

Childhood Obesity in America

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Overview

Childhood obesity in America has been on the rise and has reached a level higher than elsewhere in the world. Obesity is defined as an excessive accumulation of body fat. Fast food, food high in fat or sugar, processed foods, or just poor diets are contributing factors to this problem; genetic or hormonal causes may also be a factor. Children and adolescents that are obese face serious health and social issues that may impact their self-esteem or future well being as an adult.

In the United States between 5-25% of children and teenagers are obese. Children that are obese as a child will most likely be overweight or obese as an adult (as high as 80%). As with adult-onset obesity, childhood obesity has multiple causes that center around an imbalance between energy consumed (calories obtained from food) and energy expended (calories expended in the basal metabolic rate and physical activities). Childhood obesity most likely results from an interaction of nutritional, psychological, familial, and physiological factors (ERIC Digest 1990 ED.328506).

It is my strong belief that obesity would be easier to prevent than to treat, so the main focus of this unit will be educating students to make healthy food choices, build self-esteem and exercise on a daily basis. Diet management, heredity, metabolic factors, social and emotional disorders will be explored.

This unit will be taught at Dimmer Beeber Middle School, located in the Wynnefield section of the city, to 6th, 7th, and 8th grade students during their Science Lab classes. The periods are seventy five minutes long and the students come once a week. The lessons from this unit may be adapted for classes of different lengths.

Rationale

Acknowledging and evaluating the current rise in obesity in the United States and throughout the world is important for many reasons. Scientifically, when a problem is clearly defined, its solutions or remedies etc. may have dramatic effects on the targeted population. The benefits may be long or ever-lasting.

Raising self-esteem, making healthy food choices and exercising on a regular basis may be the rewards of attention given to the health problem of childhood obesity today. The main focus of this unit will be to raise awareness of the problem of childhood obesity and present possible ways of preventing this problem through maintaining a healthy lifestyle.

Prevention is recognized as the primary, and most efficient, means to combat obesity. However, many children and adolescents who are already overweight or obese require assistance both to prevent further weight gain and to prevent development of obesity-related co-morbidities in adulthood (Hills, King and Byrne 2007).

In this unit suggestions will be made, strategies developed and lessons planned to address this problem of obesity at Beeber Middle School. There are 507 students currently enrolled, and I have the Body Mass Indexes of 440 of the students that were screened by the school nurse.

Body Mass Index
Beeber Middle School Students

BMI	Under 5%	5-85%	86-94%	95% & over
Number of Students	5	300	14	121

1% of the students fall into the underweight percentile, 68% of the students fall into the normal or average percentile, 3% of the students fall into the at risk of becoming obese and 28% of the students are obese. The majority of the students fall into the normal range, however, 31% of the students fall into the 'at risk' or obese range.

BMI is calculated as $\text{weight}(\text{kg})/\text{height}(\text{m}^2)$ or $\text{weight}(\text{lb})/\text{height}(\text{in}^2) \times 703$. The result is plotted against age on a gender-specific BMI curve (Fig. 5.1 and 5.2).

BMI will help identify children who are obese (BMI >95th percentile), overweight (BMI between the 85th and 95th percentiles), normal weight (BMI between the 5th and 85th percentiles), or underweight (BMI under the 5th percentile for age and gender).

Comment [jcg1]: Where are figures? Were not included on hard or soft copy

When applied to an individual child, the calculation of BMI allows for classification and prompts further evaluation of individual risk factors for obesity and obesity-related co morbidities. (Hassink 2007)

The BMI classification method is still deemed to be contentious by some researchers. For example, some argue that BMI standards apply mainly to the populations whose data were used to determine the cutoff points (Fu et al., 2003; Misra, 2003). Others defend the present cutoffs and contend that they are simple, uniform definitions of overweight and obesity that hold across populations (Stevens, 2003). Despite the ongoing debate regarding cutoff points to define obesity, in agreement with Cole et al. (2000), the choice to use the BMI cutoff percentiles passing through the adult BMI cutoff point of 30 seems to be reasonable (Luciano et al., 2003). However, the use of population-specific cutoff points would clearly be the preferable choice, where available. In contemporary children, fat-free mass (FFM) and fat may contribute in the same way to the values of BMI as for the reference child (Wells et al., 2002). BMI also correlates with other parameters. For example, there is a slightly higher correlation between BMI and subscapular skin fold than weight-for-height index and the same parameter. This is also true for other cardiovascular risk factor variables (blood pressure, serum lipids, and lipoproteins) regardless of age-for-sex groups. However, weight-for-height measures are not superior to BMI as an indicator of obesity (Frontini et al., 2001). A study by Wright et al., (2001) found BMI at age 9 was significantly correlated with BMI at 50, but not with percentage of body fat. After adjustment, BMI correlated with selected health risks. (Parizkova and Hills)

The current rise in the attention given to the increase in childhood obesity has been accompanied by a growing body of literature investigating the relationship between potential risks of obesity and body fatness and the associated preventative measures. We know that there are some risk factors that affect some children more than others. However, there are certain risk factors that can predict a child's chance of becoming obese. A systematic review (Parsons et al., 1999) identified seven risk factors: parental fatness, social factors, birth weight, timing or rate of maturation, physical activity, dietary factors and other behavioral or psychological factors. (Cameron, Norgan, Ellison)

With these factors in mind, the lessons of this unit will address making healthy choices for maintaining a health lifestyle.

