

UNDERSTANDING ADOLESCENT EATING BEHAVIORS

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Despite the importance of healthy eating during adolescence, many adolescents' diets do not meet national nutrition guidelines, such as the Dietary Guidelines for Americans¹ or the Food Guide Pyramid.² This chapter will review dietary intake and adequacy of adolescents' diets, factors influencing adolescent eating behaviors, and common eating behaviors of adolescents.

DIETARY INTAKE AND ADEQUACY

A recent report from USDA³ described the diets of school-aged children in the US using nationally representative data from the 1994-96 Continuing Survey of Food Intake by Individuals (CSFII). Data was presented on about 2700 children ages 6-18 years who completed two nonconsecutive days of dietary intake interviews. In the report, youth were categorized into three groups: ages 6-8, ages 9-13, and ages 14-18. These are the same age categories used in the Dietary Reference Intakes (DRIs). Findings from the USDA report describing food group intakes of youth 9-18 years of age are discussed below. The sample was comprised of 1008 boys and 1001 girls. Nutrient level data are presented in Chapter 3.

Findings From a National Survey

The 1994-96 CSFII data showed that, on average, most children and adolescents ate fewer servings of five major food groups (grains, vegetables, fruits, dairy, meat/meat substitutes) than the USDA Food Guide Pyramid recommends.³ Most ate fewer than the minimum recommended 3 servings of vegetables, 2 servings of fruit, 2-3 servings of dairy products, and 2 servings of meat/meat substitutes (Table 1). Less than 5% of youth consumed the minimum number of servings specified in the Food Guide Pyramid for all five major food groups. None of the girls in either age group met the recommendations for all five food groups and only 2% of boys ages 9-13 and only 5% of boys ages 14-18 met all the Food Guide Pyramid recommendations.³

TABLE 1
Food Group Intakes of School-aged Children 9-18 Years of Age, 1994-1996

	Mean Number of Servings					
	Grain	Vegetable	Fruit	Dairy	Meat/Meat Alternative*	Soda**
Recommendations	6-11	3-5	2-4	2-3	2-3	-
Males						
9-13 y	7.6	2.8	1.4	2.3	1.7	1.2
14-18 y	9.5	3.9	1.4	2.5	2.3	2.6
Females						
9-13 y	6.4	2.4	1.5	1.9	1.3	1.1
14-18 y	6.2	2.8	1.3	1.4	1.5	1.7

*The Pyramid serving is 5-7 oz of lean meat or equivalent. This is based on 2.5 oz meat servings to be consistent with the serving size used in the Healthy Eating Index.

**Based on 1 c (8 oz) servings.

Source: Data from Gleason P, Suitor C. Children's diets in the mid-1990s: dietary intake and its relationship with school meal participation. Special nutrition programs; report number CN-01-CD1. Alexandria, VA: US Department of Agriculture, Food and Nutrition Service; 2001. <http://www.fns.usda.gov/oane/MENU/Published/CNP/cnp.htm>

Table 2 illustrates the five major food groups as specified in the Healthy Eating Index (HEI). The HEI was developed by USDA and provides food group targets based on the Recommended Energy Allowance for age and gender. The HEI target for all food groups is higher than the minimum of the food guide pyramid recommended range. The majority of youth do not meet the age/gender-specific targets for the five food groups (Table 3). The findings for specific food groups are described briefly below.

TABLE 2
Healthy Eating Index Target Number of Servings Per Day for Adolescents
from the USDA Food Guide Pyramid

Gender/Age	Recommended Servings Per Day, by Pyramid Food Group					
	Energy (kcal)	Grains	Vegetables	Fruits	Milk	Meat
Females, 11- 18	2,200	9	4	3	3	2.4
Males, 11-14	2,500	10	4.5	3.5	3	2.6
Males, 15-18	3,000	11	5	4	3	3
Minimum of Food Guide Pyramid Recommended Range		6	3	2	2	2

Note: The target number of servings per day is based on the Recommended Energy Allowance for age and gender rather than the amount of energy usually consumed by the individual. For females 11 to 18 who are pregnant or lactating, the recommended servings per day for each of the food groups except dairy is slightly higher than for those who are not pregnant or lactating.

