Childhood Obesity

Childhood obesity is an epidemic here in the U.S. as well as in other developed nations. There are many health risks associated with obesity and the fact that it is affecting record numbers of children today is alarming. The causes of obesity can be broadly categorized as either biological or environmental. Both contribute to individual cases to varying degrees. The increase in unhealthy weight has been linked to the shift from children physically playing outdoors to playing non-active games on the computer or watching television and has rapidly worsened in the past few years as more forms of sedentary entertainment have become popular. Steps have been taken by schools, families, and physicians to try to halt this health crisis, but still more needs to be done by our society to protect children from obesity.

“The prevalence of obesity among children aged 6 to 11 more than doubled in the past 20 years, going from 6.5% in 1980 to 17.0% in 2006. The rate among adolescents aged 12 to 19 more than tripled, increasing from 5% to 17.6%” (CDC 2009). Obesity is evaluated using body mass index or BMI. BMI is calculated by dividing an individual’s weight by their height squared (kg/m$^2$). A BMI greater than or equal to 25 kg/m$^2$ means that the individual is overweight and a person with a BMI greater than or equal to 30 kg/m$^2$ is considered obese (Herbert et al. 2006). The BMI of 25 kg/m$^2$ was chosen as the cut off for being considered overweight because that is the index at which weight increases the risk of death (Herbert et al. 2006). It is important to fight obesity when individuals are young because the BMI of the vast majority of people increases with age
(Herbert et al. 2006). In 2006, 30% of American adults were considered obese and 65% were considered overweight (Herbert et al. 2006).

Obesity causes numerous health conditions including cardiovascular, endocrine, pulmonary, renal, musculoskeletal, and psychosocial problems (Ebbeling et al. 2002). Of particular concern is type II diabetes which was very rarely diagnosed in adolescents but is now seen in an increasing number of young people and may account for almost half of newly diagnosed cases of diabetes (Ebbeling et al. 2002). Obesity has an extremely detrimental effect on the heart and cardiovascular system: it increases the chances of hardening of the arteries known as atherosclerosis and heart attack (Smith 1999). Obesity also leads to high cholesterol and obese individuals are three times more likely to develop high blood pressure compared to non-obese individuals (Smith 1999). Another effect of the extra weight that obese children must carry around is stress on the musculoskeletal system, which may lead particularly to malformation of the bones of the foot and lower leg during growth (Smith 1999). Not only does obesity affect the physiology of the body but it may also take a toll mentally. This is particularly devastating to children who are trying to fit in while going through the many changes of growing up. Obese children may be teased at school and develop a negative self image which could lead to depression and withdraw from society. All these health factors contribute to the hypothesis that children today may be part of the first generation since World War II to have a shorter lifespan than their parents (Louv 2008).

Childhood obesity is obviously a health concern, but what factors contribute to obesity? The causes of obesity are part of the nature versus nurture debate. Genetics as well as environment effect obesity but the extent of each has not yet been specifically
determined. “Predisposition to obesity seems to be caused by a complex interaction between at least 250 obesity-associated genes” (Ebbeling et al. 2002). Also, in rare cases, mutations in genes coding for proteins that function in metabolic processes have led to excessive weight gain (Ebbeling et al. 2002).

The other factor leading to obesity is environment. The effect of the environment on the weight of children may occur earlier than we first believed. Studies have shown that over-nutrition of the fetus can lead to obesity. It has been hypothesized that over-nutrition may lead to a permanent alteration of appetite or energy metabolism (Ebbeling et al. 2002). On the other hand, if the fetus is undernourished other physiological changes may take place to also cause obesity later in life as was shown by analysis of parent and child weight after the Dutch famine (Ebbeling et al. 2002).

Once the child is out of the womb, a greater range environmental factors affect obesity. In general, if more energy is consumed than is exerted, weight gain will occur (Smith 1999). If a child is exposed to an overabundance of food or unhealthy food, he or she is more likely to gain weight. An interesting study found that young children around age three and a half ate only until they were full even if they were given a large serving whereas children a bit older at age five ate the whole serving no matter if it was small or large (Ebbeling et al. 2002). It seems that as children get older, their body cues that should signal when they are full are overpowered by the positive response to the stimuli of eating and/or the cultural idea that one should eat until the portion is gone (Ebbeling et al. 2002). On the other side of the balance of energy consumption and use, a lack of physical activity contributes to obesity. A national study of U.S. children found that
“children who engaged in the least vigorous physical activity or the most television viewing tended to be the most over weight” (Ebbeling et al. 2002).

Genetic and environmental factors no doubt overlap to produce childhood obesity. The family is a perfect example of this. Not only do parents contribute genetic factors that may predispose their children to obesity but they also make decisions about the environment in which their children will be raised (Kaniss 2008). Parents decide which types of food they will offer to their children in the home environment. They also influence the way their children view different types of food (Kaniss 2008). If a parent eats junk food and does not exercise, their children will see this as acceptable and do the same (Kaniss 2008).

