Teaching Healthy Eating to Adolescence

Introducing meal portioning and planning, food labeling and shopping, and whole vs. processed foods in the classroom setting

Tag Words: Processed foods, adolescents, nutrition, education, parents, behaviors, chronic disease

Authors: Barbara Dutra, Jenna George, Marina Vineis, Willis Wiggin

Summary (JG)

Adolescence is a period of tremendous physiological, psychological, and cognitive transformation during which a child becomes a young adult. As a result, adolescents require a specific caloric intake. Although nutrition education has been implemented in most states’ curriculums, studies have shown that adolescents are not consuming the balanced diets they require for sufficient development. Processed foods have grown dangerously abundant as a result of their convenience, affordability, and rich-flavors. In turn, teenagers are over consuming energy-dense, processed foods that lack the appropriate nutrients necessary for optimal development. With the proper education and increased parental involvement in adolescents’ diets, the obesity epidemic and the diagnosis of diet-related chronic diseases will be significantly reduced. As our service project, we have developed a five day educational program that we hope to teach in the high schools of New Jersey. On the first day of our program, the students will learn about the MyPyramid food groups, portion sizes, the important nutrients within each food group, and the benefits of eating adequate amounts of these nutrients. Nutritional and physical differences between processed and whole foods will be discussed on the second day of the program. The third and fourth days will focus on how to read food labels and how to assemble a five day dinner meal plan. On the final day, the students will learn how to create a healthy shopping list, highlighting affordability and nutrient content. With this program we hope to start an epidemic of health conscious eating amongst adolescent populations, ultimately reducing the incidence of chronic diseases.

Video Link

http://www.youtube.com/watch?v=hpzi-LJburA
The Issue: Nutrition

The Importance of a Healthy Diet (JG)

It is imperative that adolescents consume a nutrient-dense diet in support of their rapid growth. Teenage populations can achieve optimal physical and cognitive development, maintain a healthy body weight, and reduce the risk of chronic disease with a balanced diet. Studies have shown that children who consume adequate nutrient intake perform better in school. Significant health problems, such as iron deficiency anemia, eating disorders, and dental problems are prevented with a healthy diet. Additionally, appropriate eating patterns can reduce the diagnosis of chronic diseases, such as coronary heart disease, cancer, stroke, diabetes, hypertension, obesity, and osteoporosis that can occur later in adulthood (James, ’10).

Through ages twelve to seventeen, teenagers grow about one inch per year. To support this rapid growth, adolescents must consume adequate nutrients. Teenagers should eat about 45 to 65% of their daily calories as carbohydrates, with an emphasis on complex carbohydrates. It is important for teenage boys to consume 31 grams of fiber per day, and teenage girls to consume 26 grams of fiber per day. This will help to regulate the digestive system. Dietary fiber decreases the risk of several chronic diseases, including heart disease, obesity, diabetes, and colon cancer. Diets high in fiber tend to contain less fat, cholesterol and energy than diets low in fiber. While simple sugars are carbohydrates, over consumption can be extremely detrimental to one’s health. Added sugars should not exceed 25% of total calories (to ensure sufficient intake of essential micronutrients). This is a maximum suggested intake and not the amount recommended for achieving a healthful diet (Position of the American Dietetic Association: Nutrition Guidance for Healthy Children, ’08).

Proteins as well as fats are crucial elements of an adolescent’s developmental health. Teenagers should co

‘Consume 10 to 30% of daily calories as lean protein. Adequate protein intake is vital in supporting growing muscle mass. Fortunately, the majority of adolescents in the U.S. are consuming sufficient amounts of protein. For ages twelve to eighteen, the DRI Committee recommends 25 to 35% of calories from fat. One study found that adolescents consumed the highest percentage of energy from fat, approximately 57% of daily calories. The fats that are consumed should be polyunsaturated and monounsaturated fatty acids, such as poultry, fish, lean meats, nuts, and vegetable oils; while keeping the consumption of saturated fat, trans-fatty acids, and cholesterol as low as possible (Position of the American Dietetic Association: Nutrition Guidance for Healthy Children, ’08). A diet low in saturated fat, trans-fatty acids, and cholesterol, while adequate in poly- and monounsaturated fats will lower blood pressure, cholesterol levels, reduce the risk of diabetes, heart disease, Alzheimer’s disease, and protect against chronic diseases (Zelman, ‘09).

A well-nourished teenager has the energy and stamina to continuously enhance his or her learning experience. Severe nutrient deficiencies can lead to growth retardation, affect mental development and diminish energy levels. Iron deficiency, in particular, will lead to difficulty concentrating and impair performance in most activities. It is necessary for adolescents to consume 10 mg of iron per day; however, this amount increases with age. To prevent osteoporosis and to allow the body to fully develop, it is imperative that teenagers consume a minimum of 1,200 mg of calcium per day (Hall, ‘10). A healthy diet is not only necessary for
adolescents to reach their physical and cognitive potentials, but is vital in fighting and preventing chronic disease.

Current Consumption of Processed Foods (MV)
No other country has embraced the movement towards processed, prepackaged foods like the United States. It is estimated that Americans eat 31 percent more packaged food than fresh food, and they consume more packaged food per person than their counterparts in nearly all other countries. (Fairfield, 2010) A large portion of the American diet has shifted towards ready-to-eat meals, such as frozen entrees, microwave meals, and sweet or salty snack foods. The convenience and accessibility of these ready-to-eat foods has contributed to their booming popularity which in turn provides industries with large profits and a growing demand.

Processed foods can be generally defined as any food that is altered from its natural or raw state. In this broad definition, the category of processed foods may include healthy foods that could provide health benefits. For instance, preparing raw foods such as peeling or cutting fruits and vegetables can be defined as processed foods, even though these foods are quite beneficial. Skim milk, which is processed from less healthy whole milk, exists as both a processed food and a healthier alternative. Unfortunately, for most Americans the term processed food is used more specifically to include foods “which have been chemically altered through additives such as flavors, flavor enhancers, binders, colors, fillers, preservatives, stabilizers, emulsifiers, etc., or which has been manufactured through combination or other methods”(Thorn, 2008). The alteration that occurs in processed foods can leave the foods stripped of important nutrients while simultaneously increasing the amount of fat, salt and sugar present in the final product. Various studies have shown that diets with high levels of fat, salt and sugar lead to increased rates of heart disease, diabetes and obesity. Most processed foods include potentially harmful ingredients such as refined grains, trans and saturated fats, salts and sugars like high-fructose corn syrup.

Refined grain products have been modified to remove the bran and germ portion of the grain and are further altered by processes such as mixing, bleaching and brominating. The bran and germ portion of whole grains contain dietary fiber, proteins, vitamins and minerals which are subsequently lost through processing. Refined grains are left with the carbohydrate portion of the grain, in other words, empty calories. Dietary fiber and some vitamins and minerals that are found in whole grains are not normally added back to refined grains. Therefore, refined grains do not lower your risk of developing cardiovascular disease, including heart disease and stroke, as would whole grains. Major sources of refined grains in the diets of Americans are yeast breads (26% of total refined grain intake), pizza (11%), grain-based desserts (10%) and tortillas, burritos, and tacos (8%) (Dietary Guidelines for Americans, 2010).

Solid fats, which contain saturated and trans fatty acids, contribute an average of 19 percent of the total calories in American diets. Solid fats provide few essential nutrients and no dietary fiber. Some major food sources of solid fats in the American diet are grain-based desserts, pizza, regular (full-fat) cheese, sausage, franks, bacon, ribs and fried white potatoes (Dietary Guidelines for Americans, 2010). When consumed, trans and saturated fats increase your levels of LDL or the “harmful” cholesterol and decrease your levels of HDL or “healthful” cholesterol. An increase in LDL cholesterol can lead to health complications such as an elevated risk for stroke, heart attack and cardiovascular disease. According to the 2010 dietary guidelines processed foods and oils are a source of around 80 percent of trans fats in the diet, compared to 20 percent that occur naturally in food from animal sources (Dietary Guidelines for Americans, 2010).
Trans fats can be found in most baked goods such as cakes, cookies, crackers and pies. It can also be seen in margarine and fried foods like potato chips and French fries.

Most processed foods possess high levels of salt, which contains sodium, in order to enhance flavor and preservation. Up to 77 percent of sodium in the average American diet comes from processed food consumption (Mayo Clinic staff, 2009). Sodium is necessary for maintaining vital life processes and proper regulation of body functions, but too much sodium consumption from processed foods can lead to high blood pressure and associated health risks. The 2010 Dietary Guidelines show evidence that increased consumption of sodium directly increases an individual’s blood pressure. Studies in children have documented that as sodium intake decreases, so does blood pressure. It is recommended to keep blood pressure in the normal range which could reduce an individual’s risk of cardiovascular disease, congestive heart failure, and kidney disease (Dietary Guidelines for Americans, 2010).

