CHILDHOOD OBESITY: A REVIEW OF RISK FACTORS, PREVENTION, AND 
THE ROLE OF THE NURSE PRACTITIONER 

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Abstract:

Childhood obesity has become a major health concern and nurse practitioners can play a key role in its prevention, diagnosis and treatment. The purpose of this article is to help advanced practice nurses provide recommended screening, assessment, anticipatory guidance and counseling for overweight patients with their families at every routine health visit. This report will review the most current recommendations on childhood obesity along with suggestions about how to talk to children and their families about weight issues. Nurse practitioners are in an excellent position to empower caregivers to recognize the influence they have on their own children’s development of lifelong habits of physical activity and nutritious eating.
Introduction:

It has been assumed by many research scientists that U.S. life expectancy will rise indefinitely. A special report in New England Journal of Medicine published March 17, 2005 suggests that this trend is about to reverse itself due to the rapid rise in obesity -- especially among children. Authors of the report conservatively estimate obesity reduces average life expectancy at present by around 4 to 9 months. If the current growth of child and adolescent obesity continues unabated, life expectancy could be shortened by two to five years in the coming decades (Olshansky, Passaro, Hershow, Layden, Carnes, Brody, Hayflick, Butler, Allison & Ludwig, 2005).

Among children 2-5 years old, 10% are overweight. Among the more than nine million children 6-19 years old almost 16% are overweight – one out of six. In the past three decades the obesity rates have more than tripled for children aged 6-11 and doubled for adolescents aged 12-19 (National Center for Health Statistics, 2002). Obesity has increased rapidly across race, gender, and class lines, but disproportionately higher among African-American, Hispanic, and Native American children (Crawford, Story Wang, Ritchie, Sabry, 2001). While a lower socioeconomic status increases the risk of being overweight among Caucasian children, higher socioeconomic status does not necessarily protect against overweight among African-American and Hispanic children (Crawford, Story Wang, Ritchie, Sabry, 2001).

Given these worrisome trends, nurse practitioners are in a position to play a key role in the prevention, diagnosis and treatment of childhood obesity. This article provides advanced practice nurses with guidelines for recommended screening,
assessment, anticipatory guidance and counseling related to body weight with families at every routine health visit for children and adolescents.

**Definitions:**

Overweight refers to an excess of weight in relation to height, and can be caused by muscle, bone, fat, and/or body water. A person can be overweight without being obese, as in the example of a bodybuilder or other athlete who has a lot of muscle. Obesity, on the other hand, is a health problem in which excess body fat has accumulated to such an extent that health may be adversely affected (WHO website, 2005).

The point at which excess body fat causes adverse health consequences (and how this relates to body weight) is a topic of much controversy, especially pertaining to children and adolescents. The most common tool used to identify weight issues is the Body Mass Index Scale (BMI), expressed as weight/height² (BMI; kg/m²). A BMI of 25-29.9 is classified as overweight and a BMI over 30 is classified as obesity in adults. No such guidelines exist for children and adolescents and the application of adult guidelines to younger individuals remains arguable. For example, the Centers for Disease Control and Prevention (CDC), the supplier of national growth charts and prevalence data, avoids using the word "obesity" for children and adolescents. Instead, they suggest two levels of overweight: 1) at the 85th percentile, an "at risk" level, and 2) the 95th percentile, the "overweight" level.

In contrast to the CDC's definition, the American Obesity Association (AOA) recommends defining the 85th percentile on the BMI growth chart as a reference point for overweight and the 95th percentile as obesity. The AOA gives six compelling reasons as to why the 95th percentile should be used as the definition for obesity in children: a)
defines obesity as having a BMI of 30, which is the marker for obesity in adults; b) is recommended as a trigger for children and adolescents to have an in-depth medical assessment; c) identifies children that are most likely to have obesity persist into adulthood; d) is associated with elevated blood pressure and lipids in older adolescents, which increase their risk of diseases; e) is a criteria for more aggressive treatment, f) is a criteria used in clinical research trials of childhood obesity treatments. For these reasons, the AOA definitions will be used for this article.

