12.8: Older Adolescence and Nutrition

Skills to Develop

- Summarize nutritional requirements and dietary recommendations for teens.
- Discuss the most important nutrition-related concerns during adolescence.
- Discuss the effect of eating disorders on health and wellness.

In this section, we will discuss the nutritional requirements for young people ages fourteen to eighteen. One way that teenagers assert their independence is by choosing what to eat. They have their own money to purchase food and tend to eat more meals away from home. Older adolescents also can be curious and open to new ideas, which includes trying new kinds of food and experimenting with their diet. For example, teens will sometimes skip a main meal and snack instead. That is not necessarily problematic. Their choice of food is more important than the time or place. However, too many poor choices can make young people nutritionally vulnerable. Teens should be discouraged from eating fast food, which has a high fat and sugar content, or frequenting convenience stores and using vending machines, which typically offer poor nutritional selections. Other challenges that teens may face include obesity and eating disorders. At this life stage, young people still need guidance from parents and other caregivers about nutrition-related matters. It can be helpful to explain to young people how healthy eating habits can support activities they enjoy, such as skateboarding or dancing, or connect to their desires or interests, such as a lean figure, athletic performance, or improved cognition.

Adolescence (Ages Fourteen to Eighteen): Transitioning into Adulthood

As during puberty, growth and development during adolescence are different in males than in females. In teenage girls, fat assumes a larger percentage of body weight, while teenage boys experience greater muscle and bone increases,
and a decrease in body fat. For both, primary and secondary sex characteristics have fully developed and the rate of growth slows with the end of puberty. Also, the motor functions of an older adolescent are comparable to those of an adult.

Elaine U. Polan, RNC, MS and Daphne R. Taylor, RN, MS, *Journey Across the Life Span: Human Development and Health Promotion* (Philadelphia: F. A. Davis Company, 2003), 171–173. Again, adequate nutrition and healthy choices support this stage of growth and development. Acne, substance use and abuse, obesity and adolescent pregnancy put the adolescent at risk of developing a nutrient deficiency that can have last lifetime effect.

## Energy

Adolescents have increased appetites due to increased nutritional requirements. Nutrient needs are greater in adolescence than at any other time in the life cycle, except during pregnancy. The energy requirements for ages fourteen to eighteen are 1,800 to 2,400 calories for girls and 2,000 to 3,200 calories for boys, depending on activity level. The extra energy required for physical development during the teenage years should be obtained from foods that provide nutrients instead of “empty calories.” Also, teens who participate in sports must make sure to meet their increased energy needs.

## Macronutrients

Older adolescents are more responsible for their dietary choices than younger children, but parents and caregivers must make sure that teens continue to meet their nutrient needs. For carbohydrates, the AMDR is 45 to 65 percent of daily calories (203–293 grams for 1,800 daily calories). Adolescents require more servings of grain than younger children and should eat whole grains, such as wheat, oats, barley, and brown rice. The Institute of Medicine recommends higher intakes of protein for growth in the adolescent population. The AMDR for protein is 10 to 30 percent of daily calories (45–135 grams for 1,800 daily calories), and lean proteins, such as meat, poultry, fish, beans, nuts, and seeds are excellent ways to meet those nutritional needs.

The AMDR for fat is 25 to 35 percent of daily calories (50–70 grams for 1,800 daily calories), and the AMDR for fiber is 25–34 grams per day, depending on daily calories and activity level. It is essential for young athletes and other physically active teens to intake enough fluids because they are at a higher risk for becoming dehydrated.

## Micronutrients

Micronutrient recommendations for adolescents are mostly the same as for adults, though children this age need more of certain minerals to promote bone growth (e.g., calcium and phosphorus, along with iron and zinc for girls). Again, vitamins and minerals should be obtained from food first, with supplementation for certain micronutrients only (such as iron).

The most important micronutrients for adolescents are calcium, vitamin D, vitamin A, and iron. Adequate calcium and vitamin D are essential for building bone mass. The recommendation for calcium is 1,300 milligrams for both boys and girls. Low-fat milk and cheeses are excellent sources of calcium and help young people avoid saturated fat and cholesterol. It can also be helpful for adolescents to consume products fortified with calcium, such as breakfast cereals and orange juice. Iron supports the growth of muscle and lean body mass. Adolescent girls also need to ensure
sufficient iron intake as they start to menstruate. Girls ages twelve to eighteen require 15 milligrams of iron per day. Increased amounts of vitamin C from orange juice and other sources can aid in iron absorption. Also, adequate fruit and vegetable intake allows for meeting vitamin A needs. Table 12.8.1 shows the micronutrient recommendations for older adolescents, which differ slightly for males and females, unlike the recommendations for puberty.

