Obesity is a national problem that impacts many levels of our society, from how our tax dollars are spent on national initiatives (like the USDA's National School Lunch Program) to how we cope with the costs of healthcare from weight related problems. While the number of obese adults is increasing each year, a more alarming trend is the rise in obese children. The chart depicts the number of overweight boys and girls. (Chart 2) The National Health and Nutrition Examination Survey by the Centers for Disease Control (CDC) has found that about one-third of U.S. children have a BMI that places them in the 85th percenile or above -- that includes over 25 million children (Source 4). Unlike most adults, children have less weight in many of the decisions that lead towards their condition, like the family grocery list. Children are also more susceptible to outside influences like television advertising which generally lead to less nutritious choices in food when they do have that opportunity to choose. Childhood obesity is an epidemic which must be understood before it can be stopped. The following discussion will provide an understanding of childhood obesity by defining or measuring it, by looking at the risks it poses, and by seeing what causes it.

The first step in understanding obesity is defining it. Traditionally, the National Center for Health Statistics developed a series of charts which compared height and weight of children at various ages with one 'ideal' measurement for all children to compare to. These charts were flawed in many ways, including that they were set with statistics from predominantly white children (Source 6). A new set of growth charts was created in 2000 from the CDC with a new value to measure against – the Body-Mass Index (BMI). The BMI is a single number calculated from an individual's weight to their height. The new formula was derived from statistics of multiple ethnic populations to be a more all-encompassing figure and accurate to a larger population. In general, a child with a BMI in the 85th percentile is seen to be 'at risk' of becoming obese and a child in the 95th percentile is obese (Source 6). The charts used for comparing a child's BMI to their percentile ranking are very different from adult rankings as the acceptable values move up and down during different stages in development. Children grow at different rates and need a certain amount of calories in order to avoid long-term growth difficulties (Source 6).

To calculate BMI, you need two values: height in inches (H) and weight in pounds (W). With this information in hand, calculate BMI with the following formula: (W \* 703) / H2. This BMI formula is the same for all children, but different standards have been published for boys and girls. Looking at an example the differences between male and female development (illustrated on the charts) are clear. To calculate the BMI for an 8 year old with the height of 4ft 4in (52 inches) and a weight of 72lbs apply this formula: (72 \* 703) / (52 \* 52) = 18.7. If the child is male, a BMI of 18.7 places them in the 88th percentile – at risk for obesity. If the child is female, a BMI of 18.7 places them in the 84th percentile – at a healthy weight. This variation is also a good reason to look to a family physician with a full medcal history before a label is placed on a child as obese.

Just identifying a child as obese can carry some of the most devastating effects of the condition – low self-esteem and depression. Once children reach the level of obese, many social and emotional problems can result. Overweight children are often the target of bullying by their peers. This bullying leads to self-esteem and depression issues that transform into social withdrawal, destructive eating behviors and even learning disabilities. As you can see from the following chart, overweight children are a problem at all ages (Chart 1). The emotional problems suffered by obese children hinder their progress in losing weight and carry into adulthood with lasting consequences. As reported in Business Week, 'study after study has shown that children with low self-esteem have the worst outcomes on any weight-loss plan' (Source 1).

The physical problems associated with obesity are devastating to children who suffer them and also cost our society an estimated $100 billion a year (Source 2). Type-2 diabetes was once referred to as 'adult onset' diabetes but is now diagnosed in a growing number of children each year. Other physical problems that manifest in obese children include: high blood pressure, asthma, sleep apnea, early puberty or menarche, skin infections, metabolic syndrome, liver disease and even chronic joint problems. These physical symptoms rob children of their childhood, making them into little senior citizens. As a doctor who counsels oveweight children said to a reporter about the situation, "It's like talking to someone who's eighty years old. Overweight kids have the same maladies [that seniors do]; they have trouble moving" (Source 6).

Examning the causes of childhood obesity can lead to some logical ways to prevent it. The causes of obesity are complex and fit together like a large web; the cures for obesity also need to follow that model. The primary causes of childhood obesity are diet, inactivity, genetics, psychological factors and family/social factors. The remainder of this paper will address these causes and some possible ways of combating them.

Diet is the most obvious cause of obesity as most people can see the connection between eating large quantities of food and gaining weight. The less obvious connection is the one between low density, high fat, calorie foods and weight gain. As our society has lowered the costs of many foods through production efficiencies and improvements in transportation, foods low in energy density and viamin rich have become more expensive. This disparity – the unhealthy food is cheaper and faster than healthy fruits and vegetables – has caused more low-income cases of obesity. Low-income parents face a trade-off not seen by high-income parents: healthy food or rent. Making healthy food available to low-income families at a lesser or subsidized cost could help alleviate this situation.

The other diet-related concern with children is aesthtic – many kids don't like to eat fruits and vegetables. Children will gravitate towards food that they find tasty, and once they have developed a craving for high-fat food, this is difficult to overcome (Source 2). Kids develop their primary preferences for food in the first 10 years of life. Once they have passed that age many studies have shown that children won't change their eating patterns without another motivation besides taste (Source 2). Exposing children to as many different healthy alternatives early can stop their taste from developing towards a craving for high-fat, high-sugar food.