Sugars such as high-fructose corn syrup are now found in virtually all commercial or processed foods. Added sugars, like high-fructose corn syrup, contribute an average of 16 percent of the total calories in American diets. The problem with high-fructose corn syrup is that the fructose portion does not stimulate insulin, which eventually helps regulate your feelings of hunger and satiety. Fructose is also an unregulated source for fatty acid synthesis (Mohr, 2008). These properties make frequent consumption of high-fructose corn syrup a major factor in unhealthy weight gain. The major sources of added sugars in the diets of Americans are soda, energy drinks, and sports drinks (36% of added sugar intake), grain-based desserts (13%), sugar-sweetened fruit drinks (10%), dairy-based desserts (6%), and candy (6%) (Dietary Guidelines for Americans, 2010). Over all, solid fats and added sugars contribute to a substantial portion of the calories consumed by Americans, 35 percent on average, or nearly 800 calories per day without contributing to overall nutrient adequacy of the diet (Dietary Guidelines for Americans, 2010).

As you can see, the movement towards commercial and processed foods has created many serious health concerns amongst Americans. This is why it is imperative that we reverse this movement and redirect it towards consumption of natural, whole or organic foods. These foods contain essential nutrients, in forms that the body can readily break down, which are required for good health and disease prevention.

The need to educate the public, in particular those in low income areas, on how to prepare healthy and affordable meals. (BD)

Movements to control and diminish the obesity epidemic and diet related chronic diseases amongst children and adolescents have been of prime importance in the past few years. Proposed and implemented changes include School breakfast and lunch programs. These programs are effective strategies because they may influence two of the three main meals per day of school age children. However, although school lunches are being revised as to provide nutrient dense meals and the curriculum of schools are requiring nutrition education, there is still no program that influences food consumption after school. Thus a program that will educate children, especially those in high school to be able to make quick and healthy meals is of critical importance for future behavioral actions once these adolescents no longer have access to school lunches.

Studies have shown that education plays a critical role in determining health status of the American population by influencing health behaviors and choices. Education has a positive
correlation with healthier diet choices, thus the subgroup of the population with limited education are more prone to low nutrient dense diets. Based on epidemiological studies, diet related diseases such as diabetes and cardiovascular disease account for a large portion of morbidity and mortality in the United States. This is of importance because it factors into the cost of health care (Variyam, 2003). Thus, this proves the need to increase nutrition education amongst low in-come areas where people living with limited financial resources are more likely to purchase processed foods that places them at an increased risk for developing chronic disease (Variyam, 2003).

Individuals chose foods based on prices, taste, preferences, pleasure, time available to cook, and nutrient quality. Thus the observed dietary differences within individuals of the population are a product of the trade offs amid all the factors influencing food purchase (Variyam, 2003). Fresh produce and more nutrient dense/less processed foods are more expensive, therefore, the same subgroup of the population who have a low income and prone to inadequate education, are more likely to purchase the cheaper processed foods.

The increase in incidence of diet related disease in children has been shown to be in part a result of the change in diet over the years. Data from three national surveys conducted in 1977-1978, 1998-1998, and 2001-2002 shows that the trend in food consumption between 6-11 and 12-19 year-olds has shifted to an increase intake of fruit juices, carbonated beverages, savory snacks foods, pizza, and candy. Along with this trend, it was also observed that there was a decrease in intake of whole milk and most vegetables (Sebastian, 2005). According to a USDA’s Food intake survey, it was discovered that the consumption of soft drinks increases and milk decreases as children get older. Furthermore there was a positive correlation between soft drink consumption and TV watching (Yen, 2002). This may play a critical role in families of low income because they are more likely to live in urban areas with limited access to safe outside playground for children and adolescents. Thus these children are more likely to be spending more time inside watching TV and drinking sweetened beverages that are cheap and empty in essential nutrients.

With the rise in processed foods in the United States, it is of no surprise that fast food has become a prominent attribute to the diet of children. In a study conducted on 4-19 year olds, it was discovered that on a typical day, 30% of children consumed fast food. The consumption of fast food by children had a positive correlation with total energy intake, fat, carbohydrates, added sugars and sweetened beverages. In the contrary, an increase in fast food correlated with less fiber intake. Dietary fiber is an influential factor in promoting satiety and protecting against weight gain. The study also found that increased fast food consumption was independently associated with male gender, older age, and non-Hispanic black race. Moreover, the individuals who ate fast food were less likely to eat dinner with their families at home. In a busy society, family routines require quick and convenient meals that often lead to fast processed food consumptions. Adolescents are thus more prone to obtain the majority of their caloric intake from fast food establishments or quick highly processed meals at home such as frozen chicken nuggets, pizza, and fries (Bowman 2004). These finding are of significance because it places these individuals at increased risk for chronic diseases. Thus, further education of behavioral change that will teach young adults how to prepare healthy quick meals at home is necessary.

Observing the food environment of Mercer County, it further emphasizes the need for behavioral education to high school students in Trenton. Mercer County has up to 15% of its low income population living more than 1 mile away from a grocery store. The number of grocery stores in
Mercer County increased by 10% and the number of convenience stores increased by 10-25% between 2007 and 2008. There has been over 35% increase of SNAP redemption and authorized stores and 10-15% increase in WIC redemption/authorized stores between 2008-2009. While the number of fast food and full service restaurants in Mercer county increased by 10% between 2007-2008, fast food restaurant expenditure rose from $320-400 in 2002 to $500-700 in 2007 and full service restaurant expenditure rose from $400-500 in 2002 to $700 in 2007 (Your Food Environment Atlas, 2011) It is important to educate adolescents how to choose healthier options because of the increased availability of fast food restaurants and convenience stores that often provide cheap yet low nutrient dense foods. By educating adolescents and parents on healthy and cheap meal preparation it is possible to take advantage of the expanded availability of grocery stores and rise in SNAP redemption on healthy foods.

There was a 47-60% SNAP participation rate in Mercer County, with 22-33% of low-income population receiving SNAP in 2007. In 2008 the number of low-income population receiving SNAP increased by 5% since 2007. Furthermore, the number of SNAP participants between 2009-2010 increased by over 15% (Your Food Environment Atlas, 2011). This effects what parents can purchase for family food intake because if 22-33% of low income population is receiving SNAP then it means they do not have enough money to purchase foods and thus they are more likely to be purchasing cheap easy to make foods that are low in nutrient density. For this reason, the education of cheap, easy and healthy dinner meals may positively influence what parents’ purchase at the grocery store with their SNAP redemption. If adolescents create meals that they are willing to eat, their parents may be more willing to purchase these foods.

The percent change of average day school lunch participation only rose by 1.1% and for school breakfast by 5% between 2009 and 2010. In 2008 20-40% of the students were eligible for free lunch and 5-10% were eligible for reduced lunch. There was less than 5% change in summer food program participation by students (Your Food Environment Atlas, 2011). These statistics show that although a large number of children may be receiving more nutritious breakfast options with the new school lunch programs, it is still essential to teach nutritious eating behaviors at home since that is the only method to reach all children and adolescents eating behaviors.

Mercer County along with all of New Jersey had household food and child insecurity bellow the U.S. average in 2009 (Your Food Environment Atlas, 2011). Thus, this proves the importance of promoting a program that will teach adolescent and parents how to purchase nutritious foods that is economically feasible. A program called Share Our Strength’s Cooking Matters was developed based on the success of teaching families how to cook healthy meals on a budget. This program now offers a new segment called Shopping Matters to aid families on making healthy and affordable choices at the supermarket (Beat Hunger with Smart, Healthy Shopping, 2011). Shopping Matters outlines the importance of providing a grocery store tour to the population so that adults can get the most nutritious foods for their money. During the tour, adults are taught how to compare unit prices, read food labels and ingredient lists in order to understand how to purchase the most nutritious foods at their budget. Shopping Matter was developed on the basis that research has shown that adequate shopping practices and nutrition label understanding is positively correlated with superior dietary quality (Shopping Matters, 2011). Based on the success of this program, the program we will develop will focus on teaching adolescents how to read food labels, and ingredients to help them formulate healthy dinner meals. By making the program fun and informative, we hope that students will be able to formulate meals that they are
willing to eat and share with their families. Through this program, we hope that students and their families can establish life-changing behaviors that implements nutritious foods into their diets.

