

CURBS ON

CARBS

In the diet

The report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans 2010 has stirred up a national controversy and is facing a wave of fierce objections from the public and many health and nutritional experts outside the US government and special-interest groups.

The controversy is centred on the soundness of these guidelines, which are mostly a copy of the earlier guidelines since 1980, with emphasis on more consumption of daily calories from carbohydrates and less from fats, especially saturated fats. The reliability of these guidelines are further

A report by JD Wright *et al*, 'Trends in Intake of Energy and Macronutrients - United States, 1971-2000', points out that, during the study period, the prevalence of obesity increased from 14.5% to 30.9% and that:

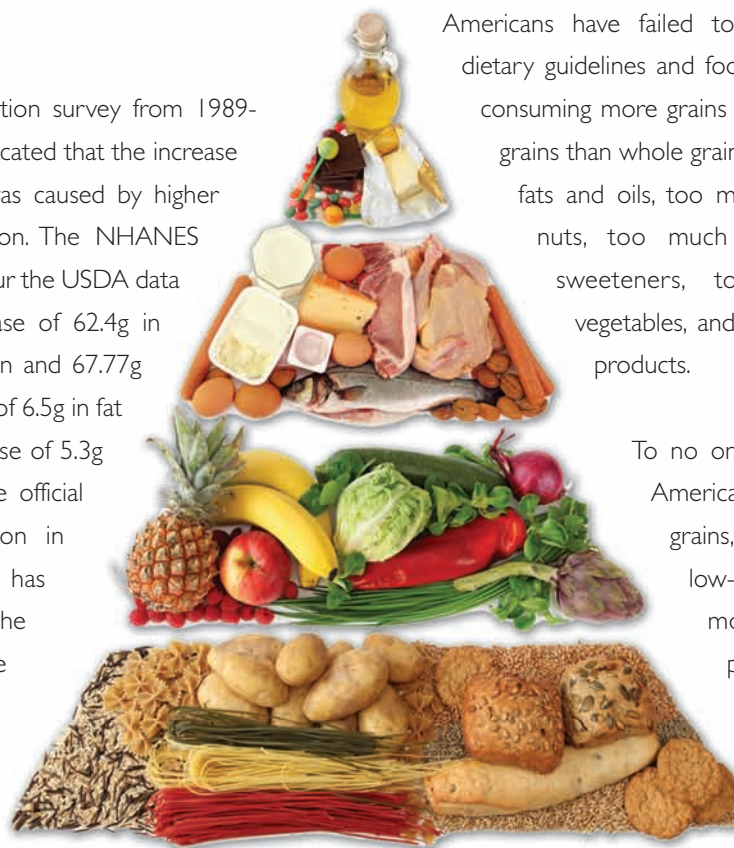
- the average daily calorie intake increased from 2,450 kcals to 2,618 kcals for men and from 1,543 kcals to 1,877 kcals for women;
- the percentage of kcals from carbohydrate increased from 42.4% to 49% for men and from 45.4% to 52.6% for women;
- the percentage of kcals from total fat "ironically decreased" from 36.9% to 32.8% for men and from 36.1% to 32.8% for women; and
- the percentage of kcals from saturated fat "notably decreased" from 13.5% to 10.9% for men and 13.0% to 11.0% for women; and only a slight decrease from protein was observed.

questioned when both the statistics and the layman's observation concur that the US population has been rapidly growing heavier since 1980 - at least six or seven out of every 10 adults are either overweight or obese. Worst of all, the trends in overweight and obesity have moved into the younger population including toddlers and infants.

A USDA food consumption survey from 1989-1991 and 1994-1996 indicated that the increase of daily calorie intake was caused by higher carbohydrate consumption. The NHANES data for 1971-2000 concur the USDA data and point out an increase of 62.4g in carbohydrates for women and 67.77g for men, and an increase of 6.5g in fat for women and a decrease of 5.3g for men. Based on these official data, excess consumption in carbohydrate, not in fat, has been responsible for the uptrend in obesity since 1980.

An article by EW Gregg et al, 'Secular Trends in Cardiovascular Disease Risk Factors According to Body Mass Index in US Adults', finds all risk factors except smoking and diabetes mellitus for cardiovascular disease were reduced with medications from 1960-2000, despite the up-trends in overweight and obesity at the same time. In other words, the prevalence of diabetes mellitus has been rapidly increasing along with or exceeding the trends in overweight and obesity.

In the meantime, US healthcare spending continued to rise, for example, from \$143 per capita in 1960 to \$7,018 in 2006, or an inflation of 49.08 times. The rate of inflation for healthcare spending per capita was 7.21 times of that for all items during the same period. Healthcare spending was 5.15% of the GDP in 1960 and 16% in 2006, or a total price tag at \$2 trillion. In 2009, the total health care cost was \$2.4 trillion. These findings clearly point out the current and past dietary guidelines have failed to improve the health of Americans.



