

# Elevate HEALTH



fitness. sports. nutrition.

A quarterly research digest  
of the President's Council  
on Fitness, Sports & Nutrition

Series 15, Number 1  
March 2014

A photograph of a woman with long brown hair, wearing a green top, smiling as she looks at a young girl with a ponytail, wearing a blue shirt. They are in a grocery store, standing at a counter with a scale. The girl is placing tomatoes on the scale. The background shows shelves of fresh produce like tomatoes and avocados.

Improving access to healthy food  
is integral to helping Americans obtain  
a healthy diet



President's Council on  
Fitness, Sports & Nutrition

# Opening Commentary

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The findings and conclusions in this paper are those of the authors and do not necessarily represent the official position of the President's Council on Fitness, Sports & Nutrition.

As I've traveled across this great country, one thing I've learned is that with all of our diverse language, culture, backgrounds, and economic strata, we share resounding commonalities.

People of all ages, abilities, and aspirations talk about their desire for a healthy lifestyle. In order to be the best you can be and to achieve your dreams you must have a strong foundation, and that foundation includes good health. The truth of the matter is that there are no shortcuts to good health. It requires dedication to consistent lifestyle habits that include nourishing the body with nutrient-rich foods and being physically active.

Making change can be difficult for some, so your approach must be as smart as your intentions. Gradual improvements that take small steps tend not to overwhelm and can facilitate the development of new habits. Your chance for success is vastly improved by first building a supportive team around you. This could mean involving the whole family or asking a friend or co-workers to commit to starting a healthy lifestyle journey with you. We all lead very busy lives in our own right, and my life is no different. When I'm home, I make it a priority to involve my children in all aspects of our nutrition, from making selections at the grocery store, to helping prepare the food. We sit down as a family and have our meals together uninterrupted by outside distractions. We are not perfect eaters, as I don't believe such people exist. We are healthy eaters on balance and we focus on smaller portions, eating until we're satisfied, not eating until we're stuffed. Our family meals have also become a great time to connect with each other and discuss what is going on in our lives and our plans for the future.

What we eat at the dinner table is not our only definition of healthy living. Our environment plays a significant role as well, everything from our neighborhood to our schools, churches, and access to healthy resources. The availability of nutritious food must be widespread where you work and live, and where your kids learn and play. It's all about increasing the opportunities to make good choices that empower people to make better food and other lifestyle selections.

In this issue, Rachel K. Johnson, PhD, MPH, RD, FAHA, and Sarah A. Amin, MPH, use the latest research to explore America's current dietary patterns and food environment. While there have been significant changes that have addressed a variety of health concerns across the United States, our work is far from over in ensuring that all Americans are first educated about the importance of good nutrition and that they have equal access to a healthy food environment. The success of a country involves numerous variables, but good nutrition and overall health are two of the most critical.

“ The availability of nutritious food must be widespread where you work and live, and where your kids learn and play, ”

Dr. Ian Smith



# Room for Improvement: Americans' Dietary Patterns and Food Environment



*The obesity epidemic is unquestionably among the top public health issues facing the United States, affecting more than one-third of adults and 17% of children and adolescents.*

## Introduction and Definitions

The obesity epidemic is unquestionably among the top public health issues facing the United States, affecting more than one-third of adults and 17% of children and adolescents.<sup>1,2</sup> In recent years, obesity rates have been leveling off and even decreasing in some parts of the country.<sup>1-3</sup> However, the recent classification of obesity as a disease by the American Medical Association (AMA) highlights the need to bring together both individual and population-wide public health strategies to combat this problem.<sup>4,5</sup>

Diet plays a major role in the obesity epidemic and also increases Americans' risk of chronic diseases such as type II diabetes and heart disease.<sup>6-16</sup> Americans' weight gain can be attributed to an energy gap—when more calories are consumed than are needed over time. Put simply, excess fat accumulates

in the body when energy intake from food and beverages exceeds energy spent on metabolism and physical activity.<sup>17</sup>

Decreasing obesity and promoting a healthy diet is a priority of *Healthy People 2020*, released by the U.S. Department of Health and Human Services.<sup>18</sup> Continued efforts are needed to promote the public's knowledge of healthy foods and to ensure that these foods are easily available and affordable.<sup>18</sup>

To promote healthy dietary patterns along with regular physical activity, the environment we live in must reinforce behaviors that contribute to a healthy weight.<sup>19-32</sup> In short, the healthy choice should be the easy choice for Americans. The role of the food environment—increased portion sizes, food advertising, fast food restaurants, accessibility to grocery stores, and food prices are all factors that influence Americans' dietary patterns.

