

NUTRITIONAL NEEDS OF INDIVIDUALS AND FAMILIES ACROSS THE LIFESPAN

Nutrition Issues and Adolescents

Grade Levels: 9-12

Concept: Type 2 Diabetes

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

LESSON COMPETENCIES:

- ? Define diabetes
- ? Identify risk factors for diabetes
- ? Explore the defenses against diabetes
- ? Plan meals appropriate for a diabetic

ANTICIPATED BEHAVIORAL OUTCOMES:

- ? Students monitor physical activity by following Dietary Guidelines for physical activity
- ? Students set dietary and activity goals in order to reduce the risk of type 2 diabetes and other chronic diseases

Resources Needed:

- Internet access for all students or copies of articles identified for each student
- Copies of handouts for all students

References for teachers and students:

A very good article on diabetes, *Diabetes: A Growing Concern*, is available at the International Food Information Council Foundation website at www.ific.org Click on Food Insights.

Another article with good background information is “*News You Can Use! Sixteen Million Americans have Diabetes: A Third Don’t Even Know It. Are You One of Them?*” at the Dairy Council of California website at www.dairycouncilofca.org Click on Healthy Lifestyles and that will lead you to the link for the article.

The National Center for Chronic Disease Prevention and Health Promotion (CDC) website has a lot of information on diabetes and diabetes prevention at www.cdc.gov/diabetes/

A website dedicated to diabetes can be found at www.diabetes.org This site is the site of the American Diabetes Association and includes nutrition information, exercise information, recipes, games and puzzles and a section for kids with diabetes – lots of good interactive activities. Check out this site before moving forward with this lesson.

NOTE TO TEACHER: Two articles from this site are suggested in the learning activities section.

Background Information:

Diabetes is one of the most serious health problems facing the world today (National Diabetes Education Program). The National Centers for Disease Control and Prevention (CDC) reported the following in the September 2001 Journal of the American Medical Association:

- ? The number of Americans considered obese jumped from 61% between 1991-2000; this is an increase from 12% of the population to about 20%)
- ? The number of Americans with diabetes climbed to 49% during the same decade (from 4.9% to 7.3% of the population)
- ? At least 10 million Americans are at risk for type 2 diabetes
- ? About 800,000 new cases are diagnosed each year and health officials predict a 165% increase in diabetes in the next 50 years.

Diabetes occurs when way the body no longer makes or is able to make insulin, a hormone produced by the pancreas. Insulin allows the energy from carbohydrates in foods to be used by the body's cells. When insulin is not present or is ineffective, blood sugar levels rise. Over time, high blood sugar levels can cause damage to the eyes, nerves, kidneys and other vital organs.

There are 3 types of diabetes: type 2, type 1 and gestational.

Type 2 diabetes accounts for about 90-95% of all diabetes cases. It occurs when the pancreas produces some, but not enough insulin. Being overweight is the greatest risk factor for developing type 2 diabetes. This form of diabetes is considered for the most part preventable. Some people with type 2 diabetes may also require insulin to stabilize blood glucose levels, although most can achieve this through proper diet and exercise. This usually occurs in adults over 40 but people of any age who are overweight and lead a sedentary lifestyle are at greater risk for developing type 2 diabetes. According to the National Diabetes Education Program (<http://ndep.nih.gov>), increasingly, health care providers are finding more children and teens with type 2 diabetes, a disease usually seen in people over age 40. Although there are no national data, some clinics report that one-third to one-half of all new cases of childhood diabetes are now type 2. African American, Hispanic/Latino and American Indian children who are obese and have a family history of type 2 diabetes are at especially high risk for this type of diabetes.

Far less common is type 1 diabetes, which occurs when the pancreas makes little or no insulin, regardless of activity or weight level. People with this form of diabetes must take insulin to regulate blood glucose. Type 1 diabetes occurs most often in children and young adults and requires daily injections of insulin to maintain normal blood glucose levels.

Gestational diabetes is a form of glucose intolerance that is diagnosed in some women during pregnancy. During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose levels to avoid complications in the infant. After pregnancy, only 5-10% of women with gestational diabetes are found to have type 2 diabetes. However, women who have had gestational diabetes have a 20-50% chance of developing diabetes in the next 5-10 years.

Risk factors for diabetes include:

- Being overweight or obese
- A sedentary lifestyle with little or no regular exercise
- A family history of diabetes or a member of a high risk racial or ethnic group. African American, Latino, Asian American, Pacific Islander or Native American are higher risk groups.
- A woman who has had a baby who weighs more than 9 pounds

The American Diabetes Association recommends these general guidelines for people with diabetes:

- ? Limit fat to 30% or less of daily calories
- ? Limit saturated fat to 10% or less of daily calories
- ? Limit protein to 10-20% of daily calories
- ? Limit cholesterol to 300 milligrams or less daily
- ? Consume about 20 to 35 grams of fiber daily

Most of these guidelines are a good idea for the general population as well. Those who are overweight may also restrict calorie intake.

Learning Activities:

High School Level

- ? Write the word **diabetes** on the board, ask students to identify words or phrases that they associate with this disease by filling in words in a crossword puzzle fashion as in the example below:

D
D I A B E T E S
N A
S D
U L
L Y
I
N

- Discuss the student's associations with these words. What do they know about diabetes?
- ? Invite a health professional, for example, registered dietician, school nurse, local nurse or doctor to discuss diabetes, importance of diet and exercise for diabetics and health concerns related to diabetes.
- ? Assign students to read the Nutrition Guide for People With Diabetes at www.diabetes.org/main/health/nutrition/nutrition_guide.jsp Student should complete the study guide for this article.
- ? Considering the information discussed in the article, ask students to plan a *Daily Menu and Exercise Plan* that follows the guidelines discussed in the article. Compare this diet to the Food Guide Pyramid and Dietary Guidelines and discuss how this diet would be healthy for all.
- ? Review the terminology with students by having them complete the *Dealing with Diabetes* word search

Extended Learning Activities:

- ? **Student Body Project** - Prepare a display on diabetes for the local library or school library during National Diabetes Awareness Month (November) or National Nutrition Month (March)
- ? **Student Body Project** - Include a booth and information on diabetes as a part of a school-wide health and fitness fair.
- ? **After School Fitness Activities** – Plan physical activities for preschool or elementary school age children involved in after school care programs. Plan activities 2-3 times a week for a month.