

Nutrient Dense Foods vs Calorie Dense Foods:
Getting the Most for Your Nutritional Buck

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Lesson Overview/ Introduction

In the United States, rates of obesity and type-2 diabetes continue to increase in childhood and adolescence. "approximately one out of three adolescence are either overweight or obese" (Lowry et al., 2013). Nutrient dense foods provide the nutrients that are needed to maintain a healthy body. On the other hand, calorie dense foods, also known as empty calories, provide high amounts of calories, but low amounts of nutrients. Hence, by over consuming calorie dense foods, children and adolescence can reach their daily limit of empty calories within a meal. By giving the knowledge and tools to these populations, a proper nutritional foundation can be established; therefore, students are empowered in their dietary choices when choosing nutrient dense foods over calorie dense foods.

For this population, a combination of theory of planned behavior and social cognitive theory approaches will help support the learning outcomes and goals. For example, from social cognitive theory, power point presentations will "provide nutrition and food related knowledge and behavioral skills to perform behavior"(Bauer, Liou & Sokolik, 2012). Moreover, adolescents are greatly influenced by their outside environment and will learn to develop habits from family, peers, and media models. Comparatively, by using hands on worksheets and analyzing the advantages and disadvantages of a calorie dense and a nutrient dense diet, reflection on personal feelings toward behavior will be promoted; which is applied from the theory of planned behavior.

My educational style is nurturing as a balance of academic and emotional support is needed to promote nutritional habit change. Though nurturing, the students have the ability to control their learning outcomes and are able to acknowledge individual growth. On the other hand, the students may be more inclined to learn through apprenticeship because "effective

teaching is a process of socializing students into new behavioral norms" (Pratt & Collins, 2006).

Through apprenticeship, students are able to learn new behavior that is promoted through the help and guidance of the teacher. As the students incorporate more nutrient dense foods into their diet, the teacher offers less nutritional advice and places more responsibility in the students.

With these differing styles, I can promote nutrition education with emotional support. After the teaching experience, more responsibility is placed on the students and they are able to meet their goals to grow individually, while they can become independent.

The lesson will focus on the comparison of calorie dense foods and nutrient dense foods. The presentation will open with general definitions to calories and nutrients in order to establish a baseline for knowledge. Then proceed to comparison between different kinds of calorie dense foods and nutrient dense foods and the food sources in which they can be found. Afterwards, an exercise will be given to help students identify the amount of calories a food item can contain with emphasis on added sugar. Lastly, a visual will give the students an idea of how much added sugar is recommended daily for the target population.

Materials and Supplies

For teaching aids, a laptop and projector will be needed in order to present the powerpoint, and administering the calculating "calories from added sugars" from a food label exercise. Also, a 12oz. coke bottle with granulated sugar will give the students a visual on how much added sugar is in the product. Also an educational handout will be provided with the sources of calorie dense foods and nutrient dense foods; moreover, general tips will be included at the bottom to remind students of what choice of foods is better. The SMOG assessment was applied to the handout to test readability. The number of polysyllabic words were 15, and

through a comparison chart, the approximate reading level is seventh grade. Please refer to the appendix for SMOG assessment.

Teaching/ learning goals

To increase knowledge of empty calorie/ calorie dense foods versus nutrient dense foods with an emphasis on added sugar and how they affect health.

Learning outcomes (Objectives)

Students will demonstrate knowledge of calories from sugar by calculating calories from added sugars on a food label during an in-class exercise.

Students will visually learn the amount of sugar that a 12oz coke provides by surveying their perceptions before revealing the visual.

Content Outline

Please refer to the "Calorie Dense versus Nutrient Dense foods" outline on page __ of the appendix.

The handout will be incorporated by giving them a reference point of which foods are high in nutrients and which are high in calories without listing them during the presentation. Goals and recommendations will be listed at the bottom of the handout to remind students of what their habits should be.

