

NUTRITIONAL NEEDS OF INDIVIDUALS AND FAMILIES ACROSS THE LIFESPAN

Nutrition Issues and Adolescents

Grade Levels: 9-12

Concept: Nutrition

Comprehensive Standard: 6.2 Evaluate the nutritional needs of individual and families in relation to health and wellness across the lifespan

Technical Standard: 6.2.1 Analyze the effects of nutrients on health, appearance, job performance and personal/family life

LESSON COMPETENCIES:

- Evaluate the role of key nutrients in maintaining and sustaining good health
- Identify food sources of the key nutrients
- Analyze the nutritional needs of adolescents
- Identify appropriate guidelines for healthy eating

ANTICIPATED BEHAVIORAL OUTCOMES:

- Students identify the nutrients in food
- Make personal food choices that are nutrient dense.

Resources Needed:

- Copies of handouts for all students
- 3/5 note cards
- [Nutri- Bingo](#) cards for all students
- Internet access for all students
- See NOTES TO TEACHER to determine alternatives which may need to be prepared

References for teachers and students:

West, D. (2006). *Nutrition and Fitness: Lifestyle Choices for Wellness*. Goodheart-Wilcox Publishing, www.g-w.com or phone at 1-800-323-0440 Chapter 3, *How Nutrients Become You* and Chapter 11, *Nutrition for All Ages*; Chapters 5-10 address each of the six key nutrients: carbohydrates, fats, proteins, vitamins, minerals and water.

Largen, V., and Bence, D. (2006). *Guide to Good Food*. Goodheart-Wilcox Publishing, www.g-w.com or phone at 1-800-323-0440 see Chapter 2 *Nutritional Needs*, Chapter 3, *Making Healthful Food Choices* and Chapter 4, *Nutrition through the Life Cycle*.

“Eating Habits of Today’s Youth” is the focus of the May, 2001 issue of the *Nourishing News* newsletter, a publication of the *Nutrition Information Resource Center* at Clemson University <http://virtual.clemson.edu/groups/NIRC/archive.php>. There is a link for subscribing to *Nourishing News*, a free email newsletter from Clemson.

Curriculum for elementary and middle grades utilizing a computer-assisted approach featuring *MyPyramid for Kids* have been developed by the *Oregon Dairy Council*, 10505 S.W. Blvd., Portland, OR 07219. Phone is (503) 229-5033 and web address is www.oregondairycouncil.org

A blank *MyPyramid* copy master is available at the USDA website at <http://www.mypyramid.gov/kids/index.html>; click on the coloring page.

Some excellent activities on calcium and iron in the diet, two nutrients often at low levels in the diets of adolescents, especially females, can be found at the *Virginia Tech Cooperative Extension Service* website. Access the calcium activity at www.ext.vt.edu/pubs/nutrition/348-019/348-019.html. A similar activity on iron can be accessed at www.ext.vt.edu/pubs/nutrition/348-371/348-371.html.

www.kidshealth.org *KidsHealth* provides health information for children from birth through adolescence, presented on separate areas for kids, teens and parents. One section focuses on teen health and includes articles on nutrition.

Several activities on nutrition developed by youth as a part of thinkquest can be found at <http://www.thinkquest.org/library/index.html>.

Find out more about osteoporosis and prevention strategies by visiting the following website: www.nof.org/prevention/risk.htm.

NEW The *New York Times* has an archive of lesson plans with related news articles. Check out these lesson plans for use in this area:

Counting Calories <http://www.nytimes.com/learning/teachers/lessons/20050210thursday.htm>

Creating Word Problems about Cereal Nutrition - In this lesson, students evaluate the health of breakfast foods. They work in pairs to create and solve word problems using cereal nutrition data. For homework, they solve additional problems formulated in class and write short essays commenting on what they have learned. (February 10, 2005)

NOTE TO TEACHER: The USDA in the Healthier US School Challenge provides guidance to consumers that grain products must be at least 51% whole grains to be considered as such; this guidance states that if the first ingredient is a whole grain, the product can be counted as a whole grain for purposes of the challenge.

See http://teamnutrition.usda.gov/HealthierUS/food_guidance.pdf for this information.

Food for Thought

http://www.nytimes.com/learning/teachers/lessons/19990525tuesday.html?searchpv=learning_lessons

Investigating Nutritional Components of Food in the Science or Health Classroom

In this lesson, students explore various nutritional components found in foods to analyze their sources, effects on the human body, and relationship to a healthy diet. Each student researches a different nutritional component and then creates an informative poster incorporating the research. (Tuesday, May 25, 1999)

You Are What You Eat

<http://query.nytimes.com/gst/learning.html?grade=6%2d8&lquery=EAT&frow=30&>

Evaluating the Nutritional Components of One's Diet - In this lesson, students evaluate their eating habits, focusing on the ways in which one assesses whether or not his or her diet is nutritious. Students work in small groups to design a menu for a healthy lunch and write a paragraph justifying their choices. For homework, students maintain a food diary over the course of a week and write a reflective essay discussing their food intake and proposing ways to make their diet healthier. (Tuesday, December 29, 1998) **NOTE TO TEACHER:** You will need to update using *MyPyramid*.