## Welcome to *Elevate Health*

Jeffrey I. Mechanick, MD, Lead Editor

Beginning with the first issue of the President's Council on Fitness, Sports & Nutrition's (PCFSN) *Research Digest*, entitled "The Health Benefits of Physical Activity," in February 1993, there have been 82 highly informative articles covering a wide range of healthy lifestyle topics. These referenced scientific works are an important tool the PCFSN Science Board utilizes to communicate with approximately 1,500 subscribers primarily composed of researchers and academicians. Since the expansion of the Council's mission, topics cover a range that includes aspects of sports, physical activity and fitness, physical education, nutrition, and dietetics research.

Our editorial team, in association with the President's Challenge, has now invigorated this publication even more, with an enhanced focus on physical activity, sports, and nutrition as they relate to real contemporary issues. The format and layout of the digest has changed to provide an easier reading experience for our audience and each issue will include an introductory commentary by a member of PCFSN. We have even changed our name and design to reflect this priority; indeed, we are proud to *Elevate Health* for all Americans.

# Current Problem: Dietary Patterns

## Adults

After an upward trend over the past 30 years, the average caloric intake of adults has decreased since 2004 by approximately 75 calories per day.<sup>33</sup> In addition, the proportion of adults who reported participating in regular physical activity increased from 28% in 2008 to 33% in 2011.<sup>34</sup> Regular physical activity is defined as more than 300 minutes/week of moderate physical activity or more than 150 minutes/week of vigorous physical activity, according to the *Physical Activity Guidelines for Americans*.<sup>34</sup> This encouraging change in the energy gap—decreasing caloric intake and increasing physical activity—could help explain the leveling off of the obesity epidemic in children in New York

Decreased availability of healthy foods and decreased proximity to food stores such as grocery stores, supermarkets, and convenience stores is associated with poorer quality diet and obesity.



City, Philadelphia, California, and Mississippi.<sup>3</sup> A person's total energy intake is based on the amount of energy-yielding nutrients (protein, fat, carbohydrate, and alcohol) in

the foods they consume.<sup>35</sup> Fats such as butter, margarine, and oil contain more calories per gram (9 kcal/gram) compared to alcohol (7 kcal/gram; e.g., beer and wine), carbohydrates (4 kcal/gram; e.g., pasta, cereal, 100% whole wheat bread), and protein (4 kcal/gram; e.g., grilled chicken, steak).<sup>35</sup> Energy-yielding nutrient distributions shifted between 1971 and 2006.<sup>36</sup> Over this period, the percent of energy from carbohydrates increased (44% to 49%).<sup>36</sup> For fat and protein, the percent of energy decreased from 37% to 34% and 17% to 16%, respectively.<sup>36</sup>

When considering dietary recommendations to address the obesity epidemic, there should be a continued focus on decreasing total caloric intake and promoting healthy sources of carbohydrates and fats in the diet.<sup>36</sup> Replacing refined grains (such as white bread/pasta) with 100% whole grains (such as whole wheat bread and oatmeal) improves the quality of carbohydrates. Also, it is important to include healthy fats in the diet. Examples include omega-3 fatty acid food sources such as salmon and walnuts as well as omega-6 fatty acids found in avocados, canola oil, and grape seed oil. See Table 1 for how the current American diet contributes to the need for increased consumption of certain nutrients.

