Child and Adolescent Obesity Management in the Primary Care Setting:

Integrating Concepts into Practice

Valerie B. Harding Lodge

Washington State University at Spokane

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To the Faculty of Washington State University:

The members of the Committee appointed to examine the non-thesis research project for VALERIE HARDING LODGE find it satisfactory and recommend that it be accepted.

Ruth C. Bradlee
Mel Holman
Margaret A. Bevog
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To my inspiration, my father who went through medical school with two small children and specialized in Pediatrics while I was in middle school. Thank you for showing me that it is possible to live life and go to school while supporting a family. And to my Mother, thank you for your continued encouragement. You always held higher education as an attainable goal. I could not have made it without the “schnauzer” bonuses.

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Abstract

As children pass the goal of adequate body weight, they begin to experience devastating consequences in health. Childhood obesity represents a leading threat to the long term health of the entire population, “even rivaling smoking in its potential impact” (Homer, 2009, p. S253).

This literature review encompassed the latest information on assessment, prevention, and treatment of childhood and adolescent obesity. While respected guidelines and recommendations are plentiful, strategies integrating these guidelines into practice are addressed less frequently.

The objective of this paper was to examine recommendations from national organizations for management of childhood and adolescent obesity and to propose specific strategies that enable the advanced practice nurse to assess and prescribe clear interventions for those children and adolescents who are overweight or obese.

The literature was found to be lacking in three main areas: One, a lack of well defined, validated and preventive therapeutic interventions was noted. Two, there are no validated measures to evaluate patient and family readiness. And Three, there is a need for chronic disease practice applications that apply to obesity. In addition, four types of barriers to implementation were found to be significant: psychosocial, time constraints, logistics and lack of resources.

Implications for the Advanced Nurse Practitioner require applying the recommendations with solutions to these barriers, which includes educating themselves on prevention, management, and treatment and of the problem of child and adolescent overweight and obesity, educating all patients in healthy lifestyle and weight management, and collaborating with other healthcare providers and institutions to provide obesity services to patients and communities.
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Child and Adolescent Obesity Management in the Primary Care Setting:
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For many years the focus of pediatric health in the United States has been on feeding children in order ensure appropriate nutrition to promote growth and development. However, in the last 15-20 years a concerning phenomenon has occurred. Not only are increasing numbers of children becoming overweight, but many have reached the point of obesity.

As these children pass the goal of adequate body weight, they are experiencing devastating consequences in health. As observed by the American Heart Association (AHA), “Overweight children and adolescents are at greater risk for significant health problems both during their youth and as adults. They are more likely than other children and adolescents to have risk factors associated with heart disease such as high blood pressure, high cholesterol, and type two diabetes mellitus” (Daniels, Jacobson, McCrindle, Eckel, & McHugh Sanner, 2009).

Children and adolescents who are overweight and obese are at risk for obesity associated diseases including asthma, hepatic steatosis, sleep apnea, joint problems, depression and self-esteem issues, and eating disorders. In addition the AHA has found that “most obese children already have at least one other major risk factor for cardiovascular disease. . . these risk factors were previously found mainly in adults, not in children” (AHA, 2011, p 1). These well-known obesity-related disease processes are becoming increasingly prevalent in the pediatric care setting. Present statistics and trends show child and adolescent overweight and obesity is a problem that is worsening each year.
The United States Centers for Disease Control and Prevention (CDC) presents the statistical trends of obesity clearly. The percentage of children and adolescents with obesity from 1976-1980 was 6.5% in children 6-11 years old, and 5% in adolescents 12-19 years old (CDC, 2011a). According to the American Heart Association’s Statistical Fact Sheet 2009 (NHANES 2003-2006 data) an update among children showed statistics on 2-19 years old are increasing in overweight and obesity (>than the 85%). In Non-Hispanic white males 31.9% and 29.5% of females were above 85%, for non-Hispanic blacks, 30.8% of males and 39.2% of females, for Mexican Americans, 40.8% of males and 35.0% of females are all over the 85% of CDC growth charts (American Heart Association [AHA], 2009, p. 1). In other words, roughly one out of three children between the ages of 2-19 years old are overweight or obese, a number that has more than tripled in the last 30 years.

A specific area of concern is that percentages of overweight and obesity are found to be greater among certain racial groups. The AHA information on United States obesity trends found that black children and adolescents demonstrate a 51% higher prevalence of obesity, and Hispanic children and adolescents demonstrate 21% higher obesity rate than white children and adolescents (AHA, 2009, p. 1).

