You Are What You Eat

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ABSTRACT

The world's population has two major food problems. One relates to the lack of quantity of the world's food supply and the other relates to the quality of the diet selection. Guidelines are given for wise food selections. There has been a major debate since the Senate's Committee on Nutrition and Human Needs announced the dietary goals for the United States. It supports a low cholesterol, low saturated-high polyunsaturated and high fiber diet for all healthy Americans. This discussion shares the recent stance of the Food and Nutrition Board of the National Academy of Sciences. It encourages further research before hardline decisions are made. It reserves major diet modifications for individuals with abnormal clinical findings.

“You are what you eat” is a catchy phrase that a lot of Americans feel says it all. We often visualize a slightly plump American stealthily tiptoeing to the refrigerator in the dead of night to snatch a calorie-loaded snack. While these secretive overindulgences are taken in private, the excess poundage that they create is anything but private. As one national weight reduction group, T.O.P.S. (Take Off Pounds Sensibly), says in its pledge, “Oh, What a fool I've been.”

“You are what you eat” takes on a serious connotation in countries where there is a lack of food or money to purchase it. This phrase for hungry people expresses the human potential that is wasted because their limited energy is spent on seeking food rather than striving for greater things. Maslow expands on this concept with his hierarchy of human needs (19) Fig. 1.

He visualized people going through a building process from satisfying the first level of physiological or survival needs and continuing to climb one level at a time until the final step, self-actualization, is attained. He states that on the whole, people can not rise to the next needs level unless their needs below are satisfied. Maslow purports that healthy men’s prime motivation is the need for self-actualization. That means becoming everything one is capable of becoming (U8). Therefore, the phrase “you are what you eat” should be changed for the starving population to “you can’t be what you could be without enough to eat.”

In this discussion I want to discuss several matters concerning nutrition. I will put forth some general statements on what is considered wise diet selections. I will briefly look at the controversies surrounding

Figure 1. Maslow's hierarchy of human needs.
cholesterol, saturated and polyunsaturated fats, as well as fiber. I will briefly conclude by placing diet in its proper place amongst the many steps one can take to establish a positive lifestyle. Many of my comments will relate more directly to American’s diet concerns. However, the rest of the world can learn from our nutritional pluses and minuses.

WISE DIET SELECTIONS

It would be a difficult matter for me to share information about the best diet for the world’s populations. The types of foods and their quantity vary too greatly. However, I can share some statements that will have general application.

1. **Encouraging a wide selection of foods with an eye on daily variety can’t be stressed enough.** No one food is nutritionally perfect. Milk is one of the most nutritious foods but it is even lacking iron and vitamin C. With more than 40 recognized nutrients available in foods, a wide selection is the only way to insure an adequate diet. The U.S.D.A. states that varying selections will make a nutrient deficiency less likely and reduce the possibility of being exposed to excessive amounts of contaminants in any one food (30).

2. **Americans are encouraged to follow the basic four food groups to receive a nutritionally balanced diet.** This simple food plan encourages selections from the dairy group; meat, fish, poultry or legumes; fruits and vegetables; and enriched or whole grain breads and cereals. Similar food selections are available and encouraged in other countries.

3. **Attaining or maintaining ideal body weight** is desirable for all populations. The Food and Nutrition Board of the National Academy of Sciences states that obesity is the most common form of malnutrition in the Western nations of the world (14). A United States HANES survey found approximately 30% of its middle-aged women and 15% of its middle-aged men were obese. That meant that they weighed more than 120% of their desired weight (1). Research has shown a strong link between obesity and increases in morbidity and mortality from such illnesses as hypertension, diabetes, gall bladder disease and coronary heart disease (11). For every pound of excess weight, one more mile of blood vessels has to be laid down. This adds an increased work load to the body (20). The incidence of these diseases has been reduced with people attaining successful weight reduction (11).

Weight reduction can be achieved through decreasing calorie input and increasing calorie output. A sensible diet and exercise program should be established that is moderate in its approach. It should establish sound nutritional and exercise habits for life.

4. **Reduction of high calorie, low nutritional quality foods** should be encouraged. This includes alcohol, sugar and excessive fats and oils.

