



CHILDHOOD Obesity

Understanding the Childhood Obesity Epidemic

By William Cochran, MD

“Doctor, is my child overweight?” “Oh no, it is just baby fat and he’ll grow out it.” Is your son or daughter obese or overweight? Is it indeed just baby fat, and will they outgrow it?

Pediatric obesity is now of epidemic proportions in the United States. Pediatric overweight and obesity now affects more than 30 percent of children, making it the most common chronic disease of childhood.

Pediatric obesity is not just a cosmetic problem; it is a real health problem that can be associated with significant issues in childhood and in adulthood. Therefore, parents of overweight young children should not just ignore this issue, but should actively seek out help to determine why their child is overweight and what they can do to help rectify the situation.

Understanding Obesity in Children

When infants are born, they have comparatively more fat; however, this is normal and appropriate. This relatively greater amount of fat provides the infant with some nutritional reserve when they are most vulnerable and adjusting to life outside the womb. This greater amount of fat decreases as the infant grows older and throughout the first several years of life.

Around five years of age, children have the lowest amount of fat and have the lowest body mass index (BMI) – a relationship between weight and height. If a child is getting overweight between two and five years of age, this is not normal and it is not just “baby fat.” Likewise, after five years of age, an overweight child should not be treated as if it is just “baby fat” and told they will outgrow it and not to worry.

In reality, if your child is overweight or obese, you do have a

cause for worry. The earlier in the child’s life that you make changes a child’s lifestyle in regards to nutrition and physical activity, the easier it is.

Measuring Obesity in Children

You may be confused with the many new terms related to obesity. There is good reason for this confusion as there is controversy over the definitions related to obesity. For adults more than 18 years of age, the definitions are based on BMI. BMI can be calculated using pounds, inches or kilograms and meters using the following formulas:

Calculating Body Mass Index (BMI)

Using pounds and inches:

$$\text{BMI} = \frac{\text{Weight in pounds}}{(\text{Height in inches}) \times (\text{Height in inches})} \times 703$$

Using kilograms and meters:

$$\text{BMI} = \frac{\text{Weight in kilograms}}{(\text{Height in meters}) \times (\text{Height in meters})}$$



The normal range of BMI for adults is 18.5-24.9. A BMI of less than 18.5 is considered underweight. A BMI between 25 and 29.9 is considered overweight while a BMI of 30 and over is considered obese. Some also define morbid obesity as a BMI greater than 40.

For children, BMI is calculated in the same fashion as for adults, but there are no absolute numbers of BMI defining normal and overweight. Instead, you have to calculate BMI and plot it on a BMI curve and find the

percentile for a child. There is a BMI curve for males and a separate one for females, ages two to 18 years (www.cdc.gov/growthcharts).

BMI Ranges in Children

Less than 5 percentile = Underweight

5 - 85 percentile = Normal

85 - 94.9 percentile = Overweight

95 percentile and above = Obese

Defined by the Centers for Disease Control and Prevention



The exact definition does not matter as much as knowing what the BMI percentile of the child is and if it is normal or abnormal, increasing or decreasing. For simplicity sake, we will use overweight and obese interchangeably.

For children less than two years of age there is no BMI curve available. Instead, you can plot the measurement on the “weight for length curve” that can be found on the “growth curve” used by healthcare providers. Normal weight is when this measurement falls between the five and 95 percentiles. A child with a “weight for length” that plots less than five percent is considered underweight and greater than the 95 percent is considered overweight.

Causes of Childhood Obesity

Changes in the living environment (how we live, eat and act) is the major factor that has contributed to the current problem. There have been several dietary changes that have transpired over the last 20 to 30 years which have contributed to obesity.

One major factor is the frequency with which people eat out. It is now estimated that approximately 40 to 50 percent of every dollar that is spent on food is spent on food outside the home (i.e. restaurants, cafeterias, sporting events, etc.). When people eat out they tend to eat a larger quantity of food (calories) than when they eat at home. Also, foods that are consumed in restaurants tend to have more fat (higher caloric density) which in turn contributes to excessive intake of calories. This also tends to be true for meals purchased in the school cafeteria. Providing children with money to buy their lunch at school also poses another potential problem.