Excess Weight as a Threat to Health:

Excess weight can have an immediate and lasting effect on physical, mental, emotional and social development. Compared with normal-weight youths, obese children and adolescents suffer disproportionately from chronic conditions such as diabetes, asthma, high blood pressure, high cholesterol, atherosclerosis, bone/joint problems, and sleep apnea (National Center for Health Statistics, 2002). Evidence also suggests that the incidence of type 2 diabetes in childhood in the U.S. is due almost entirely to the obesity epidemic (Ludwig & Ebbeling, 2001). Life threatening complications, including renal failure, may develop by young adulthood in at least 10 percent of children with type 2 diabetes (Flett, 2002). Having type 2 diabetes in adulthood places the individual at a risk level for a heart attack equal to that of an individual who has had a previous heart attack (Haffner et al., 1998). The life-shortening effect of diabetes itself is approximately 13 years (Manuel & Schultz, 2004).

Cross-sectional studies have suggested an association between childhood asthma and overweight, although the cause of this association is not clear. Overweight children with asthma also experience more severe respiratory symptoms than do lean children.
with asthma, and they require more medications and more frequent hospital treatments. Obstructive sleep apnea may occur in obese children and is usually associated with adenotonsillar hypertrophy and insulin resistance (Fisberg, Baur, Chen, Hoppin, Koletzko, Lau, Moreno, Nelson, Strauss, Uauy, 2004). Obese children with obstructive sleep apnea demonstrate clinically significant decreases in learning and memory function compared with obese children without obstructive sleep apnea (Mallory, Fiser & Jackson, 1989). Finally, obese children are also prone to intense social stigmatization, have lower self-esteem, a tendency to withdraw from others, increased loneliness, and increased use of alcohol and tobacco (National Center for Health Statistics, 2002).

Despite the advantages of recognizing weight issues in children early, the most recent data show that most health providers are not aware of national recommendations regarding childhood obesity. And those providers who are aware of national guidelines, while in the minority, demonstrate more positive attitudes about personal counseling and the effectiveness of obesity counseling in general (Kolagotla & Adams, 2004).

**Environmental and Behavioral Influences:**

There are a variety of factors that play a role in obesity and make it a complex health issue to address. Overweight and obesity result from an energy imbalance. The energy imbalance may be due to a combination of several factors. This involves eating too many calories and/or not getting enough physical activity (CDC website, 2005). Body weight is influenced by genes, metabolism, behavior, environment, culture, and socioeconomic status.

Research suggests several important environmental factors that contribute to the development of overweight. They are parental obesity, not breastfeeding, large food
portion sizes, fast-food consumption and restaurant eating, sugar-sweetened beverage consumption, reduced physical activity and television viewing (DePinto, 2004). Nurse practitioners can provide information and teaching on each of these factors.

**The Role of the Nurse Practitioner:**

Nurse practitioners routinely provide comprehensive care focused on disease prevention and health promotion. Well child care for infants and young children and sports physicals for school aged children and adolescents are excellent times to screen, assess, and counsel children and/or their families about nutrition and physical activity. Verbal advice, videotapes, handouts, and modeling behavior are all methods suggested for educating parents and children in the primary care setting.

**Screening:**

NPs should routinely assess the weight and height of children and calculate the Body Mass Index (BMI). The growth charts developed by the CDC recommend health care providers track BMI over time and identify when a child becomes at risk for overweight. Training and interpretation of the BMI curve is available on the CDC website, www.cdc.gov/nccdphp/dnpa/growthcharts/training/modules/index.htm. Tools are also available to facilitate BMI calculations. Although the CDC growth charts, which include BMI, are an effective screening tool for children and adolescents, it is important to remember that they are not a diagnostic tool to be used alone. BMI provides a guideline based on weight and height to determine weight issues. Assessment and management will vary depending on the age of the child and will be covered in the following sections.
Despite the advantages of using BMI in the clinical setting, recent data show less than 15 percent of health care providers use BMI to assess weight status of children, and most use "clinical impression" to assess excess weight (Perrin, Miller, Flower, Ammerman, 2004). In a study done by Lemay, Cashman, Savageau, & Reidy (2004), placing large BMI tables in exam rooms increased BMI calculations and documentation in patient’s records. In addition, having BMI tables posted in the exam rooms provided opportunities for patients to initiate dialogue with providers, and was more accessibly used as a visual teaching aid when discussing risk factors with patients. Figures 1 & 2 provide samples of a BMI graph along with a BMI table which can be used to simplify the BMI calculations as well as to display in patient rooms.

