

# Position of the Academy of Nutrition and Dietetics: Total Diet Approach to Healthy Eating

## ABSTRACT

It is the position of the Academy of Nutrition and Dietetics that the total diet or overall pattern of food eaten is the most important focus of healthy eating. All foods can fit within this pattern if consumed in moderation with appropriate portion size and combined with physical activity. The Academy strives to communicate healthy eating messages that emphasize a balance of food and beverages within energy needs, rather than any one food or meal. Public policies and dietary patterns that support the total diet approach include the 2010 Dietary Guidelines for Americans, DASH (Dietary Approaches to Stop Hypertension) Diet, MyPlate, Let's Move, Nutrition Facts labels, Healthy People 2020, and the Dietary Reference Intakes. In contrast to the total diet approach, classification of specific foods as good or bad is overly simplistic and can foster unhealthy eating behaviors. Alternative approaches are necessary in some situations. Eating practices are dynamic and influenced by many factors, including taste and food preferences, weight concerns, physiology, time and convenience, environment, abundance of foods, economics, media/marketing, perceived product safety, culture, and attitudes/beliefs. To increase the effectiveness of nutrition education in promoting sensible food choices, skilled food and nutrition practitioners utilize appropriate behavioral theory and evidence-based strategies. Focusing on variety, moderation, and proportionality in the context of a healthy lifestyle, rather than targeting specific nutrients or foods, can help reduce consumer confusion and prevent unnecessary reliance on supplements. Proactive, empowering, and practical messages that emphasize the total diet approach promote positive lifestyle changes.

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## POSITION STATEMENT

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**O**VER THE YEARS, THE ACADEMY of Nutrition and Dietetics has consistently recommended a balanced variety of nutrient-dense food and beverages consumed in moderation with adequate physical activity as the foundation of a health-promoting lifestyle. The total diet approach is based on overall eating patterns that have important benefits and supply adequate nutrients within energy needs. These recommendations are consistent with the fundamental principles of the 2010 Dietary Guidelines for Americans (DGA), which define *total diet* as the combination of foods and beverages that provide energy and nutrients and constitute an individual's complete dietary intake, on average, over time.<sup>1</sup>

Many Americans are conscious of the importance of healthy diets and physical activity. Recently, shoppers re-

ported buying products with more whole grains or fiber and/or that were lower in fat, sugars, and sodium,<sup>2,3</sup> and approximately half said they were doing all they can to achieve balanced nutrition and a healthy diet.<sup>2</sup> However, most Americans do not meet DGA recommendations. More than two out of three adults reported not eating fruits or vegetables more than twice a day (67.5% and 73.7%, respectively), and more than one third (36.2%) indicated no leisure-time physical activity.<sup>4</sup>

Labeling specific foods in an overly simplistic manner as “good foods” and “bad foods” is not only inconsistent with the total diet approach, but it can cause many people to abandon efforts to make dietary improvements. In 2011, 82% of US adults cited not wanting to give up foods they like as a reason for not eating healthier.<sup>2</sup> For these reasons, the concepts of moderation and proportionality are necessary components of a practical, action-oriented understanding of the total diet approach.

Nutrition messages are more effective when focused on positive ways to make healthy food choices over time, rather than individual foods to be strictly avoided. For example, consumers can enjoy nutritive sweeteners<sup>5</sup> when consumed as part of an overall balanced eating plan, such as one that meets DGA recommendations. Yet energy density, defined as the “amount of energy per unit weight of a food or beverage,”<sup>6</sup> must also be considered.

It is reasonable to consume high-calorie foods in small quantities in order to enjoy nutritious foods, such as a sprinkle of sugar on a grapefruit. In contrast, if an individual repeatedly eats large portions of energy-dense food, such as cookies or fried chicken, it would be difficult to stay within the recommended limits of calories, especially if meals frequently include other energy-rich foods or beverages. Large servings of foods or beverages high in solid fats, added sugars, or alcohol are not compatible with the DGA.

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Television, magazines, and the Internet are Americans' leading sources of nutrition information, followed by newspapers, doctors, and family and friends.<sup>2</sup> When these sources convey overly negative messages or exaggerated good/bad food distinctions, it can result in categorical rejection of nutrition guidance by eliciting negative feelings, such as guilt, anxiety, helplessness, and fear. The total diet approach is also conveyed by the policies and advocacy efforts of the Academy, as it supports nutrition program regulations and other public policy measures that facilitate healthy food choices. Whenever possible, new requirements and environmental changes should be planned, implemented, and promoted in a manner that enhances the perceived value of positive total diet and lifestyle choices.

## FEDERAL NUTRITION GUIDANCE SUPPORTS THE TOTAL DIET APPROACH

The DGA,<sup>1</sup> the centerpiece of Federal food, nutrition, and health education programs, are consistent with the total diet approach to food guidance. The DASH (Dietary Approaches to Stop Hypertension) Eating Plan, endorsed by the US Department of Health and Human Services, is a dietary pattern consisting of healthful food choices over time and is also available to assist consumers in implementing these recommendations.<sup>7</sup> The US Department of Agriculture's (USDA) MyPlate Food Guidance System also uses a total diet approach to ensure nutritional adequacy and healthy food choices.<sup>8</sup> MyPlate's SuperTracker feature helps consumers plan a nutrient-dense total diet and activity choices that satisfy nutritional requirements within personalized energy needs. The White House's Let's Move campaign was launched to reduce child obesity by improving the overall quality of children's diets and increasing physical activity.