Portion sizes have also increased.

This is true for packaged foods and fast food restaurants. Take french fries for example. A portion size is actually 12 french fries. Most fast food restaurants have small or medium french fries, but sell more large or extra-large french fries. People do not think that a large order may actually be two or three portions.

Also, soda sizes have significantly increased. The average serving size of a soda was 6 and a half ounces in 1950, and increased to 12 ounces in the 1960's and 20 ounces in the 1990's. Currently, 24 and 32 ounce sodas are marketed, with a 32 ounce soda containing approximately 400 calories. The consumption of soda by children has increased throughout the last 20 years by 300 percent. Fifty to more than 80 percent of children consume at least one soda per day and 20 percent of children consume more than four per day. Scientific studies have documented a 60 percent increase risk of obesity for every regular soda consumed per day.

Box drinks, juice, fruit drinks and sports drinks present another significant problem. These beverages contain a significant amount of calories and it is estimated that 20 percent of children who are currently overweight are overweight due to excessive caloric intake from beverages.

Another major factor in contributing to the pediatric obesity epidemic is the increased sedentary lifestyle of children. School-aged children spend most of their day in school where their only activity comes during recess or physical education classes. In the past, physical education was required on a daily basis. Currently, only eight percent of elementary schools and less than seven percent of middle schools and high schools have daily physical education requirements in the U.S.

Children are also more sedentary outside of school, which is due to increased time spent doing sedentary activities such as watching television, playing video games or using the computer. Only 50 percent of children, 12 to 21 years of age, regularly participate in rigorous physical activity, while 25 percent of children report no physical activity. The average child spends two hours a day watching television, but 26 percent of children watch at least four hours of television per day.

Studies indicate that when children watch more than two hours of televi-



Childhood Obesity continued on page 8

Childhood Obesity

Childhood Obesity continued from page 7

sion per day there is a significant increased risk of obesity as well as high blood pressure. Studies have also determined that children who eat in front of the television consume higher fat and salt containing foods and less fruits and vegetables than children who do not eat in front of the TV.

Correlation Between Childhood Obesity and Adulthood Obesity

Pediatric obesity is a real and very significant health problem that is associated with adverse effects on health in childhood as well as adulthood. There is a high likelihood of an obese child becoming an obese adult. This risk increases as the child gets older.

The risk that an obese five year-old child remains obese as an adult is approximately 50 percent. This increases to more than 80 percent for an obese adolescent. On the other hand, the risk of a normal weight child becoming obese as an adult is only seven percent.

Childhood obesity also has adverse effects on health during childhood. The most common consequence of childhood obesity is the psychosocial effect. It has been shown that obese adolescents have higher rates of poor self esteem, and this negative self image may carry over into adulthood. There may also be increased rates of depression in children who are overweight.

Our society also discriminates against obese individuals, females more so than males. It has been documented that obese females have lower acceptance rates for college than non-obese females with the same grades and standardized test scores. The National Longitudinal Survey of Youth study noted that obese adolescent females as young adults had less education, less income, higher poverty rate and decreased rate of marriage as compared to non-obese adolescent females.

Health Risks of Childhood Obesity

There are multiple medical conditions associated with obesity in childhood. The most common include insulin resistance (the first step towards developing diabetes), hypertension, liver problems and hyperlipidemia (elevated cholesterol and/or triglyceride). While these typically do not cause many problems in childhood, some children will develop diabetes or severe liver disease, including cirrhosis. Other problems that can occur include

Staggering Statistics

- **Only eight percent of elementary schools, and less than seven percent of middle schools and high schools, have daily physical education requirements in the U.S.**
- **Only 50 percent of children, 12 to 21 years of age, regularly participate in rigorous physical activity**
- **Twenty-five percent of children, 12 to 21 years of age, report no physical activity**
- **The average child spends two hours a day watching television**
- **Twenty-six percent of children watch at least four hours of television per day**



joint problems, menstrual problems, gallbladder disease, sleep apnea and headaches.