Source: Gleason P, Sutor C. Children's diets in the mid-1990s: dietary intake and its relationship with school meal participation. Special nutrition programs; report number CN-01-CD1. Alexandria, VA: US Department of Agriculture, Food and Nutrition Service; 2001. <http://www.fns.usda.gov/oane/MENU/Published/CNP/cnp.htm>

TABLE 3
Percent of Youth* Meeting Food Group Targets for the Healthy Eating Index**

	Grain	Vegetable	Fruit	Dairy	Meat
Males					
9-13 y	25	20	10	38	21
14-18 y	32	29	10	30	32
Females					
9-13 y	17	18	14	25	7
14-18 y	14	21	14	9	16

*Based on two days of intake data from the 1994-96 CSFII.

**The Healthy Eating Index targets number of servings per day based on recommended Energy Allowance for age and gender.

Source: Gleason P, Sutor C. Children's diets in the mid-1990s: dietary intake and its relationship with school meal participation. Special nutrition programs; report number CN-01-CD1. Alexandria, VA: US Department of Agriculture, Food and Nutrition Service; 2001. <http://www.fns.usda.gov/oane/MENU/Published/CNP/cnp.htm>

In summary, the findings show that the diets of American youth need improvement. Overall, diets of today's preadolescents and adolescents are low in fruits, vegetables, dairy products, whole grains, and high in total fats, saturated fats and added sugars.³

Grains – Both males and females met the minimum intake of grains as recommended in the Food Guide Pyramid. However, nearly all of it was non-whole grain. Males ages 9-18 consumed only 1.1 servings per day of whole grains and females of the same age consumed only 0.8 servings of whole grain.

Fruits – Both males' and females' mean intakes of fruit (1.4) servings were below the Pyramid's recommended minimum of 2 servings per day (Table 1) and less than 15% of youth met the HEI target for fruit. Among 14-18 year olds, 43% of males and 38% of females consumed no fruit.

Vegetables – Mean intakes of vegetables were below the Pyramid's recommended minimum, except for males ages 14-18 (Table 1). Both males and females consumed a larger mean number of servings of potatoes (1.4) than all remaining vegetables. Only 0.1 servings of vegetables were dark green leafy vegetables. Using 1989-1991 CSFII data, Krebs-Smith, et al.⁴ found that one-fourth of all vegetables consumed by children and adolescents were french fries.

Dairy Products – Intake of dairy products is low, especially among females. Only 9% of females ages 14-18 and 25% of females ages 9-13 met the HEI target.

Soft Drinks – Youth are heavy consumers of soft drinks. Overall, 70-85% of youth ages 9-18 consume soft drinks on any given day. Teenage males ages 14-18 consume the most soda, with over one-third consuming more than 3 servings per day and 20% consuming more than 4 servings per day. Almost 20% of females in this age group drink more than 3 servings per day. Consumption of soft drinks among teens has increased. Between 1989-91 and 1994-96, teenage boys' consumption of soda rose from an average of 1.7 to 2.6 servings per day. Teenage girls consumption of soda also increased.^{3,5}

Differences By Age, Income Levels, Race/Ethnic Groups

Age – The number of servings of most of the major food groups increases with age for males, but not necessarily for females. Among females 14-18 years of age, fruit intake and dairy intake decreases, and soda consumption increases compared to females ages 9-13. Several studies have shown that dietary quality decreases throughout childhood and adolescents have poorer quality overall diet compared to younger children.^{6,7}

Income Levels – Few major differences have been found by household income and food sufficiency status. The top family income group had the highest intake of several food groups including whole grains, total grains, fruits, vegetables, low fat milk, total milk products and soda. In general, systematic trends of increased intake with increased income were not apparent, with the exception of low fat milk and soda.