Collectively, these programs encourage Americans to choose nutrient-dense foods and beverages and reduce intakes of saturated and *trans* fats (solid fats), added sugars, sodium, and alcohol. An example would be the choice of water or nutrient-dense beverages over sugar-sweetened drinks, especially for youth. In the National Health and Nutrition Examination Survey 2005-2006,<sup>9</sup>

soda/energy/sport drinks added 114 calories/day to the diets of 14- to 18-year-olds. Instead, choosing low-fat or fat-free milk, a nutrient-dense beverage, would provide considerable amounts of calcium, protein, potassium, and other essential nutrients with fewer calories.

Although large servings of foods or beverages high in solid fats, added sugars, sodium, or alcohol are not compatible with the DGA, a dietary pattern that emphasizes nutrient-dense food and beverages in an overall healthy pattern can still balance a small amount of low-nutrient or high-energy density choices (eg, butter/margarine, jam, alcohol) with nutrient-dense food and beverages (eg, vegetables, whole grains, fat-free milk) to achieve an overall healthy dietary pattern. This message of the total diet approach must be communicated to consumers by food and nutrition practitioners.

## Nutrition Facts Labels and Healthy People 2020

Nutrition Facts labels facilitate food choices within dietary patterns that are consistent with the total diet approach,<sup>10</sup> along with policy guidance, such as Healthy People 2020.<sup>11</sup> In the National Health and Nutrition Examination Survey 2005-2006, most of the respondents (61.6%) reported routinely looking at the Nutrition Facts label and considering health claims when purchasing a food product.<sup>12</sup>

Healthy People 2020 was developed to create a healthier nation through healthy diet patterns and policies that foster achievement of healthy body weights for children and adults.<sup>11</sup> Nutrition and weight status objectives fit well within the total diet approach and call for:

- healthier food access in schools and food outlets;
- enhanced involvement of physicians and work sites to assess weight status and provide counseling or education;
- increasing healthy weights and reducing obesity;
- eliminating very low food security and hunger;
- increased consumption of fruits, vegetables, and whole grains and reductions in solid fat and added sugars;

- increased calcium intake; and
- reduced iron deficiency.

## Nutrient Intake Recommendations

The Dietary Reference Intakes (DRIs) are reference values used to plan and evaluate diets for healthy populations. The DRIs were created to expand upon previous sets of nutrient standards, Recommended Dietary Allowances, which had been developed initially to focus on preventing nutritional deficiencies. The DRIs have been updated periodically and now address current nutrition and public health concerns, with an emphasis on prevention of chronic diseases and promotion of optimal health. Currently, these include a more comprehensive set of standards: Estimated Average Requirements, Adequate Intakes, and Tolerable Upper Intake Levels.<sup>13,14</sup> Each type of DRI refers to average daily intake over time—at least 1 week for most nutrients. For macronutrients, recommendations are stated as Acceptable Macronutrient Distribution Ranges and illustrate that there is not just one acceptable value, but rather a broad range within which an individual can make diet choices based on their own preferences, genetic background, and health status. This concept of adequacy of nutrient intakes over time supports the need to help consumers understand the importance of the total diet approach.

## NONFEDERAL NUTRITION GUIDANCE SUPPORT

A variety of non-Federal organizations support the total diet approach, including the American Heart Association, American Cancer Society, American Diabetes Association, and Robert Wood Johnson Foundation. In addition, the American Diabetes Association shows this approach in its 2007 evidence-based recommendations and interventions for diabetes. Finally, the Mediterranean diet is a commonly accepted and healthful dietary pattern. These approaches promote the pleasure of eating, with specific food choices restricted only when based on scientific evidence.<sup>15</sup>

## Nutrient Quality Indicators

Several indicators of nutrient quality have been summarized by the Academy.<sup>16</sup> The Nutrient Rich Food Index has been developed by a research coalition

tion involving food and nutrition practitioners.<sup>17</sup> This index uses nutrient profiles that have been validated against accepted measures of a healthy diet, such as the Healthy Eating Index created by the USDA.

Another new nutrient profiling system has been proposed by the European Union to be used as a scientific means to restrict confusing health claims on certain foods for 2013. It can be utilized to identify products that are rich in important nutrients and foods with lower levels of nutrients that have been associated with chronic disease risks.<sup>18</sup>

A third tool to reduce confusion about healthy food choices is the Overall Nutrient Quality Index, which was designed to facilitate choice of healthier foods within a food group. The Overall Nutrient Quality Index scores for total diet also were validated to the Healthy Eating Index.<sup>19</sup> The score (1 to 100) can be placed on or near a product package to enable shoppers to quickly compare nutrient quality among similar foods.

An even simpler indicator of a healthy food choice is the proposed front-of-package rating systems and symbols, based on a collaboration of the Institute of Medicine, Centers for Disease Control and Prevention, US Food and Drug Administration, and USDA.<sup>20</sup> This system would formally replace voluntary efforts. It stresses simplicity and visual clarity by providing information in the form of symbols rather than words. One symbol reinforces existing nutrition labeling by representing the number of calories in a common serving. A second symbol features a number ranging from 0 to 3 nutritional points, which indicate the product's saturated and *trans* fats, sodium, and added sugars. This scale represents a range from the least to the most healthy food choice. If this proposed system is adopted, consumer guidance will be important to help the public understand how to utilize the point system in making food and beverage choices within a total diet context and avoid an exaggerated focus on single foods as "good" or "bad."