Treating Childhood Obesity

Treatment of pediatric obesity is a family affair and needs to be directed at the family, not just the child. This is extremely important since the home environment and family support are important factors when trying to address pediatric obesity. If the child is the only one making changes in their life, they are less likely to be successful and are then made to feel different. Likewise, parents who do not make healthier changes in their lives are likely to undermine the child's attempts.

Prior to addressing the treatment of childhood obesity, you must first assess the readiness of the child and the family to make changes. If the child is very depressed, this needs to be addressed prior to working on the child's weight problem. If a depressed child attempts weight-loss and is unsuccessful, this may worsen their depression or lower their self-esteem.

Similarly, if there is a lot of stress in the family at that time it is not ideal to try and tackle yet another major issue. In some situations where there is significant depression or stress, it may be most appropriate for the child and the family to seek counseling to address these issues. In addition, if parents express little concern regarding their child being overweight, they are not ready to make the necessary changes.

Treatment of pediatric obesity is not accomplished by just dieting. You need to address multiple aspects of the child's and the family's lifestyle, nutrition and physical activity patterns. Prior to discussing any treatment plans, you first must

determine what the desired goals are. If your child is overweight, or at risk for becoming overweight, it is important to work with your healthcare provider to develop an individualized plan of care that includes realistic goals and action steps.

Treatment Goals

The goals of treatment of pediatric obesity can be divided into three major areas: behavioral goals, medical goals and weight goals. The behavioral goals are to promote lifelong healthy eating and activity behaviors. Medical goals are to prevent complications of obesity in childhood and potentially adulthood, as well as improve or resolve existing complications of obesity. The weight goals are dependent on the child's age and the presence or absence of associated co-morbidities.

Taking the First Steps

The first step for all overweight children is to establish weight maintenance. For children two to seven years of age with a BMI between 85-95 percent, weight maintenance is the primary goal. This is because the child will be growing taller and they have the time as well as the ability to "grow into their weight." For those with a BMI greater than 95 percent and no associated complications, weight maintenance is still the overall goal. For those whose BMI is greater than 95 percent and have an associated co-morbidity, weight-loss should be strived for after weight maintenance is achieved. Children seven to 18 years of age with a BMI between 85-95 percent and who have no complications, weight maintenance is reasonable. However, close follow-up is needed to ensure that they are not becoming more overweight or develop a complication of obesity.

For those who have an associated co-morbidity and/or whose BMI is greater than 95 percent, weight-loss should be strived for after weight maintenance is achieved. When weight-loss is desired, it needs to be stressed that gradual weight-loss is preferable to rapid weight-loss. It is better to make gradual changes that can be maintained over time, resulting in gradual weight-loss. Ideally, you should not try to lose more than one to two pounds per week.



Parents and Treating Childhood Obesity

Parents are of vital importance in the treatment of pediatric obesity. Parents act as role models for their children regarding nutrition and physi-

Changing Family Behaviors

Here are tips to help change a family's lifestyle, nutrition habits and activity level:

Lifestyle

1. Eat as a family.
2. Slow down the eating process.
3. Have special family time that is physically active.
4. Limit eating out or getting take-out food.
5. Pack lunch for school instead of buying lunch.
6. Do not have a television in the child's bedroom.
7. Limit computer time to a maximum of 1-2 hours per day.
8. Do not eat in front of the television.
9. Do not use food as a reward.

Nutrition

1. Eat healthy, well balanced meals and snacks.
2. Plan meals and snacks in advance.
3. Offer the child a choice of healthy foods to eat.
4. Limit intake of calories from beverages.
5. Eat appropriate portion size for the child's age.
6. Limit calorically dense foods (i.e. high fat, high sugary foods).
7. Limit treats, but do not eliminate them.