Alcohol provides 7 kcal per gram and has insignificant nutritional value. A drink before a meal not only provides added calories but also serves as an appetite stimulant. On the other hand, excessive alcohol serves as a deterrent to appetite and reduces food intake. This can result in vitamin and mineral deficiencies. Excessive alcohol also alters the absorption and assimilation of essential nutrients (30).

Americans consume on the average more than 130 pounds of sugar and other sweeteners per year (30). This totals more than 59,000 calories annually. If these calories were consumed without burning any of them in exercise a weight gain of 17 lb. could occur each year. The two major concerns of large sugar consumption are that of an increased incidence of tooth decay and the calories that may lead one to obesity. Sugar should be used in the diet only after consuming foods that will provide the essential nutrients.

Fats and oils are the most concentrated sources of energy that exist. They enhance taste in the diet but at a high caloric cost. The question of preference between saturated or polyunsaturated fats will be dealt with later.

5. **Reduction of sodium** and its major source, salt, is encouraged in the diet. As far back as 1904 scientists stated there was a link between salt intake and hypertension (4). A cause-and-effect relationship has not been clearly established yet. However, Americans consume more than 20 times as much sodium as their bodies physiologically need (14).

Hypertension is absent in some nonindustrialized populations such as those in the Solomon Islands, the Amazon Basin and Coco Islands of Polynesia where the salt intake is kept very low (13). The same is true of the bushman of the Kalahari Desert (17), the Easter Islanders (8) and the Yanomamo Indians (24). Northern Japan, on the other hand, has a high incidence of hypertension and diets 40 times higher in sodium than is physiologically necessary (14). The Samburu Warri­herdsman in their environment have little hypertension, but when they were drafted into the Kenya army dietarily they received six times their normal level of sodium. In their second year in the army, their blood pressures started rising (29).

Low-sodium diets have reduced the blood pressures in known hypertensives (25). In a study done by the National Heart, Lung and Blood Institute with 10,900 persons, a combined antihypertensive drug therapy and low sodium diet resulted in a 17% reduction in mortality of hypertensive-related chronic diseases (23).

Considering these facts, the Food and Nutrition Board recommends that the general population reduce sodium intake with particular emphasis on the 15% of the population already at risk for developing hypertension. Similar reductions should be supported in other nations guilty of sodium overuse.

CONTROVERSIES

The big cholesterol debate has been going on for a while. Industries and national organizations line up on
opposite ends of the scientific spectrum, with research to back their claims that cholesterol is or is not an issue. For further reading, McGill has prepared an exhaustive article on the various research studies relating dietary cholesterol to serum cholesterol and atherosclerosis in man (27).

The U.S.D.A., in its guidelines, stated emphatically, “If you have a high blood cholesterol level, you have a greater chance of having a heart attack. . . . There is controversy about what recommendations are appropriate for healthy Americans. But for the U.S. population as a whole, reduction in our current intake of total fat, saturated fat and cholesterol is sensible” (30).

In July of 1980 the prestigious Food and Nutrition Board that scientifically examines evidence regarding nutritional recommendations for the American population stated that general reduction of cholesterol in healthy Americans’ diets is premature. It reported on a diet-heart feasibility study that was carried out in six American medical centers with free-living subjects given a controlled food supply. A diet low in saturated fats and cholesterol and high in polyunsaturated fats was only 60% as effective in lowering serum cholesterol as it was in studies carried on in metabolic units (6). Therefore, they concluded that control of serum cholesterol involves more than diet adherence in free-living persons (14).

The board reported on seven large-scale studies carried out in London, Oslo, Helsinki, New York City, New Jersey and Los Angeles. A total of 20,000 man-years of observation on 3,060 men from 20 to 59 years of age demonstrated reduced serum cholesterol of 7 to 16%. However, there was little difference in the coronary disease incidence and no effect on overall mortality (14). Additionally, five trials involving 18,000 men for 5 years were carried out in England, Scotland, Europe and the United States, using hypocholesterolemic drugs. The effects of the drugs on the incidence of coronary artery disease were not conclusive and the study reported some unexpected toxicities (2,3,7,27). The Nutrition Board went on to say, “It appears, therefore, that although high serum cholesterol and low-density lipoprotein (LDL) levels are positive risk factors for coronary heart disease, it has not been proven that lowering these levels by dietary intervention will consistently affect the rate of new coronary events” (14). The Canadian Health Protection Branch has reached the same conclusion (10).