**Assessment and Management:**

For infants and children under the age of two years, obese -- defined as a weight-for-length greater than the 95th percentile -- does not pose the same risk among infants as it does among children 2 years and older. Obese infants may not be at increased risk of being overweight in adulthood, nor do they carry the medical risks associated with obesity in childhood. Since infancy is a period of rapid growth emphasizing the importance of gaining weight, weight loss is generally not recommended. However, an assessment of healthy feeding practices should be obtained. Based on this assessment, counseling directed toward healthy eating patterns and weight maintenance should be given. In addition, health care providers may determine follow up is appropriate in certain circumstances (e.g., delayed motor development due to excess body weight) and refer children younger than 2 years to a pediatric obesity center (CDC training module, 2005).
When children 2 years and older are identified as overweight, above the 85th percentile, or obese, above the 95th percentile, weight management is recommended and an in-depth assessment should be performed. The assessment for a child between the 85th and 95th percentiles should include a family history, blood pressure, total cholesterol, and/or the patient or family’s concern about weight. If a child or adolescent is at or above the 95th percentile, the assessment also requires evaluation for possible genetic, endocrine, and psychological causes of overweight and evaluation for complications of overweight. Both the AOA and CDC recommend an in-depth medical assessment (see Table 1).

For children age 2 and older who are overweight, between the 85th and 95th percentile, with no identified complications, maintenance of current weight is recommended. This can be achieved with changes in diet and activity (CDC, 2005). The NP should promote healthy eating and increased physical activity and follow up with an annual screening. Prolonged maintenance of the present weight will allow a gradual decline in percentiles as the child grows in height. For those children and adolescents who are overweight with complications (as identified from the in-depth-assessment), weight loss of one to two pounds per week is indicated. An appropriate final goal for all children and adolescents who are overweight or obese is a BMI-for-age below the 85th percentile. The rate of weight loss should be based on health risks and balancing the costs and benefits of loss versus those risks as adolescence represents the period for greatest risk for developing adult obesity (CDC training module website, 2005).
Counseling:

It is essential that nurse practitioners make nutrition and physical activity counseling a routine part of each well-child visit. Weight management counseling will be more effective if discussing healthy nutrition and exercise habits have already become a part of the routine health exam (De Pinto, 2004). Behavior change strategies should include the entire family, with the goal of instilling the development of lifelong health habits. If the child is not meeting recommended nutritional and physical activity guidelines, NPs need to focus on areas that the family has determined they are ready to change (Abraham, 2004).

Understanding how caregivers interpret their child's weight can be helpful for nurse practitioners when counseling parents about weight issues. While there has been very little research done to determine what is the most effective way to speak to caregivers about their child's weight, there have been a number of qualitative studies done to investigate how parents determine when their child is overweight (Jain, Sherman, Chamberlin, Carter, Powers, & Whitaker, 2001). Broaching the subject of weight may be more effective if the nurse practitioner addresses what the parent or child views as a concern. In one study, low-income mothers' influence on preschoolers eating behaviors were explored by asking mothers how they determine when a child is overweight. As Jain et al. (2001) reported, "Mothers did not define overweight or obese according to height/weight charts used by healthcare professionals. Instead, mothers were more likely to consider being teased about weight or developing limitations in physical activity as indicators of their child being overweight (p. 34)." NPs may be more effective in preventing childhood obesity by focusing on these goals rather than labeling children as
overweight on a growth/weight chart. Abraham (2004) suggests several ways to assess for readiness for change which include asking the caregivers whether they: a) consider the child's weight to be a problem; b) believe that any changes in diet or activity are necessary; c) think that the child is capable of losing weight; d) believe that this weight-loss program is a priority for their family. If caregivers respond affirmatively to these questions, it is likely they will work to support the child to lose weight. When working with caregivers who respond negatively, the nurse practitioner must recognize that caregivers often do not know about the consequences of overweight and obesity. Education is essential prior to asking about readiness to begin a program (Abraham, 2004). These caregivers might benefit from anticipatory guidance based on known risk factors.