### COMMUNICATION CAMPAIGNS AND PROGRAMS

Teaching consumers to make wise food choices in the context of the total diet

is enhanced when educators implement active, behaviorally focused approaches that include the larger context of food choices and healthy lifestyles. Depending on the audience and situation, a variety of nutrition information, communication, promotion, and education strategies can be appropriate for effective nutrition interventions.

A growing body of evidence supports recommendations to design behavior-oriented food and nutrition programs that are sustainable because they fit individual preferences. Almost two thirds (62%) of American adults report being "more interested in hearing about what to eat, rather than what not to eat."<sup>21</sup>

Nutrition information from broadcast, print, and electronic media, nonprofit groups, food and supplement marketers, and friends presents a confusing mix of perspectives. Skilled marketers are trained to use colors, images, and other graphics to make products appealing to different demographic groups, such as young children. High levels of health literacy, media savviness, and critical thinking skills are required to distinguish information based on strong scientific evidence from personal testimonials and biased communications and advertisements. Health literacy is further challenged when media sources attempt to surprise or entertain their audience by exaggerating the significance of small or preliminary studies.<sup>14</sup> For example, some weight-loss products claim to use a new discovery to melt away fat without bothersome diets or painful exercise, and "super foods," such as acai and pomegranate, have been touted to possess nutritional properties far superior to other fruits.<sup>22</sup> The confusion elicited by this cacophony of messages is confounded when legitimate experts disagree on important principles, such as the benefits of reducing dietary carbohydrates, and when well-founded recommendations appear to shift over time as new research becomes available.

### PSYCHOSOCIAL CONSEQUENCES OF "GOOD" AND "BAD" FOOD MESSAGES

Categorizing foods as "good" or "bad" promotes dichotomous thinking. Dichotomous thinkers make judgments in terms of either/or, black/white, all/

none, or good/bad and do not incorporate abstract or complex options into their decision strategies.

### The Magic Bullet Approach

Thinking in terms of dichotomous or binary (either/or) categories is common in childhood. Almost all elementary-age and half of middle school children believe that there are "good" and/or "bad" foods.<sup>23</sup> Although the ability to think in more abstract and complex modes is prevalent among adolescents and adults, consumers of all ages tend to rely on dichotomous thinking in certain situations.

An example of dichotomous thinking is the quick fix or "magic bullet" approach to weight control. As long as one stays on the diet (target behavior), the person feels a sense of perceived control (self-efficacy) and accomplishment. However, when an individual encounters a high-risk situation, such as a tempting food (eg, a favorite cookie), loss of control can occur, depending on the individual's emotional state, interpersonal conflict, and social pressure.<sup>24</sup> In this scenario, a cookie would be regarded as a forbidden food and a dieter who yields to a desire for a cookie would tend to say, "I ate the cookie. I have blown my diet. I might as well finish the rest of the box." This pessimistic approach becomes self-fulfilling, as the subject believes that there is not much that can be done once a loss of control occurs.<sup>25</sup> In a study of obese women who had lost weight, dichotomous thinking and maximum lifetime weight predicted weight gain after 1 year.<sup>26</sup>

A skilled nutrition counselor could reduce the probability of relapse by increasing knowledge (need for energy balance), teaching coping skills (alternative behaviors), incorporating personal favorites in individualized eating patterns, and promoting acceptance of personal choice ("I can refuse to eat it" or "I can occasionally enjoy a small portion"). This individualized education is more comprehensive and involves context-based judgment, which is more sustainable than dichotomous approaches over time.<sup>14</sup>

### All-Good or All-Bad Foods?

When too much emphasis is given to a single food or food component, confusion and controversy can hinder, rather than facilitate, consumers in adopting

healthy dietary patterns. For example, increased risks for cardiovascular disease in early animal studies led to standard dietary guidance to restrict saturated fats (implying that red meats and butter are bad foods).<sup>1,27</sup> But more recent evidence of a direct causal link is more ambiguous. In 2010, a meta-analysis of prospective epidemiological studies (N=347,747) concluded that there was not consistent evidence that saturated fat increased the risk of cardiovascular or coronary heart disease.<sup>28</sup> Prior investigations that reported such associations might have been influenced by macronutrients that were substituted for saturated fat or variance in the type of fatty acids within foods. This topic remains highly controversial and it highlights the importance of stressing the total diet over time, rather than giving too much emphasis to specific food components.

The increased risks for cardiovascular disease associated with ingestion of *trans* fats that are formed during processing of certain foods might lead to the classification of all *trans* fat as “bad.” However, a type of *trans* fat that occurs naturally from ruminant animal sources (dairy and meat), conjugated linoleic acid, has beneficial effects on metabolic function and physiological outcomes. In contrast to the atherogenic nature of synthetic forms of *trans* fat formed during partial hydrogenation of vegetable oils, conjugated linoleic acid formed during bacterial biohydrogenation in the rumen can have beneficial effects on cardiovascular disease, diabetes, immune response, energy distribution, and bone health.<sup>29</sup> To avoid this confusion, the US Food and Drug Administration has excluded naturally occurring *trans* fat, which is in a conjugated system, from its definition of *trans* fat for nutritional labeling.<sup>30</sup>