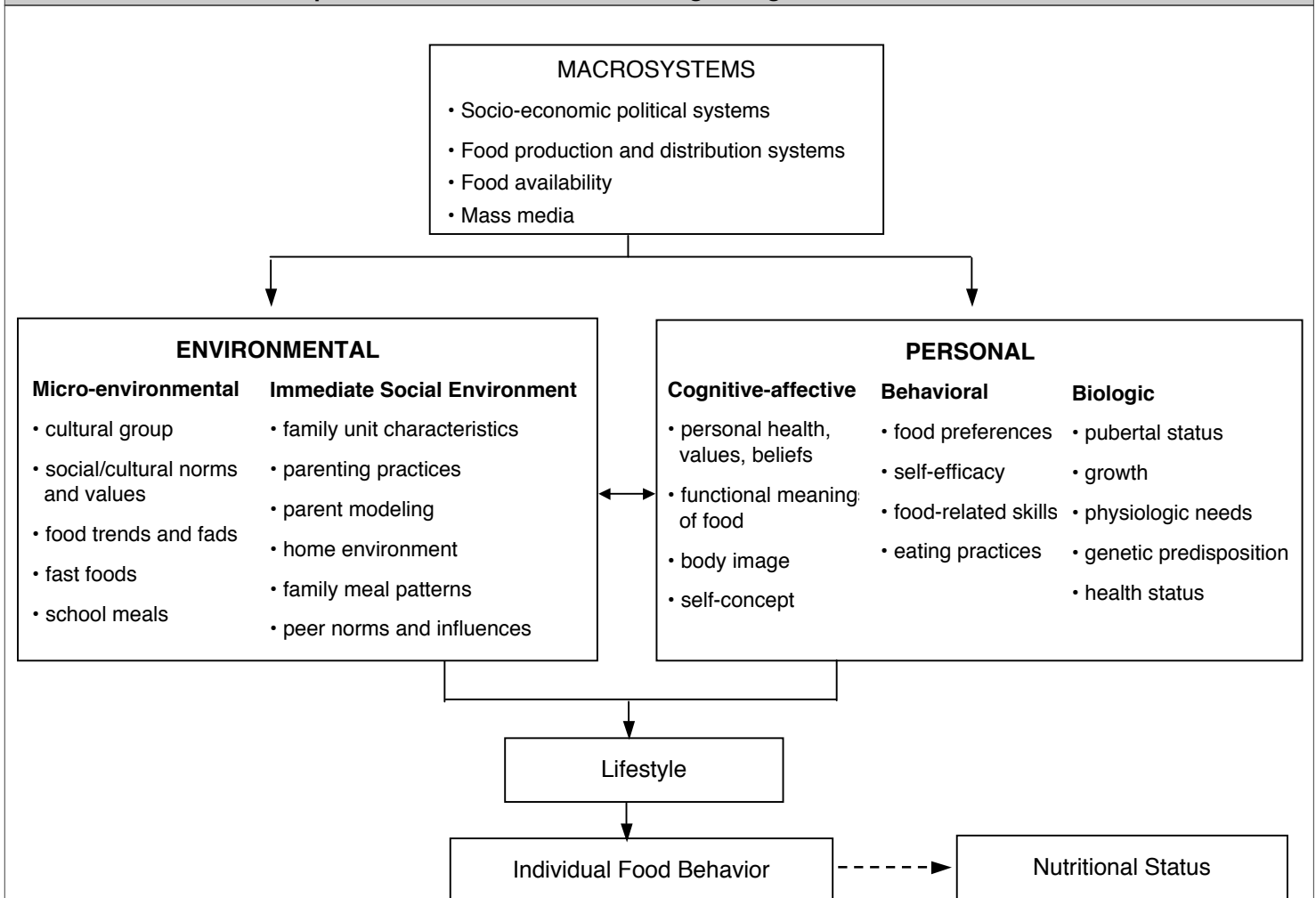
Racial/Ethnic Groups – Significant differences were noted in mean intake of food group servings among racial/ethnic subgroups. Differences included: higher intake of whole grains and total grains among white youth; lower intake of dark green leafy vegetables by Hispanics; greater whole milk consumption among Hispanics and blacks; lower total milk consumption among blacks; and higher intake of soda by whites.