Efforts have so far been ineffective to reverse this trend of increasing overweight and obesity. In fact, results from the Task Force on Community Preventive Services show that the prevalence of high Body Mass Index (BMI) in childhood has remained steady for ten years and has not declined. (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010, p. 249) The most obvious reasons for this are that both family members and health care providers have many obstacles to overcome in order to affect a decrease in the rates of obesity.
A major obstacle for Advanced Nurse Practitioners (APN) is that training provided in obesity and nutrition is insufficient. Many providers feel unqualified or perceive their skill level as low when in their practice they are confronted with treating children and adolescence with overweight and obesity. It was observed that medical schools and nurse practitioner program curricula include minimal nutrition and diet management training. Medical schools are requiring the knowledge of obesity with only one block of study dedicated exposure to nutrition topics. For example, the 2006 Integrated Curriculum for Harvard Medical School programs includes nutrition and obesity information in their anatomy and physiology scope during “Fundamentals of Medicine” in the second year. Comparatively, APN programs require one nutrition class at the undergraduate level. No further training is provided unless the individual chooses to study nutrition and obesity treatment on their own. These attitudes and lack of training account for much of the apathy regarding prevention and treatment in the area of childhood and adolescent obesity. Burghen states, “At this time integrating these concepts (of active prevention and treatment) into primary care practice has not been universally accomplished and so far has failed to reduce the obesity epidemic” (Burghen, 2005, p.211).

Another contributing factor for the APN entering primary care practice is the lack of criterion-based research available for treatment options, even now, in 2011. For example, the 2005 recommendations of the United States Preventive Services Task Force indicated “. . . there is insufficient evidence to recommend for or against primary care providers screening for overweight in children and adolescents to prevent obesity” (United States Preventive Services Task Force [USPSTF], 2005, p. 1) In view of this statement, Dr. George A. Burghen noted an “atmosphere of futility” surrounding primary care providers regarding taking action to counsel and treat childhood and adolescent obesity. After reading this report he states “providers may be
left with the impression that there is nothing they can do” (Burghen, 2005, p. 210). This observation is demonstrated in many primary care offices throughout the country.

The effects of this “atmosphere of futility” and “lack of confidence” in health care providers, as described by Burghen (2005), can be seen in their most common response to the overweight and obese child or adolescent. At present, a typical approach to prevention and treatment of child and adolescent obesity is to briefly counsel the patient and parents in regarding increased diligence in reducing caloric intake and increasing activity. After counseling there is negligible follow up or accountability of the child and family in response to their recommendation to increase exercise and reduce caloric intake. An example shows that only one third of pediatricians use Body Mass Index (BMI) charts during patient visits and many physicians are uncertain how to tailor guidance to children with obesity risk factors. (AHA, 2008, p. 1)

Leaders in child and adolescent medicine agree that “early identification of at risk children and adolescents is crucial to the prevention of chronic diseases during childhood and later life” (Jessup & Harrell, 2005, p. 28). Specifically, the National Association of Pediatric Nurse Practitioners (NAPNAP) encourages nurse practitioners to “collaborate with all healthcare professionals, parents, families and communities in prevention and early identification of overweight, obesity and obesity related morbidity” (NAPNAP Position Statement, 2009, p.16A).
Statement of Purpose

The purpose of this paper is to examine current, valid recommendations for assessment and management of childhood and adolescent obesity, will examine the barriers to implementation of these recommendations, and will propose evidence-based approaches to promote prevention, assessment, and treatment of childhood and adolescent obesity in the primary care setting.

Theoretical Framework

The theoretical framework applied was the concept of prevention, with types of prevention focused on in this paper being primary and secondary prevention.