Eggs and soy are other foods that can be difficult to classify. Egg whites are low in cholesterol and high in protein, yet they are so low in zinc that they can induce a zinc deficiency when used as a primary or sole source of protein.<sup>31</sup> Similarly, soybeans have health-promoting properties, but also contain phytates, which diminish absorption of zinc and iron.<sup>32</sup> Thus, foods like egg white and soy cannot be classified as completely good or bad, but rather their value is more appropriately determined within the context of the total

diet. With a plethora of food items in the average supermarket and an infinite array of recipe combinations, the futility of attempting to sort all food items into dichotomous categories becomes evident, leading to confusion and frustration. Thus, the total diet approach, with its emphasis on long-term eating habits and a contextual approach that incorporates nutrient-rich foods, provides more useful information to guide long-term food choices.

### Controversies with the Total Diet Approach

The total diet approach can be misinterpreted as legitimizing unlimited consumption of foods with low nutrient density. In contrast, this Position Statement and the Academy’s Practice Paper on nutrient density consistently emphasize the importance of limiting intakes of foods that are high in saturated and *trans* fats, added sugars, salt, and alcohol, so that the overall pattern of food and beverage intake meets nutrient needs without exceeding energy limits.<sup>16</sup> Thus, foods that are low in nutrient density are appropriate in quantities consistent with energy needs, especially when they are only occasional treats (eg, special treat of a brownie) or when they contribute to the enjoyable flavor of foods with high nutrient density (eg, a bit of honey added to yogurt). This is consistent with the DGA, which encourage consumers to avoid oversized portions and “account for all foods and beverages consumed and assess how they fit within a total healthy eating pattern.”<sup>1,7,8</sup>

Choosing a variety of foods has been a cornerstone principle in dietary guidance over the years. That emphasis has evolved to a more specific encouragement of varied choices of nutrient-dense items within basic food groups. The concept of choosing a variety of nutrient-dense food and beverages is encompassed by the total diet approach to food and nutrition communication because it is readily understood by consumers and has validity as an indicator of overall dietary quality.<sup>33</sup>

### WHY WE EAT WHAT WE DO

The Social Ecological model described in the next section is a guide for understanding why we eat what we do. As presented in the DGA (Figure), the So-

cial Ecological model encompasses individual factors, environmental settings, sectors of influence, and social and cultural norms and values.

