

## Food Based Dietary Guidelines: Science-Based and More

Although the United States (US) has issued dietary guidelines for over 100 years, the 1996 USDA Healthy Eating Index revealed that 88% of the diets of those surveyed fell into the “poor” or “needs improvement” categories. (1) The study concluded that while scientific research identified a healthy diet and established guidelines for healthy eating, Americans did not seem to be meeting these recommendations. Release of updated *Dietary Guidelines for Americans 2005* (DGA-2005), and the MyPyramid food guidance system ([www.MyPyramid.gov](http://www.MyPyramid.gov)) offers nutrition professionals a unique opportunity to understand the rationale behind the dietary guidelines and translate them into healthful eating strategies that consumers can apply in their daily lives. This article will look at dietary guidelines here and around the world.

Food based dietary guidelines (FBDG) are designed to provide healthy individuals, families and communities with sound, practical dietary advice to promote overall nutritional health and delay or prevent development of nutrition-related diseases or conditions. FBDG are based on reliable scientific information and promote high-quality, accessible and affordable foods. FBDG are not designed to serve therapeutic purposes.

Dietary guidelines are prepared by national or international groups to address the nutritional needs of an entire population, sub-population or target group. In the US, for example, dietary guidelines form the basis of federal nutrition policy, programs and legislation; are used to develop standards for nutrition programs in schools, community sites, hospitals, prisons and the military; address current public health problems and influence future research. More than 150 nations have developed and are presently using dietary guidelines, some based on the 1996 guidelines prepared by the World Health Organization/Food and Agriculture Organization (WHO/FAO). (2)

People around the world differ in specific nutrient requirements depending upon gender, age, genetics, activity level and general health. Most differences fall within a fairly narrow range, requiring research data and expert opinion to establish precise scientific recommendations. Other important considerations relate to environmental, public health, religious, social, cultural, agricultural, climatic, geographic and economic issues. FBDG are based on reliable scientific data but must also consider prevailing health concerns, the availability of potable water, current dietary practices, food safety, agricultural productivity and a host of other issues that

make each nation unique. FBDG become political due to inherent economic implications for agriculture production, commercial profits, international trade and government policy.

Despite their common purpose, design and theme of balance, variety and moderation, FBDG around the world differ to meet the unique needs of each nation and best address the needs of specific target populations. The use of food groups is an illustration of these differences.

Most FBDG are based on individual foods separated into groups that are considered to be similar in nutrient value or agricultural origin. One difference in FBDG involves the number and content of such groups. Some groups are large (e.g., fruit), some specific (e.g., citrus fruits) and some consider processing (e.g., smoked and salt-cured foods). The number of such groups among different nations currently ranges from 3 to 12. Selecting the foods that make up each group sometimes involves arbitrary, subjective decisions on which people rarely agree. For example, potatoes can be a separate group, a vegetable or a cereal/starch. Similarly, legumes may also be a vegetable, a protein or a separate group.

Another difference in FBDG around the world stems from the philosophical concepts on which they are based. Some guidelines combine daily nutrient needs with calories, recommending a designated number of servings from each food group to provide necessary nutrients and calories. Thus, recommendations for a person consuming 2,000 kcal per day are different than for someone consuming 2,800 kcal per day. Other guidelines recommend a daily food intake designed to provide essential nutrients but with little regard to calories. Persons following this foundational diet should then meet energy requirements by selecting additional foods as appropriate.

Some differences in FBDG reflect the target population group for which they were prepared. For example, the presence of micronutrient deficiencies in a large segment of a nation's population demands special attention. Guidelines for an affluent nation with an ample food supply (sometimes associated with diseases related to overconsumption) vary from those for a nation with a limited food supply or where undernutrition is common. FBDG recommending five or more servings per day of fruits and vegetables may be nutritionally sound but unrealistic in a nation or region where the supply of fruits and vegetables is limited and expensive.

