Childhood Obesity: Prevention & Intervention

A Senior Project

presented to

the Faculty of the Child Development Department

California Polytechnic State University, San Luis Obispo

In Partial Fulfillment

of the Requirements for the Degree

Bachelor of Science

by

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June, 2010

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CHAPTER 1

INTRODUCTION

Childhood obesity is now being recognized as a serious threat to society due to its increasing prevalence. Childhood obesity was found to affect 19% of children in the United States aged 6 to 11, and 17% of adolescents aged 12 to 19 years in 2004. These numbers have at least tripled since 1963, when obesity rates in children were around 4-5% (Niehoff, 2009). These rates are alarming since childhood obesity has been linked with many physical, social-emotional, and academic consequences (AAP, n.d.a; Niehoff, 2009; Budd & Hayman, 2008; Schwimmer et al., 2003). Medical conditions associated with obesity include, but are not limited to, sleep apnea, Type 2 diabetes, asthma, hepatic steatosis (fatty liver disease), cardiovascular disease, high cholesterol, cholelithiasis (gallstones), glucose intolerance and insulin resistance, skin conditions, menstrual abnormalities, impaired balance, and orthopedic problems (AAP, n.d.a; Niehoff, 2009). These health conditions can severely impact the health of the child and continue throughout adulthood. Some of the social-emotional consequences of obesity include being teased and/or bullied for their weight, in addition to facing other hardships including negative stereotypes, discrimination, and social marginalization (AAP, n.d.a; Budd & Hayman, 2008). In addition, overweight and obese children are more likely to have problems with peers at school and typically miss school more frequently, which can negatively affect academic performance (Schwimmer et al., 2003).

Many factors have been examined as possible causes of childhood obesity. Research has examined the effects of snack foods, genetics, basal metabolic rates, sugary beverages, sedentary
lifestyles, fast food, behavioral factors, sociocultural factors, and family factors on childhood obesity. While it is difficult to establish causality, many of the above factors have been found to be linked with childhood obesity.

Although there are many potential ways to influence children’s eating habits, parents have been found to have a particularly influential role (Munsch, HasenBoehler, Michael, Meyer, Roth, Biedert, & Margraf, 2007; Niehoff, 2009; CDC, 2010c; Birch, 1998; Fiese & Schwartz, 2008; Sullivan & Birch, 1990). Therefore, preventing and intervening in cases of childhood obesity needs to begin at home. This is true despite recent movements to include childhood obesity prevention programs within communities and schools. Such programs are more likely to be effective if parents also actively work to prevent their children from becoming overweight or obese by incorporating healthy habits into every day family life (Niehoff, 2009). Among the ways that parents might accomplish this are: modeling, avoiding “food as reward” messages, insisting on family mealtimes, providing healthy choices, promoting physical activity, and educating themselves.

For this project, I chose to make a resource for those parents interested in the things they can do to prevent childhood obesity. I took many steps in creating this resource. The first thing that I did was familiarize myself with current research understandings pertaining to childhood obesity. I then described this work in the form of a scholarly literature review. Finally, I created a website for the purpose of disseminating this information to parents and others working with children. I entitled the website that I developed for this project, “Parents’ Guide to Childhood Obesity Prevention.” The final product can be found at the following web address: http://web.me.com/cblossing/Site/Home.html. Screenshots of each page of the website are provided in the Appendix.
I believe that this resource has the potential to be effective in supporting parents in many different ways. This website presents the information that I found in the research pertaining to the prevention efforts that parents can do to build healthy eating and activity habits. These tips are important since healthy habits can protect against developing childhood obesity. The consequences of childhood obesity that are outlined on this site highlight the seriousness of this health condition, which can help parents to see the importance and value in the prevention methods. The factors that contribute to childhood obesity that are mentioned can be helpful for parents to be familiar with, since it can help parents to determine which lifestyle habits may be posing a risk to their child. This information is presented in a simplistic, accessible, and visually aesthetic manner. While I believe that this information is valuable and can be helpful for parents, I think that this website could be expanded in the future to provide more resources for parents regarding prevention strategies. It could be helpful to expand on each prevention method and provide ways that parents can assimilate these methods into their everyday lives. This website could also be altered to focus specifically on the parents in San Luis Obispo County in order to provide local resources. While this resource could be expanded in the future, I feel that this website bridges research with practice by disseminating scholarly findings to those who have the most influence on children’s lives, parents.
Due to the skyrocketing number of cases of obesity in adults and in children, it is considered to be a major public health concern in the United States (Niehoff, 2009). Dr. Anand, the Executive Director for the Center for Nutrition Policy and Promotion, describes the prevalence of obesity as being “at epidemic proportions” (Center for Nutrition Policy & Promotion, 2008, pg. 2). This statement was made in 1998. Since then, the rates of obesity have continued to rise dramatically and greater attention is being given to prevention and intervention than ever before.

According to the Center for Disease Control [CDC] (2010b), overweight and obesity is determined in children and adolescents (aged 2-19 years) using their BMI and CDC growth charts. Children’s BMI value is plotted to determine the BMI-for-age percentile. Overweight is defined as a BMI at or above the 85th percentile and lower than the 95th percentile. Obesity is defined as a BMI at or above the 95th percentile for children of the same age and sex. (Note that children’s BMI is calculated differently than adults, as children’s body composition varies as they age and the CDC growth charts reflect that variation). Using this measurement strategy, it was estimated that in 2004 childhood obesity affected 19% of children aged 6 to 11, and 17% of adolescents aged 12 to 19 years. These numbers have at least tripled since 1963, when obesity rates in children were around 4-5 percent (Niehoff, 2009). Children measured in 2002 were found to weigh an average of eleven pounds more than children and adolescents the same age living in 1963 (Niehoff, 2009). According to Niehoff, “fifteen-year-olds in 1963 weighed 135.5
pounds (boys) and 124.2 pounds (girls). Respective weights in this age range increased to 150.3 pounds and 134.2 pounds [in 2002] (Niehoff, 2009, p. 17).” A National Health and Nutrition Examination survey estimated that 31.9% of children and adolescents were overweight, and 16.3% were obese between the year 2003 and 2006 (American Academy of Pediatrics [AAP], n.d.a).

