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Food Consumption among Peasant Agriculturist Societies In 8000 BC

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After settlement of hunter-gatherers as peasants, man started farming in Africa for the first time, sometime in 8000 BC. This may be an adaptation which in turn led to unprecedented technical development, agriculture, industry and commerce [1-4]. Obviously prior to the Agricultural revolution and notwithstanding the Neolithic Revolution, sometimes called the Agricultural Revolution concerned with the initial transition from hunter-gather to settled agriculture. Our diet had great diversity characterized with enormous variety of whole grains and wild plants as well as fish, milk, egg and meat by hunting [1-4]. Peasant Agriculturist man, like hunter-gatherers, also had excellent health characteristics; enormous physical activity with limited or no mental stress, alcoholism, and tobacco intake that are now important behavioral risk factors of non-communicable diseases (NCDs). The foods available to early peasants, were not unhealthy like today's modern foods which are high energy but have poor nutrient density [1-4] (Tables 1). In this editorial, we discuss the food diversity, nutrient content and functions of various foods and nutrients available during Agricultural revolution compared to foods available now and what can be done to develop functional foods security.

The settlement of hunter-gatherers as farmers may have been associated with regular farming and storing of foods resulting in to better economic status which is known to have adverse effects on food, nutrition and health [5]. These foods grown in the farms may be characterized with a decrease in the consumption of protective omega-3 fatty acids, vitamins, antioxidants and amino acids and significant increase in the intakes of carbohydrates rich grains, fat rich meat (saturated and linoleic acid) and salt compared to the foods available to early hunter-gatherers and Paleolithic society [1-4]. The protein or amino acid intake was 2.5 fold greater (33 vs. 13%) in the Paleolithic diet of *Homo sapiens* compared to modern Western diet which should have started decreasing right from the period of peasant Agriculturists (Table 1) [1-6].

Food Security

FAO's latest estimates indicate that the proportion of the world's population suffering from under nourishment may be around 12.5 percent, down from almost half of the world's population in 1947 [7]. Today about 17% of plant species provide 90% of the world's food supply which is mainly contributed by grains produced by fertilizer based on rapidly grown crops which may result in a decrease in nutrient density and increase in energy. Wheat, corn and rice account for three fourths of the world's grain production on which humans are dependent for their food supply [6,7]. Grains are high in omega-6 fatty acids and carbohydrates and low in omega-3 fatty acids and antioxidants compared to leafy green vegetables. Green leafy vegetables are also rich sources of antioxidants, magnesium, w-3 fatty acids and carotenoids which appear to be high in the Mediterranean region [1-6]. Methods of Agriculture and foods make fundamental contributions to human nutrition through production, prices and incomes, but agriculture and the broader food system including post-harvest processing, distribution and retailing, can contribute much more. Food systems as a whole, from production through consumption, can be made more nutrition-enhancing and more environmentally sustainable through a number of specific actions that are identified in the FAO report [7].

An estimated, 2 billion people suffer from one or more micronutrient deficiencies and an estimated 1.4 billion people are overweight, of whom 500 million people are obese. Efforts should be made to correlate basic data on diets and on nutritional status; conduct impact evaluation of agricultural food-based interventions on nutritional outcomes. Encouragement and management practices and technologies may be used to improve sustainability and nutrition. There is enormous evidence which has been documented about the protective effects of Paleolithic diets in the form of Mediterranean diet, Indo-Mediterranean diet, Japanese diet, and DASH diet in the prevention of diseases [4-6]. Therefore, it is food security of functional foods, rather than modern foods, which appear to be important consideration for evolving human health and for prevention of NCDs. Plant breeding and genetic modifications are latest technologies for developing diversity in foods by altering nutrient content of foods, to solve the problem of functional food security [8]. Green revolution had contributed greatly to staple plant food productivity but without consideration on micronutrient. These stable crops can be enriched with micronutrients using plant breeding strategies, because micronutrient enrichment traits exist within their genomes that can to use for substantially increasing micronutrient levels in these foods without any negative impact on crop productivity. It may be possible to increase protective nutrients; omega-3 fatty acids, monounsaturated fatty acids, flavonoids, amino acids, vitamins and antioxidants and soluble fiber and decrease harmful nutrient contents; saturated fat, linoleic acid, sugar and erucic acid in a food by these two methods. In future, attempt should be made urgently, to develop omega-3 fatty acid and flavonoid rich slowly absorbed foods for control of under-nutrition so that there is no increase in obesity which is important for prevention of NCDs.