There are many excellent resources for children and their families (see Tables 2-6). These tables include links to websites that provide anticipatory guidance in nutrition and exercise along with risk factors of overweight. It is important for families to see overweight as a health issue with consequences that may not always be visible. Knowing the risk factors may help motivate some families to change their eating habits. In addition, it is crucial for the NP to provide positive reinforcement to patients and caregivers about what they are doing right and how they can change their lifestyle habits to achieve these goals. These links provide an additional resource that patients can use when they are not in the office for counseling. They also include fun programs and graphic animation related to exercise and nutrition that children can explore on their own.

Breast Feeding:
One of the first feeding decisions that all caregivers make is whether to breast or bottle feed their child. For many reasons, including overweight prevention, breastfeeding should be encouraged by the nurse practitioner. Gillman, Rifas-Shiman, Camargo, Berkey, Frazier, Rockett, Field, & Colditz (2001), compared 9553 infants (62%) in the first 6 months of life only or mostly fed breast milk with 4744 (31%) only or mostly fed infant formula. A total of 7186 infants (48%) were breastfed for at least 7 months while 4613 (31%) were breastfed for 3 months or less. Results indicated that infants who were predominantly fed breast milk in the first 6 months of life had a lower prevalence of overweight 9 to 14 years later. Compared with infants predominantly fed infant formula, the estimated relative reduction in risk was approximately 22%. In addition, the apparent protective effects were larger with increasing duration of breastfeeding. Infants who were fed breast milk more than infant formula, or who were breastfed for longer periods, had a lower risk of being overweight during older childhood and adolescence (Gillman et al., 2001).

As evidence for the significant advantages of breast-feeding has mounted, breastfeeding has become an increasingly important public health issue. The American Academy of Pediatrics (AAP) has noted that human milk “is uniquely superior for infant feeding and is species specific; all substitute feeding options differ markedly”. The AAP recommends exclusive breastfeeding, i.e. breast milk and water but no other liquids or solids, for the first six months of life, followed by gradual supplementation with iron-rich foods such as single-grain cereals for the next six months and the continuation of breastfeeding for as long as mother and child wish (AAP guidelines, 2003).
**Feeding Behaviors:**

Caregivers of all children must take care not to overfeed or to force eating when the child is not hungry. Caregivers should learn to respond to their infant’s hunger and satiety cues when either breast or bottle feeding. Baughcum, Burklow, Deeks, Powers, & Whitaker (1998) discovered three themes in relation to maternal over feeding behavior: (a) it was better to have a heavy infant because infant weight was the best marker of child health and successful parenting; (b) fear their infants were not getting enough to eat which led them to put rice cereal and other solid food to the diet before the recommended ages; (c) use of food to shape their child’s behavior such as a reward for good behavior or to calm fussiness. The researchers speculate that mothers who use food to satisfy their children’s emotional needs or to promote good behavior in the children may promote obesity by interfering with their children’s ability to self-regulate food intake. Asking caregivers how they feel about their own ability to respond appropriately to their child’s eating cues may be a first step in anticipatory guidance. Open-ended questions regarding concerns about their child’s weight or eating patterns may reveal the concerns caregivers may have, as well as allow the nurse practitioner to reinforce positive eating behavior.

Another aspect of feeding behaviors is caregiver-child interactions during mealtime. Quantitative studies have attempted to determine the association of adult nutrition attitudes and mealtime behaviors to young children’s eating behaviors. Gabel and Lutz (2002) collected data using questionnaires of child eating behaviors, nutrition attitudes of parents and teachers, and then compared these beliefs and behaviors with actual feeding observations. Children were then weighed and measured. Caregivers’ negative mealtime practices, such as hurrying children to eat, and requiring them to clean
their plates, were correlated with higher child weight-for-height. Conversely, caregivers’ positive nutrition attitudes, such as general conversation, nutrition teaching and encouraging food tasting, were related to more pleasant family mealtimes, fewer negative mealtime practices, and less troublesome child eating behaviors.