Objectives

Most children, given information about making healthy food choices, will see a reduction in overweight or obesity, or not become at risk of gaining excess body fat, if they maintain a rigorous physical regimen or increase daily exercise. The goal of this unit is to help children maintain a healthy body weight by making healthy food choices while

exercising daily. The students will be taught to recognize the importance of physical activity, the importance of a balanced diet, understand the importance of adequate relaxation and sleep and develop or maintain a positive self-image.

Strategies

Students will use a variety of resources, instructional input and hands-on activities. They will evaluate web sites, compare nutritional values and calculate BMI to help them maintain a healthy lifestyle.

Classroom Activities

Lesson One

What Factors Affect a Healthy Lifestyle? -1

Pre-class -Students will discuss in small groups the factors they think will affect a healthy lifestyle. 5-7 minutes.

Classwork: Students will read “What Factors Affect a Healthy Lifestyle?” worksheet. (www.worldteacherspress.com) page 9. After reading the information, students will respond to and answer questions from the worksheet “What Factors Affect a Healthy Lifestyle?”(www.worldteacherspress.com) page 11 - 2 20 -minutes

Assessment: Students can discuss and compare what they have learned from the lesson. 10 -minutes

Lesson Two

What is Exercise and Its Benefits?

Pre-class - Have students list all the activities that they consider to be exercise. 5-7 minutes.

Classwork: Have students go to <http://familydoctor.org/online/famdocen/home/healthy/physical/basic/059.html> (google - exercise benefits of #2)

Students will research the benefits of exercise using a website.

In small groups students will plan exercise activities that can be used during 10, 20, or 30 minute periods (jumping jacks, sit-ups etc). Students can compile activities to be done in a circuit, rotating every 2 or 3 minutes, depending on the time period and the amount of activities to be done.

Assessment: Encourage students to use what they have created on a daily basis. Have them write about any changes or new ideas.

Lesson Three

Self-Management / Self-Esteem

Pre-class - Have students brainstorm various aspects of his/her life which may need changing. 5-7 minutes

Classwork: Students will develop a self-management system that can be used in everyday life.

Part 1 - Have students list at least five strategies for maintaining a healthy or a balanced lifestyle. (Example - healthy diet, exercise, proper amount of sleep, release of stress, relaxation etc). 10-20 minutes

Part 2 - Students will make a chart utilizing the strategies for self-management, diet and exercise. The chart should allow them to record, on a daily basis for at least a week, information including amount of time spent exercising, sleeping and pursuing leisure time. The chart should also include space to record the amount of food and drink consumed. 10-20 minutes

Assessment: Have students set goals for themselves and maintain a daily diary/log on the strategies they felt were important for a balanced, healthy lifestyle. Students should share what they have written periodically.

Annotated Bibliography/Resources

Teachers list

A Clinical Guide to Pediatric Weight Management and Obesity

Sandra Gibson, Lippincott, Williams & Williams Phila. Pa. 2007

This book's purpose is to increase understanding of the epidemiology, pathophysiology, and effects of childhood obesity.

Childhood Obesity and Health Research

Richard K. Flamenbaum Editor, Nova Science Publishers Inc. New York, 2006

This book focuses on clinical issues, preventions and interventions of childhood obesity.

Childhood Obesity - Prevention and Treatment

Jana Parizkova and Andrew Hill, Second Edition, CRC Press. Boca Raton, Fl. 2005

This book highlights recent research on aspects related to the prevention and management of childhood obesity.

Evaluation and Treatment of Childhood Obesity

Rebecca Moran MD, American Family Physicians >vol. 59. No. 4 (Feb. 15, 1999)

This article focuses on maintaining a healthy weight and gives information about losing weight.

Child and Adolescent Obesity - Causes and Consequences, Prevention and Management

Edited by Walter Burniat, 2002

This book addresses the ever increasing problem of obesity, long term health and social problems that arise.

Underage & Overweight: America's Childhood Obesity Crisis- What Every Family Needs to Know

Frances M Berg, Haiheriegh Press Long Island City, NY, 2004

This is a research, evidence-based book that emphasizes the importance of a multifaceted approach to alleviating the childhood crisis of obesity.

Students and Teachers

Children, Obesity and Exercise: Prevention, treatment and management of childhood and adolescent obesity.