The rising rates of childhood obesity fall disproportionately on specific demographic groups within U.S. society. Rates of childhood obesity are, for example, higher in children who come from a lower socioeconomic background (Moens, Braet, Bosmans & Rosseel, 2009). One reason that low socioeconomic status may be strongly linked to obesity centers on dietary considerations. Unhealthy food, including fast food, is generally less expensive than healthier alternatives. In addition, some impoverished areas do not have access to healthy fresh food, which contributes to the consumption of unhealthy processed food (Budd & Hayman, 2008). Obesity rates are also found to be higher in ethnic minorities, with Hispanics, and African American girls being the most at risk (as cited in Budd & Hayman, 2008), p. 112). According to the American Academy of Pediatrics (n.d.a), Mexican American boys are more likely to have a high BMI than are white boys.

Childhood obesity can lead to serious consequences in many areas of child development. The magnitude of these potential negative outcomes, significant research attention has been given to the causes of obesity. Attention to scholarly investigations of the causes and consequences of obesity can inform the evaluation of existing prevention and intervention programs, as well as provide material that will aid in the development of new resources for parents who are concerned about helping their children maintain a healthy weight.
Consequences of Childhood Obesity

Childhood obesity can profoundly affect children’s physical health, social and emotional well-being, and self esteem. It is also associated with poor academic performance and a lower quality of life experienced by the child. These potential consequences are further examined in the following sections.

Medical Consequences

Childhood obesity has been linked to numerous medical conditions. These conditions include, but are not limited to, fatty liver disease, sleep apnea, Type 2 diabetes, asthma, hepatic steatois (fatty liver disease), cardiovascular disease, high cholesterol, cholelithiasis (gallstones), glucose intolerance and insulin resistance, skin conditions, menstrual abnormalities, impaired balance, and orthopedic problems (AAP, n.d.a; Niehoff, 2009). Until recently, many of the above health conditions had only been found in adults; now they are extremely prevalent in obese children. Although most of the physical health conditions associated with childhood obesity are preventable and can disappear when a child or adolescent reaches a healthy weight, some continue to have negative consequences throughout adulthood (AAP, n.d.a). In the worst cases, some of these health conditions can even result in death. Below, three of the more common health problems associated with childhood obesity are discussed, diabetes, sleep apnea, and cardiovascular disease.

Diabetes. Type 2 Diabetes has now become the most common form of diabetes (ADA, 2010). Diabetes complications occur when the body cannot produce enough insulin, or when it does not recognize it. Insulin enables the body to utilize glucose for energy, which is important since glucose is the primary source of energy in the body. When the body lacks sufficient insulin
to be able to function properly, glucose builds up in the blood and is not able to be directed
towards the cells (ADA, 2010). Type 2 Diabetes in children can result in complications resulting
in kidney failure. Type 2 Diabetes has increased dramatically in the recent years. Pediatric
journals in 2003 reported a 45% increase in Type 2 diabetes in children and adolescents
(Niehoff, 2009).

**Sleep apnea.** Sleep apnea is a less common condition than diabetes, affecting around 7%
of obese children. Nevertheless, it can be very serious as it causes oxygen levels in blood to fall
drastically during sleep (CDC, 2010c). Individuals with sleep apnea are unable to breathe for
certain lengths of time during sleep, often lasting a minute or longer (ASAA, 2008). This is due
to the brain failing to signal the muscles to breathe, a blockage of the airway, or a combination of
the two. Left untreated, sleep apnea can result in high blood pressure, cardiovascular disease,
headaches, memory problems, etc (ASAA, 2008).

**Cardiovascular disease.** Cardiovascular disease is of particular concern as it is not
reversible and extremely serious. Cardiovascular disease killed more Americans in 2006 than did
cancer, aids, and accidents. According to the American Heart Association, cardiovascular disease
claimed over 831,272 lives that year, 151,000 of which were under the age of 65 (AHA, 2010).
The Center for Disease Control found 70% of obese children aged 5-17 to have at least one risk
factor for cardiovascular disease and 39% of obese children to have two or more risk factors
(CDC, 2010c). Type 2 diabetes, high cholesterol and lipid levels, and high blood pressure have
all been found to be risk factors for this condition (Niehoff, 2009) (CDC, 2010c).
Socioemotional Consequences

In addition to being implicated in numerous medical concerns, childhood obesity affects children’s and adolescent’s social and emotional health. Obesity has been described as being “one of the most stigmatizing and least socially acceptable conditions in childhood” (Schwimmer, Burwinkle, & Varni, 2003, pg. 1818). Overweight and obese children are often teased and/or bullied for their weight. They also face numerous other hardships including negative stereotypes, discrimination, and social marginalization (AAP, n.d.a). Discrimination against obese individuals has been found in children as young as two years old (Budd & Hayman, 2008). Obese children are often excluded from activities, particularly competitive activities that require physical activity. It is often difficult for overweight children to participate in physical activities as they tend to be slower than their peers and contend with shortness of breath (Niehoff, 2009). These negative social problems contribute to low self esteem, low self confidence, and a negative body image in children and can also affect academic performance (AAP, n.d.a). All of the abovementioned negative effects of overweight and obesity can be devastating to children and adolescents.

The social consequences of obesity may contribute to continuing difficulty in weight management. Overweight children tend to protect themselves from negative comments and attitudes by retreating to safe places, such as their homes, where they may seek food as a comfort. In addition, children who are overweight tend to have fewer friends than normal weight children, which results in less social interaction and play, and more time spent in sedentary activities (Niehoff, 2009). As aforementioned, physical activity is often more difficult for overweight and obese children as they tend to get shortness of breath and often have a hard time...
keeping up with their peers. This in turn inevitably results in weight gain, as the amount of calories consumed exceeds the amount of energy burned (Niehoff, 2009).

**Academic Consequences**

Childhood obesity has also been found to negatively affect school performance. Schwimmer et al. (2003) found that overweight and obese children were four times more likely to report having problems at school than their normal weight peers. They are also more likely to miss school more frequently, especially those with chronic health conditions such as diabetes and asthma, which can also affect academic performance (Schwimmer et al., 2003).

**Children’s Perceptions of Childhood Obesity**

Schwimmer et al. (2003) examined the quality of life for children who are overweight or obese, aged 5-18 years. In this study, obese children and adolescents were asked to rate how they felt about their social interactions with others, health, feelings, and any problems they encountered at school. Parents were asked to assess their child’s physical, emotional, social, and school functioning. The children were also examined for health conditions linked with childhood obesity such as sleep apnea, fatty liver disease, etc. Researchers found that “the quality of life scores, self-reported by children and assessed by parents, were as bad as scores previously reported by children with cancer who were undergoing chemotherapy” (Niehoff, 2009, p. 18). This study is significant as it gives insight into how being overweight or obese can significantly reduce the quality of a child’s life experience.

