RESEARCH
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Updated US Department of Agriculture Food Patterns Meet Goals of the 2010 Dietary Guidelines

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ARTICLE INFORMATION

Article history:
Accepted 7 May 2012
Available online 31 July 2012

Keywords:
USDA food patterns
Dietary Guidelines
Dietary patterns

2212-2672/$36.00
doi: 10.1016/j.jand.2012.05.021

ABSTRACT

The US Department of Agriculture Food Patterns were updated for the 2010 Dietary Guidelines for Americans to meet new nutrition goals and incorporate results of food pattern modeling requested by the Dietary Guidelines Advisory Committee. The purpose of this article is to describe the process used and changes in the updated patterns. Changes include renaming the Meat and Beans and Milk Groups to the Protein Foods and Dairy Groups, respectively, to be more encompassing of foods in each. Vegetable subgroups now provide more achievable intake recommendations. Calcium-fortified soymilk is now included in the Dairy Group because of its similarity to foods in that group. Increased amounts of seafoods are recommended in the Protein Foods Group, balanced by decreased amounts of meat and poultry. A limit on calories from solid fats and added sugars is included, replacing the previous discretionary calorie allowance and emphasizing the need to choose nutrient-dense forms of foods. Lacto-ovo vegetarian and vegan patterns that meet nutrition goals were created by making substitutions in the Protein Foods Group, and for vegan patterns, in the Dairy Group. Patterns identify food choices that meet nutritional needs within energy allowances and encourage choosing a variety of foods. They rely on foods in nutrient-dense forms, including a limited amount of calories from solid fats and added sugars. The Food Patterns provide a useful template for educating consumers about healthful food choices while highlighting a large gap between choices many Americans make and healthy eating patterns.
J Acad Nutr Diet. 2012;112:1648-1655.

OVERALL EATING PATTERNS AFFECT HEALTH AND well-being—for good or bad. For many years, the US Department of Agriculture (USDA) has developed and disseminated recommended food patterns to meet known nutrient needs.[1] Since scientific evidence linking diet and chronic disease has been available, the USDA Food Patterns have included not only nutrient adequacy goals, but also recommendations to limit some dietary components. These patterns have represented a total diet approach to food guidance, in contrast to earlier guides that contained only a foundation diet for nutrient adequacy. Since the 1980s, nutrition goals and limits for USDA Food Patterns have reflected recommendations from the Dietary Guidelines for Americans (DGA), which are intended to help Americans select more healthful ways of eating.[2,3] In 1992, the then-current USDA Food Patterns were illustrated with a Pyramid, and became known as the Food Guide Pyramid.[4,5]

Between 2000 and 2005, a major revision of the USDA Food Patterns was undertaken, the first since they had been introduced. Detailed descriptions of methods and results of this revision have been published elsewhere.[6,7] The revised patterns, part of the MyPyramid Food Guidance System, were released shortly after the 2005 DGA and represented eating patterns consistent with its advice. The patterns also reflected recommendations based on food pattern modeling that was conducted for the 2005 Dietary Guidelines Advisory Committee (DGAC).[8]

As part of the development for the 2010 DGA, the 2010 DGAC again requested modeling analyses using the USDA Food Patterns. The DGAC report included summaries of the individual modeling analyses that were completed for the Advisory group.[9] The Food Patterns were then updated for inclusion in the 2010 DGA, incorporating the results of all analyses for the DGAC, changes to meet new or revised nutrition goals, and changes to improve consumer understanding. This article presents the approach used to revise and evaluate the USDA Food Patterns, changes in the patterns from 2005, the rationale for changes in the food groups or amounts recommended, and a comparison of the patterns to their nutrition goals.

APPROACH AND FINDINGS

The 2010 update of the USDA Food Patterns was conducted using the same general procedure used in previous revisions. Appropriate energy levels were identified, nutrition goals were established, food groupings were modified as deemed necessary, nutrient contributions expected from each food group were determined, and then daily patterns were created by iteratively adjusting recommended amounts of food groups until nutrition goals were met within energy constraints for patterns. This procedure, as applied in 2005, has been described in detail.[6,7]

Energy Levels and Nutrition Goals

Energy levels for the patterns were maintained from those established for the 2005 update.[6] These energy levels were based on estimates of energy needs for reference-sized individuals using Estimated Energy Requirements formulas developed by the Institute of Medicine (IOM).[10] Estimated Energy Requirements for sedentary individuals were used to ensure that the Food Patterns met nutrient needs within conservative energy allowances. Patterns at energy levels for moderately active and active individuals were also developed.[3,11] As a result, Food Patterns at 12 energy levels, ranging from 1,000 to 3,200 calories, were identified. Those from 1,000 to 1,400 calories were designed to meet nutrient needs of children aged 2 to 8 years. Those at 1,600 calories and above were designed for nutrient needs of various age/sex groups from age 9 years through adulthood.