Background Information:

Nutrition – the process by which your body uses the food you eat. Nutrition has a major role in good health throughout the life cycle. However, often food choices are made based more on personal and social reasons than nutrition (refer to Unit I.)

Adolescents need extra nutrients to support the adolescent growth spurt, which begins in girls at ages 10 or 11, reaches its peak at age 12 and is completed by about age 15. In boys, it begins at 12 or 13 years of age, peaks at age 14 and ends by about age 19. In addition to other nutrients, adequate amounts of iron and calcium are particularly important as the adolescent body undergoes this intensive growth period. From ages 9 to 18 years, both males and females are encouraged to consume a calcium-rich diet (1,300 milligrams daily) in order to ensure adequate calcium deposits in the bones. This may help reduce the incidence of osteoporosis in later years. By eating at least three servings of nonfat or low fat dairy products daily, the recommended calcium intake can be achieved. For persons who don't wish to consume dairy products, a variety of other calcium sources are available such as green, leafy vegetables, calcium-fortified soy products and other calcium-fortified foods and beverages. Teens' caloric needs vary depending on their growth rate, degree of physical maturation, body composition and activity level. Overweight is one of the most serious nutrition problems of adolescents, particularly among Native Americans, Hispanics and African-Americans. (<http://www.ific.org/nutrition/kids/index.cfm>, 2004)

However, this dramatic increase in energy and nutrient requirements coincides with a time when many teens develop irregular eating habits because they are frequently eating away from home and are often subject to the outside influence of their peers, for example in the areas of fast foods, fad diets, skipped meals, snacking and high-carbohydrate foods. Condemnation of such practices does little to assist adolescents in developing healthy eating habits.

The *Washington State Department of Health* (<http://www.doh.wa.gov/>) provides this information for adults who care about teens stressing the importance of nutrition and healthy eating in adolescence:

- The rate of growth in adolescence is second only to that of infancy
- Mature bones, body tissues and organs are still developing
- Too little food or the wrong food can affect sexual maturation and growth
- Normal bone strength may never be reached if a youth doesn't get adequate calcium
- Eating habits developed during adolescence can set the tone for a lifelong habits
- Poor dietary habits are related to obesity, osteoporosis, cardiovascular (heart) disease and diabetes
- Studies have shown that heart disease can begin in childhood and progress into adulthood
- Over-eating, under-eating and eating disorders can have devastating health and economic impacts

- Because each teen may be at a different phase of growth, a “one size fits all” approach to nutrition doesn’t always work. Teens’ food needs vary depending on growth rate, degree of maturation, body make-up, physical activity and health status.
- Teens should eat frequent meals and snacks.
- Eating breakfast has been shown to help teens be more alert at school and perform better in sports activities as well as maintain a healthy weight.

NEW According to a March 2005 report *Nutrition and the Health of Young People* (<http://www.cdc.gov/HealthyYouth/nutrition/facts.htm>) from the *Centers for Disease Control (CDC)* (www.cdc.gov/), the following is indicative of the eating habits of America’s youth:

- Less than 40% of children and adolescents in the United States meet the US Dietary guidelines for saturated fats. They exceed the recommended amounts.
- Almost 80% of young people do not eat the recommended number of servings of fruits and vegetables.
- Only 39% of children ages 2-17 meet the USDA’s dietary recommendation for fiber.
- 85% of adolescent females do not consume enough calcium. During the last 25 years, the consumption of milk--the largest source of calcium--has decreased 36% among adolescent females. Additionally, from 1978-98, average daily soft drink consumption almost doubled for adolescent females, increasing from 6 oz. to 11 oz. and almost tripled for adolescent males, from 7 oz. to 19 oz.
- A large number of high school students use unsafe methods to lose or maintain weight. A nationwide survey found that during the last 30 days preceding the survey 13% of students went without eating for one or more days, 6% had vomited or taken laxatives, 9% had taken diet pills, powders or liquids without the advice of physicians. Harmful weight loss practices have been reported among girls as young as 9 years old.
- Adolescent girls appear to be at the highest risk for dietary inadequacies. This may be related to their eating patterns. Compared to other children, female teens have a higher tendency to skip breakfast, eat fewer meals and snacks, eat a larger proportion of meals and snacks away from home and drink the least fluid milk.

Nutrients:

A nutrient is a chemical used by the body for 1) building and repairing body tissue, 2) providing energy and 3) regulating body processes. There are 6 groups of nutrients: carbohydrates, proteins, fats, vitamins, minerals and water. The human body needs over 40 different nutrients and food is the major source of nutrients for the body. However, no one food provides all of the nutrients the body needs.