Primary prevention is preventing the development of a disease before it occurs which is stated by the encyclopedia of Public Health as, “prevention of diseases and conditions before their biological onset” (Wallace, 2006 a, p. 1). Secondary prevention is defined as finding and treating a disease at the earliest onset as the encyclopedia of Public Health states, “as an identification and interdiction of diseases that are already present in the body but have not progressed to the point of causing signs or symptoms and dysfunction” (Wallace, 2006 b, p.1) These pre-clinical conditions are most often detected by disease screening and follow-up findings. Therefore, it follows that applying the framework of prevention to the present national recommendations on childhood and adolescent obesity is critical to reversal of the obesity epidemic.
Definitions of obesity in children and adolescents

To begin addressing overweight and obesity, care providers need to understand the recommended definitions of these conditions. The CDC considers overweight and obesity "labels for ranges of weight that have been shown to increase the likelihood of certain diseases and other health problems" (CDC, 2011c, p. 1). An overweight child is within the 85th to 94th percentile for BMI on CDC growth charts. Obesity is defined as a BMI at the 95th percentile or greater based on the CDC 2000 growth charts for U.S.A. and the expert committee for CDC recommendations (CDC, 2011b, p. 1).

In children and adolescents, BMI screening is used in the initial assessment of body fatness. The BMI now in use was "developed from five national health examination surveys that occurred from 1963-1994 with supplemental data from surveys during 1960-1995" (United States Preventive Services Task Force [USPSTF], 2010, p. 1). Presently, BMI remains the most widely accepted method to screen for overweight and obesity in children and adolescents because of the non-invasive nature and ease in obtaining the measurements. In addition, BMI provides clinical usefulness by standardizing assessments of children and adolescents, thereby demonstrating the significance of the present degree of overweightness. The CDC has developed age and gender specific BMI charts. If a child ranks greater than the 85th percentile for BMI, further studies, such as thorough family and health history, skin fold thickness, diet analysis and present physical activity participation, can help ensure an accurate diagnosis.

Understanding current definitions as well as documenting the prevalence overweight and obesity, aids clinicians in managing these issues.
Literature Review

A review of the current literature utilizing search engines from CINAHL, Pub-MED, MEDLINE, Psych INFO, current national websites, and Medical and Advanced Nurse Practitioner journals addressing childhood and adolescent obesity recommendations and treatments was conducted. Searches on topics and restrictions were performed using the keywords: childhood obesity, child and adolescent obesity, recommendations on childhood obesity, childhood obesity guidelines, and position statements on childhood obesity, child overweight and/or obesity and/or treatment, adolescent overweight and/or obesity and/or treatment. Literature, both supporting and contradicting implementation of national recommendations on child and adolescent obesity was explored. Tools created to apply national recommendations were also reviewed and referenced.

National Recommendations on Prevention, Assessment and Treatment of Child and Adolescent Obesity

Today children are at higher risk for developing chronic diseases resulting in overweight or obesity in adulthood. In fact, childhood obesity represents a leading threat to the long term health of the entire population, “even rivaling smoking in its potential impact” (Homer, 2009, p. S253). Statistics clearly support applying prevention and interventional treatments beginning in the primary care setting. Many medical areas are taking the initiative and creativity to implement concepts presented in the last ten years on the threat of obesity.

United States Preventive Services Taskforce (USPSTF). The USPSTF is in the forefront of providing guidelines and recommendations regarding childhood and adolescent
overweight and obesity. In February 2010, the USPSTF updated their recommendations on screening for obesity. The Taskforce now suggests that screening children 6 years and older for obesity is substantiated. To offer or refer these 6-18 year olds to comprehensive, intensive behavioral interventions to promote improvement in weight status is classified as a grade B recommendation (USPSTF, 2010, p. 1). Recommendations suggest that moderate to high intensity behavioral interventions for children with overweight and obesity and adolescents 6-18 years old were found to effectively yield short term (up to 12 months) improvement in weight status. The USPSTF, however, found inadequate evidence regarding the effectiveness of low intensity interventions.

These intensity categories were defined according to hours of contact with the obese patient.

- **VERY LOW:** A very low intensity intervention equating to 10 hours or fewer contact with the patient dedicated to counseling or treatment management of obesity.
- **LOW:** A low intensity intervention equating to 10-25 hours of contact.
- **MODERATE:** A moderate intervention equating to 26-75 hours of contact.
- **HIGH:** A high level of intervention equating to 75 hours or greater.

USPSTF, in the 2010 update, upholds that moderate to high intensity interventions are appropriate in specialty health care facilities such as pediatric obesity referral clinics. They maintain that these moderate to high intensity interventions would not be feasible for implementation in a primary care setting, but that referral to a specialty clinic would be the most feasible option. In addition, the USPSTF suggests that “lower intensity interventions that are
possibly feasible for primary care did not demonstrate a significant consistent benefit with regard to BMI” (United States Preventive Services Task Force [USPSTF], 2005, p. 1)

**American Academy of Pediatrics (AAP).** The American Academy of Pediatrics Expert Committee suggests the following recommendations for prevention at the patient visit level. In addition to screening and using the BMI at least yearly, preventive action should be taken early in the feeding and exercise practices taught to children before they become overweight.