FBDG frequently recommend a specific number of servings to be consumed daily from each food group. "Serving" is an imprecise term that can be confusing to both professionals and consumers. Serving sizes vary within food groups as well as among them. Nor is there agreement on the appropriate serving size for many foods. Recommended serving sizes can change from time to time, may differ from nation to nation and sometimes vary from serving sizes required in nutrition labeling regulations. A current trend is to use common household measures (such as cups instead of ounces in the US) to determine serving sizes, but professional opinions continue to vary on how to best express serving size.

Dietary guidelines should be considered both individually and collectively. No one guideline is most important, and guidelines are not presented in rank order. A review of 50+ FBDG from around the world reveals widespread agreement on six common themes:

- ❖ **Importance of variety:** Variety is a fundamental principle of a healthy diet. Selecting a variety of nutrient-rich foods and beverages allows a maximum intake of nutrients and minimum risk for consuming potential contaminants or toxins. Variety can be achieved with many healthful dietary patterns and food combinations. An important caution around this concept is to achieve variety within appropriate calorie limits. Some FBDG recommend choosing a variety of foods from each food group, some recommend choosing foods from a variety of groups, others combine these two recommendations.
- ❖ **Value of consuming a moderate fat diet that is low in saturated fat:** A high-fat diet is frequently associated with increased consumption of saturated fat and calories. High intake of saturated fat, trans fat and cholesterol increases the risk of high blood cholesterol levels, which may increase the risk of coronary heart disease. Conversely, a diet too low in fat may increase the risk of inadequate intake of important nutrients such as vitamin E and essential fatty acids. Some dietary guidelines recommend a maximum number of fat grams per day or a specific percentage of daily calories; others are general (eat less fat). Recommendations for total fat intake generally fall between 15%-35% of total calories (DGA-2005 recommends 20%-35%), with saturated fat intake less than 10% of total calories. Only a few countries include recommendations for dietary cholesterol (usually less than 300 mg/day), polyunsaturated fat (usually less than 10% of total energy), omega-3 or omega-6 fatty acids. Even fewer include a recommendation related to trans fat (WHO/FAO guidelines

recommend less than 1% of total energy; DGA-2005 recommends keeping trans fatty acid consumption as low as possible within a healthful diet). (3)

- ❖ **Need to balance energy intake and physical activity in order to achieve and maintain a healthy weight:** Excess body fat is associated with some serious health problems and increased risk for premature death. On the other hand, regular physical activity has been shown to reduce the risk of certain chronic diseases and can help with weight management. Thus, most guidelines address the rising level of obesity and the need for increased physical activity, albeit in a general way (e.g., stay within calorie needs, get more exercise). Most FBDG recommend sufficient calories to provide basal energy needs, allow growth and development, repair body damage and supply energy for physical activity. DGA-2005 recommends *at least* 30 minutes of moderate-intensity activity on most days of the week for adults (60 minutes for children) to reduce chronic disease risk, 60 minutes on most days to prevent weight gain and 60 to 90 minutes for those who wish to lose weight or sustain weight loss. WHO/FAO guidelines recommend that everyone engage in 60 minutes of moderate-intensity activity on most days of the week.
- ❖ **Need to increase amounts of complex carbohydrates and fiber:** Carbohydrates supply energy as glucose, which is the only energy source for red blood cells and is the preferred energy source for the brain, central nervous system and developing fetus. Appropriate amounts of whole grains, in particular, can reduce risk of coronary heart disease, may help with weight maintenance and may lower the risk of some other chronic diseases. WHO/FAO and guidelines of many nations recommend a carbohydrate intake representing 55%-75% of total calories. DGA-2005 makes no specific recommendation for amounts of dietary carbohydrates, although the 2002 Dietary Reference Intakes recommend 45%-65% of total calories. (4) Many FBDG discuss the need for an increased intake of whole grains and fiber-containing foods but do not include a specific recommended intake. DGA-2005 recommends consuming at least three one-ounce equivalents of whole grains per day and 14 grams of fiber for every 1,000 calories. WHO/FAO and some other FBDG include a recommendation regarding intake of refined sugars (usually <10% of daily calories). Some nations advise citizens to consume less sugar, or to avoid or limit sugar intake for caloric reasons. A few nations make no mention at all of sugars or sweeteners. DGA-2005 has no precise

recommendation but advises people to consume refined carbohydrates and sugar-containing foods and beverages less frequently and to choose and prepare foods with little added sugar or caloric sweeteners.

