity and how should it be quantified. Unfortunately, no method is available to quantify the immune system thus far. (III) Another problem is that precise effect of foods on organs or tissues within the body is unclear. Some studies have shown that food mainly interacts with the GI mucous membrane system. Communication between organs and tissues is established through the circulatory and signaling systems of the GI tract and inner system. Food does not enter target organs or tissues directly, which results major problem that we face, i.e., quantitative description of this complex nonlinear system. The metabolic and cellular communication networks provide feasible ways and can be evaluated by obtaining only a few millimeter cube of peripheral blood. (IV) Finally the last one is related to Public health being a social and political concept aimed at the improving health, prolonging life and improving the quality of life among whole populations through health promotion, disease prevention and other forms of health intervention. A distinction has been made in the health promotion literature between public health and a new public health for the purposes of emphasizing significantly different approaches to the description and analysis of the determinants of health, and the methods of solving public health problems. This new public health is distinguished by its basis in a comprehensive understanding of the ways in which lifestyles and living conditions determine health status, and recognition of the need to mobilize resources and make sound investments in policies, programmes and services which create, maintain and protect health by supporting healthy lifestyles and creating supportive environments for health.

## Conclusion

Despite wide differences in opinion among researchers and the general public over recent years, dietary fats remain a potent regulator of physiological function. This calls for caution in supplementing more than a few grams of any uncommon fat per day. Food sources remain the preferred method of intake in most situations. The various fatty acids provide perhaps the most important aspect of dietary fat manipulations, although increasing the percentage of fat in the diet

also has an impact on exercise and resting metabolism. Nutrition, especially sensing and absorption of energy substances, not only plays an important role in the intensity of life activities and storage of energy substances but also controls aging and lifespan. More activity and rapid growth result in shorter life expectancy, and less activity and slower growth result in longer life expectancy. Awareness on junk food facts is lacking amongst every individual in the community. Eating a healthy diet is a hard work. The only way to evade junk food is to encourage eating healthy diet and more of the following foods, which are usually considered to be a part of a healthy diet. Foods that are low in fat, saturated fat, and cholesterol high fiber foods, including whole-grain foods, vegetables and fruits. Foods that have only a moderate amount of sugar and salt calcium rich foods, to meet daily calcium requirements. Iron rich foods, to meet daily requirements for iron. Nutrition science constantly evolves, and future research will better elucidate the independent and combined roles of modifiable factors such as physical activity and nutrition on human health. Health professionals can play a pivotal role in optimizing Modern diet and human health across the life cycle, particularly during growth and old age.

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