

## NUTRITIONAL NEEDS OF INDIVIDUALS AND FAMILIES ACROSS THE LIFESPAN

### Nutrition Issues and Adolescents

Grade Levels: 9-12

**Concept:** Vegetarian Diets

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

**Technical Standard:** 6.2.2 Examine the relationship of nutrition and wellness to individual and family health, throughout the life span.

6.2.3. Assess the impact of food and diet fads, eating diets, and eating disorders on wellness

#### LESSON COMPETENCIES:

- Define vegetarian diets
- Develop vegetarian meal plans that meet daily nutrient requirements
- Discuss the benefits and nutritional considerations important when choosing a vegetarian lifestyle

#### ANTICIPATED BEHAVIORAL OUTCOMES:

- Students identify the special nutritional considerations of a vegetarian lifestyle.
- Students choosing this lifestyle plan vegetarian meals that meet the nutrition requirements for the adolescent stage of the life span.

#### Resources Needed:

- Food labels or packages of foods with nutrition labels that contain vitamin and calcium supplements; packages of foods high in soy or other forms of vegetable protein, tofu, soy or rice milk, if available.
- Copies of “MyPyramid guidelines for Vegetarian Meal Planning”  
[http://www.MyPyramid.gov/tips\\_resources/vegetarian\\_diets.html](http://www.MyPyramid.gov/tips_resources/vegetarian_diets.html).
- Copies of handouts for all students.
- Dietary Tables of the nutrient value of common foods; a nutrient database is also available on the web from the United States Dept. of Ag at  
[www.nal.usda.gov/fnic/cgi-bin/nut\\_search.pl](http://www.nal.usda.gov/fnic/cgi-bin/nut_search.pl).

#### References for teachers and students:

*ADA Position: Vegetarian Diets* was updated in 2003 and is available at  
[http://www.eatright.org/cps/rde/xchg/ada/hs.xsl/advocacy\\_933\\_ENU\\_HTML.htm](http://www.eatright.org/cps/rde/xchg/ada/hs.xsl/advocacy_933_ENU_HTML.htm)

The *Vegetarian Resource Group* has vegetarian and vegan recipes, vegetarian nutrition information, brochures and other services at [www.vrg.org](http://www.vrg.org).

*Keeping Teenage Vegetarians Healthy and In the Know* is an article published in *Contemporary Pediatrics*, October, 2001. This is an excellent article with sound advice from health professionals. The article would need to be accessed at a library.

**NEW** The *Palo Alto Medical Center* has several references on teens and vegetarianism at <http://www.pamf.org/teen/health/nutrition/veggieteens.html#>.

**NEW** *KidsHealth* (<http://kidshealth.org/teen>) website has resources for teens on this topic including an article, “Becoming a Vegetarian” ([http://kidshealth.org/teen/food\\_fitness/nutrition/vegetarian.html](http://kidshealth.org/teen/food_fitness/nutrition/vegetarian.html)). The site also has several vegetarian recipes.

**NEW** A chart outlining the nutritional needs for vegetarian teens can be found at <http://www.kidsnutrition.org/consumer/nyc/volW-00e.htm>. This tool can help teens to see what foods they need to get everyday to meet their nutritional needs on a vegetarian diet.

**NEW** The Nutrition.gov website has a list of references on this topic at <http://www.nutrition.gov/index.php?term=vegetarian+diets&mode=fulltext&x=16&y=4> including the “MyPyramid recommendations for vegetarians” ([http://www.MyPyramid.gov/tips\\_resources/vegetarian\\_diets.html](http://www.MyPyramid.gov/tips_resources/vegetarian_diets.html)).

**NEW** *MedLine Plus* website has a page dedicated to resources and articles on the topic of “vegetarianism” (<http://www.nlm.nih.gov/medlineplus/vegetariandiet.html>).

## Background Information

**Vegetarianism** is the practice of eating a diet that consists entirely or largely of plant sources of food. Fruits, vegetables, grains, nuts and seeds are the mainstays of a vegetarian diet.

There are several types of vegetarians including:

- Vegans – They eat no foods from animal sources; diet is limited strictly to foods from plant sources
- Lacto-vegetarians – eat animal protein in the form of milk, cheese and dairy products. They do not eat meat, fish, poultry or eggs.
- Lacto-ovo vegetarians – They eat animal protein in the form of dairy products and eggs. However, they do not eat meats, fish or poultry.
- Semi vegetarians or partial vegetarians – They eat dairy products, eggs, poultry and seafood. They eat little or no red meat – beef, veal, pork and lamb
- Pesco vegetarians – They eat fish but no other meat
- Pollo vegetarians – They eat poultry but no other meat.