Physical Activity

1. Encourage daily physical activity.
2. Have a variety of physical activities that can be done.
3. Be physically active with others.
4. Limit sedentary activity.



cal activity. It is extremely important for an overweight child to see the parents being an example of what they want their child to do. Treatment needs to be family-based and individualized. By obtaining a good dietary, physical and lifestyle history, areas of potential concern for that child and family can be identified and then addressed.

Three Major Areas of Treatment

Treatment of pediatric obesity needs to focus on three major areas: lifestyle, nutrition and physical activity. (See box above for tips on changing family behaviors.) As you approach the treatment of obesity, it is important

Childhood Obesity continued on page 17

Modifying Your Diet

The second phase in the treatment of obesity involves a discussion of dietary options. A good general rule is to get the patient to decrease their current oral intake by 500-1000 calories per day, which translates into a one or two pound weight-loss per week. The typical caloric intake recommendation is 1000-1200 for women and 1200-1600 for men. Of particular significance, it is unsafe to fall below 800 calories per day.

As everyone is well aware, because of substantial media coverage, the choices of diets is astonishing. In general, a chronic dieter (the classic “yo-yo dieter”) knows more about the different fad diets than most physicians. Fad diets have ranged from the grapefruit to cabbage soup, to the most recent pita pocket diet. Each of these diets claim to be the next answer to long term success with weight-loss.

Perhaps the biggest and most recent craze, the “low carb” diet, is based on the fact that patients are more satiated and seem to lose more weight (at least initially) when diet plans such as Atkins and South Beach are closely followed. A collateral benefit of these diets may be that less processed food is eaten and blood glucose levels tend to stay in the normal range.

The most important and basic principle universal to all diets is that intake greater than output leads to weight gain. For this reason, I recommend portion control, avoidance of all processed foods (stick to the all natural vegetables, lean protein and fruit), consuming some good fat (olive oil, nuts, etc.) and eating small frequent meals. Patients with a higher BMI (greater than 30) may want to consider one of the very low calorie plans (such as Medifast) but should only do so under the guidance and supervision of a properly trained physician (preferably a bariatrician).

Behavior Therapy

It became very clear to me when I started to treat obesity that behavioral therapy is, not surprisingly, a huge key to long term success. There are so many emotional ties to food in that food is cheap, legal and always around when you “need it.” People eat in celebration, sadness, stress, boredom and sometimes (but not often) even when they are hungry.

Patients need to evaluate how much emotional eating exists in their day-to-day life and learn to control it in order to succeed. The quickest tool that is easy (and free) is self-monitoring. For this purpose, I recommend that patients keep a journal with every oral intake documented (be certain to carry the journal at all times, as 30 percent of calories are forgotten if

Recommended Caloric Intake For Weight-loss:

Women	1000-1200 calories/day
Men	1200-1600 calories/day

recorded at the end of the day). The patient should also write down his/her mood at the time so that the reason for eating can eventually be shifted to hunger and meal times.

Often the “yo-yo dieter” will have issues such as binge eating, night eating syndrome (when 70 percent or more of the daily calories are consumed after 7 p.m.) or untreated depression. These conditions need more aggressive psychotherapy and treatment prior to attempting any aggressive weight-loss program.

Exercise

Additionally, most patients will not succeed without incorporating exercise into their daily routine. Studies have shown that patients who lose weight become more efficient at any activity. This means if you have lost any significant weight, the energy you burn walking to the mailbox will essentially be cut in half. The body adopts a “starvation” mentality and conserves energy. Therefore, you will have to make two trips to the mailbox in order to burn the same number of calories that you spent before losing weight. This explains why exercise is such a critical part of long term weight maintenance.

Many times patients just need some guidelines on what exercises they should be doing. Often it is a scheduling issue. I tell my patients that exercise should be treated as if it is one of their most important meetings or clients for the day. Many of my corporate patients actually schedule their activity time on their calendar to be sure not to miss a workout.