The need for connection between parents and young adults on nutrition information (WW)
All children living in a civilized community obtain their food directly from their parents. From breakfast to dinner, mothers and fathers decide what their kids consume. Usually, the food habits the parents have carry on throughout their children’s developing years. The most important amount of learning about nutrition happens during the period between a child breastfeeding to the time they are in preschool. As a baby, they obtain milk whenever they cry for it; however, when they are in preschool parents will move towards regimented eating habits.

In a survey conducted by the American Dietetic Association Foundation, hundreds of children and adolescents were questioned about nutrition and their parents. Just under 70% of the students said that they are most influenced on subjects dealing with nutrition by their parents, and the majority feel the most comfortable talking to their parents about their bodies and what they consume. Because many families are recently having more women working full time, it is being more of a problem to focus a lot of time on nutrition and a well balanced diet for children. Fast paced, working families tend to rely on convenient foods for their children that takes the least amount of time for preparation. This directly affects parents lenience with their children's choices.

The ADAF survey also discovered that kids are more likely to eat and watch TV with their parents rather than doing a physical activity outside with their parents. Having a role model is very important to the development in a child. Children will most likely reenact or act similarly to what their parents do. So if a family that enjoys the confines of TV dinners and spending after-work hours on the catch watching TV, then the child will adopt this paradigm. However, an active family who enjoys physical activity and organic cookery, the child will most likely adopt that lifestyle.

Parents should find a framework where they are do not have too much stringent controls on food intake, which can potentially sway children into preferring high-fat, dense foods. In the toddler age, if restricted or forced to eat only vegetables and other organic products, children may be limited to acceptance of a small variety of foods. Parents sometimes take the role-model position too seriously and assume children need assurance in what to eat, when to eat, and how much. During baby development, many parents often encourage their babies to finish the food; sometimes by pretending the spoon is an airplane and applauding afterwards. This is looked at as an approval to the child for eating the amount in which its parents want. When a child has eaten enough of his/her meal, he should have the option to stop and not be forced to finish, they will naturally regulate the amount they eat. Also, parents tend to set a requirement of an amount of food or vegetables the child has to eat in order to receive dessert. Michelle May, a Phoenix family physician and author stated, "We're saying, 'you have to eat all the 'yucky stuff' if you want to get the 'good stuff,' " she said. "You've set up this 'yucky food vs. reward food,' and we take that all the way into adulthood." Unhealthy, desirable foods should never be used as a bribe or ploy to eat the important parts of the meal. Instead, families should read food labels to check the daily nutrients and ingredients. Children are attracted to the packaging and advertising of foods, including sugared cereals and processed treats. These processed foods should be given on occasion as a treat in a diet that is focused on low sugar, low fat, and unprocessed foods.
Setting and example for children to copy is helpful because it sets an example of healthy, enjoyable meals. If parents can spend time shopping, cooking, and eating the same meals with their children, the child will see no reason to indulge in fattening foods. If children are introduced to cooking at a young age, they will become more reliant about cooking for themselves in high school and in college years, and leaning away from convenient foods will help this factor of childhood nutrition development. Having healthy snacks around the house, parents can feel safe that their children are eating healthy even when they are not present. Fruits, vegetables, yogurt, granola, oats, nuts, low-fat crackers, and whole grain breads are all healthy foods that can be comfortably appealing to children. When it comes time for a meal, parents and children should discuss how hungry they are, and cook how much they feel fit for their hunger. Children should not be discouraged to eat how much or how little depending on their needs.

If children are growing up on the reward basis, they will value healthy, fresh foods as a requirement in order to eat what the foods they really enjoy like chocolate, ice cream, soda, and sweets. However, giving toddlers self-control over their diets with positive, nutritious influence has been found the best way to a healthy, child nutrition. The parents should provide a balance between healthy foods, whole grains, and organics for their children to pick and choose from. It may take multiple occasions for a child to become familiar with a healthy food, so diversifying his/her plate will increase the probability of a child to finally accept a healthy food into a daily diet. Ultimately, the parent’s goals should be to set a good example, buy a variety of healthy food and snacks, and to teach and impress their kids about nutritional quality.

Dietary Intake of Low Income Adolescents (JG)

Unhealthy eating patterns and malnutrition greatly increases the risk of many chronic diseases. Obesity, heart disease, and diabetes mellitus have become a major public health concern in the United States, and low-income and minority adolescents are disproportionately affected. This is due to unhealthy food choices and the lack of effective education. The lack of nutritious foods in an adolescent’s diet not only has immediate deleterious physical and psychological effects, but may also foster hazardous eating habits that promote chronic disease throughout adulthood (Wang et al., ‘10). Age-adjusted death rates for diet-related chronic diseases such as cancer, heart disease, stroke, and diabetes mellitus are greater among minority groups than Caucasians. Substantial evidence suggests that improving diet and nutrition could reduce the incidence, mortality, and the economic cost of these chronic diseases (Sharma et al., ‘09).

In the United States, the majority of adolescents’ diets provide ample micronutrient intake. However, only a small portion of this age group consumes the recommended amounts of fruits, vegetables, milk, and whole grain products, while exceeding the recommendations for fat and sugar. These eating behaviors, attributed to a lack of education, are the cause of the noteworthy health discrepancy between minorities and other major ethnicities in the United States (Sharma et al., ‘09). A national survey reported that 84% of Americans’ diet scored as “poor” or “needs improvement” by the USDA’s Healthy Eating Index. Low-income groups had lower scores than other income groups (Wang et al., ‘10).

A study was performed in Chicago, Illinois that determined the dietary intake of 382 adolescents ages ten to fourteen taken from four public schools. The majority of the students were from low-income families. Participants reported high-energy intakes and several unhealthy eating patterns: 58.6% consumed one or more servings of a sweetened beverage per day and 15.7% consumed three or more servings per day. Average fried food consumption was high (1.4 servings/day),
58.4% consumed one or more serving per day; and 75% consumed three or more snacks per day (Wang et al., '10). Other results stated that the mean caloric intake averaged at 3,144 calories per day, more than twice the recommended daily amount. More than half of the adolescents consumed about 300 mg of cholesterol per day; and sodium intake was high, with 75% consuming 2,400 mg per day. Mean fiber intake was inadequate at 23 to 25 grams per day, with a recommended intake of 31 grams per day for boys (aged nine to thirteen), and 26 grams a day for girls. About 55% of the students consumed less than the recommended amount per day (Wang et al., '10). Despite the efforts of the Illinois State Board of Education, these adolescents are in grave danger of developing chronic diseases. The core curriculum of the state promotes positive health practices and relevant health care; with an emphasis on a balanced diet to reduce a multitude of health risks. This experiment demonstrates the necessity for an improved nutritional education to be implemented in schools across the nation.

**Conclusion**

Adolescents’ increased consumption of processed foods high in added sugar, fat and sodium has lead to serious health consequences involving such chronic diseases as diabetes, obesity, and cardiovascular disease. Despite the recent efforts of most state schools in trying to implement nutrition education in their curriculums, most children and adolescents are still failing to consume a well balanced diet. Strong correlations can be seen between parental and child-eating behaviors, as poor dietary choices will most likely transcend from parent to child. Therefore, more focus needs to be directed towards not only improving and implementing interactive nutrition education programs within schools but also changing the dietary behaviors in the home setting where parental figures can reinforce healthy habits learned in school. This full circle plan will help ensure that adolescents will receive proper nutrition education in school and behavioral support of good dietary habits outside of school, promoting an overall healthy lifestyle and reducing future risk for chronic diseases.

**The Service Project: Raising awareness and Educational Plan**

To whom it may concern,

The rise in morbidities amongst young adolescents in the State of New Jersey is of critical concern to the future of our community. The increase in consumption of processed foods and subsequent lack of physical activity are the main causes for the rise in obesity and diabetes in the population. Thus, it is evident that the need for nutrition education on life style habits if of optimum importance to the adolescents in our society.

We are writing to you today to ask permission for the presentation of our nutrition education program, Adolescent Nutrition Education that can serve as a supplemental teaching tool to your school’s nutrition program. This is a one-week program that will teach your students basic knowledge of the MyPyramid food guide, how to distinguish processed versus whole foods, how to read food labels, how to formulate a one-week dinner meal schedule and how to go grocery shopping on a budget. This information can be of extreme importance to young adults because it has been shown that a majority of children and adolescent are consumed in school. Furthermore, once the students graduate from high school it will be to their benefit to be able to shop and build a healthy and affordable meal. Attached you will find a table of contents outlining our program.
Thank you for your time and consideration, we hope to benefit your students by aiding them with life skills that will promote the advancement of their health.