FACTORS INFLUENCING EATING BEHAVIORS

A Conceptual Model

Eating patterns and behaviors of adolescents are influenced by many factors, including peer influences, parental modeling, food availability, food preferences, cost, convenience, personal and cultural beliefs, mass media, and body image.⁸ Figure 1 presents a conceptual model of the multiple factors that influence eating behaviors of adolescents. The model depicts three interacting levels of influence which impact adolescent eating behaviors: personal or individual, environmental, and macrosystems. Personal factors that influence eating behavior include attitudes, beliefs, food preferences, self-efficacy and also biological changes. Environmental factors include the immediate social environment such as family, friends and peer networks, and other factors such as school, fast food outlets and social and cultural norms. Macrosystem factors, which include food availability, food production and distribution systems, and mass media and advertising, play a more distant and indirect role in determining food behaviors yet can exert a powerful influence on eating behaviors. To improve the eating patterns of youth, nutrition interventions should be aimed at each of the three levels of influence. Table 4 provides ten key strategies for improving the eating behaviors of adolescents based on the three levels of influence.

FIGURE 1
Conceptual Model for Factors Influencing Eating Behavior of Adolescents



Source: ©Mary Story. Reprinted from Story M, Alton I. *Becoming a woman: nutrition in adolescence*. In: Krummel DA, Kris-Etherton PM, eds. *Nutrition in women's health*. Gaithersburg, MD: Aspen Publishers;1996.

TABLE 4
Key Strategies to Improve Eating Behaviors of Adolescents

Personal factors

- Encourage teens to eat a meal in the morning, even if it is not a traditional breakfast. Sandwiches, crackers and cheese, fruit smoothies and leftovers can serve as quick, nutritious morning meals.
- Teach teens to prepare simple, nutrient dense snacks and meals for the times that they eat alone or without other family members (see table 5).
- Provide nutrition education and counseling that focuses on the positive aspects of a healthy diet, such as increased energy levels, better academic performance, improved concentration, and better athletic performance. Avoid counseling techniques that focus on the negative aspects of commonly consumed foods or fast foods as most teens are present oriented and do not view themselves as at risk for chronic diseases.
- Teach teens to choose wisely when eating at fast food restaurants or buying foods at convenience stores. Provide concrete examples of how to choose healthy foods, such as choosing foods that contain no more than 5 grams of fat per serving. Discuss the pros and cons of “super sizing” portions and how it affects the quality of a meal.

Environmental factors

- Encourage teens and their parents to keep a variety of healthy foods in the home, within easy reach. Also encourage teens and their parents to limit the number of low-nutrient, high fat and/or highly sweetened foods and beverages within the home.
- Work with school administration, parent-teacher organizations, school food service staff and others to develop policies that limit the sales of soft drinks, sports drinks, candy, snack foods, chips and fast foods within schools. At the very least, ask school leaders to limit sales of these foods to non-school hours, only. Lost funding can be sought through the sale of healthier foods and beverages, or through non-food related fund raisers.
- Advocate for policy development within schools, community centers and other youth-serving organizations that outlines the nutrient quality of foods that are offered through vending machine, school stores, or canteens. Foods that offer < 5 grams of fat per serving and that do not contain added nutritive sweeteners, such as fruit, vegetables and dip, baked chips, flavored bottled water, milk, yogurt and low-fat popcorn are appropriate choices for teens.
- Encourage schools, community centers and other youth-serving organizations to restrict the marketing of fast foods, snack foods and sweetened beverages to adolescents and children within their buildings.

Macrosystem factors

- Collaborate with local politicians, urban planners, parent-teacher organizations and school administrators to pass ordinances that limit the building or location of fast food restaurants and convenience stores close to schools and community centers.
- Utilize media literacy techniques to assist adolescents in evaluating marketing and advertising messages. Do most people have bodies that look like those portrayed in advertisements? Does drinking a certain beverage really make a person more popular?