Some foods, like yeast breads and rolls, are on both the list of nutrients to increase and nutrients to limit. If these grain-based foods are made with a whole grain, such as whole wheat flour, they may be a good source of fiber. On the other hand, if they are made

**Table 1. Leading Sources of Dietary Fiber, Calcium, Vitamin D, and Potassium\***  
**How the Current American Diet Contributes to Nutrients to Increase**

Nutrients to Increase	Food Source	% Total Intake
<b>Dietary Fiber</b>	Yeast breads and rolls	10.9
	Fruits	10.2
	Legumes	8.0
	Potatoes (white)	6.4
	Biscuits, corn bread, pancakes, tortillas	5.9
<b>Calcium</b>	Milk <sup>a</sup>	22.5
	Cheese	21.6
	Yeast breads and rolls	7.3
	Coffee, tea, and other nonalcoholic beverages	4.4
	Biscuits, corn bread, pancakes, tortillas	3.6
<b>Vitamin D</b>	Milk <sup>a</sup>	45.1
	Fish and shellfish	14.4
	Eggs	5.4
	Ready-to-eat cereal	5.4
	Fruit juice	3.6
<b>Potassium</b>	Milk <sup>a</sup>	9.6
	Coffee, tea, and other nonalcoholic beverages	8.4
	Potatoes (white)	6.7
	Tomatoes, tomato/vegetable juice	5.9
	Fruit	5.8

<sup>a</sup> Milk = full fat, low fat, fat-free, and flavored milk

Source: O'Neil et al. 2012

\* The foods listed above are the top sources of dietary fiber, calcium, vitamin D, and potassium in the American diet. This is not meant to imply that these foods are the best sources for meeting people's needs for these nutrients.

**Table 2. Leading Sources of Calories, Added Sugars, Saturated Fat, and Sodium**  
**How the Current American Diet Contributes to Nutrients to Decrease**

Nutrients to Limit	Food Source	% Total Intake
<b>Calories</b>	Cakes, cookies, quick bread, pastry, and pie	7.2
	Yeast breads and rolls	7.2
	Soft drinks and soda (includes diet)	5.4
	Beef	5.0
	Alcoholic beverages	4.7
<b>Added Sugars*</b>	Soft drinks and soda (includes diet)	33.0
	Candy, sugars, and sugary foods	19.5
	Cakes, cookies, quick bread, pastry, and pie	14.4
	Fruit drinks and -ades	11.0
	Milk desserts <sup>a</sup>	5.4
<b>Saturated Fat</b>	Cheese	16.5
	Beef	9.1
	Other fats and oils	8.9
	Milk <sup>b</sup>	6.7
	Frankfurters, sausages, and luncheon meats	6.7
<b>Sodium</b>	Salt	22.6
	Yeast breads and rolls	8.7
	Cheese	7.4
	Frankfurters, sausages, and luncheon meats	6.6
	Condiments and sauces	5.2

<sup>a</sup> Milk desserts = ice cream, home-prepared puddings, ready to serve puddings, and custard  
<sup>b</sup> Milk = full fat, low fat, fat-free, and flavored milks

Source: Huth et al. 2013, O'Neil et al. 2012

\* Based on an age group ≥2 years (all other percentages were based on adults 19+ years)



with refined white flour and butter or shortenings, they will be low in fiber and may contribute unwanted saturated or trans fats and sodium. It is important to incorporate a variety of foods into the diet to ensure a balanced intake of nutrients. For example, when selecting fiber-rich foods, a person should not consume only breads but should also include fruits, vegetables, and legumes.

The top food and beverage sources of calories for American adults (19+ years old) include: cakes, cookies, quick breads, pastries and pies (7%), yeast bread and rolls (7%), soft drinks/soda (5%), beef (5%), and alcoholic beverages (5%)<sup>37</sup> (see Table 2).

*American children's diets are marked by intake of high-calorie foods and often lack the appropriate nutrients for growth and development.*

### Children

Childhood is a critical time for developing healthy dietary behaviors to carry into adulthood.<sup>39</sup> American children's diets are marked by intake of high-calorie foods and often lack the appropriate nutrients for growth and development.<sup>40</sup> Similar to adults, the excessive intake of calories is an underlying factor of the obesity epidemic in youth.<sup>41</sup> Obese children are at a higher risk for type II diabetes, which was previously considered an adult disease,<sup>42,43</sup> as well as high blood pressure and high cholesterol.<sup>44</sup>