Sincerely,

Barbara Dutra, Marina Vineis,
Willis Wiggin, and Jenna George
# Appendices

## Table of Contents

I  
**Day One**—MyPyramid learning the food groups  
- Teach students food groups and portion sizes, nutrients and health implications

II  
**Day Two**—Whole Foods Verses Processed Foods  
- Teach students the nutritional and physical differences between processed and whole foods

III  
**Day Three**—How to Read a Food Label  
- Teach students important components of the food label including serving size, percent daily values and nutrient content

IV  
**Day Four**—How to Assemble a One-Week Dinner Meal Plan  
- Teach students two methods, both visual and written, of meal assembly and planning

V  
**Day Five**—Food Shopping on a Budget  
- Teach students how create a healthy shopping list highlighting affordability and nutrient content
Day 1: MyPyramid: Learning the Food Groups (Jenna George)
*Information from mypyramid.gov

Outline of lesson plan:
Introduction:
I. Instructors will ask students
   A. What they think practicing good health habits means?
   B. Do they think good nutrition is important for good health?
   C. Ask the students to give examples of foods they think are nutritious.

Body:
II. Instructors will present students with a MyPyramid poster
   A. Will ask students if they are familiar with this poster and ask them to share what they know
   B. The food groups will be explained as follows:

   What foods make up the fruit food group?
   Any fruit or 100% fruit juice counts as part of the fruit group. Fruits may be fresh, canned, frozen, or dried, and may be whole, cut-up, or pureed.
   Examples: Apples, Apricots, Avocado, Bananas, strawberries, blueberries, raspberries, Cherries, Grapefruit, Grapes, Kiwi fruit, Lemons, Limes, Mangoes

   How much should you be eating a day?
   Girls 9-13 years old: 1 ½ cups
          14-18 years old: 1 ½ cups
   Boys 9-13 years old: 1 ½ cups
          14-18 years old: 2 cups

   Health benefits of fruits:
   • Eating a diet rich in fruits and vegetables as part of an overall healthy diet may reduce risk for stroke and perhaps other cardiovascular diseases.
   • Eating a diet rich in fruits and vegetables as part of an overall healthy diet may reduce risk for type 2 diabetes.
   • Eating a diet rich in fruits and vegetables as part of an overall healthy diet may protect against certain cancers, such as mouth, stomach, and colon-rectum cancer.
   • Diets rich in foods containing fiber, such as fruits and vegetables, may reduce the risk of coronary heart disease.
   • Eating fruits and vegetables rich in potassium as part of an overall healthy diet may reduce the risk of developing kidney stones and may help to decrease bone loss.
   • Eating foods such as fruits that are low in calories per cup instead of some other higher-calorie food may be useful in helping to lower calorie intake.

   Nutrients:
   • Most fruits are naturally low in fat, sodium, and calories. None have cholesterol.
   • Fruits are important sources of many nutrients, including potassium, dietary fiber, vitamin C.
- Diets rich in potassium may help to maintain healthy blood pressure. Fruit sources of potassium include bananas, prunes and prune juice, dried peaches and apricots, cantaloupe, honeydew melon, and orange juice.
- Dietary fiber from fruits, as part of an overall healthy diet, helps reduce blood cholesterol levels and may lower risk of heart disease. Fiber is important for proper bowel function. It helps reduce constipation and diverticulosis. Fiber-containing foods such as fruits help provide a feeling of fullness with fewer calories. *Whole or cut-up fruits are sources of dietary fiber; fruit juices contain little or no fiber.*
- Vitamin C is important for growth and repair of all body tissues, helps heal cuts and wounds, and keeps teeth and gums healthy.

What foods make up the vegetable food group?
Any vegetable or 100% vegetable juice counts as a member of the vegetable group. Vegetables may be raw or cooked; fresh, frozen, canned, or dried/dehydrated; and may be whole, cut-up, or mashed.

Vegetables are organized into 5 subgroups, based on their nutrient content:

- Dark green vegetables: broccoli, dark green leafy lettuce, kale, mustard greens, romaine lettuce, spinach
- Orange vegetables
  butternut squash, carrots, hubbard squash, pumpkin, sweet potatoes
- Dry beans and peas: black beans, black-eyed peas, garbanzo beans (chickpeas), kidney beans, lentils, lima beans (mature)
- navy beans, pinto beans, soy beans
- Starchy vegetables: corn, green peas, lima beans (green), potatoes
- Other vegetables: Artichokes, asparagus, bean sprouts, beets, Brussels sprouts, cabbage, cauliflower, celery, cucumbers, eggplant

How much should you be eating a day?

<table>
<thead>
<tr>
<th>Group</th>
<th>9-13 years old</th>
<th>14-18 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls</td>
<td>2 cups</td>
<td>2 ½ cups</td>
</tr>
<tr>
<td>Boys</td>
<td>2 ½ cups</td>
<td>3 cups</td>
</tr>
</tbody>
</table>

Health benefits
- Eating a diet rich in fruits and vegetables as part of an overall healthy diet may reduce risk for stroke and perhaps other cardiovascular diseases.
- Eating a diet rich in fruits and vegetables as part of an overall healthy diet may reduce risk for type 2 diabetes.
- Eating a diet rich in fruits and vegetables as part of an overall healthy diet may protect against certain cancers, such as mouth, stomach, and colon-rectum cancer.
- Diets rich in foods containing fiber, such as fruits and vegetables, may reduce the risk of coronary heart disease.
- Eating fruits and vegetables rich in potassium as part of an overall healthy diet may reduce the risk of developing kidney stones and may help to decrease bone loss.
• Eating foods such as vegetables that are low in calories per cup instead of some other higher-calorie food may be useful in helping to lower calorie intake.

Nutrients:
• Most vegetables are naturally low in fat and calories. None have cholesterol. (Sauces or seasonings may add fat, calories, or cholesterol.)
• Vegetables are important sources of many nutrients, including potassium, dietary fiber, folate (folic acid), vitamin A, vitamin E, and vitamin C.
• Diets rich in potassium may help to maintain healthy blood pressure. Vegetable sources of potassium include sweet potatoes, white potatoes, white beans, tomato products (paste, sauce, and juice), beet greens, soybeans, lima beans, winter squash, spinach, lentils, kidney beans, and split peas.
• Dietary fiber from vegetables, as part of an overall healthy diet, helps reduce blood cholesterol levels and may lower risk of heart disease. Fiber is important for proper bowel function. It helps reduce constipation and diverticulosis. Fiber-containing foods such as vegetables help provide a feeling of fullness with fewer calories.
• Vitamin A keeps eyes and skin healthy and helps to protect against infections.
• Vitamin E helps protect vitamin A and essential fatty acids from cell oxidation.
• Vitamin C helps heal cuts and wounds and keeps teeth and gums healthy. Vitamin C aids in iron absorption.

What foods make up the grain food group?
Any food made from wheat, rice, oats, cornmeal, barley or another cereal grain is a grain product. Bread, pasta, oatmeal, breakfast cereals, tortillas, and grits are examples of grain products.

Grains are divided into 2 subgroups, whole grains and refined grains.

Whole grains contain the entire grain kernel -- the bran, germ, and endosperm. Examples include:
• whole-wheat flour
• bulgur (cracked wheat)
• oatmeal
• whole cornmeal
• brown rice

Refined grains have been milled, a process that removes the bran and germ. This is done to give grains a finer texture and improve their shelf life, but it also removes dietary fiber, iron, and many B vitamins. Some examples of refined grain products are:
• white flour
• degermed cornmeal
• white bread
• white rice

Most refined grains are enriched. This means certain B vitamins (thiamin, riboflavin, niacin, folic acid) and iron are added back after processing. Fiber is not added back to enriched grains. Check the ingredient list on refined grain products to make sure that the word “enriched” is
included in the grain name. Some food products are made from mixtures of whole grains and refined grains.

How many grain foods are needed daily?
Girls 9-13 years old: 5 oz  
14-18 years old: 6 oz  
Boys 9-13 years old: 7 oz  
14-18 years old: 7 oz

Health benefits
• Consuming foods rich in fiber, such as whole grains, as part of a healthy diet, reduces the risk of coronary heart disease.
• Consuming foods rich in fiber, such as whole grains, as part of a healthy diet, may reduce constipation.
• Eating at least 3 ounce equivalents a day of whole grains may help with weight management.
• Eating grains fortified with folate before and during pregnancy helps prevent neural tube defects during fetal development.