COMMON EATING BEHAVIORS

The cognitive, physical, social, and lifestyle changes during adolescence can create profound changes in their eating patterns. Teens as a group tend to snack, miss meals, eat away from home, consume fast foods, and diet (especially among females) more frequently than younger children.

Snacking

National survey data show 88% of adolescents consume at least one snack per day, with a range of 1 to 7.^{9,10} Snacks account for 25-33% of daily energy intakes among adolescents. The prevalence of snacking and proportion of calories and nutrients from foods consumed as snacks has risen during the period from 1977 to 1996.¹¹ Food choices made by adolescents while snacking tend to be high in sugar, sodium, and fat, while relatively low in vitamins and minerals. Soft drinks are the most commonly chosen snacks for adolescent females and account for about 6% of total caloric intake.¹² This high consumption of soft drinks increases the risk for bone fractures over an individual's lifetime.¹³ Since adolescents often snack on what is readily available, healthy food choices should be emphasized (see Table 5).

TABLE 5
Teen Friendly Healthy Snacks

Pudding made with skim milk	Baked tortilla chips with bean dip or salsa
A glass of skim milk sweetened with a teaspoon of chocolate or strawberry syrup	Baked potato (microwaved) topped with salsa, yogurt or fat free sour cream
Soft pretzels warmed in the microwave and topped with mustard or salsa	Graham crackers, animal crackers
Sliced apples dipped in peanut butter or fat free caramel dip	Frozen yogurt or juice bars
English muffin mini-pizzas (topped with tomato/pizza sauce and mozzarella cheese)	Fruit drink spritzer (half cranberry juice and half seltzer water)
Air-popped popcorn	Trail mix (dried fruit with nuts and seeds)
Peeled and sectioned oranges	Baby carrots and low fat ranch dressing
Humus and pita bread	Low fat granola bars
Mozzarella or string cheese	Mini-rice cakes or popcorn cakes
	Sandwich wraps with slices of turkey, cheese and tomato

Skipping Meals

Meal skipping is common among adolescents, especially during middle and late adolescence. Breakfast is the most commonly skipped meal and is attributed to lack of time, desire to sleep longer in the morning, lack of appetite, and dieting to lose weight. Skipping breakfast may affect concentration, learning, and school performance.¹⁴ National data show that among adolescents, 24% of females and 20% of males skipped breakfast on the day of a survey.¹⁵ The percentage of youth skipping breakfast increases with age, especially for females. Among adolescents 14-18 years old, 34% of girls and 28% of boys ate nothing for breakfast compared to only 15% among boys and girls ages 9-13 years old.³ Young people who skipped breakfast had lower total daily energy, vitamin and mineral intakes compared to those who ate breakfast. Overall, the odds of dietary inadequacy were two to five times higher for those who skipped breakfast than for those who ate breakfast.¹⁶ Lunch is skipped by almost one-quarter of adolescents.³ As with breakfast, skipping lunch reduces intakes of energy, protein, and other nutrients. Adolescents who skip meals should be counseled on convenient, portable, and healthy food choices that can be taken with them and eaten as meals or snacks.

Family Meals

Dinner is the most frequently consumed meal among adolescents¹⁷ and it also provides a larger proportion of intake of energy and key nutrients than any other meal or snack.¹⁵ Survey data indicate that the proportion of youth eating dinner with their families on a regular basis is not high. Only about one-third of adolescents ate dinner with their family nearly every day.^{18,19} About 22-32% of adolescents reported eating dinner together with their family never or only a few days each week.^{18,19} Youth in 7th grade reported eating more family meals over the past week (mean 5.7) than youth in 10th grade (mean 3.5). Adolescents gave several reasons for not having family meals, including parent and teen schedules, desire for autonomy, and dissatisfaction with family relations. Busy or conflicting work schedules of parents and teenage activities such as sports or employment were the most frequently mentioned reasons among parents.²⁰ Family meals are associated with better overall dietary quality among children and adolescents. Gillman and colleagues¹⁸ compared food and nutrient intakes of 9-14 year olds who ate family dinner most days to those who ate family dinner never or only a few days a week. Increasing frequency of family dinner was associated with more healthful dietary intake patterns, including more fruits and vegetables, less fried food and soft drinks, less saturated and trans fats and more fiber and micronutrients from food. Family meals also provide an opportunity for family communication and interaction. A recent report using data from the National Longitudinal Study of Adolescent Health looked at frequency of family meals as a proxy measure for parent-child relationship or family connectedness and found that teens who ate dinner with a parent at least five days a week were more likely to get better grades, were less likely to smoke, use drugs, have sex at young ages, or to get into fights, compared to youth who did not eat with a parent five days a week or more.²¹