A final important issue that has become the topic of much concern in area of feeding behavior is children’s increased exposure to fast food. In addition to excess calories provided by large portion sizes, many foods consumed outside the home are higher in fat and lower in fiber, calcium, and iron than home-prepared meals (DePinto, 2004). Up to 30 percent of meals children eat are away from home, the majority being fast foods (DePinto, 2004). Caregivers should be encouraged to eat home-prepared meals as a family.

A study done by Omar, Coleman, & Hoerr (2001) conducted focus groups to explore barriers that caregivers’ felt towards healthy eating for rural low-income toddlers. The major barriers identified were work schedules; cost of food; and inadequate time to shop, plan and prepare nutritious meals. It is important to acknowledge competing demands and difficulties that caregivers experience and ask how we, as NPs, can best help. It is also essential to support caregivers in their efforts and to convey to them that they are doing a good job at a very difficult task. Contributing to the self-efficacy of caregivers is important. The perceived needs and perceptions of caregivers ought to be considered when providing nutrition education. Caregivers need to be counseled on how to make healthy food choices both at the grocery store and when choosing among menu items while eating out. Caregivers willing to model healthy choices to their children are likely to instill habits that promote a healthy lifestyle (DePinto, 2004).


Food Guidelines:

Currently, there are no national guidelines for parents to follow when feeding older infants and toddlers under the age of two. Health care providers should encourage caregivers to offer a variety of vegetables, fruit, meats and grain foods. For children age two and older, MyPyramid is the most current guideline and replaces the 1992 Food Guide Pyramid and associated materials (see figure 1). It incorporates recommendations from the 2005 Dietary Guidelines for Americans, released by the U.S. Department of Agriculture (USDA) and U.S. Department of Health and Human Services (HHS) in January, 2005. MyPyramid provides web-based interactive lessons, calculators and print materials for clients. The Dietary Guidelines for Americans, 2005, gives science-based advice on food and physical activity choices for health. They describe a healthy diet as one that emphasizes fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products; includes lean meats, poultry, fish, beans, eggs, and nuts; and is low in saturated fats, trans fats, cholesterol, salt (sodium), and added sugars.

MyPyramid also includes materials designed specifically for health professionals. These professional materials include food intake patterns that identify what and how much food an individual should eat for health. The amounts to eat are based on a person’s age, sex, and activity level. It also explains what changes most Americans need to make in their eating and activity choices, how they can make these changes, and why these changes are important for health. This educational framework for professionals and MyPyramid links for clients can be located at

Physical Activity and Sedentary Behavior:

According to the CDC, in the year 2003, more than one-third of high school students did not regularly engage in vigorous physical activity and only 28% of high school students attended physical education classes daily. Physical activity reduces the risk of premature mortality in general, and of coronary heart disease, hypertension, colon cancer, and diabetes mellitus in particular. Regular physical activity in childhood and adolescence improves strength and endurance, helps build healthy bones and muscles, helps control weight, reduces anxiety and stress, increases self-esteem, and may improve blood pressure and cholesterol levels (Mokdad, Marks, Stroup, Gerberding, 2004). Nurse practitioners can encourage physical activity such as walking, outdoor play, organized sports, and bicycling. Exercise should also include unstructured play at home, in schools, in child care settings, and throughout the community (AAP, 2003). Free brochures regarding benefits of physical activity that are designed to help parents, teachers, and principals increase physical activity among elementary and middle school-aged youth can be found online at [http://www.cdc.gov/HealthyYouth/PhysicalActivity/](http://www.cdc.gov/HealthyYouth/PhysicalActivity/).