Current dietary patterns in U.S. children represent an important target for change. Consumption of foods from milk and milk products, grains, and fruit and vegetable groups has been associated with decreased levels of obesity in adolescents.<sup>45</sup> It is important to include these food groups in children's diets, while at the same time being aware of how they are prepared. At a young age, children (2–6 years old) are consuming more foods high in added sugars, solid fats, and sodium including pizza/calzones, Mexican dishes, savory snacks, candy, and fruit juice.<sup>46</sup> This trend continues throughout childhood, with grain-based desserts being the top sources of calories for children 6–11 years old.<sup>47</sup> Popular food items in the diets of teens (12–19 years old) include soda, energy and sports drinks, and pizza.<sup>47</sup> An important factor contributing to the consumption of “empty calories” (calories from solid fats such as butter and items with added sugars such as soft drinks) among children is the increase in snacking (27% of daily calories), predominantly in the form of salty snacks and candy.<sup>48</sup>

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## What are the Dietary Guidelines for Americans (DGAs)?<sup>56</sup>

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The DGAs are a set of 23 recommendations intended to help Americans adopt a healthy diet.

### Three major DGA goals are:

- Incorporate physical activity and awareness of energy intake for weight management.
  - Increase consumption of food groups and nutrients including fruits, vegetables, whole grains, fat-free/low-fat dairy products, and seafood.
  - Limit consumption of foods containing sodium, saturated fats, *trans* fats, cholesterol, added sugars, and refined grains.
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## Socio-demographic Characteristics and Diet

Diet quality varies based on people's socio-demographic characteristics including age, sex, race/ethnicity, income, and education levels.<sup>49–51</sup> The Healthy Eating Index (HEI) measures diet quality based on adherence to the Dietary Guidelines for Americans (DGA), with a higher score representing a higher quality diet.<sup>52</sup> Children and older adults have higher HEI scores than younger and middle-aged adults. Hispanics also have better HEI scores than Whites and Blacks, as do females when compared to males.<sup>50</sup> As income increases, diet quality also improves.<sup>50</sup> Though the consumption of added sugars (sugars added to food during processing, cooking/meal preparation, or at the table)<sup>53</sup> has decreased overall in the United States since 1999,<sup>54</sup> there are socio-economic differences based on educational status, income, and race/ethnicity.<sup>55</sup> Low income, low education groups, African American men, and African American women had the highest intake of added sugars.<sup>55</sup>

## New Information: The Food Environment

Recent efforts to improve Americans' diets have shifted from a focus on the individual to the broad food environment.<sup>22,57</sup> There are numerous aspects of the food environment that may affect diet, including access and availability (such as proximity to grocery stores, supermarkets,<sup>58–61</sup> and fast food restaurants,<sup>62–64</sup>) food prices,<sup>65</sup> food advertising,<sup>32,66</sup> and food portion sizes.<sup>67–69</sup> There are also aspects of the interpersonal environ-



ment, such as family meals<sup>70,71</sup> and meals eaten away from home,<sup>72,73</sup> that can affect dietary patterns.

## Family Meals and the Home Environment

The daily ritual of family meals—defined by homemade foods and family members putting aside their work, school, and social commitments to gather around the table, has experienced a sharp decline since the 1960s.<sup>74</sup> An assessment of time use shows that from 1965–1966 and 2007–2008, time spent cooking decreased substantially.<sup>75</sup> Women spent more than 45 minutes less time cooking per day over this time period, and low-income groups demonstrated the steepest decline.<sup>75</sup> The increased number of mothers in the work place along with work-life stress contributes to this trend.<sup>76,77</sup> For example, full-time employed mothers are less likely to have adequate time to prepare food<sup>76,78</sup> and family meals than non-employed mothers.<sup>76</sup> Though young adults reported that they enjoy social meal occasions, time restraints often prohibit them from sitting down for a meal.<sup>79,80</sup> Another