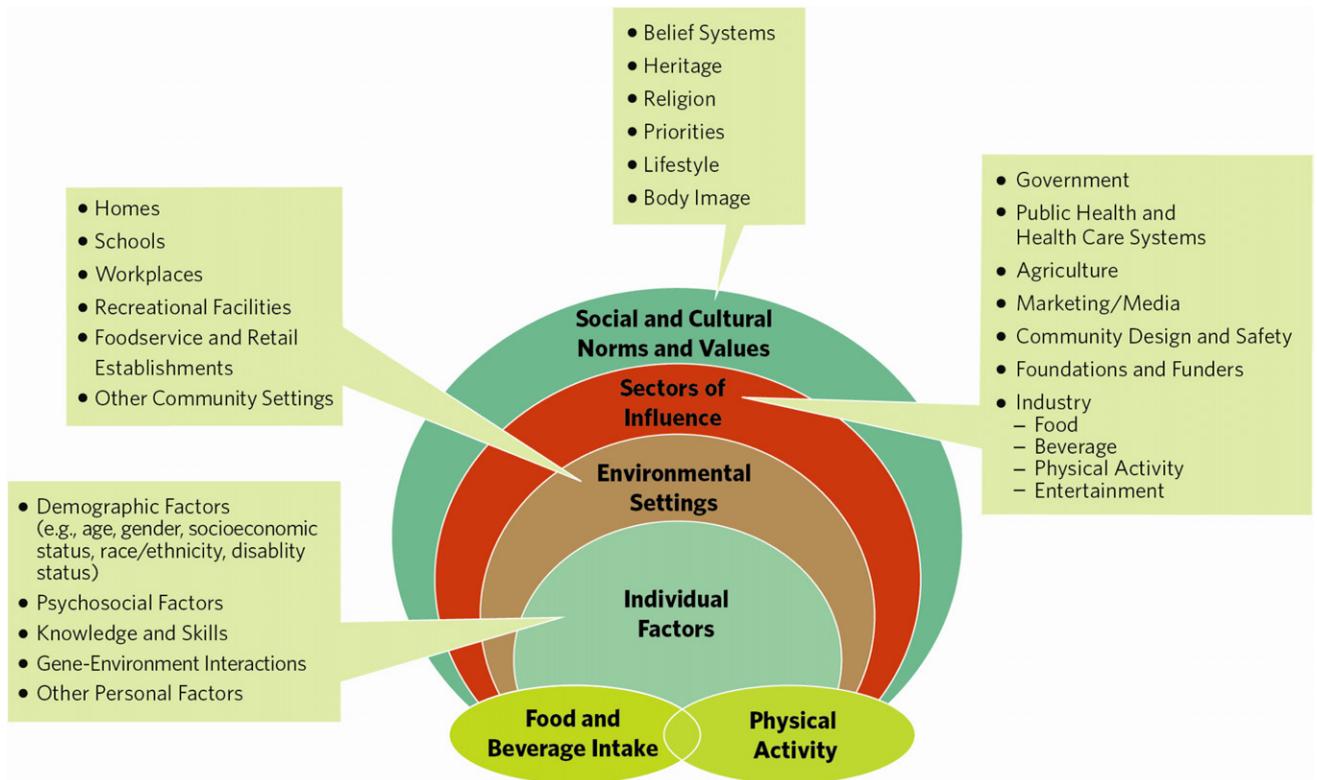
### Individual Factors

**Taste and Food Preferences.** Taste is often the most important factor influencing food choice.<sup>3</sup> Basic taste sensations—sweet, sour, bitter, salty, umami (L-amino acid), and fatty acids—are affected initially by genetics, but these can be modified by physiological and metabolic variables, such as feelings of contentment and satiety,<sup>34</sup> as well as age, race/ethnicity, cultural forces, and experiences.<sup>35</sup> Children have a natural taste preference for sweet and salty, with a rejection of bitter and sour. Yet early familiarization with healthy foods that might be rejected initially by children can increase consumption, as preferences are changed by repeated experiences.<sup>36</sup>

Energy-dense foods and beverages are ubiquitous in our food environment and young children often learn to prefer them.<sup>37</sup> Because strict avoidance of these foods can induce feelings of deprivation, small portions of high-energy foods on special occasions can be included within the context of the total diet approach. Thus, MyPlate encourages families to “make treats ‘treats,’ not every day foods.”<sup>8</sup>

**Balancing Food and Physical Activity for Weight Control.** Nutrition is a contributor to food choices, although it is less of a personal concern for most consumers than taste.<sup>3</sup> Nutrition knowledge is also positively associated with overall diet quality<sup>38</sup> and weight loss in dieting women.<sup>39</sup>

Energy density is a concept that can help in balancing energy needs to improve weight loss and maintenance. Generally, foods and food patterns that are high in fat have high energy density, and those high in water and/or fiber have low energy density. Because diets with low energy density are supportive of weight loss and maintenance, energy density can help individuals achieve and maintain healthy body weights. It strengthens the position that the total dietary pattern should be emphasized, rather than an overly restrictive reliance on specific food components in a diet.



**Figure.** The Social Ecological Model. Reprinted from reference 1.

**Physiological Influence.** Whenever possible, the Academy encourages food and nutrition practitioners to avoid overly simplistic messages that do not take overall dietary quality into account. For example, advising people to buy only fresh fruits and vegetables is unnecessarily restrictive, because frozen, canned, and dried forms can have advantages in terms of price, seasonal availability, storage, etc. Nevertheless, there can be individual circumstances, such as food allergies/sensitivities, that warrant specific food avoidance. Special food recommendations might also be needed to accommodate conditions, such as digestive decline, poor dental health, swallowing difficulties, bone demineralization, dementia, and/or diminished basal metabolism that are associated with aging. Disease states and treatments, such as dialysis for chronic renal failure<sup>40</sup> and some cancer chemotherapies,<sup>41</sup> also change food practices. For example, patients with renal failure tend to dislike sweet foods, vegetables, and red meats, while protein foods (eg, eggs, cheese, meat) often become unpleasant for patients undergoing treatment for cancer. Due to the great influence of pathophysiologies on food choices and nutrient needs, it is impor-

tant to stress that the total diet approach is designed for a healthy population, rather than individuals with exceptional dietary needs.

**Time and Convenience.** One of the most significant influences affecting food choices is the desire to limit the amount of time spent in food preparation and nutrition monitoring in our rapidly changing lifestyle. In the 2011 Trends Survey, 62% of American adults indicated that it “takes too much time to keep track of my diet” as a reason for not eating healthier.<sup>2</sup> While approximately 60% of American mothers are trying to juggle work with families, many working mothers prefer to spend <15 minutes to prepare a meal.<sup>42</sup> When parents and food providers have demanding work schedules, such as long hours away from home or evening shifts, they often cope with time challenges by using more takeout meals and precooked entrées and missing family meals.<sup>43</sup> With attention to the total diet, nutritional quality does not have to be sacrificed for convenience, as demonstrated by the rising availability of nutritious fast food in today’s marketplace (eg, fresh, pre-prepared meals

and meal components in grocery stores). Even traditional fast food can be an occasional feature of a balanced diet, as demonstrated in the Table.

### Environmental Settings

**Environmental Factors.** In general, people eat more when they are served large portions of food. Wansink identified four categories of environmental factors that interact to affect the amount of food eaten.<sup>44</sup> These include environmental conditions, such as lighting, odors, and sounds that affect pleasantness or ambiance of surroundings; convenience and accessibility; presence of other familiar and friendly people that promote eating; and distractions (watching TV) that can reduce a person’s tendency to self-monitor or stop eating.