Childhood obesity has been increasing at an unprecedented rate. So what caused this spiral into poor health in recent years? There is certainly a link between the increase in technology and the rise in childhood obesity (Louf 2008). Children can find sedentary entertainment from television, video games, computer games, and the internet (Ebbeling et al. 2002). The CDC found that “35% of high school students watched television three or more hours per day” and “25% of students played video games or used a computer for something that was not school work for three or more hours per day on an average school day” (CDC 2007). Another study found that the time children spend watching TV directly correlates with their percentage of body fat (Louf 2008). Television and computer time is displacing time when children used to go outside and be physically active (Louf 2008). “Children in the U.S. spend 75% of their waking hours being inactive, compared with remarkably little time in vigorous physical activity; estimated at only 12 minutes per day” (Ebbeling et al. 2002). Not only are children not burning
calories when they are sitting watching television, they are also more likely to passively consume calories (Ebbeling et al. 2002). Many advertisements for unhealthy food are directed toward children and a study has shown that “exposure to 30-second commercials increases the likelihood that three to five year olds would later select an advertised food when presented with options” (Ebbeling et al. 2002). Families are eating a greater percentage of their meals in restaurants where they consume more calories per meal than they would consume from a home cooked meal (Ebbeling et al. 2002). To add on top of everything there has been an increase in processed food and fast food restaurants, which serve such products. The epitome of this increased consumption and decreased energy expenditure is the fast food drive-through (Ebbeling et al. 2002). Consumers can order a meal worth the complete daily-recommended caloric intake all while not even expending the energy to walk inside to order.

In general, there is less movement as part of everyday life in society today. Instead of walking to a location less than half a mile away, we get in our cars and drive there. We take the elevator instead of the stairs. In our modern society we are always looking for ways to do less physical work.

Although it is counterintuitive, the average BMI of children has increased with an increase in organized sports (Louv 2008). Richard Louv, author of Last Child in the Woods, believes that playtime for children today is too structured (2008). What children really need is unstructured play in nature. Unstructured play would not only help children manage their weight, it would also allow them to exercise their imagination and escape the constraints of society (Louv 2008). Children’s lives are so scheduled that
whenever they have free time they want to watch TV or play on the computer instead of physically exerting themselves.

Obesity is so hard to overcome because the environmental factors are embedded in our society. Young adults have grown up in a culture where they are surrounded by entertainment that can be brought to them with the flip of a switch, they do not feel the need to explore outdoors or make up their own games (Louv 2008). Even if they wanted to get some exercise outside, there is too much fear about the outdoors as a dangerous place. Parents are afraid to let their children out of the house without their supervision for fear that they might be abducted or get into a violent situation. Although this does happen, it is very rare. “The authors of the Duke Well-Being Index state, ‘The most disturbing finding’ of their report is not violence or abductions, but ‘that children’s health has sunk to its lowest point in the 30 year history of the Index, driven largely by an alarming rise in the number of children who are obese and a smaller decline in child mortality rates than achieved in recent years’” (Louv 2008). To the detriment of children, our society has been trained to think that the indoors are safer than the outdoors (Louv 2008).

There is a racial disparity among obese children. In the U.S., Black, Hispanic, and Native American children have higher rates of obesity than White children (Smith 1999). This trend seems to be tied to the socioeconomic disparity among obese children in the U.S. (Smith 1999). Less educated families may not know enough about health and diet to make healthy choices. Even if they know what is healthy, families with lower income may not have enough money to choose the healthiest options. Additionally, low-income families will have a harder time paying for the treatment of obesity (Smith 1999).
The good news is that the childhood obesity crisis has been recognized and people are doing something about it. Whether or not it is effectively lowering obesity in children is another story. Studies of programs where children receive encouragement to exercise, dietary counseling, and family intervention have shown that there is very little success in preventing obesity in the experimental group relative to the control group (Ebbeling et al. 2002). Even if there is success, as soon as the children leave the program its effectiveness in preventing obesity is greatly diminished (Ebbeling et al. 2002).

The government has also stepped into the childhood obesity health crisis. In 2005, the U.S. Department of Agriculture recognized the need to change the food pyramid to include physical activity. The pyramid also emphasizes the need for a balanced diet with fruits, vegetables, low-fat milk products as well as some lean meat and only a small amount of fat and added sugar (USDA 2009). Schools have been implementing health guidelines in cafeterias in order to offer more healthful menu items to students. The Institute of Medicine presented schools with a list of nutrition guidelines in 2007 (Kaniss 2008). The guidelines included limiting competitive foods such as brand name snacks and making fruit and vegetables more available (Kaniss 2008). It also noted that beverages with nonnutritive sweeteners, such as soda, should not be sold during regular school hours (Committee on Nutrition Standards for Foods in Schools 2007).

On the extreme side, pharmaceuticals and surgical procedures usually reserved for severely obese adults have been considered for children (Smith 1999). The problem is that these options are dangerous, especially for children, and they are only temporary solutions. Anti-obesity drugs work to suppress appetite, but many of those previously approved by the FDA have since been found to cause adverse effects and were removed
from the market (Smith 1999). Also, no studies have been done on children to determine if the medications would be effective and safe for individuals of that age (Smith 1999).

Surgical procedures such as vertical banded gastroplasty, which is when a small pouch is created in the upper part of the stomach by stapling a section off, have helped many obese children. It works because as soon as the small stomach is full it sends signals to the brain to stop eating (Smith 1999). However, the procedure is only considered in extreme circumstances for children because of the dangers of invasive surgery (Smith 1999).

With the invention and spread of television, video games, computer games, and the internet, children are playing more indoors and being sedentary rather than being active and burning up calories. More needs to be done to combat childhood obesity. Changes in public policy and guidelines in schools will help, but I do not believe that they will solve the problem alone. A greater change in our cultural values needs to occur where junk food is discouraged and not valorized by commercials intended for children. We also need to get motivated as a society to take a greater part in our health and not just sit by as the average BMI increases and overweight becomes the norm. We should especially work to prevent childhood obesity because it is easiest to stop when children are young, once children have cultural values and norms instilled in them it is much harder to change their lifestyle. We as adults need to be good examples for children. We should eat and promote healthy foods and we need to change our attitude from exercise as work to exercise as a fun social experience.
Literature Cited


Centers for Disease Control and Prevention. 2009. “Healthy Youth! Health Topics: Childhood Obesity.”