**Table 12.8.1: Micronutrient Levels during Older Adolescence**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Males, Ages 14–18</th>
<th>Females, Ages 14–18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A (mcg)</td>
<td>900.0</td>
<td>700.0</td>
</tr>
<tr>
<td>Vitamin B₆ (mg)</td>
<td>1.3</td>
<td>1.2</td>
</tr>
<tr>
<td>Vitamin B₁₂ (mcg)</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>Vitamin C (mg)</td>
<td>75.0</td>
<td>65.0</td>
</tr>
<tr>
<td>Vitamin D (mcg)</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Vitamin E (mg)</td>
<td>15.0</td>
<td>15.0</td>
</tr>
<tr>
<td>Vitamin K (mcg)</td>
<td>75.0</td>
<td>75.0</td>
</tr>
<tr>
<td>Calcium (mg)</td>
<td>1,300.0</td>
<td>1,300.0</td>
</tr>
<tr>
<td>Folate (mcg)</td>
<td>400.0</td>
<td>400.0</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>11.0</td>
<td>15.0</td>
</tr>
<tr>
<td>Magnesium (mg)</td>
<td>410.0</td>
<td>360.0</td>
</tr>
<tr>
<td>Niacin (B₃) (mg)</td>
<td>16.0</td>
<td>14.0</td>
</tr>
<tr>
<td>Phosphorus (mg)</td>
<td>1,250.0</td>
<td>1,250.0</td>
</tr>
<tr>
<td>Riboflavin (B₂) (mg)</td>
<td>1.3</td>
<td>1.0</td>
</tr>
<tr>
<td>Selenium (mcg)</td>
<td>55.0</td>
<td>55.0</td>
</tr>
<tr>
<td>Thiamine (B₁) (mg)</td>
<td>1.2</td>
<td>1.0</td>
</tr>
<tr>
<td>Zinc (mg)</td>
<td>11.0</td>
<td>9.0</td>
</tr>
</tbody>
</table>

Source: Institute of Medicine. [http://www.iom.edu](http://www.iom.edu)

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**Acne**

Some teens develop acne which is not caused by eating chocolate, sugary or greasy foods. Instead, it is caused by an infection of the sebaceous gland in the skin. The gland duct becomes clogged and skin oils accumulate. When this happens, the gland becomes irritated, inflamed and the associated "heads" occur. Acne is worsened by stress and tends to run in families (hereditary link). Treatment includes reducing the factors that are causing the stress, antibiotics,
topical ointments and/or the drug Accutane. Accutane is similar to vitamin A so toxicity from the drug will be monitored closely.

Eating Disorders

Do you know any of these people: Demi Lovato, Paula Abdul, Russell Brand, Lady Gaga, Alanis Morissette, Diana, Princess of Wales, Elton John, or Jane Fonda? They all have an eating disorder.

Many teens struggle with an eating disorder, which can have a detrimental effect on diet and health. A study published by North Dakota State University estimates that these conditions impact twenty-four million people in the United States and seventy million worldwide. North Dakota State University. “Eating Disorder Statistics.” Accessed March 5, 2012. http://www.ndsu.edu/fileadmin/counseling/Eating_Disorder_Statistics.pdf. These disorders are more prevalent among adolescent girls but have been increasing among adolescent boys in recent years. Because eating disorders often lead to malnourishment, adolescents with an eating disorder are deprived of the crucial nutrients their still-growing bodies need.

The cause of eating disorders is unknown and most likely multiple factors contribute to its development. These factors may be biological, psychological and/or social and several factors may interact to cause the condition. Biological factors appear as a consequence of pubertal hormone changes and may be genetic. Personality and behavioral changes occur during puberty and these may promote the development of an eating disorder. Finally, mass media influences our perception of body weight and sets unrealistic notions of desirable body weight. Often, adolescent athletes have the misconception that less weight is better performance.

Eating disorders involve extreme behavior related to food and exercise. Sometimes referred to as “starving or stuffing,” they encompass a group of conditions marked by undereating or overeating. Some of these conditions include:

- **Anorexia Nervosa.** Anorexia nervosa is a potentially fatal condition characterized by under eating and excessive weight loss. People with this disorder are preoccupied with dieting, calories, and food intake to an unhealthy degree. Anorexics have a poor body image, which leads to anxiety, avoidance of food, a rigid exercise regimen, fasting, and a denial of hunger. The condition predominantly affects females. Between 0.5 and 1 percent of American women and girls suffer from this eating disorder. Five percent are men. Two to five percent of adolescent girls experience anorexia nervosa.
  
  The American Psychiatry Association sets standards to diagnosis eating disorders. The DMS-IV criteria for anorexia nervosa are 1) refusal to maintain body mass over a minimal weight for age and height (15% below expected body mass); 2) intense fear of gaining weight or becoming fat despite being underweight, 3) distorted self-image and/or denial of the severity of low body mass (satisfied with certain body parts but critical of other areas); and 4) absence of at least three consecutive menstrual cycles. The individual may have an emaciated physical appearance with rough, dry skin, hair loss, and tooth loss. Psychologically they may be competitive, obsessive, and have very high standards. Their family may be over-involved, rigid, over protective, and conflictive.
  
  Protein-energy malnutrition is a common nutritional complication of anorexia nervosa. Medical complications are a lower immune function (reduced white blood cells); lower basal metabolic rate, body temperature, heart rate, and bone mass; anemia; constipation; amenorrhea; multiple organ failures; and an increased risk of suicide.
  