There also appears to be a benefit to limiting or decreasing sedentary activities. National survey data indicate that leisure activity is increasingly sedentary with the wide availability of entertainment such as television, videos, and computer games. In fact, more than 25% of children watch at least 4 hours of television per day. Children who watch 4 or more hours of television per day have a significantly higher BMI, compared with those watching fewer than 2 hours per day (Dennison, Erb, Jenkins, 2002). In addition, television watching may have the dual consequences of decreasing energy expenditure and increasing energy intake through snacking and other adverse eating
behaviors (Robinson, 1998). The American Academy of Pediatrics recommends that children have less than two hours of television, video games, or computer use per day (AAP, 2003).

Future goals:

Nurse practitioners can make a difference not only through interaction with individual children and families, but also by fostering healthy nutrition and physical activity within their communities. This can be done by getting involved in local or statewide nutrition and physical activity coalitions, schools, and parent-teacher organizations. Most school meals do not meet USDA's recommendations, especially for fruit, vegetable, grain and dairy servings (Dalton, 2004). Nationwide data show that about 10% of school food sold is from the cafeteria USDA reimbursable lunch available to all and specifically to those eligible for free and reduced price meals. Over 70% of school food is sold from cafeteria menus which typically offer daily choices of burgers, fries, pizza, ice cream, cookies and other snack type foods, and the final 20% comes from school vending machines (Dalton, 2004). Decisions regarding the sale of foods in addition to the National School Lunch Program meals need to be based on nutrition goals, not on profit making.

Not only is school nutrition a problem locally, but also there is an inadequate amount of physical education provided in school nationally (National Association for Sport and Physical Education, 2004). Recess has all but disappeared from the daily school schedule in some states. Forty-eight states have some type of physical education requirement, but they vary greatly from state to state. Recent proposed legislation has focused on refining or increasing physical education requirements or encouraging
positive physical activity programs for students at recess or other opportunities for physical activity at school. Just as standardized testing has recently been given precedence, physical education needs to be reinstated as a priority nationally.

Finally, improved insurance coverage and third-party reimbursement for obesity care is needed. Despite the significant expenditure on the complications of obesity, patients often have to pay out-of-pocket for treatment because insurance reimbursement for early intervention strategies remain limited (Tershakovec, Watson, Wenner, Marx, 1999). Healthcare providers need to identify ways of making sure that child obesity treatments are covered by public and private insurance. This is an enormous task but it is fundamental to addressing the epidemic of obesity and the short and long term impacts on people's lives. Getting involved with local or statewide organizations are essential to have a voice in this area. In 2004, the U.S. Department of Health and Human Services (HHS) allocated $35.8 million to fund 40 communities. The Steps to a HealthierUS 5-year cooperative agreement program funds States, cities, and tribal entities to implement chronic disease prevention efforts focused on reducing the problem of diabetes, overweight, obesity, and asthma and addressing three related risk factors: physical inactivity, poor nutrition, and tobacco use. More information can be found at http://www.healthierus.gov/steps/grantees.html. Getting involved with efforts like these can help turn the tide in reducing battling childhood obesity.

Conclusion

There is no better time than the early years to make an impact on the lifelong eating and exercise habits that contribute to health maintenance and disease prevention. Since it is easier to prevent than to correct obesity, it is important that the nurse
practitioner review patterns of physical activity and energy balance during every well child visits. Nurse practitioners have a unique opportunity to prevent obesity by identifying, educating and empowering families through counseling and anticipatory guidance. At the same time, nurse practitioners must be conscious of the immensity of the forces – economic and social arrayed against even the most well meaning and enthusiastic caregivers. By asking open-ended questions to elicit caregiver’s feelings or concerns about how well they are feeding their child, along with BMI screening at each routine health visit, nurse practitioners can make advances in curbing this epidemic.
Reference:


Olshansky, S., Passaro, D., Hershow, M., Layden, J., Carnes, B., Brody, M., Hayflick, L.,