Evaluation strategies

Evidence- based research on the adolescent population, specifically high school freshmen, was conducted as the needs assessment. High school freshmen was chosen because "33% of [their] total energy intake came from empty calories" (Poti, Slining & Popkin, 2013). With 1/3 of calories coming from empty calories, as well as lack of exercise, many adolescents are susceptible to becoming overweight or obese. Adolescents are heavily influenced by external

factors; hence, developing healthy lifelong habits are crucial at this stage of life. At this age, teens are able to critically think and apply this knowledge to their personal needs. Since freshmen are still young, and there are many levels to nutrition, it is best to avoid biochemical concepts. With these factors, predicted outcomes include nutrition information retention for the future, goal setting and decision making skills and "to inspire them to be active leaders and to empower others with healthy living" (Lowry Gordon, Roessler & Caine-Bish, 2013).

For the post assessment, the students will be asked to calculate the amount of calories that added sugar provides from a Hershey's milk chocolate bar. After some assistance locating key numbers from the food label, students are to calculate the amount of calories from sugar. Students are evaluated by giving a verbal response in order to determine if they are correct or not. If they were not successful, determine where the point of error was and discuss what problems occurred.

Evaluation of the audience's needs were hard to measure because the change is a gradual behavioral change. However, teaching goals were achieved because every student participated, as well as gave the correct answer in the exercise; hence, learning did occur.

References

- Bauer, K., Liou, D., & Sokolik, C. (2012). *Nutrition counseling and education skill development*.
- Lowry, R., Lee, S., Fulton, J., Demissie, Z., & Kann, L. (2013, March 12). *Obesity and other correlates of physical activity and sedentary behaviors among us high school students*. Retrieved from <http://0-web.b.ebscohost.com.opac.sfsu.edu/ehost/detail?sid=96753b25-629a-4827-a09f-f6c11cff251a@sessionmgr115&vid=1&hid=125&bdata=JkF1dGhUeXB1PWlwLGNvb2tpZSx1cmwsdWlkJnNpdGU9ZWlhvc3QtbGl2ZQ==>
- Lowry Gordon, K., Roessler, C., & Caine-Bish, N. (2013, July). *Learning to lose: Empowering youth through community-service that promotes and advocates a healthy lifestyle.*. Retrieved from <http://0-web.b.ebscohost.com.opac.sfsu.edu/ehost/detail?sid=a634cca0-e626-44ae-b1e5-3f617ab4220f@sessionmgr113&vid=1&hid=125&bdata=JkF1dGhUeXB1PWlwLGNvb2tpZSx1cmwsdWlkJnNpdGU9ZWlhvc3QtbGl2ZQ==>
- Poti, J., Slings, M., & Popkin, B. (2013, November 9). *Where are kids getting their empty calories? stores, schools, and fast-food restaurants each played an important role in empty calorie intake among us children during 2009-2010*. Retrieved from <http://0-www.sciencedirect.com.opac.sfsu.edu/science/article/pii/S2212267213013361>
- Pratt, D., & Collins, J. (2006). Five perspectives on teaching. *International PBL Symposium*,

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Calorie Dense versus Nutrient Dense Foods

Duration: Ten Minutes

Target group: High School Freshmen [13-15 year old students], no background of chemistry

Overall Goal: To increase knowledge of empty calorie/ calorie dense foods versus nutrient dense foods with an emphasis on added sugar and how they affect health.

Major Concepts:

Nutrient dense:

Food sources: Fruits, vegetables

Effects on health:

- Provide energy to maintain body health
- Promote better quality of life

Calorie dense:

Food sources: Added sugars, solid fats (solid at room temperature)

Effects on health:

- Excessive consumption results in weight gain; development of chronic disease

Attention grabber: (Definition of terms)

What are calories?

Calories are a measurement of energy that we get from the food and beverages we consume

What are nutrient dense foods?

Foods that contain lots of nutrients, and low in calories. They also have health promoting properties.

What are calorie dense foods?

Foods that contain lots of calories, and low in nutrients. Can be detrimental effects on health.