❖ **Value of consuming less salt and sodium:** Keeping sodium intake within recommended levels helps reduce the risk of high blood pressure. Maintaining normal blood pressure reduces a person's risk for serious health problems such as coronary heart disease, stroke and kidney disease. Although included in most guidelines, the recommendation is usually general (i.e., eat less salt). WHO/FAO recommend eating less than 6 grams of salt per day (equivalent to less than 2,400 mg of sodium); DGA-2005 recommends an intake of less than 2,300 mg per day of sodium in a 2,000 kcal diet.

❖ **Importance of moderating intake of alcoholic beverages:** The hazards and health effects of heavy drinking are well documented. Preliminary research, however, suggests that moderate intake of some alcoholic beverages may have beneficial health effects in some people. Most FBDG advise a maximum intake of two drinks per day for those who choose to drink alcoholic beverages, although "drinks" are defined somewhat differently from nation to nation. DGA-2005 and several other guidelines define a moderate intake as two drinks per day for men and one drink per day for women (in the US, 12 fluid ounces of regular beer, 5 fluid ounces of wine or 1.5 fluid ounces of 80-proof distilled spirits counts as one drink). DGA-2005 also cautions that some

people should not consume alcoholic beverages at all and points out that alcoholic beverages provide calories but few essential nutrients.

Understanding and applying the principles of science-based dietary guidance is especially important today. In the US and many other countries, food habits are changing rapidly, the population is becoming more diverse and increased access to global food supplies is expanding the number and variety of products available in the marketplace. Immigrants in many nations can, if they wish, choose familiar foods and brands. Thus, dietary patterns learned in youth can be continued, requiring limited accommodation to the changed environment. While second- and third-generation immigrants generally adapt to the prevailing culture, the food patterns of the parents continue to influence dietary habits.

Health professionals with greater understanding of food habits and dietary recommendations in other nations can help clients achieve effective dietary change by using FBDG that best fit an individual's typical dietary pattern. Evidence confirms that no one dietary pattern fits all and a variety of diverse eating patterns can provide a healthy diet. That there are so many possible options for planning a healthful diet and being active is a hallmark of DGA-2005. The MyPyramid food guidance system mirrors the key messages of DGA-2005 and allows individuals to customize a healthful eating and physical activity plan to meet their personal nutrition goals, as well as their food and exercise preferences. This system and the DGA-2005 can be valuable resources to use as you educate consumers about nutrition.

## References

1. Food and Agricultural Policy: Taking Stock for the New Century. Washington, DC: US Dept of Agriculture; 2001.
2. FAO/WHO Preparation and Use of Food-based Dietary Guidelines. WHO Technical Rpt. Ser. No. 880, Geneva. 1998.
3. US Dept of Health and Human Services and US Dept of Agriculture. Dietary Guidelines for Americans 2005. Available at: <http://www.healthierus.gov/dietaryguidelines>. Accessed January 13, 2005.
4. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids (Macronutrients). Washington, DC: The National Academy of Sciences, 2002.  
[Go to: [www.iom.edu](http://www.iom.edu). Click on "Reports," then scroll down to "Reports issued in 2002."]

## Further Reading

Dietary guidelines: Past experience and new approaches. *J Am Diet Assoc.* 2003; 103: supplement 2. Proceedings of a symposium and workshop held April 30-May 1, 2002, at the University of Toronto, Canada.

Painter J, Rah J-H, Lee Y-K. Comparison of international food guide pictorial representations. *J Am Diet Assoc.* 2002; 102(4):483-9.