In sum, children who are overweight or obese are negatively affected in virtually every aspect of their lives. As previously discussed, childhood obesity affects them negatively physically, socially, emotionally, psychologically, and academically. Children who are
overweight or obese do not have the same opportunities as children at a normal weight. They are not provided the same opportunities for physical activity as children at a healthy weight, are not able to make friends as easily, and are more likely to develop a serious health condition. These things profoundly affect the life of an overweight or obese child.

**Factors that Contribute to Childhood Obesity**

The drastic rise in obesity rates throughout the past few decades have spurred many research studies examining the factors that contribute to obesity in children. Although certain biological considerations such as heredity and metabolic functioning likely play a role in childhood obesity, this is not the whole story. Because obesity rates were stable between 1971-74 and 1976-80 and only began to rise thereafter, environmental changes around and since that time have been extensively examined (Niehoff, 2009). Particular attention has been paid to interactions between individual behavior and the resources and expectations of the society.

**Genetics**

Genetics are one of the biggest factors examined as a cause of obesity. Some studies have found that BMI is 25 to 40 percent heritable (Anderson & Butcher, 2006). However, genetic susceptibility often needs to be coupled with contributing environmental and behavioral factors in order to affect weight (CDC, 2010a). Other genetic factors include syndromes that can lead to overweight including, Klinefelter’s, Klein-Levin, Prader-Willi, Lawrence Mood Biedl, Mauriac, and Frohlich’s. The above medical conditions account for less than 5 percent of cases of childhood obesity (Anderson & Butcher, 2006). Therefore, while genetics can play a role in the development of obesity, it is not the cause of the dramatic increase in childhood obesity.
**Basal Metabolic Rate**

Basal metabolic rate has also been studied as a possible cause of obesity. Basal metabolic rate, or metabolism, is the body’s expenditure of energy for normal resting functions. Basal metabolic rate is accountable for 60 percent of total energy expenditure in sedentary adults. It has been hypothesized that obese individuals have lower basal metabolic rates. However, a study conducted by Bandini, Schoeller, and Dietz (1990) amongst obese and nonobese adolescents did not find any difference in basal metabolic rates between the two groups. Therefore, differences in basal metabolic rates are not likely to be responsible for the rising rates of obesity (Anderson & Butcher, 2006).

**Diet**

Dietary factors have been studied extensively for its possible contributions to the rising rates of obesity. The dietary factors that have been examined include fast food consumption, sugary beverages, snack foods, and portion sizes.

**Fast food Consumption.** Increased fast food consumption has been linked with obesity in the recent years. Americans eating outside of the home has increased by 89 percent since the 1970’s, according to Wang and Brownell (as cited in Budd & Hayman, 2008). Many families, especially those with two parents working outside the home, opt for these places as they are often favored by their children and are both convenient and inexpensive (Niehoff, 2009). Foods served at fast food restaurants tend to contain a high number of calories with low nutritional values. A study conducted by Ebbeling, Sinclair, Pereira, Garcia-Lago, Feldman, & Ludwig (2004) examined the eating habits of lean and overweight adolescents at fast food restaurants. Researchers found that both groups consumed more calories eating fast food than they would
typically in a home setting but the lean group compensated for the higher caloric intake by adjusting their caloric intake before or after the fast food meal in anticipation or compensation for the excess calories consumed during the fast food meal (Ebbeling, Sinclair, Pereira, Garcia-Lago, Feldman, & Ludwig, 2004). Though many studies have shown weight gain with regular consumption of fast food, it is difficult to establish a causal relationship between fast food and obesity.

**Sugary Beverages.** Sugary drinks are another factor that has been examined as a potential contributing factor to obesity. Sugary drinks are often thought of as being limited to soda, but juice and other sweetened beverages fall into this category. Many studies have examined the link between sugary drink consumption and weight and it has been continually found to be a contributing factor to being overweight (Anderson & Butcher, 2006). A study examining children aged 9 to 14 from 1996-1998, found that consumption of sugary beverages increased BMI by small amounts over the years (Anderson & Butcher, 2006). Sugary drinks are less filling than food and can be consumed quicker, which results in a higher caloric intake (CDC, 2010a).

**Snack Foods.** Another factor that has been studied as a possible contributing factor of childhood obesity is the consumption of snack foods. Snack foods include foods such as chips, baked goods, and candy. Many studies have been conducted to examine whether these foods have contributed to the increase in childhood obesity. While snacking has been shown to increase overall caloric intake, no studies have been able to find a link between snacking and overweight (Anderson & Butcher, 2006).
**Portion size.** Portion sizes have increased drastically in the past decade. Consuming large portions, in addition to frequent snacking on highly caloric foods, contribute to an excessive caloric intake. This energy imbalance can cause weight gain, and consequently obesity (CDC, 2010a).

**Activity Level**

One of the factors that is most significantly linked to obesity is a sedentary lifestyle. Dietz and Gortmaker (as cited in Anderson & Butcher, 2006) found that “each additional hour of television per day increased the prevalence of obesity by 2 percent” (p. 27).” Television viewing amongst young children and adolescents has increased dramatically in recent years. The increased amount of time spent in sedentary behaviors has decreased the amount of time spent in physical activity. Only 35.8 percent of students in the United States reported achieving the recommended physical activity guidelines, spending at least 60 minutes per day at least 5 days a week on moderate to vigorous physical activity (Budd & Hayman, 2008).

**Environmental Factors**

While extensive television viewing and the use of other electronic media has contributed to the sedentary lifestyles of many American children, other environmental factors have reduced the opportunities for physical activity. Opportunities to be physically active and safe environments to be active in have decreased in the recent years. The majority of children in the past walked or rode their bike to school. A study conducted in 2002 found that 53 percent of parents drove their children to school (Anderson & Butcher, 2006). Of these parents, 66 percent said they drove their children to school since their homes were too far away from the school. Other reasons parents gave for driving their children to school included no safe walking route,
fear of child predators, and out of convenience for the child (Anderson & Butcher, 2006). Children who live in unsafe areas or who do not have access to safe, well-lit walking routes have fewer opportunities to be physically active (Anderson & Butcher, 2006).