Objectives and learning domains, generalizations and learning experiences.

1. Students will adapt to a diet focused on a nutrient dense diet, rather than a calorie dense diet.

Domain: Affective Domain- Organization

Generalization: All calories come the food we eat, not all calories come from the healthiest of sources.

Learning experiences: (5 minutes)

Provide a power point presentation covering the major concepts

Define nutrient dense foods

- Contain high level of nutrients (protein, carbohydrate, fat, vitamins, minerals)
- contain few calories
- minimally processed
- provide a variety of health properties per serving

Define calorie dense foods

- Energy dense foods.
- Contain high level of calories per serving.
- Some calorie dense foods are "empty calories" (provide energy from calories without other nutritional value)
- Consumed in moderation/ over consumption results in weight gain

2. Students will learn to calculate calories from sugar from a nutrition label and discover how much sugar a product contains.

Domain: Cognitive Domain- Application

Generalization: The amount of empty calories in a product is hard to visualize, calculating the amount of added sugar will help show a quantifiable amount.

Learning experiences: (2 minutes)

Provide a nutrition label reading demonstration, focusing on how to find the amount of added sugar in a product.

3. Students will notice how much added sugar can be found within one 12 ounce coca-cola can and will become aware of how much calories it provides with relation to daily limits.

Domain: Affective Domain- Receiving

Generalization: Sugary beverages contain only added sugar and can contribute to all of the empty calories allowed in a day for an adolescent.

Learning Experience: (1 minute)

Provide a visual consisting of an unopened coca-cola bottle and an empty coke bottle filled with granulated sugar. These two models were compared side by side in order to show how much added sugar is in a 12oz bottle of cola; which is 140 calories. Daily limit for male teens ages 13-18 is 265 calories, and 160 calories for female teens.

Teaching aids and materials

- laptop and projector
- Power point presentation
- Calculating "calories from added sugars" from a food label exercise
- Food Sources and tips handout
- Added sugar from a cola visual

Summary:

Calories are found in all of the food and beverages that we consume, and is simply a measurement of energy. Depending on the nutrient and calorie content, foods and beverages can be nutrient dense foods or calorie dense foods. Nutrient dense foods contain nutrients that are needed in order to sustain life and promote growth. Conversely, calorie dense foods contain little nutrients, while providing high amounts of calories. Common sources of calorie dense foods are foods with added sugar and foods that contain fats that are solid at room temperature and allows a person to reach their daily caloric intake with ease but provide no nutrients to assist with processing those calories. For this reason, calorie- nutrient balance is important and can be achieved by limiting calorie dense foods, increasing nutrient dense foods, variety and moderation.

Evaluation:

For the post assessment, the students will be asked to calculate the amount of calories that added sugar provides from a Hershey's milk chocolate bar. After some assistance locating key numbers from the food label, students are to calculate the amount of calories from sugar. Students are evaluated by giving a verbal response in order to determine if they are correct or not. If they were not successful, determine where the point of error was and discuss what problems occurred.

Assignment:

A handout identifying calorie dense foods and nutrient dense foods is given to the students. By analyzing their main sources of food, students will determine if they are in need to shift from a calorie dense diet to a nutrient filled diet. Then, students will observe and self-monitor their diets and see any changes in their health, mood, and attitudes.

Nutrient dense foods vs Calorie dense foods

What are Nutrient dense foods?

High Nutrients, low Calories

- Fruits and Vegetables
- Whole grains
- Low- fat/Fat-free Dairy
- Seafood
- Lean poultry and meats, eggs, and beans



What are Calorie dense foods?

High calories, Low nutrients

- Added sugar (Candies, Soda, Cookies, Cakes)
- Solid fats (solid at room temp.) (Pizza, Burgers, French Fries)



Tips

- Limit Calorie Dense foods
(265 calories/day for males, 160 calories/ day for females)
- Eat a variety of Nutrient Dense foods
Nutrients are needed for good health and body growth

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Polysyllabic Words: 15

Approximate grade level:7