Learning Activities:

Middle School Level

- Give each student a 3X5 note card; ask them to write down one or two things they have heard or know about nutrition or nutrients. Ask each student to share what he/she has written on his/her card. Discuss each statement and clarify nutrition misinformation.
- Define nutrition. Ask students why nutrition is important. Discuss the benefits of healthy eating/sound nutritional food choices.
- Ask students to complete the chart, [Nutrition Knowledge](#).
NOTE TO TEACHER: You may ask the students to complete the chart using a text, published article or website as resources; see reference list above for suggestions. You may choose to use the chart as a graphic organizer for an illustrated lecture or PowerPoint presentation on the key nutrients. Discuss with students.
- Using a blank MyPyramid, ask students to identify the key nutrients that would be found in the foods in each group.
- Assign each student one nutrient (protein, carbohydrates, fats, Vitamin A, Vitamin C, B vitamins, iron, calcium); ask them to create a word search containing a minimum of ten foods that are considered “good” sources of that nutrient. Explain the guidelines used for food labeling to define a good source of each nutrient. (Use the website: www.puzzlemaker.com.)
- Play “[Nutri-Bingo](#)” to review the functions and sources of the key nutrients.
NOTE TO TEACHER: If you want to reinforce the importance of calcium in the diet of teens, use the activities in the calcium education program for girls 11-14, *Calcium! Do You Get It?* (See reference list.) You will need to develop the questions and responses for this game based on what you addressed with students. Students list the responses in the cards.
- Students can solve the case of the missing nutrient at “On the Case”; students read a short food mystery and then try to figure out the missing nutrient from the character's diet. *Nutrition Sleuth Casebook*
<http://www.exhibits.pacsci.org/nutrition/sleuth/casebook.html>

High School

- To introduce the study of nutrient, ask students to complete a KWL chart about nutrition and nutrients. Complete the first two columns indicating “K – I know, W – What I want to learn more about. The L – What I learned” can be completed at the conclusion of the study of nutrition and nutrients.
- Review the nutrients, their functions and food sources using the chart, [Nutrition Knowledge](#).
NOTE TO TEACHER: You may ask the students to complete the chart using a text, published article or website as resources or you may choose to use the chart as a graphic organizer for an illustrated lecture or PowerPoint presentation on the key nutrients. Discuss with students.

- Ask students to complete the “Nutri-Quiz” at the *Nutrition on the Web* (<http://library.thinkquest.org/10991/>) website. Clarify questions.
- Use the case studies at the Nutrition on the Web site with students. Discuss the nutrition related problems presented in these case studies.

NOTE TO TEACHER: You could ask students to read the cases on the Web and lead a discussion or ask them to write responses to the cases presented. Or you might want to type up the case studies and present to student on note cards and lead a class discussion related to the cases presented. Ask students to write their own case studies related to nutrition.
- Ask students to read the article *Eating Habits of Today’s Youth* (see reference list). Ask students about their reaction to the information presented.
- Include additional activities on calcium and iron, two nutrients often lacking in adolescent diets. See reference list for web based activities. Discuss alternate ways that teens can get calcium and iron in the diet. Ask students to research osteoporosis and iron-deficiency anemia.

Extended Learning Activities:

Taste Panel – Updated - Hold a tasting activity with a variety of fruits and vegetables, a whole grains tasting activity or lean protein (lean meats, low-fat, and soy cheese, meatless meats, beans, tofu, different kinds of nuts, etc.)

1. **Milk Mustache Contest** - visit the www.whymilk.com site and have fun with the milk mustache. Considering holding a milk mustache contest at your school with pictures of teachers and students. Coordinate a drink milk campaign in your school with this activity. Make posters promoting milk and milk products. Make milk mustache poster from the photos of contest winners.

Nutrition Knowledge

| Nutrient | Why Needed | Major Food Sources |
|----------------------|-------------------|---------------------------|
| Carbohydrates | | |
| Fats | | |
| Vitamin A | | |
| Vitamin C | | |
| Thiamin | | |
| Niacin | | |
| Riboflavin | | |

| Nutrient | Why Needed | Major Food Sources |
|-----------------|-------------------|---------------------------|
| Calcium | | |
| Iron | | |
| Water | | |

Nutri - Bingo

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Directions for NUTRI-Bingo

1. Make a set of blank BINGO cards – one for each student in the class.
2. On the board or on an overhead slide, have a list of nutrition terms that you want to review with students; ask student to put one word in each box on their bingo card, each should write the words in random order on the card.

NOTE To Teacher: You could generate a set of bingo cards on the computer – one for each student should you so desire.

To play the game, students listen to the clues read aloud from the index cards and mark the box that they think has the correct answer. A chip or some other small object is placed on each box as clues are read. The game is played in the traditional BINGO manner until a winner is declared!