Nutrients:
• Grains are important sources of many nutrients, including dietary fiber, several B vitamins (thiamin, riboflavin, niacin, and folate), and minerals (iron, magnesium, and selenium).
• Dietary fiber from whole grains, as part of an overall healthy diet, helps reduce blood cholesterol levels and may lower risk of heart disease. Fiber-containing foods such as whole grains help provide a feeling of fullness with fewer calories. Whole grains are good sources of dietary fiber; most refined (processed) grains contain little fiber.
• B vitamins play a key role in metabolism – they help the body release energy from protein, fat, and carbohydrates.
• Iron is used to carry oxygen in the blood. Many teenage girls and women in their childbearing years have iron-deficiency anemia. They should eat foods high in heme-iron (meats) or eat other iron containing foods along with foods rich in vitamin C, which can improve absorption of non-heme iron. Whole and enriched refined grain products are major sources of non-heme iron in American diets.
• Whole grains are sources of magnesium and selenium. Magnesium is a mineral used in building bones and releasing energy from muscles. Selenium protects cells from oxidation. It is also important for a healthy immune system.

What foods are included in the dairy food group?
All fluid milk products and many foods made from milk are considered part of this food group. Foods made from milk that retain their calcium content are part of the group; while foods made from milk that have little to no calcium, such as cream cheese, cream, and butter, are not. Most dairy group choices should be fat-free or low-fat.
Examples: Skim or low fat milk, reduced-fat cheeses, low fat yogurt!
How much should you be eating a day?

Girls     9-13 years old: 3 cups
         14-18 years old: 3 cups
Boys      9-13 years old: 3 cups
         14-18 years old: 3 cups

Health benefits:
• Diets rich in milk and milk products help build and maintain bone mass throughout
  the lifecycle. This may reduce the risk of osteoporosis.
• The intake of milk products is especially important to bone health during childhood
  and adolescence, when bone mass is being built.
• Diets that include milk products tend to have a higher overall nutritional quality.

Nutrients:
• Calcium is used for building bones and teeth and in maintaining bone mass. Milk
  products are the primary source of calcium in American diets. Diets that provide 3
  cups or the equivalent of milk products per day can improve bone mass.
• Diets rich in potassium may help to maintain healthy blood pressure. Milk products, especially yogurt and fluid milk, provide potassium.
• Vitamin D functions in the body to maintain proper levels of calcium and
  phosphorous, thereby helping to build and maintain bones. Milk that is fortified with
  vitamin D is a good source of this nutrient. Other sources include vitamin D-fortified
  yogurt and vitamin D-fortified ready-to-eat breakfast cereals.
• Milk products that are consumed in their low-fat or fat-free forms provide little or no
  solid fat.

Why is it important to make fat-free or low-fat choices from the dairy group?
Choosing foods from the dairy group that are high in saturated fats and cholesterol can have
health implications. Diets high in saturated fats raise “bad” cholesterol levels in the blood. The
“bad” cholesterol is called LDL (low-density lipoprotein) cholesterol. High LDL cholesterol, in
turn, increases the risk for coronary heart disease. Many cheeses, whole milk, and products made
from them are high in saturated fat. To help keep blood cholesterol levels healthy, limit the
amount of these foods you eat. In addition, a high intake of fats makes it difficult to avoid
consuming more calories than are needed.

What foods make up the protein food group?
Although dry beans can be part of the vegetable food group, they are also part of the protein food
group, in addition to meats, poultry, fish, eggs, nuts and seeds.

How much should you be eating per day?
Girls     9-13 years old: 5 oz
         14-18 years old: 5 oz
Boys      9-13 years old: 5 oz
         14-18 years old: 6 oz

Nutrients:
Meat, poultry, fish, dry beans and peas, eggs, nuts, and seeds supply many nutrients. These include protein, B vitamins (niacin, thiamin, riboflavin, and B6), vitamin E, iron, zinc, and magnesium.

Proteins function as building blocks for bones, muscles, cartilage, skin, and blood. They are also building blocks for enzymes, hormones, and vitamins. Proteins are one of three nutrients that provide calories (the others are fat and carbohydrates).

B vitamins found in this food group serve a variety of functions in the body. They help the body release energy, play a vital role in the function of the nervous system, aid in the formation of red blood cells, and help build tissues.

Vitamin E is an anti-oxidant that helps protect vitamin A and essential fatty acids from cell oxidation.

Iron is used to carry oxygen in the blood. Many teenage girls and women in their child-bearing years have iron-deficiency anemia. They should eat foods high in heme-iron (meats) or eat other non-heme iron containing foods along with a food rich in vitamin C, which can improve absorption of non-heme iron.

Magnesium is used in building bones and in releasing energy from muscles.

Zinc is necessary for biochemical reactions and helps the immune system function properly.

Health implications

- Diets that are high in saturated fats raise “bad” cholesterol levels in the blood. The “bad” cholesterol is called LDL (low-density lipoprotein) cholesterol. High LDL cholesterol, in turn, increases the risk for coronary heart disease. Some food choices in this group are high in saturated fat. These include fatty cuts of beef, pork, and lamb; regular (75% to 85% lean) ground beef; regular sausages, hot dogs, and bacon; some luncheon meats such as regular bologna and salami; and some poultry such as duck. To help keep blood cholesterol levels healthy, limit the amount of these foods you eat.
- Diets that are high in cholesterol can raise LDL cholesterol levels in the blood. Cholesterol is only found in foods from animal sources. Some foods from this group are high in cholesterol. These include egg yolks (egg whites are cholesterol-free) and organ meats such as liver and giblets. To help keep blood cholesterol levels healthy, limit the amount of these foods you eat.
- A high intake of fats makes it difficult to avoid consuming more calories than are needed.

Why is it important to include fish, nuts, and seeds?

- Many people do not make varied choices from this food group, selecting meat or poultry everyday as their main dishes. Varying choices and including fish, nuts, and seeds in meals can boost intake of monounsaturated fatty acids (MUFA) and polyunsaturated fatty acids (PUFA). Most fat in the diet should come from MUFA and PUFA. Some of the PUFA are essential for health—the body cannot create them from other fats.
- Some fish (such as salmon, trout, and herring) are high in a type of PUFA called “omega-3 fatty acids.” The omega-3 fatty acids in fish are commonly called “EPA” and “DHA.” There is some limited evidence that suggests eating fish rich in EPA and
DHA may reduce the risk for mortality from cardiovascular disease. (EPA is eicosapentaenoic acid and DHA is docosahexaenoic acid.)

- Some nuts and seeds (flax, walnuts) are excellent sources of essential fatty acids, and some (sunflower seeds, almonds, hazelnuts) are good sources of vitamin E.

III. Short, easy group quiz
   A. Students will be broken up into groups of three or four
   B. Answer Quiz: (the bolded words will be what we hope the students come up with)

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Recommended Amount Per Day</th>
<th>Nutrients Provided</th>
<th>Best Sources of Targeted Nutrients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>3 cups/ 3 servings</td>
<td>-calcium</td>
<td>-low fat milk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-potassium</td>
<td>-reduced fat cheeses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-magnesium</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-protein</td>
<td></td>
</tr>
<tr>
<td>Vegetable</td>
<td>2 ½ cups/ 5 servings</td>
<td>-fiber</td>
<td>-raw carrots</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-vitamin A</td>
<td>-stemmed broccoli</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-vitamin C</td>
<td>-sautéed peppers (any vegetable will be accepted)</td>
</tr>
<tr>
<td>Fruit</td>
<td>1 ½ cups/ 3 servings</td>
<td>-fiber</td>
<td>-apple</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-vitamin A</td>
<td>-pear</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-vitamin C</td>
<td>-orange</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(any fruit will be accepted)</td>
</tr>
<tr>
<td>Grain</td>
<td>6 ounces/ 6 servings</td>
<td>-fiber</td>
<td>-brown rice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-carbohydrates</td>
<td>-rye bread</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Etc.</td>
</tr>
</tbody>
</table>

C. Every correct answer will allow the group to subtract one second from the time it takes them to correctly complete the Supermarket Sweet Game.

IV. Supermarket Sweep Game
D. Set up -
   i. Students will remain in the same groups; classroom desks will serve to establish "grocery aisles" that students will race down.
   ii. At the end of each aisle will be a shopping bag full of more healthy and less healthy food choices (printed, laminated images of that item).
   iii. Students will start and end each "race" at their "home base," here, one student per team will remain seated and will serve as the recorder of items into their appropriate food groups.
E. How to play -
   i. One student from each team will race down the aisle to a shopping bag which will include more healthy & less healthy food choices from each food group.
   ii. Student will retrieve one food item from the shopping bag per trip down the aisle, and will return to their home base.
   iii. A waiting member of the group will record this food item as belonging to one of the food groups. Once the answer is approved by an instructor, the next student for the team may race down the aisle and repeat the food choice and designation process.
   iv. Game will go on for three minutes. At the end, teams will be asked to identify the nutrients associated with each of the four major food groups discussed in class. The team with the most correctly designated food groups and nutrients will win!