potential barrier to young adults eating meals at home is lack of knowledge about food preparation.<sup>81</sup> Young adults scored low in an assessment of cooking skills and preparation and the majority reported negative views about cooking meals from scratch.<sup>81</sup> Often, these people resort to quick and easy options, such as fast food.<sup>79</sup> Though the impact of family meals on body mass index (BMI) is unclear,<sup>82,83</sup> its affect on positive dietary patterns is significant.<sup>83,84</sup> BMI is a calculation based on a person's height and weight. It is one way of assessing weight status (underweight, normal weight, overweight, and obesity) and disease risk.<sup>85</sup> To calculate your BMI, the National Heart, Lung, and Blood Institute offers an online calculator: [www.nhlbi.nih.gov/guidelines/obesity/BMI/bmicalc.htm](http://www.nhlbi.nih.gov/guidelines/obesity/BMI/bmicalc.htm).<sup>85</sup>

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## Body Mass Index (BMI) Categories<sup>85</sup>

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<b>Underweight</b>	Below 18.5
<b>Normal</b>	18.5–24.9
<b>Overweight</b>	25.0–29.9
<b>Obese</b>	30.0 and Above

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Regular family meals during the teen years are a good predictor of future dietary behaviors later in life.<sup>84</sup> However, outside of family meals, the home environment can also serve as a source of low-nutrient, high-calorie foods such as baked goods, candy, dairy-based desserts, and sugar-sweetened beverages for youth.<sup>86</sup> It is important to evaluate how the home environment contributes to food and meal offerings available to children. In adults, consistent family meals are associated with increased consumption of fruits and vegetables<sup>79,83</sup> and more desirable eating patterns, such as decreased fast food consumption.<sup>83</sup>

The type of foods served during family meals is of interest. Responses from a survey completed by 1,923 parents/guardians indicated that most of the participants served vegetables (70%) during family meals.<sup>77</sup> However, only 28% of the participants reported serving green salads on a regular basis and 21% had fast food two or more times per week.<sup>77</sup> Away-from-home family dinner options, such as fast food, other restaurants, home delivery, and takeout options were found to be associated with increased overweight/obesity in families.<sup>73</sup> Since this environment can substantially affect overall diet quality, emphasis should be placed on homemade meals that feature foods of high nutritional value.

### Fast Food Restaurants

Fast food is pervasive in the United States and has become a staple in the American diet.<sup>87,88</sup> Between 2007 and 2010, fast food accounted for 11% of adults' daily caloric intake with consumption increasing as age decreased.<sup>88</sup> Based on the percentage of calories consumed, fast food intake increased as weight status increased, and was highest for obese adults.<sup>88</sup> Consumption of foods away from home in younger populations (2–18 years old) is also rising and increased significantly between 1977 and 2006.<sup>89</sup> Fast food amounted to 13% of total energy intake in this age group.<sup>89</sup> Consumers of fast food have poorer dietary patterns than non-consumers and increased intakes of calories, total fat, saturated fat, trans fat, added sugars, and sodium.<sup>90</sup> Fast food enthusiasts also consume lower levels of fiber and vitamins.<sup>90</sup>

Although there have been efforts to reduce the availability of fast food, the impact of these efforts on adults' consumption of these foods is not known at this time.<sup>91,92</sup> Likewise, it remains uncertain whether increased access to fast foods is associated with a higher BMI.<sup>62</sup> It is clear, however, that low-income neighborhoods with high ethnic minority populations are more likely to have access to fast food establishments.<sup>62–64</sup> Restaurant proximity to school and home has been

Consumers of fast food have poorer dietary patterns than non-consumers and increased intakes of calories, total fat, saturated fat, trans fat, added sugars, and sodium.



shown to increase the frequency of consumption of restaurant foods in teens.<sup>63</sup>

Although the nutritional quality of menu offerings has increased in recent years, fast food restaurants fall short of achieving recommended HEI scores when measured against the DGA.<sup>93</sup> This includes poor access to fruit, dark-green and orange vegetables, legumes, and whole grains.<sup>93</sup> Improving the nutritional quality of menu offerings could be a way to influence consumers' food choices. Previous attempts to change fast food consumption behavior such as inviting customers to downsize fast food portions resulted in decreased calorie consumption.<sup>94</sup>