**Sociocultural Factors**

Sociocultural factors have also been found to influence the development of obesity. Our society tends to use food as a reward, as a means to control others, and as part of socializing (Budd & Hayman, 2008). These uses of food can encourage the development of unhealthy relationships with food, thereby increasing the risk of developing obesity.

**Family Factors**

Family factors have also been associated with the increase of cases of obesity. The types of food available in the house and the food preferences of family members can influence the foods that children eat. In addition, family mealtimes can influence the type of food consumed and the amount thereof. Lastly, family habits, whether they are sedentary or physically active, influence the child (Budd & Hayman, 2008). Studies have shown that having an overweight mother and living in a single parent household are associated with overweight and childhood obesity (Moens et al., 2009).

**Prevention and Intervention**

Healthy eating habits are critical to the prevention and intervention of childhood obesity. A healthy diet, according to the Center for Disease Control (2010), includes plenty of fruits, vegetables, and whole grain products, low-fat dairy products (yogurt, milk, cheese), and good sources of protein (lean meats, beans, lentils, fish, and poultry). Foods high in sugar and
saturated fats should be avoided, especially any foods with transfats (CDC, 2010a). The American Academy for Pediatrics recommends not drinking any sugar-sweetened beverages on a daily basis (AAP, n.d.b). Children also need to learn about appropriate portion sizes (CDC, 2010c).

Although there are many potential ways to influence children’s eating habits, parents have been found to have a particularly influential role (Niehoff, 2009). Research examining the eating habits of parents and their children have found correlations between parent’s eating habits and their children’s eating habits. Eating habits include the food choices that are made, where food is eaten, and the speed by which food is eaten. Parents have been found to pass on their eating habits to their children through modeling, reinforcement, and by verbal instructions (Munsch, HasenBoehler, Michael, Meyer, Roth, Biedert, & Margraf, 2007). Therefore, preventing and intervening in cases of childhood obesity needs to begin at home. This is true despite recent movements to include childhood obesity prevention programs within communities and schools. Such programs are more likely to be effective if parents also actively work to prevent their children from becoming overweight or obese by incorporating healthy habits into every day family life (Niehoff, 2009). Among the ways that parents might accomplish this are: modeling, educating themselves, insisting on family mealtimes, providing healthy choices, avoiding “food as reward” messages, being persistent, and encouraging physical activity.

**Modeling desired behaviors.** Children do not respond well to the “do as I say, not as I do” approach. As aforementioned, children often learn their eating habits from their parents by observing their example. Parents who want to make diligent efforts to improve their children’s eating and activity habits must also be committed to make positive lifestyle changes themselves.
(CDC, 2010c). These changes are necessary in order to be a positive model of healthy eating behaviors.

One of the most important behaviors that parents need to model is to eat when hungry. It is important for children to learn to use their internal cues to guide when and how much they eat. Many parents have adopted the “clean plate rule” at mealtimes, where children are required to finish everything on their plate. This rule can be problematic since it forces children to ignore their internal hunger cues and rely on an external cue, in this case the plate (Birch, 1998).

Children who are able to listen to their internal hunger cues are better able to control themselves when presented with tempting foods, than those who rely on external signals, and consequently eat less in situations where there are no external cues to signal when they should stop eating (Munsch et al, 2007).

**Educating themselves.** In order for parents to be able to help their children establish healthy eating habits, parents need to have nutrition information. Nahikian-Nelms (1997) found that the level of nutrition education that individuals have is correlated to their attitudes towards nutrition and their behavior at mealtimes. In this study, Nahikian-Nelms observed 113 caregivers in 24 licensed child-care programs. Caregivers were given a list of behaviors and attitudes that have been recommended to promote healthy eating habits and asked to state whether or not they agreed with these items. Though they agreed with most of these items, the caregivers scored poorly on the nutrition knowledge test offered. Findings demonstrated the caregivers who had scored poorly on the nutrition test were more likely to behave in ways inconsistent with the recommended behaviors that they had endorsed as beneficial for establishing healthy eating habits. For instance, 90% of the caregivers agreed with the statement that children will eat a variety of foods if they are exposed to them. However, 38% of the caregivers also agreed with
the statement that it is best to substitute a food the child likes better if the child is refusing to eat. This view was inconsistent with the research that has suggested that exposure increases the chances that a child will consume a particular food item. In addition, some caregivers did not eat the same food as the children, did not talk with the children during mealtimes, or failed to encourage all children to taste all the foods served, all of which are behaviors that go against recommendations to establish healthy eating habits. The results of this study highlight the need for caregivers to obtain nutrition knowledge, since this knowledge interacts with attitudes about nutrition to influence behavior, which can be an important means by which children’s eating habits can be improved.

**Insisting on family mealtimes.** Family mealtimes can be an extremely beneficial means by which parents can positively influence the eating habits of their children. Research has found that meals prepared at home tend to be significantly lower in calories and fat than those prepared in restaurants (Fiese & Schwartz, 2008). In addition, parents have more control over the foods that their children consume when the food is prepared at home. Family mealtimes can provide children with the opportunity to try new foods and develop preferences for food that they may not be initially intrinsically motivated to consume. Therefore, it is important that parents do not prepare separate meals for each individual family member according to their own preference, as this can rob children of the abovementioned opportunity to try healthy foods (Fiese & Schwartz, 2008). However, while it is important for parents to provide healthy food options for their children, parents should be careful not to make food an issue or be over restrictive as to what their children can eat. Family mealtimes should be an enjoyable experience and intense fighting can be counterproductive to building healthy eating habits, and can increase the risk of eating disorders. In addition to nutrition and health benefits, family mealtimes have been found to
promote language development and increase parent-child communication (Fiese & Schwartz, 2008).

**Eating breakfast.** Dinner is not the only healthy meal that parents should aim to have with their children. Many studies have found breakfast to be the most important meal of the day. Ironically, this meal is the most likely to be skipped. Individuals who regularly eat breakfast are more likely to have a lower BMI than those who often skip breakfast. Eating breakfast can protect against weight gain since it can ward off feelings of hunger in the morning that can lead to the consumption of snack foods and other unhealthy foods. Parents should insist that their child eats a balanced breakfast every morning and set the example of this by doing so themselves (Pearson, Biddle, & Gorely, 2009).