Edited by Andrew P. Hills, Neil A. King and Nuala M. Byrne, Routledge NY. 2007

Through sports and exercise this book provides an accessible and practical guide to understanding and managing childhood and adolescent obesity.

Childhood Obesity - Contemporary Issues.

Edited by N. Cameron, N.G.Norgan and G.T.H. Ellison, Taylor and Frances Group, Boca Raton, Fl. 2006

This book provides an up to date account of the increase of obesity in children, its causes and its preventions.

Healthy Choices - Diet -Exercise - Self-Management

World Teachers Press, www.worldteacherspress.com, Didax Inc., Rowley MA. 2006

This book provides teachers and students with practical and content- rich materials to address three levels of instruction; self-management, diet and exercise.

Deciphering Food Labels

http://www.kidshealth.com/parent/nutrition_fit/nutrition/food_labels.html

Nutritional facts are explained and suggestions are given for creating a well balanced diet.

How to Understand and Use the Nutrition Fact Label

<http://www.cfsan.fda.gov/~dms/lab-gen.html>

Label-building skills are used to make it easier for understanding nutrition labels to make quick informed food choices that contribute to a healthy diet.

Healthy Eating

http://www.kidshealth.org/parent/nutrition_fit/nutrition/habits.html

Base around the idea that good nutrition and a balanced diet help kids grow up healthy. Gives strategies to improve nutrition and encourage smart eating habits.

Childhood Obesity on the Rise, Carol Torgan Ph.D

<http://www.nih.gov/news/WordonHealth/jun2002/childhoodobesity.html>

Gives advice and suggestions for helping children maintain healthy body weight.

Appendices-Standards

Standards

Health Education Standard 1	Students will comprehend concepts related to health promotions and disease prevention to enhance health.
6-8	1.8.1 Analyze the relationship between healthy behaviors and personal health.
	1.8.2 Describe the interrelationships of emotional, intellectual, physical, and social health in adolescence.

1.8.3	Analyze how the environment affects personal health.
1.8.4	Describe how family history affects personal health.
1.8.7	Describe the benefits of and barriers to practicing healthy behaviors.
Health Education Standard 2	Students will analyze the influence of family, peers, culture, media, technology and other factors on health behaviors.
2.8.1	Examine how the family influences the health of adolescence.
2.8.3	Describe the influence of culture on health beliefs, practices and behaviors.
2.8.4	Analyze how the school and community can affect personal health behaviors.
Health Education Standard 3	Students will demonstrate the ability to access valid information and products and services to enhance health.
3.8.1	Analyze the validity of health information, products and services.
3.8.2	Access valid health information from home, school, and community.
3.8.5	Locate valid and reliable health products and services.
Health Education Standard 4	Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.
4.8.1	Apply effective and verbal and nonverbal communication skills to enhance health.
4.8.2	Demonstrate refusal and negotiation skills to avoid or reduce health risks.
4.8.4	Demonstrate how to ask for assistance to enhance the health of self or others.
Health Educations Standard 5	Students will demonstrate the ability to use decision-making skills to enhance health.
5.8.1	Identify circumstances that can help or hinder healthy decision making.

5.8.4	Distinguish between healthy and unhealthy alternatives to health-related issues or problems.
5.8.7	Analyze the outcomes of a health related decision.
Health Education Standard 6	Students will demonstrate the ability to use goal-setting skills to enhance health.
6.8.1	Assess personal health practices.
6.8.2	Develop a goal to adopt, maintain, or improve a personal health practice.
6.8.3	Apply strategies and skills needed to attain a personal health goal.
6.8.4	Describe how personal health goals can vary with changing abilities, priorities and responsibilities.
Health Education Standard 7	Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.
7.8.1	Explain the importance of assuming responsibility for personal health behaviors.
7.8.2	Demonstrate healthy practices and behaviors that will maintain or improve the health of self or others.
7.8.3	Demonstrate behaviors that avoid or reduce health risks to self and others.
Health Education Standard 8	Students will demonstrate the ability to advocate for personal, family and community health.
8.8.2	Demonstrate how to influence and support others to make positive health choices.
8.8.3	Work cooperatively to advocate for healthy individuals, families, and schools.

Appendices

Governors Fitness Challenge

Governor Edward Rendell has issued a challenge for Pennsylvania's school children to make life-long healthy food choices. Specifically the Governor wants the children to maintain good nutrition with daily activity in an attempt to reduce overweight and obesity in our state. This unit will support the Governor's initiative by offering opportunities for our children and their families by providing information to help them make healthy food choices while exercising daily. The 5-2-1 rule will be promoted.

5-2-1 Rule

The 5-2-1 rule is a suggested guideline for healthy living:

- "5" Eat 5 servings of fruits or vegetables a day.
- "2" Spend no more than 2 hours a day watching TV or playing video games or on the computer
- "1" Spend one or more hours a day being physically active.