### Portion Sizes

Food portion sizes that exceed recommended serving sizes are a major contributor to excess calorie consumption.<sup>30,67,95,96</sup> Between 2000 and 2009, 147 increased portion-size foods entered the market including many fast food items such as burgers, pizza, and burritos as well as candy bars and beverages.<sup>30</sup> Fast food chains persist in introducing larger portion sized entrees, which alone can contribute considerably to calorie intakes. A comparison of food portion sizes in 2002 to their size at the time when they were introduced (1950s–1960s) indicated that they were between two to five times larger. When ready-to-eat prepared foods such as muffins, cookies, bagels, steak, and soda were compared to United States Department of Agriculture (USDA)/Food and Drug Administration (FDA) serving sizes, they

exceeded recommendations by two and eight times.<sup>97</sup> Americans have become attuned to growing portion sizes, which can affect their ability to self-regulate food intake.<sup>98</sup>

### Access to Healthy Food

The importance of reducing the consumption of unhealthy foods is linked to the need to target “food deserts” or food environments that lack supermarkets, farmers markets, or other retail options for healthy food.<sup>22,57</sup> Decreased availability of healthy foods and decreased proximity to food stores such as grocery stores, supermarkets, and convenience stores is associated with poorer quality diet and obesity.<sup>58–61</sup> There are also racial, ethnic, and educational level disparities related to access to stores that provide healthy foods.<sup>58,99–101</sup> In one study, 24% of African American participants and 5% of White participants lived in a neighborhood characterized as having low access to these stores.<sup>58</sup> This points out the ethnic disparities that exist in consumers' ability to access grocery stores and supermarkets. Improving access to healthy food is integral to helping Americans obtain a healthy diet.

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## Energy Density vs. Nutrient Density<sup>35</sup>

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**Energy Density** The measure of *calories* contained *per gram* of food.

Tip: Look for foods with a low energy density

Examples of foods with *low energy density* and *high nutrient density*:

- Vegetables, fruits, fat-free/low-fat milk

**Nutrient Density** The measure of *nutrients* contained *per calorie* of food.

Tip: Look for foods with a high nutrient density

Examples of foods with *high energy density* and *low nutrient density*:

- Cakes, cookies, doughnuts, pizza, soda
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## Food Marketing

Food marketing is widespread in the United States and can affect the obesity epidemic by influencing people's food purchasing behavior and consumption.<sup>32</sup> For example, television advertisements typically promote foods high in fats and sugars.<sup>25</sup> Food marketing strategies can reach the consumer in a variety of ways through the "four P's" of product, price, promotion, and place.<sup>32,102</sup> These include, but are not limited to, advertising via media channels such as television, the Internet, print, radio, movies, and games.<sup>32,103,104</sup> Product promotion can also occur in the retail environment or in-store through product branding, packaging, labeling, product placement, product assortment,<sup>32,102,105</sup> food prices,<sup>32,102,106</sup> and price promotions/discounts.<sup>32</sup>

Limiting food marketing to children has become a public health priority in terms of the nutritional quality of foods promoted<sup>104</sup>

*The majority of foods advertised to children on websites are marked as "foods to avoid" by the Institute of Medicine (IOM) standards.*

and their corresponding impact on diet-related health.<sup>107,108</sup> Though there have been marginal improvements to television advertisements,<sup>103</sup> a recent study found that 86% of ads seen by children promoted foods high in saturated fat, added sugars, and sodium.<sup>104</sup> The majority of foods advertised to children on websites are marked as "foods to avoid" by the Institute of Medicine (IOM) standards.<sup>109</sup> The food industry prioritizes marketing to younger populations by spending 63% of marketing on carbonated beverages, fast food, and breakfast cereals and often using animated or fictional characters that appeal to children.<sup>108</sup> Evidence supports that food advertising is associated with consumption of energy-dense and nutrient-poor foods, particularly fast food and soft drinks.<sup>107,108</sup>