**Providing healthy choices.** Parents can also improve their child’s eating habits by monitoring the food that is available in the home. Research has found that food that is accessible is more likely to be eaten (Fiese & Schwartz, 2008). This finding is important as it highlights the need for healthy food choices to begin at the grocery store. Parents should be selective as to the food that they buy and have available in the home. Parents should also be cautious when purchasing “kid’s food,” the food that is directly marketed towards children, as they often are higher in calories and sugar and lower in fiber and protein than similar products marketed towards the general public (Fiese & Schwartz, 2008).

**Avoiding “food as reward” messages.** While monitoring the food available to children is important, parents also need to be careful of using food as a reward. Birch, Zimmerman, and Hind (1980) found that children who were offered food as a reward reported increased liking for that food weeks after having been offered it in that manner. This finding is significant since
many people tend to use sugary foods to reward their children. Using food in this manner can promote a preference towards sugary foods, which can undermine healthy eating habits (Birch, Zimmerman, & Hind, 1980). Using food as a means to a reward (“eat your vegetables and you can have dessert”) can also be problematic as it can decrease a child’s liking for the food that is used as a means of achieving the reward (Birch, 1998).

**Being persistent.** Many parents tend to get frustrated when their children do not immediately embrace new healthy foods. However, it is important for parents to realize that their efforts of exposing their children to a variety of healthy foods is not in vain. Research has found that repeated exposure to a new food reduces the body’s innate neophobic response of resistance (Birch, 1998). Many studies have found that it takes a child being exposed to a new food between 8 and 15 times before the food is accepted. This figure is only applicable if the child is required to taste the food each time it is exposed. This research shows the importance of being persistent when offering a food item to a child and encouraging the child to taste the food each time (Sullivan & Birch, 1990).

**Promoting physical activity.** In addition to teaching their children about healthy eating habits, parents should encourage their children to engage in physical activity. Children and adolescents should participate in at least 60 minutes of moderate activity most days of the week. Parents should model this behavior and encourage their children to join. Activities that are moderately intense include but are not limited to: brisk walking, playing tag, jumping rope, dancing, etc. Sedentary activities such as playing video games, watching television, and browsing the web should also be limited. It is important to note that activities such as reading and doing homework should not be discouraged. Quiet activities such as these are beneficial for children (CDC, 2010c).
In sum, childhood obesity has become a serious problem to society. While it poses serious health risks and has become nationally widespread, it is almost entirely preventable. With diligent effort from parents, the rates of childhood obesity can be greatly reduced. Parents need to be aware of the consequences of childhood obesity, in order to understand the seriousness and implications of this health condition. They also need to be aware of the factors that have been linked to childhood obesity. Lastly, parents need to access information as to how they build healthy eating habits to know what they can do to prevent their child from becoming overweight or obese. For this project, I created a website that provides these key pieces of information for parents.
CHAPTER 3

METHODS

I took many steps to create a resource for parents interested in learning more about how they can prevent childhood obesity. The first thing that I did was familiarize myself with current research understandings pertaining to childhood obesity. I then described this work in the form of a scholarly literature review. Finally, I created a website for the purpose of disseminating this information to parents and others working with children. Each of these processes is explained in greater detail below.

Finding Information

I found the articles that I used for this project primarily from the Cal Poly Library databases, specifically PsycInfo. This database was helpful as it provided journal articles that had been peer reviewed, as well as those that had not been. I chose to use as many peer reviewed articles as possible, though I did have to use some that had not yet been reviewed to fill in some of the gaps in the literature. I found some of the other articles that I used on the JAMA (Journal of the American Medical Association) website. I also used articles from organization websites, such as the American Diabetes Association and the American Sleep Apnea Association.

Compiling the Research

Due to the great wealth of information that I found on childhood obesity, I first had to narrow down the material that my literature review would cover. I chose to present the factors that are associated with childhood obesity, along with the consequences of obesity on the child,
and the things that parents can do to prevent their children from becoming overweight or obese. The decision to include a focus on prevention and intervention within families was particularly useful and allowed me to set aside the plethora of research on how communities and the government can influence childhood obesity rates.

Creating the Website

My goal for this website was to create a resource for parents to access that provide them with general information about childhood obesity and the things that they could do to help their children. Based on my review of the existing literature, I decided to include the effects of childhood obesity on the child, in order to help parents understand that the issue of childhood obesity is not a cosmetic problem, but a serious health problem. I also considered it important to include the factors that have been associated with childhood obesity, in order for parents to be able to identify the habits that can be problematic for their children by putting them more at risk for developing childhood obesity. The last thing I felt was important to include was the ways that parents can help their children to develop healthy eating and exercise habits. I chose only to use the most important and helpful findings from the literature. By limiting the amount of information presented, I created a resource that was concise, while still being informative. Since I created this resource for parents, I avoided using technical jargon and used the results of studies without going into detail about the way the studies were conducted.

I created this website using iWeb, a program found on Mac computers. This program enabled me to build a website using pre-set themes. I chose to use this program due to the ease of use and the aesthetic look of the end product. I found the pictures for the website by searching the Creative Commons section of Flickr. There were a couple photos that I had wanted to
include but was not able to find on Flickr. For these photos I used Google Images. The only picture that I did not find online was the photo of myself that I used for the “About Me” section. This photo was taken from my computer.
I entitled the website that I developed for this project, “Parents’ Guide to Childhood Obesity Prevention.” The final product can be found at the following web address:
http://web.me.com/cblossing/Site/Home.html. Screenshots of each page of the website are provided in the Appendix. The website opens to a Welcome page, which introduces the topic of obesity by relating a quote which highlights the importance of examining the subject of childhood obesity. This quote refers to the alarmingly high rates of childhood obesity which have continued to rise for over a decade now and establishes that if trends continue, this generation is believed to be the first generation to live in poorer health and die younger than their parent’s generation. Beneath the quote is the heading, “Childhood Obesity~ Why Be Concerned?” This heading is followed by a paragraph that sums up the categories of information that can be found on the website. These categories are:

**Consequences of Childhood Obesity**

This section lists the medical, social-emotional, and academic consequences of childhood obesity. It also mentions children’s perceptions of childhood obesity by describing the study conducted by Schwimmer et al. (2003), which found the quality of life of obese children to be as bad as that of children undergoing chemotherapy.
Factors that Contribute to Childhood Obesity

This section provides information about individual factors thought to contribute to childhood obesity. These factors include genetics, increased fast food consumption, sugary beverages, portion sizes, activity level, sociocultural factors, and family factors.