Eating Out

During adolescence, teens spend less time with family and more time with friends. As teens become more independent, eating away from home increases. One-third of all teen eating occasions occur outside the home.²² Over half (52%) of out-of-home eating occasions take place at school, followed by fast food restaurants (16%), other locations (16%), and vending machines (6%).²²

The average teen eats at a fast food restaurant twice a week. Fast food visits account for 31% of all food eaten away from home, and make up 83% of adolescent visits to restaurants.²² Fast food restaurants and food courts are favorite eating places of teens for several reasons:

- They offer a social setting with an informal, comfortable atmosphere for adolescents.
- Fast foods are relatively inexpensive and offer socially acceptable choices.
- Fast foods can be eaten outside the restaurant, fitting into the busy schedules of adolescents.
- Service is fast and the limited offerings allow for quick decision-making.
- Fast food restaurants employ many adolescents, increasing the social value of these restaurants.

Eating at fast food restaurants has direct bearing on the nutritional status of adolescents. Many fast foods are high in fat and low in fiber and nutrients. However, there are ways to increase the nutrient content of fast food meals and decrease the fat contents. Adolescents can be counseled to ask for juice or milk instead of soft drinks, order small sandwiches instead of larger choices, choose a salad as a side dish instead of fries, order grilled items as opposed to fried sandwiches, and avoid “supersizing” meals, even if they seem to offer a better economic deal.

Dieting and Weight Control Behaviors

Dieting is a common and widespread practice among adolescents, especially girls. In 1999, 59% of high school girls and 26% of high school boys reported trying to lose weight during the 30 days preceding a national survey.²³ Almost 20% of girls had gone without eating for 24 hours or more to lose weight, 11% had taken diet pills, and 8% had vomited or taken laxatives (Table 6).²³

TABLE 6
Percentage of High School Students in Grades 9-12 (n = 15, 349) who were Dieting and Engaging in Weight Loss Behaviors* – United States Youth Risk Behavior Survey, 1999

	<u>Females</u>	<u>Males</u>
Dieted to lose weight	59.4	26.1
Fasted to lose weight	18.8	6.4
Took diet pills, powders or liquids	10.9	4.4
Took laxatives or vomited	7.5	2.2

*during the 30 days preceding the survey

Source: Center for Disease Control and Prevention. Morb Mortal Wkly Rpt CDC Surveill Summ 2000;49(No. SS-5).

Non-Traditional Eating Patterns

A central issue in adolescence is the establishment of identity, i.e., a sense of oneself as a unique individual. Further, adolescence is a time of experimentation and idealism. Because food is charged with symbolic meaning, it may be used as a means of establishing individuation and expressing one’s identity and uniqueness. Food choices convey strong messages about the individual to friends, family and the outside world. Eating patterns such as vegetarianism may be adopted as a way of exploring new roles and lifestyles, testing adult restrictions, or becoming interested in global or environmental issues.

ADOLESCENTS’ PERCEPTIONS ON FOOD AND EATING

Youths’ views about food and eating have been explored using focus group interviews. Adolescents report several key factors influencing their food choices and eating behaviors, such as taste, hunger, convenience, availability, and parental and cultural influences²⁴ (Table 7). Many adolescents feel that healthy eating is not a primary concern during the teenage years. In general, the quality of the adolescent diet is a reflection of this lack of concern. Adolescents say that in order to improve their eating, healthy foods should be appealing and taste good, and be more widely available²⁴ (Table 8).