Inactivity has become a greater problem as our society has changed with the Information Age. Many leisure activities enjoyed by children today are sedentary – gaming consoles, computers and television require little physical effort. Other factors, such as the safety of local parks and playgrounds in the inner city also lead to children staying indoors and inactive for leisure time. Sports programs and physical education in the public schools have been cut back due to funding issues. Moderation in sedntary activities is instrumental to increasing activity for children. Increase movement whenever possible – even a walk to school each day or walking the entire store on a shopping trip can help bridge the gap between calories eaten and used each day.

The genetic cause of obesity is one of the smallest factors in the obesity epidemic. Less than 5% of obese children have a genetic predisposition towards the condition. Displling the myth that all overweight children are doomed to this fate is beneficial to combating this misconception.

Psychological, family and social factors are the largest contributors to childhood obesity. Once a child is overweight and on the path to obesity, the psychological factors – like depression, low self-esteem and compulsive eating – become the cause of the condition as well as the effect. When a child grows up in the household of obese parents, habits learned from the parents will be passed on from generation to generation. Even healthy parents make the common mistake of feeding children adult-size portions. This behavior causes overfeeding to become the norm: "If you over feed toddlers or young children, they will consistently seek out more than their body needs", Dr Ellen Rome, director of adolescent medicine at the Cleveland Clinic (Source 1).

These factors can be minimized by two main measures: keeping children from becoming obese and creating healthy family patterns that enable children to learn healthy habits. Bring children to the grocery store to do the family shopping and discuss each item before putting it in the cart. Read ntritional labels and create family rules about what foods can and cannot be eaten in the home based on their nutritional content. Practice moderation when eating out as a family. When the food is delivered, demonstrate healthy portion control at the table to show children how much food should be eaten at one seating. Avoid using any type of food as a reward.

Childhood obesity is an enormus problem with no quick answers. Only by defining the problem, recognizing the need for change and working together towards a solution will we find a way to avoid a preventble epidemic.

Source 1:

Author: Arnst Catherine

Online Journal: Business Week

Article Title: Helping Your Kid Slim Down; How to change behavior that can foster obesity -- and its long-term damage.

Year published: 9 Jan. 2006

Page: 86

Media: Print

Source 2:

Article Title: Childhood obesity

Author: Mayo Clinic Staff

Website Title: Risk Factors

Publisher/sponsor: Mayo Clinic

URL: http://www.mayoclinic.org/diseases-conditions/childhood-obesity/basics/risk-factors/con-20027428

Published: 1998-2015

Source 3:

Author: Goodwin, Jennifer.

Article Title: Many Kindergarteners Already on Road to Obesity, Study Finds; To Prevent Health Problems, Lifestyle Programs Need to Start in Early Childhood, Experts Say."

Publisher/Sponser: HighBeam Research

Date Published: 23 Nov. 2011.

URL: 16 May 2015. <http://www.highbeam.com/doc/1G1-273243865.html?refid=easy\_hf>.

Media: Web

Source 4:

URL: <http://www.cdc.gov/obesity/childhood/basics.html>.

Article Title: Basics About Childhood Obesity

Publisher/Sponser: Centers for Disease Control and Prevention

Date Published: 27 Apr. 2012

Date Accessed: Today

Media: Web

Source 5:

Author: Hellmich, Nanci.

Article Title: Energy gap factors into Child obesity; Extra 110 calories can add pounds

Website Title: Energy gap factors into child obesity - USATODAY.com

Publisher/sponsor: USA Today

URL: <http://usatoday30.usatoday.com/news/health/2006-12-03-child-obesity_x.htm>

Published: 12 May 2006

Source 6:

Book Title: Obesity, Business, and Public Policy

Author: Zoltan J. Acs, Alan Lyles and Kenneth R. Stanton.

Publisher: Edward Elgar

City: Cheltenham, UK

Year Published: 2007

Media: Printed book

Page: 16

Source 7:

Title: Obesity in Childhood and Adolescence

Authors: Kiess, W., Marcus, Claude and Wabitsch, Martin

Publisher: In Pediatric and Adolescent Medicine.Basel : Karger. 2004

Media: eBook Collection (EBSCOhost).

Source 8:

Author: Dalton, Sharron.

Book Title: Our Overweight Children: What Parents, Schools and Communities Can Do to Control the Fatness Epidemic.

Publisher: Berkeley University of California Press

Year Published: 2004

Media: Printed book

Source 9:

Author: Roberto A. Ferdman,

Article Title: Food Industry Still Aiming TV Ads for Unhealthy Fare at Kids, Study Finds

Newspaper: Washington Post

Database: SIRS Issues Researcher

Page: A.10

Date Published: 12 May 2015

Source10:

Title: Food addiction’. What happens in **childhood**?

Academic Journal: Appetite

Authors: Burrows,Tracy and Meule, A.

Volume and page: Vol. 89, p298-300.

Date published: Jun2015

Online Database: Academic Search Premier