Food marketing strategies are also used in the retail setting.<sup>32,102</sup> Product assortment is used by retailers to direct the types, amount, and variety of food items offered for sale.<sup>102</sup> In terms of the product itself, the package design, labeling, size of the packaging, and price affect purchasing and dietary behavior.<sup>32,102</sup> Within the store, the presence and placement of healthy versus unhealthy food items on store shelves—such as end-of-aisle displays—are also important factors.<sup>32,102</sup> Ensuring that healthy foods are both available and effectively promoted—such as integrating checkout aisles that offer healthier food options instead of energy-dense snacks—can be adopted by food stores.<sup>102</sup> This should be paired with decreasing access to unhealthy foods to help shoppers make healthy purchasing decisions.<sup>102</sup>

## New Information: Policies that Have the Potential to Change Dietary Patterns Sugar Sweetened Beverages

Reducing Americans' excessive consumption of added sugars is important to improving dietary patterns.<sup>104,105</sup> The scientific evidence linking sugar-sweetened beverages (SSBs) and added sugars intake with obesity and chronic diseases is increasingly conclusive.<sup>110,111</sup> SSBs are of particular concern since they are the number one contributor to added sugars intake,<sup>49,53</sup> and since calories consumed in beverages are not compensated for as well as those consumed in solid foods. In other words, since beverages do not provide the same satiety (fullness) that solid foods do, they may promote excess energy intake.<sup>112</sup>

Historically, strategies targeting the obesity epidemic have focused on the individual by addressing personal eating behavior and education.<sup>113</sup> However, there is evidence to suggest that the impact of these one-on-one approaches is limited and that targeting the overall environment holds more promise for improving dietary and physical activity patterns.<sup>114,115</sup> Changing the environment can reinforce personal responsibility.<sup>113</sup> This has applications to SSBs by addressing the access, pricing, portions, and marketing of these products.<sup>116</sup> A price increase on SSBs via an excise tax has been proposed as a potential policy mechanism to reduce consumption.<sup>117</sup> According to economists,<sup>118</sup> a 10% increase in soft drink prices could reduce consumption by 8 to 10%. Based on this projection, it has been predicted that a penny-per-ounce excise tax on SSBs would yield a 1.5% reduction in adult obesity prevalence, a 2.6% reduction in the incidence of diabetes, and \$17.1 billion savings in medical costs over 10 years.<sup>119</sup> However, the impact of these theoretical projections cannot be realized until the policy is put into practice somewhere and evaluated. Given that recent trends indicate added sugars and SSB intake are declining in the absence of a national tax,<sup>120</sup> further research is needed on what other factors may already be at play that are contributing to reduced consumption.



## Menu Labeling

Menu labeling in restaurants—through posting calorie information adjacent to a food item—is another public health tool that can better inform Americans about their food choices. This is supported by research indicating that consumers underestimate the calorie content in restaurant meals.<sup>121</sup> A provision of the Patient Protection and Affordable Care Act of 2010 requires that restaurants with 20 or more locations nationally list calorie contents on menus and menu boards.<sup>122</sup> Selected areas of the country including New York, parts of Seattle, and the states of Washington, California, and Massachusetts implemented menu labeling as early as 2008.<sup>123</sup>

Evaluations of the impact of menu labeling efforts and the restaurant/meal environment have been mixed.<sup>124–126</sup> A comparison of a county that required menu labeling to a county that did not found that there were negligible differences in the promotion of healthy eating and the presence of healthy food options.<sup>125</sup> However, elsewhere it was reported that the nutritional quality of menu offerings improved<sup>124</sup> and that reductions of calories, saturated fat, and sodium were observed in entrees following menu labeling.<sup>126</sup>

The effect of menu labeling on food purchasing behavior has mostly shown a minimal impact on calories purchased by both adults and children.<sup>127–129</sup> However, others have reported decreases in calories purchased.<sup>130,131</sup> One study found a decrease in calories purchased for specific types of restaurants, namely coffee and taco chains.<sup>131</sup> Reasons proposed for these conflicting findings relate to consumers' inherent preferences for high calorie, salty, and sugary foods<sup>123</sup> as well as the possibility that they ignore or do not understand calorie information.<sup>123,132</sup>

A consumer's ability to navigate posted calorie information in restaurants can be affected by time constraints,<sup>133</sup> wide calorie ranges for meals with different food options,<sup>132</sup> and calories posted for meals that serve more than one person.<sup>132</sup> It has also

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## Key Recommendations to Parents and Caregivers Regarding Child Nutrition