Conclusion:

III. Instructors will conclude with the following
   A. Open the floor for questions
   B. Summarize key information from lesson
      i. Why good nutrition is important for adolescents
      ii. the four food groups of focus for adolescents
      iii. choosing whole food, low fat options
Day 2: Whole Foods vs. Processed foods (Marina Vineis)
Lesson plan provided by NYC Health. We found this lesson plan to fit perfectly with our program and only made a few alterations to its format. To view the lesson plan as a PDF file and to access the handout click on the following link:

Materials:

Pictures of the following:
Brown Rice, Polenta, White Rice, Coca Cola, Whole apple, Rice Cake, Dried Beans, Apple sauce, Rice Crispies, Canned Beans, Apple PopTart, Rice-a-Roni, Hummus, Wheat berries, Rice Crispies Treat, Frank and Beans or Baked beans, Whole wheat flour, Fresh corn, Whole wheat bread, Frozen corn, White flour, Canned corn, White bread, Corn chips.

Write up:

Write on the board: “A Whole Food is: 1. a food that has nothing added to it or taken from it. 2. a food in the form in which nature intended it to be.” – cover up definition.

Lesson plan

What is a Whole Food?

Hold up/ tape up pictures of an apple, apple sauce, and an apple PopTart.

Let’s start by comparing three foods: an apple, applesauce, and an apple PopTart.
Ask: Which do you think is the healthiest? Why?

Answer
Whole apple. Be sure to say that the whole apple has more nutrients, less additives, less added fat, sugar, and sodium.

Ask: Out of these three foods, which is the most whole? Which is the least whole? Why?

Answer
Most whole: Apple > applesauce > Apple PopTart

Ask: What is a whole food?

Uncover the board with the definition of whole food. Explain that whole is being in the form that nature created it. A whole food looks similar to how it would look in nature.

Discussion:
-A whole food is usually a healthy food for the very same reasons you stated earlier. Whole foods don’t have all the additives, fat and sugar added. They also don’t have their nutrients
Ask: What does it mean to be processed?
-Processing is altering the food from the form it is found in nature. You can hardly tell that these apples were once growing on a tree. Right? Can you see that applesauce is in between these two products in terms of how processed it is? It may not look as much like an apple, but applesauce has just been chopped into fine pieces from a whole apple. It still tastes like an apple, and although it doesn’t look like an apple, you can imagine how it is made from whole apples.

Activity

On each table you will see a variety of pictures of products. Take a minute to put the products in order of most whole to least whole. Then, we will come back together to discuss.

Give each group two minutes to put the foods in order. Then ask one person from each table to present their order and state why they put the foods in that order.

Now if I asked you to put them in the order of healthy to least healthy would anything change in your order?

Discuss any changes and answer any questions that come up regarding whole foods.

Distribute the hand out titled Whole vs. Processed Foods.

Here is a hand out that describes various whole and processed foods.

Now let’s take a deeper look at wheat, which is on one of the tables. Each of these products is really made from the same plant- wheat. Each food is different in how much it has been processed. The plant’s seeds are wheat berries. These can be cooked and eaten like rice. Look at the wheat berry picture. See how it has a brown outer shell? This is called the bran. Lots of nutrients lie in the bran outer coating.

Ask: If I take these wheat berries and grind them all up, what will I get?
Answer: It would become whole wheat flour.
Ask: With this whole wheat flour, what can I make?
Answer: Whole wheat bread.
Ask: Now, if before I ground these wheat berries up, I removed the bran, what would I have?
Answer: White flour.

Knowing whether a food is a whole food or processed is important for healthy eating. How do you know your foods are whole?
Make a list with the students on the board and be sure to include less packaging, less added ingredients, looks like what it would look like on a plant.

When you are shopping you can ensure that you go for whole foods first by shopping around the outside of the supermarket before the inside aisles. If you think about a supermarket, what is on the outside? Produce, dairy, eggs, meat, fish, etc. The inside is where all the packaging is. This is not to say there are not healthy foods that come in packages.
Ask: How do you know if packaged foods are healthy or if a food has less added ingredients?
Answer: Read the food labels (we will discuss food labels next week!).

References:
**Whole Foods Versus Processed Foods**

Here are some examples of whole versus processed foods.

<table>
<thead>
<tr>
<th>Whole Food</th>
<th>Processed Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>Apple PopTart</td>
</tr>
<tr>
<td>Brown rice</td>
<td>White rice</td>
</tr>
<tr>
<td>Wheat berries</td>
<td>Donut</td>
</tr>
<tr>
<td>Orange</td>
<td>Orange juice</td>
</tr>
<tr>
<td>Tomato</td>
<td>Canned tomato soup</td>
</tr>
<tr>
<td>Corn</td>
<td>Tortilla chip</td>
</tr>
<tr>
<td>Potato</td>
<td>Potato chip</td>
</tr>
</tbody>
</table>

Some processing is not unhealthy. For instance, skim milk is processed from a less healthy whole version. Usually, the more processed the food, the worse it is for your health. So, the more you can stick to whole foods, the better.
Day 3: How to read a food label (Barbara Dutra)
- Explain the important components and provide examples of good choices
- Provide students with a sheet that contains the food label with a description of the important components

Food Label Lesson Plan

I. Hand out the Nutrition Facts food label sheet to all students
II. Hand out the 10 Steps to Mastering a Food Label sheet to all students
III. Use the “10 Steps to Mastering a Food Label” sheet to teach students how to read the food label
   a. Use the Nutrition Facts Food label sheet as guide for each student to learn each step

10 Steps to Master the Food Label

1. Serving Size:
   · Look here for the serving size (the amount for one serving) and the number of servings in the package
   · Similar food products now have similar serving sizes, which make it easy to compare different food products.
   · Serving sizes are based on amounts people actually eat.
   · However be aware that some products such as drinks often have more than one serving, so you must multiply to nutrition values by the number of serving sizes if you consume the entire product.

2. Label Information:
   · The label covers those nutrients most important to your health. This information is required on all food labels.

3. Label numbers:
   · Numbers on the nutrition label may be rounded for labeling. (e.g. food products might list 0 grams Trans Fat but can contain up to 0.5 g and still be considered Trans Fat free.)

4. Let the Percent Daily Values Be Your Guide
   · Percent Daily Value: shows how a food fits into a 2,000 Calorie reference diet. You can use the %Daily Value to compare food products with one another.
   · Use percent Daily Values (DV) to help evaluate how a particular food fits into your daily meal plan:
     · Daily Values are average levels of nutrients for a person eating 2,000 calories a day.
     o A food item with a 5 percent DV of fat provides 5 percent of the total fat that a person consuming 2,000 calories a day should eat.
     · Percent Daily Values are for the entire day, not just one meal or snack
     · You may need more or less than 2,000 calories per day. For some nutrients you may need more or less than 100 percent DV.
   · The High and Low of Daily Values
     o 5 percent or less is low. Aim low in total fat, saturated fat, trans fat, cholesterol and sodium.
     o 20 percent or more is high. Aim high in vitamins, minerals and fiber
   · Daily Value Footnote: These are the label reference numbers. These numbers were set by the government and are based on current nutrition recommendations.
Some labels list the daily values for 2,000 kcal or 2,500 kcal per day. Remember that 2,000 Calorie is not fit for everyone, therefore the Daily Values may be more or less for your body type.

5 Calories Per Gram Footnote
- Some labels will list the approximate number of calories in a gram of fat, carbohydrate and protein.

6. Check out Total Calories and Fat
- Find out how many calories are in a single serving and the number of calories from fat
- Calories
  - Calorie Free: less than 5 calories
  - Low calorie: 40 calories or less
- Fat
  - Fat Free: Less than ½ gram fat
  - Low Fat: 3 grams or less fat

7. Vitamins and Minerals:
- Only two vitamins A and C, and two minerals Calcium and Iron, are required on all food labels.
- A food company can voluntarily list other vitamins and mineral in food products.
- Eat more fiber, vitamins A and C, calcium and iron to maintain good health and help reduce your risk of certain health problems such as osteoporosis (low calcium) and anemia (low iron).
- Choose more fruits and vegetables to get more of these nutrients.
- Remember to aim high for the ideal percentage Daily Values of these nutrients.