Prevention Begins at Home

This section describes the influential role that parents play in their children’s eating habits. The bottom of the page contains a list of some of the ways that parents can change their children’s eating habits. These methods include modeling desired behaviors, educating themselves about nutrition, insisting on family mealtimes, avoiding “food as reward” messages, and promoting physical activity. These methods are all links to other pages that further elaborate on how parents can utilize this information.

Guidelines for Instilling Healthy Eating Habits. This section relates 12 guidelines that were found in the book “Lunch Lessons: Changing the Way We Feed Our Children.” These guidelines are itemized and contain a brief explanation of how they can positively affect children’s eating habits. These guidelines include being a good role model, bringing your children shopping with you, be flexible, make mealtime special, don’t be a short-order cook, don’t buy into marketing for kids, don’t use food as rewards, bribes, or punishments, let kids help in the kitchen, love your children no matter what, make sure your child eats breakfast, encourage your child to move their bodies, and remember that you are the boss.

Family Mealtimes. This section highlights the importance of family mealtimes and the role that it can play in establishing healthy eating habits and the other benefits of sharing meals together. I included a list of guidelines for family mealtimes, along with a short explanation of
the importance of each guideline. These guidelines include no fighting, involve children in mealtimes, don’t cook separate meals for each family member, turn the television off, talk to your children, and provide at least one familiar food if possible.

**Nutrition Education.** This section briefly explains the importance of parental nutrition knowledge and provides some links that can help parents learn more information about nutrition.

**Preparing Food at Home.** This section highlights the importance of preparing food at home and provides resources that can help parents find recipe ideas and meal planning tips.

**Physical Activity.** This section provides a list of the benefits of physical activity on the individual and another list of some of the activities that promote physical activity. Physical activity has many positive benefits including reducing anxiety and depression, promoting social well-being, improving flexibility, reducing the risk of developing colon and breast cancer, and helping to maintain a healthy weight. Some activities that promote physical activity include football, gymnastics, running, jumping rope, and playing tag.

**About Me.** This section provides a little bit of information about me and how I came to be interested in this topic of childhood obesity.
Concerns about childhood obesity are at the forefront of conversations about children’s health. To reduce the risk of obesity for children, attention must be given to the factors that contribute to this health condition, such as genetics, fast food consumption, sugary beverages, portion sizes, using food as a reward, sedentary lifestyles, environmental factors, and family factors. In addition, research on these topics published in academic journals must be shared with those who have daily contact with children, such as parents. The website described in this project was an effort to bridge research with practice by disseminating scholarly findings to those who have the most influence on children’s lives, parents.

The “Parents’ Guide to Childhood Obesity Prevention” website provides information for parents on how they can reduce the likelihood that their child will become overweight or obese. In particular, the website offers recommendations for how parents can positively affect their children’s eating and activity choices. Such information should be seen as an important, but only initial step in assisting parents. Future versions of this website should provide more resources for parents regarding nutrition information pertinent to their children; the current website does not clearly define which foods are “healthy” and some parents may need guidance in selecting appropriate options. Further, it would also be beneficial to elaborate more on the importance of modeling healthy eating habits. Modeling is one of the most well supported prevention methods (CDC, 2010; Birch, 1998). Finally, parents may be interested in learning more about how they
can manage their weight or lose weight themselves, since having an overweight or obese parent increases the likelihood that a child will become overweight or obese (Moens et al., 2009).

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While parent knowledge of prevention techniques is important, it is also important for children to be knowledgeable about healthy eating and activity habits. A possible extension of this project would be to design and implement a healthy eating workshop for children, adolescents, and parents that could instruct students as to how to make healthy eating choices and prepare simple healthy meals. One method of helping children to eat healthier is to involve them in food preparation (AAP, 2010b). As a result, it would be beneficial to teach children and parents how to cook, what to cook, and what appropriate portion sizes look like. Parental influence could play a role in the child’s acceptance of the healthy foods prepared during the class, since research on childhood obesity prevention emphasizes the importance of parental modeling. In addition, engagement in such a workshop could help children and parents become aware of certain eating habits that have found to be beneficial, such as eating breakfast and family mealtimes (Fiese & Schwartz, 2008; Pearson, Biddle, & Gorely, 2009). This type of training can help children and parents to make more responsible healthy eating choices and intrinsically motivate them to positively change their eating habits.

Another form of training that may be helpful for parents could be instruction in how to avoid “food as reward” messages. Research has found that using food as a reward can increase liking for a particular food (Birch, Zimmerman, & Hind, 1980). This finding can be problematic since many parents use food as a reward in order attain certain behaviors from their children and
do not know of other rewards that can be used instead. An extension of this website could include a section on helping parents to develop a non-food reward system and suggestions of alternative rewards. Rewards could include time spent playing a particular game or sport, extra reading time, a trip to the swimming pool, etc. Using activities as rewards can promote being physically active while not undermining healthy eating habits.

Complimenting efforts to encourage healthy eating habits, a focus on physical activity is important as well. Physical activity has been found to be extremely beneficial for parents and children and can prevent weight gain (CDC, 2010c). Sedentary habits have been associated with childhood obesity (Anderson & Butcher, 2006). Parents who want their children to be more physically active must take the lead in being physically active themselves (CDC, 2010c). Parents must provide opportunities for children to engage in activity and positive experiences that will motivate children to want to participate. This can be difficult since many children and parents spend a large amount of time engaging in sedentary behaviors (Budd & Hayman, 2008). Another extension of this project could be to design and create parent-child activity workshops. These workshops could encourage children to engage in enjoyable physical activities while parents are instructed in the importance of physical activity, ways to incorporate physical activity into everyday life and encourage their children to be active, and being supportive of their child regardless of their size. These workshops could also bring parents and children together after the parental instruction for cooperative activities that are active in nature, which can promote positive social relationships and enjoyment of physical activity.

This website should be evaluated by means of an evaluation form attached to the site. This form could be e-mailed or anonymously returned after having been completed and include 5-point Likert scales ranging from strongly disagree to strongly agree to evaluate elements of the
website, the information presented, and the viewer’s attitudes regarding the effectiveness of the website. Statements could include, “The content of this website was easy to understand”, “This site clearly provided the factors that have been found to contribute to childhood obesity”, and “I would recommend this site to a parent or friend”. Other statements could evaluate the helpfulness of the website for providing prevention methods and the resources offered. It would also be important to include items that indicate the viewer’s attitudes towards healthy eating and activity habits after reading the information presented on the website and their perception of whether or not this information was helpful and/or motivating. The evaluation form should provide a box that individuals can check that indicates whether they are a parent and a blank area for additional comments, recommendations, and concerns. This feedback could be helpful to evaluate the changes that could be made to improve the website.