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- Make an effort to increase home-cooked family meals.
  - Opt for healthier menu options at fast food restaurants, such as switching fries for apple slices or switching soda for non-fat/low-fat milk.
  - Model healthy eating behaviors in front of children.
  - Monitor children's time in front of the television and be aware of food marketing strategies.
  - Pay attention to the nutrition label when grocery shopping.
  - Ask the child what he/she ate for lunch.
  - Avoid sugary drinks such as soft drinks, fruit drinks, sports drinks, and energy drinks.
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been suggested that calorie data alone are not sufficient to guide choices.<sup>123,134,135</sup> To complement postings, options such as a “stoplight system,”<sup>123,134</sup> “heart-healthy” symbol,<sup>123</sup> and “rank-ordered” (meal options listed from lowest caloric content to highest)/“colored calories”<sup>135</sup> have been proposed.

### Child Nutrition

Recently, the USDA made important improvements to the nutritional quality of foods served in schools through the National School Lunch Program (NSLP) and School Breakfast Program (SBP). More than 30 million children participate in the NSLP, providing tremendous opportunity for shaping healthier food choices.<sup>136</sup> NSLP participants consume higher amounts of fruits or 100% fruit juice as well as vegetables (though predominantly potatoes) compared to non-program participants.<sup>137</sup> In Fall 2012, the USDA put new regulations in place for school meals which for the first time set calorie maximums and require students to select a fruit or vegetable with their meal.<sup>138</sup>

Marketing to children is an important area of focus when considering factors that contribute to childhood obesity. Various companies have responded by participating in the Children's Food and Beverage Advertising Initiative (CFBAI), which aims to market healthier foods to children.<sup>139</sup> However, a recent evaluation of CFBAI questioned its effectiveness due to program restrictions and highlighted the minimal impact that it has had on current marketing



practices.<sup>103</sup> Expert recommendations point to the role that policies could play in marketing to children.<sup>140</sup> For example, the use of cartoon characters and celebrity endorsements in food advertising to children could be limited.<sup>140</sup> Though research is limited, one county in California has implemented a toy ordinance that restricts the inclusion of a toy in a restaurant meal that includes foods of low nutrient density.<sup>141</sup> An evaluation of this regulation found improvement in the marketing of health food items.<sup>141</sup>

## Conclusion

In order to make progress in reducing the burden of obesity in the United States, there is a pressing need to make changes in Americans' usual dietary patterns. The diets of U.S. adults and children are characterized by intakes of high-calorie, nutrient poor foods such as soda, pizza, desserts, salty snacks, and candy. There are also racial/ethnic, income, and educational differences that have been associated with diet quality. The consumption of unhealthy foods is exacerbated by growing portion sizes, which oversupply calories and are up to eight times larger than recommended.

The coordination of individual and population-based prevention strategies is important to reducing the prevalence of obesity. Americans should have the necessary knowledge to select healthy diets while at the same time the environment should support,



*Beyond the benefit of bringing families together, the family meal serves as an opportunity to practice healthy cooking and to instill positive eating habits and behaviors in children.*

not discourage, healthy choices. There are many aspects of the food environment that influence eating behaviors and dietary patterns including access and availability of grocery stores, supermarkets, farmers markets, and fast food outlets. Price, advertising, and portion sizes enhance the appeal of foods to consumers by making foods appear more delicious, convenient, and cheap. Fast and ready-to-eat foods have become staples in the American diet due to parental employment, work-life stress, and time constraints. These are also the barriers to the family meal, which has declined over the past few decades. Beyond the benefit of bringing families together, the family meal serves as an opportunity to practice healthy cooking and to instill positive eating habits and behaviors in children.

Sound public health policies have the potential to improve dietary patterns and can help support a positive food and nutrition environment. Reducing the intake of SSBs is a public health priority as these products are a prime contributor to Americans' added sugars intake, and are associated with obesity and chronic disease. Menu labeling is one strategy to better inform Americans about the food choices they make in restaurants. Finally, progressive school nutrition regulations and policies that limit advertising and marketing of unhealthy food to children can support the intake of a diet conducive to a healthy weight.

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