### Sectors of Influence

**Abundance of Functional and “Miracle” Foods.** Consumer demand for nutritious foods has stimulated the food and agriculture industries to promote an expanding array of products that are marketed as functional foods. Functional foods are whole foods or fortified, enriched, or enhanced foods that

**Table.** Sample menu<sup>a</sup> with a fast-food lunch based on the 2010 Dietary Guidelines for Americans food group recommendations for a 2,000-calorie diet<sup>b</sup>

Meals and items	Amounts
<b>Breakfast</b>	
Cereal, wheat flakes (eg, Wheaties <sup>c</sup> )	3/4 cup
Milk, 1% low-fat	3/4 cup
Blueberries, fresh	1/2 cup
English muffin, whole-wheat with raisins	1
Peanut butter, unsalted	1/2 Tbsp
Tomato juice, low-sodium	1/2 cup
Coffee	1 cup
<b>Lunch</b>	
Grilled chicken sandwich with tomato, lettuce, and non-mayonnaise spread on bun	1
Latte (espresso coffee with 1% milk)	19 oz
Salad, with lettuce and vegetables (tomatoes and vegetables (tomatoes and/or carrots)	1 cup
Salad dressing, ranch, reduced calories	1 Tbsp
<b>Dinner</b>	
Stir-fry shrimp with vegetables	
Shrimp, steamed or boiled	1/2 cup
Broccoli, chopped, fresh, cooked	1/2 cup
Carrots, sliced, fresh, cooked	1/2 cup
Mushroom pieces	1/2 cup
Green onions, chopped	1/2 cup
Oil, canola	2 tsp
Rice, brown, cooked	3/4 cup
Pear	1 small
<b>Snacks</b>	
Yogurt, plain, fat-free, vitamin D–fortified	1 cup
with strawberry halves, raw	1 cup
and topped with granola	1/4 cup
Banana, medium (7-in to 7 7/8-in long)	1 medium

<sup>a</sup>Menu prepared with MyPlate FoodTracker; more sample menus are available at [http://www.choosemyplate.gov/food-groups/downloads/Sample\\_Menus-2000Cals-DG2010.pdf](http://www.choosemyplate.gov/food-groups/downloads/Sample_Menus-2000Cals-DG2010.pdf).

<sup>b</sup>Nutrient totals: 1,987 calories (23% from protein, 57% carbohydrates, 23% from total fat, 5% from saturated fat; 3% from added sugars); 250 mg cholesterol; 37 g fiber. The menu meets all Dietary Reference Intake—based daily targets for vitamins and minerals except sodium (109%) and vitamin E (87%).

<sup>c</sup>General Mills, Inc.

have a potentially beneficial effect on health when consumed as part of a varied diet on a regular basis at effective levels.<sup>45</sup> Also, special foods free of allergens and foods with enhanced levels of prebiotic and probiotic components are becoming more available in the marketplace. In addition, new biotechnologies have enhanced the quality, safety, nutritional value, and variety of avail-

able foods.<sup>46</sup> Demand for such products is strong. For example, in 2011, 48% and 39% of consumers reported increasing intakes of berries and foods with n-3 fatty acids, respectively.<sup>2</sup> While many foods and products have legitimate functional benefits, Americans spend billions of dollars a year on unneeded products and treatments, including food and supplement products that

make egregious health claims with little or no scientific evidence of effectiveness. The increasing abundance of functional foods and products that make exaggerated health claims can contribute to increased energy intakes if individuals tend to think it is acceptable to eat larger quantities of foods and beverages that are “good” for them, such as sugar-sweetened smoothies. As consumer choices continue to expand, food and nutrition practitioners need to stay current regarding changes in the food supply and factors that affect food and lifestyle choices.

**Economics.** A 2012 Gallup poll showed that 71% of Americans worry “a great deal” about the economy,<sup>47</sup> and cost/economics is now the number two reason why people make the food choices they do, behind taste.<sup>48</sup> Although a USDA report found that most fruits, vegetables, and other healthy foods were less expensive according to weight or portion size than those high in saturated fat, added sugar, or sodium,<sup>49</sup> financial issues have been associated with limited compliance with dietary guidelines among low-income women.<sup>50</sup>

**Media and Marketing.** Television, magazines, and other media are powerful forces influencing the food choices of Americans. In 2012, a ground beef ingredient called lean finely textured beef was referred to as “pink slime” in a televised interview with a celebrity chef. Within weeks, talk-show hosts and other media personalities joined journalists and food activists in expressing negative views of this form of ground beef and criticisms went viral via social media. Product sales plummeted, forcing some producers to close production plants and/or change methods of capturing beef trimmings used in ground beef.

In addition to news and entertainment program content, commercial messages also influence food choices. In 2006, 44 companies that marketed food to children spent \$1.6 billion on children’s ads, with the bulk for carbonated beverages, fast food and other restaurant food, and breakfast cereals.<sup>51</sup> Television advertising accounted for almost half of the expenditures in 2006, but newer forms of electronic marketing (eg, text messages, Internet games,

tweets) are increasingly dominant outlets for marketing promotions, especially those aimed at children and young adults. Addressing marketing issues has become increasingly complex with stealth marketing, as messages and product placements are inserted into movies, TV shows, video games, etc, rather than discrete, identifiable advertisements and commercials.

A survey of 12,642 adolescents showed that students who watched more television ate less fruit and vegetables, ate more candy and fast food, and skipped breakfast more often than teens who watched less television.<sup>52</sup> Similarly, adults in Australia who were high viewers of television ( $\geq 3$  hours/day) ate more fast food than those who watched less.<sup>53</sup>

**Perception of Product Safety.** Science-based reports about food-safety issues are often oversimplified by news reports and media discussions, or misinterpreted due to personal beliefs. Confidence in product safety has been eroded because of food-borne illness outbreaks, product recalls, and contamination controversies (eg, acrylamide in fried foods, bisphenol A in plastic containers, *Escherichia coli* in spinach).<sup>54</sup> In these circumstances, it is increasingly important for food and nutrition practitioners to be familiar with the scientific evidence regarding food-safety issues and to help consumers make sound decisions when weighing options for food-product purchasing and handling.