  Therapy should involve a medical team trained to treat anorexia nervosa. The nutrition goal is a slow weight gain and this is done by gradually increasing food intake (approximately 200 kcal per day) Supplements may be required to make sure the diet is nutritionally adequate. Food habits need to be changed so it is important to identify the emotional factors and ways to control their behavior. This may be done using family, group/individual, and/or relapse therapy.

- **Binge-Eating Disorder (also called compulsive overeating).** People who suffer from binge-eating disorder
experience regular episodes of eating an extremely large amount of food in a short period of time but don't purge. This eating disorder is the most common and is common in the severely obese. Binge eating is a compulsive behavior, and people who suffer from it typically feel it is beyond their control. This behavior often causes feelings of shame and embarrassment and leads to obesity, high blood pressure, high cholesterol levels, Type 2 diabetes, and other health problems. Both males and females suffer from binge-eating disorder. It affects 1 to 5 percent of the population.

The diagnosis of binge eating includes recurrent binges at least two days per week for six months. The individual feels they are eating out of control and eat large amounts of food even when they are not hungry. Often, they eat alone because they are embarrassed about the amount of food they ate and feel disgusted and guilty for overeating. Most people with this eating disorder are overweight or obese. They have a low self-esteem and may be depressed. Medical complications are related to their excess adipose stores and treatment involves weight loss and changing their lifestyle to maintain the weight lost.

- **Bulimia Nervosa.** Bulimia nervosa is more prevalent than anorexia nervosa and is characterized by alternating cycles of overeating and undereating. People who suffer from it partake in binge eating, followed by compensatory behavior, such as self-induced vomiting, laxative use, diuretics, enemas, medications, fasting, and compulsive exercise. Most experience a loss of control over eating during their binge episode. As with anorexia, most people with this condition are female and may be single, well-educated and near ideal body weight. Approximately 1 to 2 percent of American women and girls have this eating disorder.National Eating Disorders Association. “Learn Basic Terms and Information on a Variety of Eating Disorder Topics.” Accessed March 5, 2012. [http://www.nationaleatingdisorders.org/information-resources/general-information.php](http://www.nationaleatingdisorders.org/information-resources/general-information.php).

The DMS-IV criteria for bulimia nervosa are 1) recurrent episodes of binge-eating, 2) recurrent, inappropriate, compensatory behavior in order to prevent weight gain; 3) binge eating and compensatory behavior both occur on average at least twice a week for three months; 4) dissatisfaction and/or distortion of body image, and 5) disturbance does not occur in episodes of anorexia nervosa. People with this eating disorder may have normal weight or experience a rapid change in weight by twenty percent.

This eating disorder may develop after unsuccessful dieting. The individual may be a perfectionist, have low self-esteem, a high-stress level, be depressed, and/or passive. Usually, they know the behavior is abnormal. Their family may be disengaged and permissive. Medical complications can include poor kidney function, decreased immune function, increased number of urinary tract infections, low blood potassium (hypokalemia) and irregular heart beat. If they purge by vomiting, they may experience infections of the esophagus and salivary glands, rupturing their esophagus and/or stomach, erosion of their teeth, and loss of potassium. Treatment includes developing normal eating habits, meal planning, food diaries and maintaining constant body weight and food intake. Psychologically they must break the purge cycle, develop a better body image, build self-esteem, treat depression, and develop a healthy attitude about their body image and food.

Eating disorders stem from stress, low self-esteem, and other psychological and emotional issues. It is important for parents to watch for signs and symptoms of these disorders, including sudden weight loss, loose clothing, lethargy, drop in grades, social isolation like eating alone, vomiting after meals, and the use of appetite suppressants. Eating disorders can lead to serious complications or even be fatal if left untreated. Treatment includes cognitive, behavioral, and nutritional therapy and requires a trained professional.
Video 12.8.1: Eating Disorders: Anorexia. This video provides more information about the eating disorder anorexia nervosa.

Muscle Dysmorphia (Adonis Complex)

Adonis Complex is the preoccupation with not being sufficiently lean and muscular. It has many similarities to anorexia nervosa but clearly, the individual has a distorted image of their body. Most people with this eating disorder are large and muscular. They have a preoccupation with being lean and muscular and frequently weigh themselves and/or look at themselves in the mirror (narcissistic). They like to wear baggy clothes or modify their clothes to enhance their muscularity. To achieve the muscularity, they engage in excessive exercise and abuse dietary supplements or adhere to a strict dietary regime. Amazingly, they view themselves as frail and small, even though they are not, and they may spend greater than three hours thinking about their muscularity.

Concluding Comments

Older adolescents experience numerous physical changes and must increase their energy intake to support these changes and meet nutrient needs. Nutrient needs are greater during adolescence than at any other time in the life cycle, except during pregnancy. The daily energy requirements for ages fourteen to eighteen are 1,800 to 2,400 calories for girls, and 2,000 to 3,200 calories for boys, depending on activity level. Nutritional concerns for older adolescents include eating disorders.
Discussion Starter

1. Research the biological, social, and psychological aspects of eating disorders at this website. Then, brainstorm a list of risk factors and warning signs for parents, teachers, and physicians.

http://www.nationaleatingdisorders.org/