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Homo sapiens diet given in tables 1-5.	Pattern 1: Huntergatherers.	Pattern 2: Food Scarcity-Poverty	Pattern 3: Receding Food Scarcity & Poverty	Pattern 4: More food, less execise- *Homo economicus*	Pattern 5: Healthy Behavior-*Homo modestis*
Nutrition profile Diet	Plants, low-fat wild animals, diet diversity by collecting foods.	Cereals predominant, diet less varied	*Fewer starchy staples; more fruit, vegetables, animal protein; low variety continues*	More fat (animal products, trans fat, w-6 fat), sugar, processed foods; less fiber, less w-3 fat and flavonoids	Higher-quality fats, reduced refined carbohydrates, more whole grains, fruit, vegetables rich in w-3 and flavonoids
Nutritional status	Robust, lean population; few nutritional deficiencies	Children and women suffer most from low fat intake, nutritional-deficiency disease emerge, stature declines	Continued MCH[1] nutrition problems, many deficiencies disappear, weaning diseases emerge, stature grows	Obesity, problems for elderly (Osteoporosis, fractures etc), type 2 diabetes, hypertension, stroke, heart attack, brain degeneration, Psychological disorders,cancer	Reduction in body fat and obesity, and NCDs,improvement in bone health Epigenetic modulation and transgenerational epigenetic inheritance-natural selection.
Economy	Hunter-gatherers	Agriculture, animal husbandry, homemaking begin; shift to monocumono cultures	Second agricultural revolution (crop rotation, fertilizer), Industrial Revolution, women join labor force	Fewer jobs with heavy physical activity, service sector and mechanization, household technology revolution	Service sector mechanization and industrial robotization dominate, increase in leisure exercise offsets sedentary jobs
Household	Primitive, onset of fire	Labor-intensive, primitive technology begins (clay cooking vessels)	Primitive water systems, clay stoves, cooking technology advances	Household technology mechanizes and proliferates	Significant reduction in food preparation costs as a result of technologic change
Income and assets	Subsistence, primitive stone tools	Subsistence, few tools	Increases in income disparity and agricultural tools industrialization	Rapid growth in income and income disparities, technology proliferation	Decrease in income growth, increase in home and leisure technologies
Professional skill/ Education	Hunting	Stock breeding , cultivation	Industry, intensive agriculture	Processed unhealthy foods increased	Functional foods availability increases
Demographic profile Mortality	Low fertility, high mortality, low life expectancy	Age of Malthus; high natural fertility, short life expectancy, high infant and maternal mortality	Mortality declines slowly, then rapidly; fertility static, then declines; small, cumulative population growth, which later explodes	Life expectancy hits unique levels (ages 60–70), huge decline and fluctuations in fertility (eg, postwar baby boom)	Life expectancy extends to ages 70 and 90 y, disability-free period increases
Age structure	Young population	Young, very few elderly	Chiefly young, shift to older population begins	Rapid decline in fertility, rapid increase in proportion of elderly person	Increases in the proportion of elderly >75 y of age
Housing	Rural, low density	Rural, a few small, crowded cities	Chiefly rural, move to cities increases, international migration begins, megacities develop	Dispersal of urban population decrease in rural green space	Lower-density cities rejuvenate, increase in urbanization of rural areas encircling cities
Food processing	Nonexistent	Food storage begins	Storage processes (drying, salting) begin, canning and processing technologies emerge, increases in food refining and milling	Numerous food- transforming technologies	Technologies create functional foods and food constituent substitutes (eg, macronutrient substitutes)

[1] MCH, maternal and child health, Modified from Singh et al. [4].

Table 1: Nutrition in transition and emergence of non-communicable diseases.

Conflict of Interest

No conflict of interest has been declared by the authors.

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