8. Additional Nutrients
It is important to also know the additional nutrients on the Nutrition Facts Panel.
- Protein: Most Americans eat more protein than they need, so a percentage Daily Value is not required on the label. Eat moderate portions of lean meat, poultry, fish, eggs, low-fat milk, yogurt and cheese, plus beans, peanut butter and nuts.
- Carbohydrates: There are three types of carbohydrates: sugars, starches and fiber. Eat whole-grain breads, cereals, rice and pasta plus fruits and vegetables.
  - Sugars: Simple carbohydrates or sugars occur naturally in foods such as fruit juice (fructose) or come from refined sources such as table sugar (sucrose) or corn syrup. Avoid eating a lot highly processed sugary products since they are often low in other important nutrients
    - High Fiber: 5g or more fiber

9. Limit Fat, Cholesterol and Sodium
Eating less fat, cholesterol and sodium may help reduce your risk for heart disease, high blood pressure and cancer.
- Total fat includes saturated, polyunsaturated, monounsaturated and trans fat.
- Limit to 100 percent DV or less per day.
- Saturated fat and trans fat are linked to an increased risk of heart disease.
- Remember to aim for low percentage DV of these nutrients.
- Cholesterol
  - Cholesterol Free: Less than 2mg cholesterol and 2g or less saturated fat
  - Low Cholesterol: 20mg or less cholesterol and 2g or less saturated fat
High levels of sodium can add up to high blood pressure.

- Sodium Free: Less than 5mg sodium
- Very Low Sodium: 35mg or less sodium
- Low Sodium: 140mg or less sodium

10. Check the Ingredient List
- Foods with more than one ingredient must have an ingredient list on the label.
- Ingredients are listed in descending order by weight.
- Those in the largest amounts are listed first.
- This information is particularly helpful to individuals:
  - With food sensitivities,
  - Who are vegetarian
  - Wish to limit their consumption of added sugars.

Homework
1. What is the serving size of this product?
2. How many servings is in this product?
3. How many calories per serving?
4. How many calories if you consume the entire product?
5. How much of the % Daily Value of total fat?
6. Is the % Daily Value of fat high or low?
7. What is the % Daily Value of Sodium?
8. Is the % Daily Value of Sodium high or low?
9. Is this product a good source of fiber? Why is fiber important?
10. Is this product a good source of Calcium? Why is Calcium important?

Reference: http://www.eatright.org/Public/content.aspx?id=10935
Day 4: How to assemble a one week dinner meal plan (Marina Vineis)

I. Provide students an sample dinner meal for one day
II. Discuss healthy options and meal planning using “how to develop a meal plan” and the “plate method”
III. Provide students a handouts to be completed as homework assignments
   a. 5-Day Dinner Meal Plan Chart (written)
   b. 5-Day Dinner Meal Plan “Plate Method” visual worksheet (drawn)

Lesson Plan

Part 1
Explain to students how to go about developing a meal plan by addressing the following menu planning tips:
1. Variety of all food groups- you don’t want to repeat any food items within your one week menu
2. Colors: make sure each meal has different colors, this will ensure that you obtain most essential vitamins and minerals. For example, color in foods such as orange and green fruits and vegetables can indicate the presence of vitamin A.
3. Texture: Each meal should include at least two different textures to make it tasty! (smooth, crunchy, chewy...)
4. Aroma: Meals that are cooked with spices or sautéing onions enhance the flavor of healthy foods and stimulates appetite.
5. Portion size! Refer to the “Plate Method” for portion size visualization.
6. Try at least one new food

Part 2
The Plate Method

The plate method is one way that meals can be planned keeping in mind portion size and color scheme.

The Dinner Plate Method:

Vegetables should take up half (1/2) of the plate
   Vegetables include: lettuce, tomatoes, mushrooms, spinach, green beans, and broccoli.
Starch or grains should take up 1/4 of the plate
   Starchy foods and grains include: bread, rolls, rice, pasta, potatoes, yams, corn, lima beans, and cereals.
Protein meat or non-meats should take up another 1/4 of the plate
   Meat and non-meat protein foods include: chicken, beef, pork, fish, cheese, beans, tofu, and soy products that resemble meat or chicken.
Fruit may also accompany your meal
   Fruits include: oranges, applesauce, grapes, peaches, berries, bananas and grapefruit.

Although the plate method is relatively easy, portion sizes are still critical. The amount of food on your plate should vary according to the number of calories that you need each day. A recommended plate size is about 9 inches across (9 inch diameter). Try measuring your plates!
Give some menu samples to get the creative ideas flowing:
1. [http://www.fns.usda.gov/eatsmartplayhardhealthylifestyle/QuickandEasy/Menus/Week1_samplemenu4.htm](http://www.fns.usda.gov/eatsmartplayhardhealthylifestyle/QuickandEasy/Menus/Week1_samplemenu4.htm)

**Homework:**

1. **5-Day Dinner Meal Plan Assignment**

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains or Starch</td>
<td>Grains or Starch</td>
<td>Grains or Starch</td>
<td>Grains or Starch</td>
<td>Grains or Starch</td>
</tr>
<tr>
<td>Vegetables</td>
<td>Vegetables</td>
<td>Vegetables</td>
<td>Vegetables</td>
<td>Vegetables</td>
</tr>
<tr>
<td>Protein</td>
<td>Protein</td>
<td>Protein</td>
<td>Protein</td>
<td>Protein</td>
</tr>
<tr>
<td>Fruit</td>
<td>Fruit</td>
<td>Fruit</td>
<td>Fruit</td>
<td>Fruit</td>
</tr>
</tbody>
</table>

Have students fill out a grain/starch, vegetable, protein and fruit for each day of the week

2. **5-Day Dinner Meal Plan “Plate Method” visual worksheet**
- Have students draw in the appropriate meal items in each category on their divided plate (each day matches the meal they chose for the 5-Day Meal Plan chart.)
Day 5: Food shopping

Lesson
Food shopping is a necessity for college students and parents alike and directly affect you as a son or daughter. Provided below are tips to make your grocery store visit easy, fast, and cheap. In this lesson, you will be informed on where, what, and when to buy your healthy alternative foods, which enables you to be healthy and enjoy delicious flavors at the same time.

Here are 10 easy tips to help you locate healthier and cheaper options of foods.

TIP 1: Plan Ahead - Before going to the grocery store, check what you already have in your kitchen and pantry, that way you do not over purchase any foods.

TIP 2: Don’t go hungry! - Going to the grocery store on an empty stomach will lead to you purchasing filling, delicious foods that may not be of a healthy nature.

TIP 3: Coupons - Before you leave, check the newspaper’s grocery coupon page, or pick up a coupon catalog at the grocery store to find healthy discounts.

TIP 4: Stick to the List - if you keep a running list at home of items that need to be replaced, you won’t have to worry about forgetting anything, make a list and try your hardest to stick to it.

TIP 5: Organize the List - Organizing all your dairy, vegetables, fruits, proteins, and drinks into sections will cut down your store visit significantly.

TIP 6: Season Select - Foods that are fresh and that are in season tend to come cheaper, when buying corn in the winter, for example, will be priced 10 times as much as in its natural season.

TIP 7: On Sale - Any healthy alternatives on sale are cheaper, buy them even if it’s for a later use.

TIP 8: National vs. Store - A national brand is usually more expensive than the grocery store’s brand, make it a habit to check the store brand’s food which is similar in taste but for way less money.

TIP 9: Fresh, Frozen, or Canned - Certain items, usually fruits, come fresh, frozen, or canned. Make sure to check all three of that item’s price and choose the cheapest one.

TIP 10: Time Savers - Purchase healthy that can be stored for a large amount of time as a back up food for you to eat.
Some examples are:
- Canned or frozen fruit
- Canned or frozen meat, poultry, and fish
- Whole-grain bread or crackers
- Enriched or brown rice
- Canned or frozen vegetables and beans
- Canned soups or stews
- Enriched or whole grain pasta
- Cheese
- Yogurt
Homework Assignment:

After reviewing these tips for food shopping, find a day of the week that your mother or father can take you to go grocery shopping. When you get to the store, let your parents help you find healthy, inexpensive items of food and document them onto the sheet below. You should obtain 3-5 carbohydrates, 3 vegetables, 3 fruits, 3 proteins, and 3 dairies. Make sure to compare prices of national brands and store brands, as well as canned, frozen, and fresh fruits and vegetables. (see hand out)
Handout:

<table>
<thead>
<tr>
<th>Carbohydrates</th>
<th>Item</th>
<th>Brand</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vegetables</th>
<th>Item</th>
<th>Brand</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fruits</th>
<th>Item</th>
<th>Brand</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proteins</th>
<th>Item</th>
<th>Brand</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dairy</th>
<th>Item</th>
<th>Brand</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

http://www.fns.usda.gov/eatsmartplayhardhealthylifestyle/SmartChoices/smartshopping.htm
http://www.eatright.org/Public/content.aspx?id=11628
References

Make it quick and easy. USDA. Food and Nutrition Service Feb 16, 2010.

http://join.strength.org/site/PageNavigator/SOS/SOS_ofl_shoppingmatters_home

Beat Hunger with Smart, Healthy Shopping. (2011, February 23). Retrieved February 23, 2011, from American Dietetic Association:


http://www.ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=171361


The Need for Nutrition Education amongst Adolescents
By Jenna George

Despite the efforts to incorporate nutrition education into the New Jersey curriculum, many studies have shown that adolescents are still not consuming a well balanced diet. With the popularity of processed foods because of their convenience, cost, and taste, teenagers are over consuming energy-dense foods that lack the appropriate nutrients. By eating a healthy diet throughout life, these adolescents will not only perform better in school, but can prevent many chronic diseases that may occur from continuing to practice unhealthy eating behaviors.