### Social and Cultural Norms and Values

**Culture.** Cultural food practices not only affect taste preferences, but also shopping habits, manners, communication, and personal interactions. In 2012, the minority population was the fastest growing segment of the US population, with 50.4% of children under the age of 1 year classified as minority.<sup>55</sup> As people from varying backgrounds become acculturated into US society, their dietary habits tend to convert from patterns of higher intakes of fruit and vegetables with smaller overall portion sizes to dietary patterns more typical in the United States.<sup>56</sup> Sensitivity to what might be considered “good” or “bad” by people from varying cultures is critical for food and nutrition

practitioners who have the complex job of tailoring advice to each individual within a cultural context.

**Attitudes and Beliefs.** Perceptions, attitudes, and beliefs about nutrition have shifted in the last half-century due to various social trends, media, marketing, and the wealth of instant information available in cyberspace. One shift that has been documented is the attitude that “Diet and nutrition are important to me personally,” with 89% of consumers agreeing in 2011, as compared to 79% in 1991.<sup>2</sup> Newer processing and preparation techniques, innovative information technologies, familiarization of global cuisines, a greater diversity of cultures, interest in fresh organic foods, concerns for sustainability of agricultural practices, and a dramatic increase in food away from home are revolutionizing the American diet. One might remember a typical meal of the 1950s as being rather monotonous by today’s standards (eg, steak, onion rings, lettuce wedge with Thousand Island dressing, and baked potato with toppings). In contrast, today’s upwardly mobile consumers might use a smart phone application to find food outlets for the best sushi, fusion cuisine, molecular gastronomy, and super-grain entrees (eg, faro, quinoa).

### COMPLEXITIES OF CHANGING EATING BEHAVIORS

The impact of nutrition information on promoting healthy lifestyles depends on how effectively nutrition messages are communicated. Nutrition information must be presented with sufficient context to provide consumers with a broader understanding of issues and to determine whether it applies to their unique needs.<sup>14</sup> Communications and educational programs also must emphasize the importance of considering a food or meal in terms of its contributions to the total diet. This type of communication can be more effective when educators utilize appropriate theories and models of factors related to human behavior.

Simply providing information can sometimes be effective in promoting healthy behaviors, but communications are often more effective when guided by health-behavior theories and models. There is no one “best” theory or

model, but analyses of dietary and physical activity interventions concluded that certain theoretical constructs (ie, self-monitoring, prompting intention formation, prompting specific goal setting, giving feedback, and prompting review of behavioral goals) contribute to program effectiveness.<sup>57</sup>

### ADAPTING BEHAVIOR-ORIENTED THEORIES FOR FOOD AND NUTRITION COMMUNICATION

**Knowledge-Attitude-Beliefs.** One of the simplest procedures for food and nutrition communication is based on the faulty assumption that a person who is exposed to new information will attend to it, gain new knowledge, change attitude, and improve dietary patterns.<sup>58</sup> This relatively simplistic approach can be effective if the individual is already motivated and the new information is easy to follow. For example, a list of foods that are high in iron can successfully trigger dietary improvement for someone concerned about a diagnosis of anemia. However, without such a “teachable moment,” increased knowledge (memorized list of high-iron foods) is often insufficient to change habitual behaviors. This is particularly true if following the advice is not congruent with personal taste preferences or social/cultural norms, or the recommended foods are not available or affordable in the person’s daily environment (such as home, work, or school).

**Health Belief Model.** The Health Belief Model<sup>59</sup> focuses on individuals’ knowledge and beliefs as the target for health education. An example is the promotion of foods high in folate to reduce the risk of certain birth defects. This model explains human behavior and readiness to act via four main constructs: perceived susceptibility (“How likely am I to have a baby with a neural tube defect?”), severity (“How bad would it be to have a baby with this condition?”), benefits (“Will I have a happier or healthier family if I choose folate-rich foods?”), and barriers (“How hard will it be to eat a diet with adequate folate?”), along with self-efficacy (“How confident am I that I can succeed in eating a folate-rich diet?”). The model is useful when the target audience perceives a problem behavior or condition in terms of health motiva-

tion. Yet many consumers “tune out” repeated messages of gloom and doom for habits that seem common and without immediate negative consequences.

**The Transtheoretical Model.** The Transtheoretical Model describes learners in terms of their progress through a series of behavioral stages.<sup>60</sup> Constructs of this model include stages of change, processes of change, self-efficacy, and decisional balance (pros/cons). Educators can use the Transtheoretical Model as a guide to tailor educational messages to learners’ needs and readiness for behavioral change.