**Veggie Facts** from the *American Dietetic Association* ([www.eatright.org/](http://www.eatright.org/)) (2003 - updated):

- Approximately 4.8 million Americans (2.5% of the population) in 2000 followed a vegetarian diet.
- Aging baby boomers are taking a proactive approach to their health by eating more meatless meals; according to a 2002 survey, 20-25% of Americans report that they eat 4 or more meatless meals a week.
- Health and taste are the top reasons consumers are eating more meat-free meals

There are many reasons why individuals or families may follow a vegetarian diet:

- Religious reasons (Seventh Day Adventists follow a vegetarian diet)
- Health concerns
- Concern for animals
- Concern for the environment
- Economic

A vegetarian diet may help to reduce the risk of developing medical conditions such as obesity, heart disease, high blood pressure, and diabetes.

Several research studies point to the health benefits of adding meatless meals to U.S. eating patterns. One of the largest studies to date showed that if participants' diets were high in animal protein and contained fewer foods of vegetable origin, there was a higher risk for heart disease and some cancers. In another study, researchers concluded that substituting some soy protein for animal protein can significantly lower serum cholesterol and LDL-cholesterol levels. ("*Meat-Free*" *Goes Mainstream*, an *American Dietetic Association* fact sheet, no longer available)

Vegetarian diets have been linked to anorexia nervosa in adolescents. (Nutritional Deficits: Potential Problems from *Keeping Teenage Vegetarians Healthy and In the Know*, see reference list)

### **Vegetarian Diets and Nutrient Intake**

Tables indicating the Dietary Reference Intakes for all nutrients can be found at this link: [http://dietary-supplements.info.nih.gov/Health\\_Information/Dietary\\_Reference\\_Intakes.aspx](http://dietary-supplements.info.nih.gov/Health_Information/Dietary_Reference_Intakes.aspx). Another source of information about each nutrient and the tables with recommended amounts can be found at the *Linus Pauling Institute* at *Oregon State University* at the following link: <http://lpi.oregonstate.edu/infocenter/contentnuts.html>.

Protein – The RDA for protein is 46 g for a female adolescent (14-18 years old) and 52 g for a male adolescent (14-18 years old). These values are easily achieved by most teen vegetarians. Lacto-ovo vegetarians consume eggs, milk and other dairy products that are high in protein. Vegans obtain protein primarily from legumes, whole grains and nuts. A variety of sources is necessary to ensure that the diet has adequate amounts of all essential amino acids.

Calcium – 40-60% of peak bone mass is acquired during adolescence (Golden, et al.). Therefore it is essential that adequate amounts of calcium be a part of a teenager's diet. Dietary Reference Intake for calcium is 1,300 mg for adolescents. For vegans, achieving the AI for calcium requires more knowledge and effort because unsupplemented vegetable sources of calcium tend to have lower amounts of calcium per serving than dairy products do. Vegan teens should not only consume calcium-rich vegetables but also use calcium-supplemented products such as calcium-supplemented soy and rice beverages, orange juice, breakfast cereals and waffles. Lacto-ovo vegetarians should consume calcium-rich vegetables and dairy products.

Vitamin D – Unfortified and vegetable-based foods are trivial sources of vitamin D. Teen vegans should either take a Vitamin D supplement containing 5 mcg of Vitamin D or ensure adequate intake by consuming fortified foods.

Vitamin B12 - A lacto-ovo vegetarian diet provides a reliable supply of B12 but a vegan diet does not. The RDA for Vitamin B12 for adolescent males and females age 14 and older is 2.4 micrograms a day and 1.8 mcg/day for 13 and under. Adolescent vegans must get the RDA through a vitamin supplement or supplemented foods such as soy beverages, cereal, and waffles.

### **Learning Activities:**

#### **High School Level**

- Discuss the definition of vegetarianism and the different types of vegetarians. Share sample menus for each type of vegetarian diet. Use the overhead master, [Vegetarian Vocabulary](#), to present the terms to students. This could also be copied and used as a study guide/advanced organizer for students.
- Discuss reasons why people may choose a vegetarian lifestyle. Potential health benefits of a vegetarian diet may be included in the discussion.
- Compare the “*MyPyramid* for Vegetarian Meal Planning” ([http://www.MyPyramid.gov/tips\\_resources/vegetarian\\_diets.html](http://www.MyPyramid.gov/tips_resources/vegetarian_diets.html)) to other *MyPyramid* ([www.MyPyramid.gov](http://www.MyPyramid.gov)) recommendations for teens who are not vegetarians. Discuss differences and dietary concerns for vegetarians.
- Review the recipe for [Santa Fe Pizza](#); ask students to plan a complete the [Vegetarian Menu Plan](#) for one meal using this dish as the entrée. Complete the day’s menu with breakfast, dinner and snack selections. Students should use the “*MyPyramid* for Vegetarian Meal Planning” ([http://www.MyPyramid.gov/tips\\_resources/vegetarian\\_diets.html](http://www.MyPyramid.gov/tips_resources/vegetarian_diets.html)) – menu should meet the requirements of the Food Guide. Optional: ask students to determine the nutrition information for one serving of the [Santa Fe Pizza](#)
- Working in groups of two, ask students to complete the [Vital Nutrients for Vegetarians](#) assignment. Be prepared to assist students with food amounts to use for some of the food items. When students have completed the assignment, discuss the following questions:
  1. Could you follow a strict vegan diet on a daily basis? Why or why not? What about a lacto-ovo vegetarian diet or a lacto vegetarian diet?
  2. Why does meal planning for a vegetarian diet take special consideration?
  3. Do you think most teens would take the time to make sure they are meeting the guidelines of *MyPyramid* whether or not they are vegetarian? Why or why not?