In conclusion, childhood obesity profoundly affects the life of the child. It is a serious health condition and it puts children more at risk for developing Type 2 Diabetes, sleep apnea, cardiovascular disease, and other serious health conditions as well. Childhood obesity affects children physically, emotionally, socially, and academically. It can also negatively affect the quality of a child’s life. While parents can intervene in cases of childhood obesity, prevention is crucial. Parents can prevent their children from becoming obese by establishing healthy eating and activity habits at an early age. Although such prevention strategies require diligent and consistent effort on the part of parents, establishing healthy eating and activity habits are crucial for preventing childhood obesity.
REFERENCES


http://www.aap.org/obesity/about.html


http://www.srcd.org/index.php?option=com_content&task=view&id=232&Itemid=1


APPENDIX A: PARENTS’ GUIDE TO CHILDHOOD OBESITY PREVENTION
Childhood Obesity~ Why Be Concerned?

Childhood obesity rates have skyrocketed in the recent years. According to the American Academy of Pediatrics, over the past two decades, the prevalence of children who are obese has doubled, while the number of adolescents who are obese has tripled. These trends are frightening since being overweight or obese can profoundly affect the development of the child. The factors that influence childhood obesity, the consequences on the child, and the things parents can do to prevent their children from becoming overweight or obese are considered on this site.
Consequences of Childhood Obesity

Childhood obesity affects children in many different ways. It affects children’s physical health and social and emotional well being. It is also associated with lower academic performance and a lower quality of life experienced by the child.

Medical Consequences

Childhood obesity has been linked with numerous medical conditions. These conditions include, but are not limited to:

- Fatty liver disease
- Sleep apnea
- Type 2 Diabetes
- Asthma
- Cardiovascular disease
- High cholesterol
- Gallstones
- Skin conditions
- Menstrual abnormalities
- Impaired balance
- Orthopedic problems

Many of the above conditions had only been found in adults but are now extremely prevalent in obese children. These conditions can be fatal and they often carry into adulthood, posing a lifelong medical risk.

A Note About Cardiovascular Disease:

The Center for Disease Control found that 70% of obese children aged 5-17 have at least one risk factor for cardiovascular disease and 30% of obese children have at least two or more risk factors.
Factors that Contribute to Childhood Obesity

The drastic rise in obesity rates throughout the past few decades has spurred many research studies examining the factors that contribute to obesity in children. Although certain biological considerations such as heredity and metabolic functioning likely play a role in childhood obesity, this is not the whole story. Because obesity rates were stable between 1971-74 and 1976-80 and only began to rise thereafter, environmental changes around and since that time have been extensively examined (Niehoff, 2006). Particular attention has been paid to interactions between individual behavior and the resources and expectations of the society.

The factors below are associated with the rising number of cases of childhood obesity:

- Genetics
- Increased fast food consumption
- Sugary beverages
- Portion sizes
- Activity Level
- Sociocultural factors
- Family factors

Genetics

Genetics are one of the biggest factors examined as a cause of obesity. Some studies have found that BMI is 25 to 40 percent heritable (Anderson & Butcher, 2006). However, genetic susceptibility often needs to be coupled with contributing environmental and behavioral factors in order to affect weight (CDC, 2010). Other genetic factors include syndromes that can lead to overweight including Klinefelter’s, Klein-Levin, Prader-Willi, Lawrence Mood Biedl, Mauriac, and Pringle’s. The above medical conditions account for less than 5 percent of cases of childhood obesity (Anderson & Butcher, 2006). Therefore, while genetics can play a role in the development of obesity, it is not the cause of the dramatic increase in childhood obesity.
Healthy eating habits are critical to the prevention and intervention of childhood obesity. A healthy diet, according to the Center for Disease Control (2010), includes plenty of fruits, vegetables, and whole grain products, low-fat dairy products (yogurt, milk, cheese), and good sources of protein (lean meats, beans, lentils, fish, and poultry). Foods high in sugar and saturated fats should be avoided, especially any foods with trans fats (CDC, 2010). The American Academy for Pediatrics recommends not drinking any sugar-sweetened beverages on a daily basis (AAP, n.d.). Children also need to learn about appropriate portion sizes (CDC, 2010).

Although there are many potential ways to influence children’s eating habits, parents have been found to have a particularly influential role. Therefore, preventing and intervening in cases of childhood obesity need to begin at home. This is true despite recent movements to include childhood obesity prevention programs within communities and schools. Such programs are more likely to be effective if parents also actively work to prevent their children from becoming overweight or obese by incorporating healthy habits into every day family life (Niehoff, 2009).
Guidelines for Instilling Healthy Eating Habits

It is important for parents to realize that eating habits are learned behaviors—they are not intuitive. Therefore, parents should begin teaching their children about nutrition and healthy living practices early in life. The following 12 recommendations were taken from the book Lunch Lessons: Changing the Way We Feed Our Children. These tips can be considered the "ground rules" for raising healthy children.

1. Be a good role model. Healthy eating and regular physical activity must start with the parents. According to the American Dietetic Association, children learn their habits, attitudes, and beliefs about eating and physical activity as they watch and interact with other people. Children want to imitate “grown up” behavior and they also want to please. Role modeling is the most powerful way to help your child to eat smart and exercise more.

2. Bring your children shopping with you. Though it may be easier to go alone, shopping
Family Mealtimes

Family mealtimes can be an extremely beneficial means by which parents can positively influence the eating habits of their children. One reason for this is due to the fact that parents have more control over the foods that their children consume when the food is prepared at home. In addition to nutrition and health benefits, family mealtimes have been found to promote language development and increase parent-child communication (Fiese & Schwartz, 2008).

Research has found that meals prepared at home tend to be significantly lower in calories and fat than those prepared in restaurants (Fiese & Schwartz, 2008).

Guidelines for Family Mealtimes:

1. No fighting. Family mealtimes need to be positive experiences in order to have a positive effect on the child and his/her eating habits. Intense fighting can actually be counterproductive to building healthy eating habits.