TABLE 7
Factors Adolescents View as Influencing their Food Choices*

Very important	Important	Less Important**
Hunger/food cravings	Availability	Mood
Appeal of food (primarily taste)	Parental influences	Body image
Time	Perceived benefits (e.g., energy, health, sports)	Habits
Convenience	Situational (e.g., who they are with [family, friends], setting [school, fast food places, home])	Cost
		Media influence
		Vegetarian lifestyle

*Based on focus groups with 141 adolescents in 7th and 10th grades.

**Could be primary factors for some students.

Source: Adapted from Neumark-Sztainer D, Story M, Perry C, Casey M. Factors influencing food choices of adolescents: findings from focus-group discussions with adolescents. J Am Diet Assoc 1999;99(8):929-937.

TABLE 8
Adolescents' Perceived Barriers to Healthful Eating and Suggestions for Reducing Barriers

Barriers

Eating healthful foods isn't a priority for most students**

Fruits, vegetables, and dairy products don't taste as good as other options**

The places where adolescents eat away from home, such as school and fast-food restaurants, either don't promote these foods or don't make these options appealing

Fruits and vegetables aren't as convenient as other foods

Healthful foods cost more

Suggestions

Make healthful food taste and look better**

Make healthful food the only available option (take away unhealthy foods)

Have parents teach their children to eat healthfully when they are young

Make it cool to eat healthfully— advertise

*Based on focus groups with 141 adolescents in 7th and 10th grades.

**Most important categories (discussed most frequently and with greatest intensity)

Source: Adapted from Neumark-Sztainer D, Story M, Perry C, Casey M. Factors influencing food choices of adolescents: Findings from focus-group discussions with adolescents. *J Am Diet Assoc* 1999;99(8):929-937.

In general, adolescents know what they should and should not be eating. In focus groups with adolescents, the following four themes emerged as major barriers to improving their diets.²⁵

- Lack of time was a major factor. Adolescents said they were too busy to worry about food and eating right. Common remarks were: "People our age are so busy that we don't have time to change bad habits." "We have too many other pressures on us."
- Inconvenience of eating healthy. Adolescents felt that healthy foods are more difficult to prepare and are difficult to obtain in certain settings. The prevailing view among adolescents was that while good nutrition was important, it was too much of a bother.
- Lack of self-discipline. Many adolescents felt they did not have adequate self-discipline to eat healthy foods, since they had a strong preference for "junk foods."
- Lack of a sense of urgency – the feeling that "I'll worry about it later on in life."

Implications

Focus group research with youth indicate that many teenagers have an overriding orientation toward the present and little concern about the future in terms of their own health.^{24,25} Teenagers do not perceive much urgency to change their behavior, since the future is so ephemeral and chronic diseases are connected with "older people." Also, the long-term benefits of good health and eating practices do not outweigh the short-term advantages of certain unhealthy activities. Many of the activities, which according to teenagers are unhealthy, such as smoking, drinking and drugs, are inextricably intertwined with age-appropriate developmental issues of identity, self-concept, friendship, independence, and authority. Thus, to give up what teenagers call "junk food" would be to give up much more than the activity itself. Nutrition interventions must address these deeper and more subtle social and developmental issues.

In focus groups adolescents said they lead busy, active lives and want to eat quickly. Food only receives a fraction of their attention. The nutritious foods they need are not always available to them

at places and times when they eat. If adolescents are to make dietary changes, it must be in the context of their everyday lives.

Effective Nutrition Messages for Youth

We need to rethink how we frame our messages to youth. Years ago, Leverton²⁶ pointed out that, too often, teenagers have been given the message that good nutrition means “eating what you don’t like because it is good for you.” Rather, they should learn “eat well because it will help you in what you want to do and become.” Teenagers are present-oriented and tend not to be concerned about how their eating will affect them in later years. However, they are concerned about having lots of energy, achieving and maintaining a healthy weight, their physical appearance, and doing well in school. Many are also interested in optimizing their sports performance. While adolescents need to be aware of the long-term risks related to diet, and long-term benefits of healthy eating, focusing on the short-term or immediate benefits will have more appeal to them.

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