Another article for the US Department of Agriculture by Hodan Farah Wells and Jean C. Busby, 'Dietary Assessment of Major Trends in US Food Consumption, 1970-2005', says that Americans have failed to follow the dietary guidelines and food pyramids by consuming more grains especially refined grains than whole grains, too much added fats and oils, too much meat, eggs, and nuts, too much added sugars and sweeteners, too little fruits and vegetables, and too little milk and milk products.

To no one's surprise, it advises that Americans should eat more whole grains, fruits and vegetables, more low-fat milk but less cheese, more monounsaturated fats and polyunsaturated fats but less saturated fats. These recommendations are mostly the basis for the proposed Dietary Guidelines for

Americans 2010. The report recognises the up-trends in overweight and obesity, but its recommendations at the time are deemed to fail due to their lack of scientific and clinical evidence.

How to increase satiety

Consuming more calories than the body needs for its daily activities unarguably makes it gain weight, and vice versa. The Dietary Guidelines and Food Pyramids have always emphasised food portioning for cutting the amount of calorie intake. Unfortunately, food portioning against hunger is a difficult task in the practical world. There are two types of hungers; one is physical and the other is physiological.





Physical hunger as a result of an empty stomach is much easier put off for a while. However, physiological hunger as a result of hypoglycaemia is a medical emergency and requires immediate feeding. Knowing how to reduce the sense of hunger or to increase satiety is critical in reducing the amount of calories, thus helping to lose weight.

Carbohydrates other than those high in indigestible fibres are easy for digestion and absorption, and have a shorter stomach emptying time, in comparison to fats and proteins. Thus, using more fats and proteins is the best way to improve satiety that affords individuals the dietary control; it helps reduce the amount of calorie intake and facilitates weight loss.

Unarguably, based on biochemistry, a majority of blood glucose, in particular during the postprandial period, is from dietary carbohydrates. The elevation of postprandial blood glucose is positively linked to the total of the ingested carbohydrates or glycaemic load. The slope of rising postprandial blood glucose level is

closely tied to the purity of the ingested carbohydrates or glycaemic index, regardless of the types of carbohydrates depending on their chemical structures.

Complex carbohydrates (polysaccharides) such as starchy foods only take a longer period before they are broken into monosaccharides for absorption. Complex carbohydrates, nevertheless, still affect the postprandial blood glucose level based on their glycaemic loads and glycaemic indices. Thus, the higher the glycaemic load and glycaemic index of foods are ingested, the greater of the excursion, in both the height (elevation) and the width (duration), of the postprandial blood glucose level will be.

In response to the increase of postprandial blood glucose level, the pancreas produces and releases insulin for facilitating the cells to take up glucose for producing energy, storing the excess glucose by converting it into glycogen and fat. When an individual consumes more carbohydrates, his pancreas responds with more insulin production and release that may result in hypoglycaemia before mealtime. Consequently, he requires more feedings, especially with more carbohydrate, which followed by hyperglycaemia during the postprandial period; more insulin produced and released; and hypoglycaemia before mealtime.

Such a vicious cycle helps individuals consume more foods especially high in carbohydrate and more calories, thus gaining weight. Reversing this with carbohydrate-restricted, fat-rich diets helps individuals maintain a stable, normal blood glucose level, increase satiety, and lose weight. The grave but often ignored impacts of a rising postprandial blood glucose level on the health include inflammation and pro-inflammation; arteriosclerosis and atherosclerosis; vasoconstriction or hypertension; pro-thrombosis; and glycation and pro-glycation.

Protective roles of fats

Having understood these impacts, consuming excessive carbohydrate at 45-65% of total calories as recommended in the proposed Dietary Guidelines for Americans 2010 is extremely dangerous to the health of Americans. While the Guidelines urge Americans to reduce the amount of added sugar, they fail to address the serious consequence of consuming High Fructose Corn Syrup, such as overweight/obesity that causes cardiovascular diseases.

Because of the unpleasant appearance of fat and the unwarranted but repeated public warnings, more people have become *lipophobic*, thanks to the success in publicising Dietary Guidelines and Food Pyramids for the past three decades. As said earlier, fats and proteins provide satiety, in addition to the supply of essential fatty acids and amino acids. But until recent years, many study results mistakenly condemned fats, especially saturated fats, for diseases in the presence of abundant carbohydrates especially those that high in glycaemic indices and glycaemic loads.

Recent studies have shown the protective roles of fats in the situations of restricting carbohydrates. The fear of short supply of the blood glucose with carbohydrate restrictions is simply baseless. Through gluconeogenesis from both fats and proteins, a stable blood glucose level within the normal range is achieved without the risk of either hyperglycaemia or hypoglycaemia.

Thus, increasing the consumption of fats and proteins in place of restricting carbohydrates helps stabilise the blood glucose level and to maintain a low level of inflammation, which reduces the risks of developing diseases including diabetes mellitus, coronary heart disease and cancers, just to name a few.