One of the major problems with the cholesterol controversy is that simplified, inaccurate statements have hurt the dairy and egg industries. Numerous cardiac patients have been told by their physicians that a low cholesterol diet means no dairy products and that eggs are close to poison. Because the physicians’ credibility is so high with their patients, as it should be, the patients faithfully eliminate these foods from their diet and miss these low cost protein- and nutrient-enriched foods. It is taking educators, such as dietitians, a long time to reeducate patients on the availability of low-fat dairy products that can be used when a low cholesterol diet is indicated. Moderate use of eggs can also be provided in a low cholesterol diet without creating a fear that eggs are the total cause of an elevated cholesterol. Practitioners have been working hard to change these misconceptions.

An article in the *Wisconsin State Journal* quoted a food scientist, Thomas Richardson at the University of Wisconsin-Madison, as saying, “Recent research indicates that there are factors in milk that somehow prevent the build-up of cholesterol in our blood. . . . Therefore, whole milk and especially skim milk should not present a problem by increasing blood cholesterol of consumers.” This research put a question on what foods are even considered cholesterol-lowering.

The Nutrition Board felt persons with the risk factors for heart disease, such as a positive family history, obesity, hypertension or diabetes, should have blood levels of cholesterol monitored by a physician. If these levels are abnormal, therapy can be undertaken.

More research is needed regarding the role that the low-density lipoprotein (LDL) and high-density lipoprotein (HDL) play in the cholesterol controversy. The Nutrition Board recognizes LDL as a positive risk factor for atherogenesis and HDL as a negative risk factor (14). Diet recommendations are not established from these factors, however.

It is felt that saturated fats tend to raise the serum cholesterol level and that polyunsaturated fats tend to lower it. The American Heart Association (5,7) and the Select Committee on Nutrition and Human Needs (28) have recommended that fats be reduced to 30% of the total calories and that the ratio of polyunsaturated to saturated fats be doubled. The Nutrition Board, on the other hand, felt that the benefit of this switch has not been established. In fact, diets employing this increased ratio have had added negative results. First, there has been a greater incidence of gastro-intestinal disease (2). Second, polyunsaturated fats are found to possibly alter requirements of nutrients such as Vitamin E (22). Last, other reports have linked an increased intake of polyunsaturated fats to an increased incidence of cancer (9). However, epidemiological studies indicate that excessive fat intake seems to be the culprit rather than the polyunsaturated fats (12,31). Studies in Romania and the U.S.S.R. also demonstrated no higher incidence of cancer despite large polyunsaturated consumption (16). More research is needed regarding the polyunsaturated fats before recommendations can be made.

Concerns over Americans’ decreased intake of fiber has brought on a bran sprinkling mania. Epidemiologic studies done by Wynder (32) show low-fiber countries with a higher incidence of diverticulitis and colon cancer. Nations with a high fiber intake have a correspondingly low level of both diverticulitis and colon cancer. The Nutrition Board did not find any research findings to support excess use of fiber-containing foods.

More research needs to be done on effects of a high-fiber diet on iron, zinc and magnesium (26). Phytates in the whole grains seem to bind some of the
minerals, making them unavailable for digestion and metabolism. Iran has indicated that some of its children have been unable to metabolize the trace metal zinc, and have become malnourished due to a high fiber intake (15).

**POSITIVE LIFESTYLE**

First, an appropriate quantity of food is essential for good health. Then the quality of a person’s diet will have significance for overall health. Beside the importance of a good diet, the following concerns also have a direct impact on maintaining a positive lifestyle: proper rest, adequate health care, aerobic exercise, avoidance of smoking, weight control, reducing life’s stresses and avoidance or control of diseases such as diabetes or hypertension. Therefore, diet is not the only factor in attaining or maintaining good health but it does play a significant role.

**CONCLUSION**

To make wise diet selections, it is important to encourage a wide selection of foods, follow the basic four food groups, attain or maintain ideal body weight, reduce intake of high calorie-low nutritional quality foods and reduce the daily sodium intake. Even though experts line up to promote the value of a low cholesterol, low saturated fat, high polyunsaturated fat and high fiber diet, just as many experts can refute most of the studies of the first group. Therefore, before massive dietary changes are forced on any of the world’s population more conclusive evidence should be found.

**ACKNOWLEDGMENT**


**REFERENCES**