Processed foods have been warmly welcomed into the homes of too many Americans because of their accessibility, convenience, and low cost. These foods can be characterized as any food that has been altered from its natural or raw state, including foods that have been chemically altered through additives, such as flavor enhancers, binders, colors, fillers, preservative, and stabilizers. This alteration may leave, once, nutritious foods stripped of beneficial nutrients and make them high in fat, sodium, and sugar. Many studies have shown that diets high in fat, sodium, and sugar lead to increased rates of coronary heart disease, obesity, diabetes, and hypertension. Who has been hit hardest with these growing epidemics? Sadly, our own American adolescents.

In the United States, majority of adolescents’ dietary intake provide ample micro-nutrient intake, however, only a small proportion of this age group consume the recommendations for fruits, vegetables, milk, and whole grain products, while exceeding the recommendations for fat and sugar. Data from three national surveys have shown that the trend in food choices between the ages of six to nineteen has shifted to an increased consumption of carbonated beverages, savory snacks, fruit juices, pizza, and candy. These eating behaviors are attributed to the lack of effective education. Because of the growing cost of fresh produce and more nutrient dense and less processed foods, those who are of low economical status with low levels of education, are more apt to buy cheaper, processed foods.

Because of their rapid growth, it is imperative for adolescents to consume a nutrient-dense, varied diet. They are able to achieve optimal physical and cognitive development and reduce the risk of chronic disease through proper eating behaviors. Diets lacking in fiber, like many adolescents’, are more prone to developing heart disease, diabetes, and colon cancer. It has been observed that many students’ consume large amounts of saturated fats; however, the fats that should be consumed include poly- and monounsaturated fatty acids, such as poultry, fish, lean meats, nuts, and vegetable oils. A diet low in saturated fat, trans-fatty acids, and cholesterol will allow for weight maintenance, lower blood pressure and cholesterol levels, reduced risk of diabetes, heart disease, and Alzheimer’s disease. Severe nutrient deficiencies, which may occur with inadequate consumption of fruits and vegetables, can lead to growth retardation, affect mental development, and diminish energy levels. Iron deficiency, in particular, will lead to difficulty concentration and poor performance in most activities. Also, to prevent osteoporosis and to allow the body to fully develop, adolescents must consume adequate amounts of calcium. Therefore, it is important that the adolescents of America be properly educated on the importance of a well-balanced, healthy diet.

Although movements to control and diminish diet-related chronic diseases among adolescents have been implemented during school, there are still no programs to influence food
consumption after school. Therefore, a program geared towards educating children and adolescents will allow these students to be able to make healthy choices and will be of crucial importance for future behavioral habits once they no longer have access to school lunches. By influencing health behaviors, education can play a critical role in reducing the risk of diet-related chronic diseases that many of our adolescents are on the path to develop. With education we can instill motivation into the students to want to make better eating choices, and eventually decrease the risk of chronic diseases. It is important that we reverse this epidemic and redirect it to promote health and reduce disease by inspiring our adolescents to eat a well-balanced diet.

Barbara Dutra
Purpose of editorial submission to The Times of Trenton: Increase public awareness of the potential for nutritious meal planning education for adolescents as a method to combat the rising obesity rates and subsequent chronic diseases.

Breaking the Bonds of Adolescent Obesity through Nutritious Meal Planning
The issue of adolescent nutrition has been addressed as a critical concern in the past few years due to rise in obesity and chronic diseases. In 2008, the Center of Disease and Control Prevention reported 18.1% of United States adolescents aged 12-19 to be obese, placing these teens at an increased risk for developing hypertension, diabetes and cardiovascular disease. The solution? An advancement in nutrition education and nutritious foods in public schools. Although state budgets have been set to further expand nutrition programs in schools, where nutrition education is being implemented along with healthier food options, more work needs to be completed. Not all teens eat their lunch at school, and even if so, they may be on their own at home to plan a dinner meal. Thus, a program targeting food selection outside of school needs to be proposed. A program focusing on meal planning and food shopping would stimulate teens to choose healthier foods and assemble their own meals. Although food shopping is seen as the parent’s or guardian’s responsibility, teens should be given effective and easy advice because once they graduate from high school, they will no longer have access to school breakfast and lunch. Furthermore, after graduation many teens will need to know how to food shop and assemble healthy affordable meals on their own. With this knowledge, young adults may be less tempted to purchase fast foods and instead feel confident in creating their own nutritious meals.

Back to the Basics: Steering Americans Away from Processed Food
By Marina Vineis

The new 2010 Dietary Guidelines for Americans recommend reducing consumption of solid fats, added sugars, and salts. Unfortunately, the adherence to these guidelines for better health is in competition with America’s rapid embrace of the movement towards processed and packaged foods. Processed foods contain high levels of fats, sugars, and salts contributing to 80% of the trans fat intake and 77% of sodium intake in the average American diet. Added
sugars, found in virtually all processed foods, can contribute to an average of 16% of the total calories in American diets. If the ever increasing trend towards processed foods continues, not only will the Dietary Guidelines not be met, but the American people will be facing higher risks of chronic diseases such as obesity, diabetes and cardiovascular disease. This trend must be reversed and redirected back to the basics: consumption of whole, non-processed foods. These foods contain essential nutrients, in forms that the body can readily break down, which are required for good health and disease prevention. In order to bring America back to the basics, we need to provide the necessary nutrition education starting with the children and leading towards improved future behavioral dietary patterns of all Americans. Educating young students on the necessary consumption of foods such as fruits, vegetables, and whole grains and rewarding healthy dietary choices will not only positively influence their personal dietary patterns but may also transcend further, effecting their families dietary behaviors and promote healthier communities. Through early childhood nutrition education Americans can eventually learn to turn back to the basics and away from processed foods.

The Battle of Child Nutrition: Who is to blame?
By Willis Wiggin

It is obvious that the pickiest eaters are children, and the relatively healthiest are adults, but why is it that adults have not learned from previous mistakes and attempted to drive their children into a healthy, nutritious direction?

In today’s economy and culture, foods that are convenient, appealing, and cheap dominate the market. Kids are enjoying brightly packaged, highly energy-dense foods that lack nutritious ingredients required for a healthy daily diet. Americans eat an estimated 31% more packaged food than fresh food, and they consume more packaged food per person in nearly all other countries. Frozen foods and pre-packaged ready-to-go meals have swept the grocery lists pouring energy-dense unhealthy food into our kitchens and homes. Most processed foods include potentially harmful ingredients such as refined grains, trans and saturated fats, salts and sugars such as high-fructose corn syrup.

The benefits of a healthy diet in children are priceless, and when meeting the required nutrition levels, children will experience improved physical and cognitive development. Healthy weight and a reduction of risk to chronic diseases (coronary heart disease, cancer, stroke, diabetes, high blood pressure, obesity, and osteoporosis) are all benefits of eating right.

Nutrition has been studied for centuries and more importantly child nutrition; and because of this, nutrition can be used to maximize the performance of a growing teenage body. For example, teenagers should be consuming 45-65% of their daily calories as carbohydrates for successful growth, 25 – 31 grams of fiber daily for disease risk reduction, 10 -20% as protein for muscle mass growth, 10mg of Iron to support learning and thought, and 20 – 30% calories from non saturated fat for stable weight and blood pressure.

This may look easy to do on paper; however, children have the most stubborn taste out of all of us. Children lean towards easy textures, sweet and salty tastes that they grow accustomed to after their first positive experience. Children will most likely reenact or act similarly to what their parents do. So if a family that enjoys the confines of TV dinners and spending after-work hours on the catch watching TV, then the child will adopt this paradigm. Parents should find a
framework where they are do not have too much stringent controls on food intake, which can potentially sway children into preferring high-fat, dense foods.

Studies have shown that education plays a critical role in determining health status of the American population by influencing health behaviors and choices. Education has a positive correlation with healthier diet choices.

So the question is, who is really at fault? Or is it collectively an American problem? It seems the government, the school systems, the parents, and the children all have to understand together that a nutritious lifestyle will steer our lives into a prosperous direction. With the right knowledge, accessibility, and feasibility of organic, hearty foods, this battle can indeed be won.