The proposed Dietary Guidelines for Americans 2010 should recommend only 125-175g of daily carbohydrate consumption

or under 20% of the total daily calorie intake, preferably with those that low in glycaemic indices and glycaemic loads. To replace carbohydrates, the Dietary Guidelines should recommend 50% of the total daily calories from fats, at least evenly from both unsaturated and saturated fats, with emphasis on essential fatty acids. Consequently, they should recommend 30% of the total daily calories from proteins with emphasis on essential amino acids.

Understandably, the USDA, through its policies, must continue to help the agriculture industry make profits by promoting grains, vegetables, fruits or livestock to consumers. However, it should not be concerned about the impacts of changing dietary guidelines on the industry. Rather, it should encourage the industry to continue producing grains and other carbohydrate foods for feeding livestock, manufacturing foods with low carbohydrate content, and converting grains and other carbohydrate foods for alternative fuel.

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Both these articles can be read in full at www.carbohydratescankill.com

Cholesterol Control in Children

Both the pharmaceutical industry and the medical establishment have orchestrated in making statin drugs the only choice for preventing and treating pediatric hypercholesterolemia and atherosclerosis. Pharmaceutical companies stand to profit when a majority of adults and children takes statins for the rest of their lives. The medical establishment ignores the serious adverse effects on the pediatric patients from the statin drugs, and its motive in doing so is suspicious.

Studies have reported traces of atherosclerotic plaques in children and infants as young as only a few months old. Without careful examination on all the contributing factors involved, especially the nutritional facts, quickly blaming genetic factors and dietary fats for the epidemic of child obesity, diabetes mellitus, hypertension and atherosclerosis is irresponsible, at least.

Recent studies have begun to recognise that inflammation plays an important role in developing atherosclerosis. In the article, 'Inflammation and Atherosclerosis', its authors pointed out inflammation is involved in all stages of the development of atherosclerosis. Without initiating inflammation in the endothelium (the inner layer of the blood vessel), neither triglyceride nor cholesterol will be deposited onto the vascular wall. The article says that some statin drugs could reduce the incidence of coronary events by lowering the inflammation level without reducing the level of lipids. Thus, lowering lipids is off the target and at the expense of harming the health by the adverse effects of statin drugs.

The question now should be focused on how inflammation is initiated and/or where it comes from. It is logical that infection and trauma can inflict the tissues including the endothelium for inflammation. However, it is inconceivable that every coronary artery event involves infection and/or trauma. Studies have shown that an increase of blood glucose spontaneously raises the level of inflammation, without provocation, which is positively related to the level of blood glucose, and can be reduced or eased by the use of anti-inflammatory drugs such as *Glutathione*.

The findings underscore the therapeutic effects of anti-inflammatory drugs on preventing coronary events. Furthermore, the level of inflammation by exogenous factors such as infections would be intensified in the presence of hyperglycemia. Logically, a stable, reasonably low, normal blood glucose level reduces the risk of developing arteriosclerosis and atherosclerosis.

Carbohydrate consumption

Now, take a look at the nutritional facts of foods that children and infants take every single day. These are heavy on carbohydrates from breads, cereals, potatoes, and cookies to ice creams, candies and juices. Many contain added sugars including but not limited to high-fructose corn syrup. These added sugars fuel up the carbohydrate foods in raising the levels of children's blood glucose and inflammation immediately after meals.

Sure, many children are luckily born with a functional pancreas, which is able to dispose the rising blood glucose and bring its level down to within the normal range. In addition, children and infants have more hormones for growth, which help insulin dispose blood glucose. However, their beta cells still can lose their capability of producing adequate insulin sooner or later as the mass of beta cells repeatedly receives attacks by extraordinary levels of hyperglycemia and inflammation time after time and begins to lose its size.

The feeding of infants is not much better either. If the infant receives breast-feed from his mother who eats a moderate or lesser amount of carbohydrates, and produces milk which is moderate or low in glucose, the infant will be healthy with little risk for arteriosclerosis and atherosclerosis. If the mother eats more carbohydrate especially those high in glycemic index and glycemic load, and produce milk which is high in glucose, the infant will have higher postprandial blood glucose concentration, and higher risk for arteriosclerosis and atherosclerosis.

If the infant receives baby formula, which is commonly high in added sugars, its postprandial blood glucose level will rise sharply after feeding. Many parents are naively pleased at the extraordinary growth of their infants. They think their infants have received 'excellent nutrition'. But they would be shocked when they realise their infants suffer from obesity, diabetes mellitus, dyslipidemia, atherosclerosis and other diseases.

For the past five to six decades, carbohydrate consumption has continued to rapidly increase across the globe, especially among children including toddlers and infants. Based on the knowledge in biochemistry, the amount of consumed carbohydrates positively affects the level of blood glucose. Restricting carbohydrate intake will decrease the risk of arteriosclerosis and atherosclerosis, and check the need for statin drugs.

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