Preventive measures can be taken at birth and the AAP policy on childhood overweight and obesity reports, “The extent and duration of breast feeding is inversely associated with the risk of obesity in later childhood” ("AAP Policy," 2003, p. 425) The AAP suggests breast feeding up to the age of six months and beyond.

Physicians and allied health care providers are encouraged to counsel the following for children 2-18 years of age whose BMI is 5th to 85th percentile with the following approach of “Prevention Plus”:

The 5210 Pneumonic for healthy weight management:

1. Encourage diets including 5 fruits and vegetables a day
2. Limit television and other screen time to no more than 2 hours per day.
3. Participate in 1 hour of moderate to vigorous physical exercise a day
4. 0- Limit consumption of sugar-sweetened beverages

Additionally counsel should include encouraging family meals in which parents and children eat together, eating breakfast daily, limiting eating at restaurants, especially fast food restaurants, and limiting portion sizes (Spear et al.[AAP], 2007, p. S255).

The AAP recognizes that BMI is incomplete without consideration of the many complex behavioral factors that influence obesity but the organization holds the BMI as a reliable
indicator of overweight and obesity. BMI ranks highest in frequency of use and effectiveness among over 300 researched assessment tools identified since 1995. Using BMI according to age, the AAP research shows, results in fewer children being diagnosed incorrectly as overweight or obese. Lastly, clinicians need to include medical histories in their assessments at each well child visit in order to identify modifiable life style behaviors, such as dietary and physical activity practices. In addition it should include assessment of current and future risks for medical comorbidities associated with a child’s overweight or obese status and to assess patient and family for readiness to make behavioral changes (Barlow & Expert committee, 2007, p. S188).

Laboratory tests may be helpful but may not always be necessary. If results are unlikely to alter the treatment or outcome, the value of testing is limited. Laboratory tests useful to perform for specific BMI levels are listed in Table 1.

Table 1
Testing for Specific BMI

<table>
<thead>
<tr>
<th>BMI/Percentile in height and weight</th>
<th>Labs</th>
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<tr>
<td>85%-94% percentile height/weight</td>
<td>Fasting lipid level</td>
</tr>
<tr>
<td><em>with no risk factors</em></td>
<td></td>
</tr>
<tr>
<td>85%-94% percentile height/weight</td>
<td>Fasting lipids, AST, ALT,</td>
</tr>
<tr>
<td><em>with risk factors</em></td>
<td>Fasting Glucose</td>
</tr>
<tr>
<td>95% and over</td>
<td>Fasting lipids, AST, ALT,</td>
</tr>
<tr>
<td><em>with or without risk factors</em></td>
<td>Fasting Glucose</td>
</tr>
</tbody>
</table>

(Barlow & Expert committee, 2007, p. S188)
Child and Adolescent

After determining that a child falls into an overweight or obese category, height and weight charts, BMI, and the previously discussed assessment tools, a clinician must determine a course of action. Additional recommendations from the AAP suggest the following four step (staged) approach to weight management and treatment:

1. Prevention Plus (as defined previously)
2. Structured weight management
3. Comprehensive multidisciplinary intervention
4. Tertiary care intervention

If the patient fails to lose weight after attempting to make lifestyle changes of Prevention Plus for a 3-6 month period of time, the provider can offer the next level of obesity care, which is structured weight management. This includes developing a plan for balanced macronutrient diet, structured daily meals and snacks, supervised active play of 60 min each day, 1 hour of screen time each day and increased monitoring by provider, patient, and family (logging screen time, physical activity, dietary intake, and restaurant intake). The goal of this stage is weight maintenance and not to exceed weight loss of 1 lb. per month. After 6 months, if the patient is failing to lose weight after attempting to make lifestyle changes, a referral to a multidisciplinary pediatric weight management program using a trained obesity care team is appropriate (Barlow & Expert committee, 2007).