**Social Marketing.** Social marketing uses marketing principles to influence human behavior in order to improve health or benefit society.<sup>61</sup> Social marketers create and maintain exchanges of target audience resources, such as money or time, for perceived benefits, such as feeling better or more independent. For example, the Partnership for Food Safety Education’s Fight BAC! campaign, a health-oriented communication program that utilizes social marketing principles. Just as educators might use a range of theoretical concepts to design comprehensive interventions, marketing campaigns can also be more effective when important determinants of behavior are identified and utilized.<sup>62</sup>

**Social Cognitive Theory.** The theories and models cited here are concerned mainly with characteristics of individual consumers. When problem behaviors are closely tied to social motivations in addition to individual knowledge and attitudes, comprehensive theories might be more effective tools for planning nutrition communications. For instance, if an educator needs to promote milk-based foods as sources of dietary calcium, the Social Cognitive (Social Learning) Theory can be utilized to address behavioral capability (knowledge and skills to select and prepare milk-based foods), reciprocal determinism (environment forces such as availability in vending machines and restaurants that influence, and are influenced by, individuals’ choices), expectations (beliefs about osteoporosis and other possible consequences linked to insufficient calcium),

self-efficacy (confidence in one’s ability to consume more milk foods), observational learning or modeling (seeing respected peers and other role models drinking milk), and reinforcement (positive or negative feelings that occur when behavioral changes are practiced).<sup>58</sup>

**The Socio-Ecological Dimension.** In addition to programs that target knowledge, skills, and behavioral practices of individuals, it is often appropriate to promote behavioral changes and dietary improvements at the broader organizational or societal levels. The Social-Ecological Model (Figure) illustrates that various elements of a person’s social context affect that person’s lifestyle food and beverage choices and other lifestyle behaviors.<sup>1</sup>

## REDUCING NUTRITION CONFUSION

Regardless of the theoretical basis as summarized here, messages are more likely to result in healthy dietary and lifestyle changes when they have a consistent emphasis on a total dietary pattern that is balanced and moderate. Unless they provide sufficient context for determining whether information applies to an individual’s needs and preferences, communicators might not be effective in achieving their educational goals.<sup>14</sup>

To reduce confusion from the high volume and apparent inconsistencies of nutrition advice, the following can be considered when designing nutrition-education messages or programs for the public:

- Promote variety, proportionality, moderation, and gradual improvement. Variety refers to an eating pattern that includes foods from all MyPlate food groups and subgroups. Proportionality, or balance, is eating more of nutrient-dense foods and beverages (fruits, vegetables, whole grains, fat-free or low-fat milk products), and less of others (high in saturated or *trans* fats, added sugars, cholesterol salt, and alcohol). Moderation can be accomplished by limiting overall portion size and choosing foods to limit intake of saturated and *trans* fats, added sugars, cholesterol, salt, and alcohol. To make

gradual improvement, individuals can take small steps to improve their diet and lifestyle each day.<sup>1,8</sup>

- Emphasize food patterns, rather than individual nutrients or individual foods.
- Be aware of social, cultural, economic, and emotional meanings that might be attached to some foods and allow for flexibility whenever possible. Social and cultural aspects of food consumption are essential for planning educational programs to help correct nutritional problems of individuals and groups.<sup>56</sup>
- Provide guidance on appropriate ways to include products such as functional foods in a healthy diet.
- Highlight the importance of obtaining nutrients from foods, rather than unnecessary reliance on supplements. Although nutrient modifications are recommended for some specific needs, a wide variety of foods remains the preferred overall source of nutrients.<sup>1</sup> Numerous bioactive compounds in foods such as phytochemicals have been identified that have potential health benefits. Yet the precise role, requirement, interactions, and toxicity levels of many of these are still unclear. Their potential value might not be maintained when components are isolated and consumed as supplements or fortification ingredients. Furthermore, whole foods might contain additional nutritional substances that have not yet been discovered. Thus, appropriate food choices, rather than supplements, should be the foundation for achieving nutritional adequacy.
- Stress that physical activity complements the total diet approach, as it permits individuals to help manage weight and lowers the risk of premature diseases.

## ROLES OF FOOD AND NUTRITION PRACTITIONERS

Food and nutrition practitioners have a responsibility to communicate unbiased food and nutrition information that is culturally sensitive, scientifically accurate, medically appropriate, and

tailored to the needs and preferences of the target audience.<sup>14</sup> Some health and nutrition professionals and many “pseudo-experts” promote specific types of foods to choose or avoid. A more responsible and effective approach is to help consumers understand and apply the principles of healthy diet and lifestyle choices. Unless there are extenuating circumstances (severe cognitive or physical limitations), the total diet approach is preferred because it is more consistent with research on effective communication and inclusive of cultural/personal differences. In order to achieve this goal, the Board of Directors of the Academy of Nutrition and Dietetics approved the objective to focus nutrition messages on total diet, not individual foods.

### Effective Communication Strategies

Strategies recommended to increase the effectiveness of educational messages and counseling interventions include:

- focus on high-priority personal and/or public health needs;
- provide a proactive, positive, and practical approach that helps clients and learners set and achieve behaviorally focused goals;
- promote an enjoyable pattern of diet and activity as part of a long-term overall healthy lifestyle;
- encourage parents, teachers, and other role models to help children become accustomed to healthy food and lifestyle choices;
- use successful educational strategies and technologies with appropriate theories and models to promote behavioral change; and
- evaluate and share information on the effectiveness of communication strategies used in food and nutrition programs.

As leaders in nutrition communication, food and nutrition practitioners need to continue to strengthen skills, update competencies, and document outcomes. Suggested techniques are to:

- partner with industry, government, academia, and organizations to promote environments and messages that facilitate

healthy food, activity, and lifestyle choices;

- use a full range of available and appropriate communication technologies and embrace newer channels, such as social media, to communicate with professional colleagues and the public;
- act as role models of active participation in local and professional associations and maintain state-of-the-art knowledge through continuing education; and
- assume an active professional and unbiased approach to promoting healthy eating and physical activity patterns.

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