Treating Obesity Using Medications and Supplements

The medical approach to obesity treatment is complex. The initial evaluation needs to include testing to rule out a medical reason for the weight issue. Hormones such as cortisol and thyroid disorders may be culprits. Patients also need to be stable enough to handle a weight-loss plan (i.e. without active coronary artery disease or going through cancer therapy).

Unfortunately there are only a few weight-loss medications approved by the Food and Drug Administration (FDA). Sibutramine, Xenical and the anorexant class, such as Phentermine or Phendimetrazine, are the most commonly prescribed medications. A new medicine, Rimonabant, will likely be available for prescribing sometime after the first of the year. Rimonabant is generally safe for all patients and is said to help achieve a 20 pound weight-loss in one year.

There are also many nutritional supplements that have been advertised as treatment options for weight-loss, such as CLA and L-Carnitine, but these supplements generally lack substantial evidence supporting their efficacy.

Treating Morbid Obesity

Unfortunately, medical treatment of severe obesity using medications and supplements is weak at best (four to eight percent decrease in body weight typically seen with the above mentioned modalities). Therefore, for patients with a BMI greater than 40, bariatric surgery should be considered as the best chance at long term significant weight-loss (up to 65-75 percent decrease of excess body weight).

The most common procedure is the Roux-en-Y gastric bypass, where a portion of the small bowel is bypassed promoting weight-loss via restrictive (a small pouch size) and malabsorptive means.

The Lap-Band® procedure is a less invasive option now being commonly performed with good results. There are also some endoscopic procedures (through the mouth) being developed that may soon become an additional, less invasive, choice.

The Results of Treating Obesity

The great news about the treatment of obesity (and why those of us that choose this field love our jobs) is that most of the significant associated co-morbidities seen

with obesity are resolved with weight-loss. Weight-loss can lower the mortality rate by up to 24 percent. Even losing 10 percent of your total body weight can significantly improve blood pressure, diabetic control, lipids and arthritis. Many people are also able to get off some, or even all, of their medications. Patients with diabetes or metabolic syndrome can see 75-90 percent improvement rates after gastric bypass surgery.

Therefore, patients and physicians need to approach weight-loss as a chronic disease with a focused treatment plan, which includes a team of healthcare providers. The team should include dietitians, psychologists and exercise specialists, in addition to the medical providers.

With a focused team approach, patients will have all the tools they need to not only succeed in their weight-loss attempts, but to achieve long term maintenance.

About the Author:

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Body Mass Index Chart

Body Mass Index (BMI) is a measurement tool for indicating weight status. For adults 20 years and older, BMI falls into one of the following categories:

Underweight	Less than 18.4
Normal	18.5 - 24.9
Overweight	25 - 29.9
Obese	30 - 39.9
Morbidly Obese	Greater than 40

To calculate your BMI, please visit the "All About Obesity" section on the OAC Web site at www.obesityaction.org.



ABOUT THE OBESITY ACTION COALITION (OAC)

The Obesity Action Coalition (OAC) is a National non-profit organization dedicated to giving a voice to individuals affected by obesity and helping them along their journey toward better health. Our core focuses are to elevate the conversation of weight and its impact on health, improve access to obesity care, provide science-based education on obesity and its treatments, and fight to eliminate weight bias and discrimination.



VIBRANT COMMUNITY



NATIONAL AWARENESS CAMPAIGNS



ANNUAL CONVENTION



ADVOCACY



PUBLIC EDUCATION

LEARN, CONNECT, ENGAGE

The OAC knows that the journey with weight can be challenging but we also know that great things happen when we learn, connect and engage. That is why the OAC Community exists. Our Community is designed to provide quality education, ongoing support programs, an opportunity to connect, and a place to take action on important issues.

Through the OAC Community, you can get access to:

- Weight & Health Education • Community Blogs
 - Community Discussion Forum
 - Ongoing Support • Meaningful Connections
- AND MUCH MORE**



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