#### **Extended Activities:**

- **Vegetarian Food Fest** – Students choose and prepare vegetarian recipes. Students sample the final products. Students provide nutrition information for one serving of the recipes prepared. Allow others in the school to sample the results.

# Vegetarian Vocabulary

## Vegetarianism

### Types of Vegetarians

- **Vegans**
- **Lacto-ovo vegetarians**
- **Lacto vegetarians**
- **Semi-vegetarians**
- **Pesco vegetarians**
- **Pollo vegetarians**



# Santa Fe Pizza

(A vegetarian recipe from the American Dietetic Association)

- 1 12-inch pre-baked pizza crust
- 2 tablespoons yellow cornmeal
- 2 meat-free, soy-based burgers
- 1/2 teaspoon cumin
- 1/2 cup taco sauce
- 3 tablespoons fresh cilantro
- 1/2 cup canned black beans, rinsed and drained
- 1/4 cup diced green chili peppers
- 6 ounces shredded Mozzarella cheese

Spray pizza pan with nonstick cooking spray, then dust the pan with cornmeal. Fry soy-based burgers in a nonstick skillet over low heat, chopping the burgers into bits with a spatula. Stir in cumin. Spread taco sauce over pizza crust and sprinkle with warm burger and remaining toppings. Bake at 400 degrees F. for 15 minutes or until cheese is bubbly and begins to brown. Cut into 8 slices.

Calories per slice:	300
Protein:	15 grams
Fat:	5 grams
Carbohydrate:	47 grams
Sodium:	590 milligrams
Cholesterol:	12 milligrams



# Vegetarian Menu Plan

Name(s) \_\_\_\_\_

Directions: Plan a one day vegetarian menu plan following the recommendations of the “MyPyramid Recommendations for Vegetarian Meal Planning” ([http://www.MyPyramid.gov/tips\\_resources/vegetarian\\_diets.html](http://www.MyPyramid.gov/tips_resources/vegetarian_diets.html)). The entrée for the lunch menu has already been selected for you; the ingredients for this entrée are available for you to review.

## **BREAKFAST**

## **LUNCH**

Santa Fe Pizza

## **DINNER**

## **SNACKS**

# Vital Nutrients for Vegetarians

Name(s) \_\_\_\_\_

**Directions:** Your friend Amanda, 17 has decided to follow a vegetarian lifestyle. You are concerned about the nutritional quality of the foods that she eats. Listed below is a one-day sample menu for Amanda. It is your task to see if her menu meets the recommendations of “*MyPyramid* for Vegetarians” ([http://www.MyPyramid.gov/tips\\_resources/vegetarian\\_diets.html](http://www.MyPyramid.gov/tips_resources/vegetarian_diets.html)) and to see if she is getting the Dietary Recommended Intake (DRI) for each of the 6 nutrients listed. Place each food and serving size in a blank *MyPyramid*. Complete the chart on nutrient intake to see if Amanda’s menu is nutritionally adequate.

## Amanda’s Menu

### Breakfast

1 cup oatmeal with cinnamon, raisins and ½ cup fortified soy milk  
1 slice whole wheat toast with 1 tablespoon peanut butter  
½ grapefruit

### Lunch

2 bean burritos: black beans in corn tortillas, topped with chopped lettuce, tomatoes and salsa  
Carrot sticks

### Dinner

Chinese stir fry over brown rice: tofu chunks, broccoli, pea pods, water chestnuts and Chinese cabbage  
Baked apple

### Snack

Banana soymilk shake

### Nutrient Intake Chart

Food Item	Serving Size	Vit B12 (mg)	Vit D (mg)	Calcium (mg)	Protein (g)	Iron (mg)	Zinc (mg)
Oatmeal							
Raisins							
Soymilk							
Whole Wheat Bread							
Peanut Butter							
Grapefruit							
Black beans							
Corn Tortillas							
Lettuce							
Tomatoes							
Salsa							
Carrot Sticks							
Brown Rice							
Tofu Chunks							
Broccoli							
Pea Pods							
Water Chestnuts							
Chinese Cabbage							
Apple							
Banana							
Soy milk							
Totals	*****						