2. If possible, try to involve children in mealtimes. Perhaps you could have the child set the table or put drinks on the table for everyone. You could also have the child help you plan the menu and even help you cook.
Nutrition Education

Parents need to have a basic understanding of nutrition in order to make healthy food choices for themselves and their children. This includes being able to distinguish foods that are healthy from those that are not, being able to identify healthy food preparation methods, knowing the basics about vitamins, minerals, and macronutrients, and being able to read nutrition labels.

For more information, see the links below:

Mypyramid.gov~ This website introduces the American Food Pyramid and the different food groups. It mentions the recommended servings that both adults and children need from each food group and has many different resources that can be helpful for parents to put healthy eating recommendations into practice.

Making Good Food Choices~ This page provides basic guidelines for making good food choices.

Vitamins & Minerals~ These pages provide basic information about vitamins and minerals. Being aware of how vitamins and minerals affect the body can motivate individuals to make more nutritious food choices.

Macronutrients~ This page discusses carbohydrates, protein, fats, and fiber and the role they play in a balanced diet.
Vegetarianism and Children

Vegetarianism is a type of diet that excludes meat. There are many different reasons that influence people to choose this type of diet, including moral, personal preference, health, and religious reasons. It is important to note that there are many different kinds of vegetarians. Some eat animal products, while others do not. Vegans differ from vegetarians as they do not consume animal products of any kind. Below is a breakdown of the different types of vegetarians:

Lacto-vegetarians- consume dairy products but not eggs

Ovo-vegetarians- consume eggs but not dairy products

Lacto-ovo vegetarians- consume both eggs and dairy products

Semi-vegetarians- consume a diet primarily of vegetarian foods, but may consume fish and sometimes poultry, in addition to dairy products and eggs

Vegans- do not consume eggs, dairy products, gelatin (made from the collagen inside animals' skin and bones), honey, or any other animal products

Vegetarianism can be a healthy eating practice for both adults and children. It is important to note that vegetarians do not simply omit meat from their diets. Vegetarians have to adjust their diets to
Guidelines for Making Good Food Choices

As aforementioned, a healthy diet consists of fruits, vegetables, whole grains, lean protein, and dairy products (or milk alternatives). Below are some guidelines that can help make good food choices taken from the book Eat, Play, and Be Healthy written by the Professor of Pediatrics and the Director of the Division of Nutrition at Harvard Medical School.

- **Weight control and physical activity are the foundations of good health.** This strategy does not entail a preoccupation with body image or thinness, but rather it is about developing healthy habits early in life.

- **Select better carbohydrates for better health.** Carbohydrates play an important role in a child’s diet since the body uses carbohydrates for fuel. The category of carbohydrates encompasses foods that are packed with vitamins, minerals, and dietary fiber, while others have no nutritional value. It is important to select carbohydrates that are not refined and processed, such as whole grains. Whole grains provide nutrients and can affect the body’s digestion and metabolism.

- **There is a place for fats in a healthy diet.** Fat is an essential nutrient that both adults and children need to survive. Not all fats were created equal. Some fats can actually be harmful to the body, such as in the case of saturated and trans fat. Monounsaturated and polyunsaturated fats, on the other hand, are important for overall well being. Polyunsaturated fats include omega-3 and omega-6 fatty acids, which are used in the chemical signaling in the body and to maintain the structure and proper growth of cells.

- **Choose better protein sources.** Some foods provide a higher quality of protein than other sources. Children’s diet should include a variety of animal and plant protein sources. In addition, children should eat low-fat, fat-free, or lean versions of dairy products and meats.

- **Make the most out of fruits and vegetables.** Fruits and vegetables provide different nutrients. Some provide more benefits than others. Variety is key.
Preparing Food at Home

It is critical for parents who want to improve the eating habits of their children to prepare meals at home. Many parents report not having the time or the energy to cook at home, particularly after a long day of work. While it may be easier to just pick up fast food or another type of convenience meal, it is more beneficial for both children and parents to eat meals prepared at home.

The internet has a great wealth of helpful information that can help parents prepare healthy foods. You don’t need to buy a ton of cookbooks or have gone to culinary school to be able to cook healthy food. You also don’t need to go out and spend a ton of money buying a bunch of exotic ingredients that you can only use once. The following links may be helpful for finding recipe ideas and meal planning.

Note:

When looking through recipes, keep in mind that not every recipe labeled healthy is nutritional. There are no qualifying terms for a recipe to be labeled healthy so be sure to look through the ingredients and make your own judgment as to whether or not you think it is healthy.
Encouraging Physical Activity

In addition to teaching their children about healthy eating habits, parents should encourage their children to engage in physical activity. Children and adolescents should participate in at least 60 minutes of moderate activity most days of the week. Parents should model being physically active and engage in physical activities with their children.

Regular physical activity is critical to a child’s being. Some of the benefits include:

- reduces risk of dying prematurely from heart disease and other conditions
- reduces the risk of developing diabetes
- reduces the risk of developing high blood pressure
- reduces the risk of developing colon and breast cancer
- helps to maintain a healthy weight
- helps build and maintain healthy bones, muscles, and joints
- reduces feelings of anxiety and depression
- promotes psychological well-being
- leads to cardiovascular fitness
- important for maintaining muscle strength, bone health, and joint functioning
- associated with improved academic performance
- increases self-esteem
- can promote social well-being
- can teach self-discipline
- improves flexibility, reducing risk of injuries

Activities that promote physical activity include but are not limited to:

- brisk walking
- playing tag
- jumping rope
ABOUT ME

My Background

Studying children has become one of my greatest passions in life. I’ve been in college for years now learning about how they develop and seeking to understand how to guide and support their development. I love the natural curiosity of children, the unbridled tongues of the very young, and the active imaginations that children have and express. I love watching children learn through discovery, make friends, and run around as if someone was chasing them. It brings me great sadness to watch as children have become progressively less active throughout the years and consume considerable amounts of soda, snack foods, and fast food. These habits are not just unhealthy but have been linked to the development of childhood obesity. Childhood obesity in turn results in a number of physical, social-emotional, and academic consequences, which negatively affects children’s life experience and development.

My interest in childhood obesity began in the 3rd grade when I first met a child that was about my age and obese. At that period of time, he was one of the only children in the entire school that was overweight. I remember feeling so sad for him when people would make fun of him and watching him always picked last for games, even after me (which says a lot since I was one of the worst players on any sports team). I remember watching him struggle during P.E. class, never able to jump rope as long or run as far as the other children. One of the most difficult...