Table 1 – In Depth Medical Assessment

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<thead>
<tr>
<th>Medical history:</th>
<th>Identify any underlying syndromes or secondary complications of overweight.</th>
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<tr>
<td>Dietary Assessment:</td>
<td>Evaluate eating habits, including quantity, quality and timing of food intake. A 24 hour recall, food record or other method may be used.</td>
</tr>
<tr>
<td>Physical Activity Assessment:</td>
<td>Assess daily activity levels, including time spent on exercise as well as time spent on sedentary behaviors such as TV, video games and computers.</td>
</tr>
<tr>
<td>Physical Examination:</td>
<td>Provides the degree of overweight and any related findings such as high blood pressure and signs of problems identified in the history.</td>
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<tr>
<td>Laboratory Tests:</td>
<td>Ordered as indicated after consideration of the degree of overweight, family history and results of the physical exam.</td>
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<tr>
<td>Psychological Evaluation:</td>
<td>This may be needed for children and adolescents who require weight management to determine their readiness to change. This can also be used to identify a history of eating disorders or depression which may require a referral.</td>
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(http://www.cdc.gov/nccdphp/dnpa/growthcharts/training/modules/module1/text/mainmodules.htm)

Table 2: Calorie-Saving Tips

- Substitute water or unsweetened tea for sugary sodas.
- Limit fruit juice to 4 ounces per day.
- Always leave food on the plate, even if it is one bite.
- Do not eat in front of the TV.
- Snack on vegetables and fruits instead of chips and cookies.
- At fast food restaurants, order grilled items and plain baked potatoes instead of fried food.
- Before snacking, drink a glass of water. Then decide if you are still hungry before you eat any more food.
- Eat slowly and wait 20 minutes before getting a second helping.

(Abraham, 2004)
Table 3: Implications for practice:

1. Screen Body Mass Index:
   - BMI can be graphed by support staff while rooming the client to review prior to seeing the client.
   - BMI tables can be displayed in patient rooms and be used as a teaching tool.
   - BMI graph should be tracked over time to identify growth patterns. At or above the 95th percentile requires an in-depth medical assessment and management.

2. Assess Eating Patterns:
   - Determine the routine for family meal times. "Do you eat together?" "How often do you eat out?"
   - Emphasize breast feeding, eating together as a family, and how to make healthy eating choices even when eating out.

3. Assess Physical and Sedentary Activities:
   - Use open ended questions: “What activities do you like to do as a family?” “Do you have any concerns about you or your child’s eating behaviors?”
   - Ask about teasing in school or if child can keep up physically with his or her peers.
   - Assess awareness of risk factors related to obesity. Inquire about readiness to change.

4. Advocate for local and national changes within the community:
   - Advocacy of physical education in schools
   - Promote standards of nutrition in school lunch programs.
   - Support increased reimbursement for preventative obesity counseling and nutrition management.

Table 4 - Helpful websites for healthcare providers:

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<td>American Obesity Association</td>
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<td><a href="http://www.obesity.org/subs/childhood/prevalence.shtml">http://www.obesity.org/subs/childhood/prevalence.shtml</a></td>
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<tr>
<td>BMI growth charts.</td>
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<tr>
<td><a href="http://www.cdc.gov/growthcharts/">http://www.cdc.gov/growthcharts/</a></td>
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<td><a href="http://aappolicy.aappublications.org/cgi/content/full/pediatrics;112/2/424">http://aappolicy.aappublications.org/cgi/content/full/pediatrics;112/2/424</a></td>
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Table 5 - Dietary Websites for healthcare providers and families:

<table>
<thead>
<tr>
<th>Website</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dietary Guidelines for Americans, 2005.</strong></td>
<td>For the 70 page scientific document</td>
</tr>
<tr>
<td>For more information about the Guidelines</td>
<td><a href="http://www.healthierus.gov/dietaryguidelines/">http://www.healthierus.gov/dietaryguidelines/</a></td>
</tr>
<tr>
<td><strong>Nutrition Facts label</strong></td>
<td>For more information about understanding and using the Nutrition Facts label on food products</td>
</tr>
<tr>
<td><a href="http://www.cfsan.fda.gov/~dms/foodlab.html">http://www.cfsan.fda.gov/~dms/foodlab.html</a></td>
<td></td>
</tr>
<tr>
<td>For information about Qualified Health Claims on food product labels</td>
<td><a href="http://www.cfsan.fda.gov/~dms/lab-qhc.html">http://www.cfsan.fda.gov/~dms/lab-qhc.html</a></td>
</tr>
<tr>
<td><strong>Commercial Alert:</strong></td>
<td><a href="http://www.commercialalert.org">http://www.commercialalert.org</a></td>
</tr>
<tr>
<td><strong>Food and Nutrition information</strong></td>
<td>For access to more Federal government food and nutrition information</td>
</tr>
<tr>
<td><a href="http://www.nutrition.gov">http://www.nutrition.gov</a></td>
<td></td>
</tr>
<tr>
<td><strong>Food composition</strong></td>
<td>For data on the nutrient content of specific foods</td>
</tr>
<tr>
<td><a href="http://www.nal.usda.gov/fnic/foodcomp/">http://www.nal.usda.gov/fnic/foodcomp/</a></td>
<td></td>
</tr>
<tr>
<td><strong>Food and Nutrition Service Assistance Program</strong></td>
<td>For more information about USDA nutrition assistance programs</td>
</tr>
<tr>
<td><a href="http://www.fns.usda.gov/fns/">http://www.fns.usda.gov/fns/</a></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 - Physical activity website information:

<table>
<thead>
<tr>
<th>Website</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>For information about physical activity and health</td>
<td><a href="http://www.cdc.gov/nccdphp/dnpa/physical/index.htm">http://www.cdc.gov/nccdphp/dnpa/physical/index.htm</a></td>
</tr>
<tr>
<td><strong>Fun and educational website for kids</strong></td>
<td><a href="http://www.kidnetic.com">http://www.kidnetic.com</a></td>
</tr>
<tr>
<td><strong>Smart Mouth:</strong></td>
<td><a href="http://www.Smart-mouth.org">http://www.Smart-mouth.org</a></td>
</tr>
</tbody>
</table>
### Table 7 - Websites for health related issues of obesity:

<table>
<thead>
<tr>
<th>Issue</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osteoporosis</td>
<td><a href="http://www.fda.gov/fdac/features/796_bone.html">http://www.fda.gov/fdac/features/796_bone.html</a></td>
</tr>
<tr>
<td>Anemia</td>
<td><a href="http://www.4woman.gov/faq/anemia.htm">http://www.4woman.gov/faq/anemia.htm</a></td>
</tr>
</tbody>
</table>
Figure 1 – MyPyramid Nutritional Chart

**MyPyramid**

**For a 2,000-calorie diet, you need the amounts below from each food group. To find the amounts that are right for you, go to MyPyramid.gov**

**GRAINS**
- Eat at least 3 oz. of whole-grain cereals, breads, crackers, rice, or pasta every day.
- 1 oz. is about 1 slice of bread, about 1 cup of breakfast cereal, or 1/2 cup of cooked rice, pasta, or cereal.

**FRUITS**
- Eat more dark green veggies like broccoli, spinach, and other dark leafy greens.
- Eat more orange vegetables like carrots and sweet potatoes.
- Eat more dry beans and peas like pinto beans, kidney beans, and lentils.

**MEAT & BEANS**
- Go low-fat or fat-free when you choose milk, yogurt, and other milk products.
- If you don’t or can’t consume milk, choose lactose-free products or other calcium sources such as fortified foods and beverages.
- Choose low-fat or lean meats and poultry.
- Broil it, grill it, or sauté it.
- Very your protein sources — choose more fish, beans, peas, nuts, and seeds.

**Know the limits on fats, sugars, and salt (sodium)**
- Make most of your fat sources from fish, nuts, and vegetable oils.
- Limit solid fats like butter, margarine, shortening, and hard, as well as foods that contain these.
- Check the Nutrition Facts label to keep saturated fats, trans fats, and sodium low.
- Choose food and beverages low in added sugars. Added sugars contribute calories with few, if any, nutrients.

**Find your balance between food and physical activity**
- Be sure to stay within your daily calorie needs.
- Be physically active for at least 30 minutes most days of the week.
- About 60 minutes a day of physical activity may be needed to prevent weight gain.
- For sustaining weight loss, at least 60 to 90 minutes a day of physical activity may be required.
- Children and teenagers should be physically active for 60 minutes every day, or most days.