Nutrient goals for 12 vitamins, 9 minerals, and 8 macronutrients were derived from the most current recommendations available in the IOM Dietary Reference Intake reports or established by the DGA, and summarized in Appendix 5 of the 2010 DGA.[3] Nutrient adequacy goals were set at 100% of the Recommended Dietary Allowance (RDA) or Adequate Intake level or more, provided that amounts were not above the nutrient's Tolerable Upper Intake Level.[12] Small deviations below the RDA or Adequate Intake were considered acceptable. After the initial update of the patterns, the IOM released new RDAs for calcium and vitamin D[13]; goals for those nutrients were revised accordingly. Moderation goals for the Food Patterns were based on Acceptable Macronutrient Distribution Ranges established by the IOM[10] and quantified recommendations in the 2010 DGA.[3] The Food Pattern at each calorie level was targeted to one or more age/sex groups, and if for more than one age/sex group, it was evaluated against nutrient goals for all groups.

Food Groups

Food groups and subgroups used in the 2005 Food Patterns were reviewed, in collaboration with the 2010 DGAC, to identify where changes reflecting new science might be needed and to enhance the usability of patterns for making food choices. The five major food groups—Fruits; Vegetables; Grains; Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts (Meat and Beans Group); and Milk, Yogurt, and Cheese (Milk Group)—were retained, as was the Oils category. Based on discussions with professionals and consumer testing,[14] names of the Meat and Beans Group and Milk Group were changed to the Protein Foods Group and Dairy Group, respectively, to be more encompassing of foods included in each group. No modifications were made to the structure of the Fruit or the Grain groups. Modifications to the Vegetable, Dairy, and Protein Foods Groups were made as follows:

Vegetable Group. The structure and composition of vegetable subgroups were modified with a goal of providing more achievable vegetable intake recommendations. The 2005 Food Patterns included recommendations for intake from five subgroups: Cooked Dry Beans and Peas,* Starchy Vegetables, Dark Green Vegetables, Orange Vegetables, and Other Vegetables. The biggest change for 2010 was the creation of a Red and Orange Vegetable subgroup, developed by moving tomatoes and red peppers from the Other Vegetable subgroup to what had previously been the Orange Vegetable subgroup. This resulted in a more even distribution of total vegetable consumption across subgroups and placed more focus on tomatoes, in recognition of their popularity and nutrient contributions. Tomatoes comprise almost one quarter (22%) of total vegetable consumption in the United States. In previous USDA food patterns, tomatoes were considered to be part of the Other Vegetable subgroup, along with >35 other vegetables that represented more than half of all vegetable consumption. The former Orange Vegetable subgroup, in contrast, was composed of four vegetables that represented only about 4% of total vegetable consumption. In the previous grouping system, the nutritional contributions of tomatoes did not stand out, because they were grouped with a large number of diverse vegetables, with varying nutritional attributes. With the new groupings, tomatoes comprise a major part of the Red and Orange Vegetable subgroup, and the Red and Orange Vegetable and Other Vegetable subgroups each represent about one fourth of all vegetable consumption.

Vegetable subgroup intake recommendations within the range of "best" current consumption also were developed. "Best" current consumption was defined as at or below the 95th percentile of usual intake levels, amounts already consumed by at least 5% of the population. For several vegetable subgroups, the 2005 recommendations were notably higher than this—four to eight times usual median intakes, and above the 95th percentile of usual intake levels.[15]

Figure 1 shows how recommended vegetable subgroup intakes in the 2,000-calorie pattern compare to the 50th and 95th percentiles of usual intake by the US population 2 years of age and older. For all vegetable subgroups, the 2010 recommended amounts fall between the 50th and 95th percentiles of usual intake. In contrast, in the 2005 patterns, only the recommended amounts for Starchy Vegetables and Other Vegetables were within that range. Additional findings, published elsewhere,[16] show that in the few instances where the new recommendations for a population subgroup exceed the 95th percentile of usual intake, they do so by much smaller amounts than did the 2005 recommendations.

Dairy Group. The Dairy Group includes fluid milks, cheeses, yogurt, and other foods containing these dairy products. This group is the primary source of calcium in American diets as well as a major source of shortfall nutrients, including magnesium, potassium, vitamin A, and vitamin D. With publication of the 2010 DGA, calcium-fortified soymilk was added to the group. Soymilk is typically fortified with calcium, vitamin A, and vitamin D, and is nutritionally comparable to other foods in this group. In addition, soymilk is used in meals in the same way as cow's milk. For vegans and people who avoid milk products because of allergies, cultural practices, and other reasons, soymilk serves as a nondairy source of nutrients contributed by this group. Other possible alternatives to milk and milk products, such as rice milk, tofu, and leafy greens were examined, but no others were considered sufficiently similar in nutrient content to warrant their inclusion in the Dairy Group.[17]

*The name of the subgroup "cooked dry beans and peas" was changed to "beans and peas," based on public comments for the DGA and consumer testing.