The Comprehensive multidisciplinary intervention, or stage three, increases the intensity of behavior changes, the frequency of visits and the specialists involved. At this stage the pediatric patient is referred to group that have experience in childhood obesity issues. The group should include a physician, a nurse, a registered dietician, an exercise physiologist, and a psychotherapist. The frequency of visits is often weekly for 8-12 weeks with follow up.
Generally, this type of program would exceed the capacity of a primary care office to offer within the typical visit structure. Spear and cohorts point out that “Few primary care providers have the time or training needed to implement fully basic obesity treatment such as that described for the structured weight management stage” (AAP, 2009, p. S280). It is very difficult to refer severely obese adolescents due to the lack of current registries of tertiary centers or programs in many areas. If the child or adolescent is not showing improvement in BMI after 3-6 months advancing to stage 4 is appropriate. At this level of obesity more aggressive treatment such as drug therapy or referral to a tertiary care center for obesity is indicated (Spear et al., 2007) (Barlow & Expert committee, 2007).

Lack of success with the comprehensive multidisciplinary intervention is not by itself an indication to move to the next level of treatment. Intensive interventions in this category may be offered to some youths with severe obesity. According to Barlow (2007), “Candidates for consideration should have attempted weight control in the comprehensive multidisciplinary intervention stage, should have the maturity to understand possible risks, and should be willing to maintain physical activity and a healthy diet with appropriate behavior monitoring.” (p. 21) Consideration of the interventions depends on the patient and the resources in the patient’s location.

An initial treatment at this level would include medications such as sibutramine and orlistat, two drugs which have been used along with diet and exercise programs with modest effects. The Food and Drug Administration has “approved sibutramine for patients > 16 years of age and orlistat for >12 years of age” (Uli et al., 2008, p.40) It must be considered that the latest information on sibutramine states that “On October 8, 2010 Abbott and the U.S. Food and Drug Administration announced sibutramine (Meridia) is being withdrawn from the market because of
increased risk of myocardial infarction and stroke. Europe suspended sibutramine from the market earlier this year” (Uwaifo & Arioglu, 2011, p. 1).

Two other treatments at this level include implementing a very low-calorie diet and weight control surgery. The expert committee recommends stage 4 for children >11 years old with a BMI of ≥ 95th percentile who have significant comorbidities and who have not been successful in stages 1-3, or for children with BMI ≥ 99th percentile who have shown no improvement in stage 3 (Barlow & Expert committee, 2007). In regard to treatment, the AAP encourages clinical practices to modify their office systems; to streamline office based care; and to coordinate with professionals and programs outside the office for more intensive interventions.

**American Heart Association (AHA).** Another strong advocate of prevention of obesity in children and adolescents is the American Heart association (AHA). The AHA classifies obesity prevention as avoiding the occurrence of obesity during childhood and adolescence. The AHA differentiates two approaches to accomplish this goal. First, a population approach focuses on environmental and policy changes or “upstream” approaches. Secondly, they suggest a treatment approach which focuses on patient treatment and interventions or “downstream approaches”. Their patient centered, “downstream” approach encourages five guiding principles important for the treatment of overweight.

- To establish individual treatment goals and approaches based on the child’s age, degree of overweight, and presence of comorbidities.
- Involve the family or major caregivers in the treatment of overweight or obesity.
- Provide assessment and monitoring frequently.
• Consider behavioral, psychological, and social correlates of weight gain in the treatment plan.

• Provide recommendations for dietary changes and increases in physical activity that can be implemented within the family environment and that foster optimal health, growth and development. (Daniels et al., 2005, p. 2004)

AHA policy position statement of 2008 on the treatment of childhood obesity also follows with recommendations on assessment, prevention, and treatment. Assessment recommendations encourage healthcare providers to perform, at a minimum, a yearly assessment of weight status in all children. At each well child visit a qualitatively assessed dietary pattern, screen time, physical activity behaviors should be performed on all pediatric patients. All overweight and children with overweight and obesity should receive a thorough physical examination, including BMI assessment, pulse rate and blood pressure measured appropriately for the child’s arm size. The following laboratory tests should occur for both the overweight and obese: fasting lipid profile, fasting glucose, AST and ALT. In the child with obesity, blood urea nitrogen and creatinine should be assessed. A focused family history for obesity, type 2 diabetes, cardiovascular disease (particularly hypertension), and early deaths from heart disease or stroke should be performed to assess risk of current or future comorbidities associated with a child’s overweight or obese status.

Prevention recommendations maintain that:

• Children should be breastfed to age 6 months and breastfeeding should be maintained after introduction of solids to age 12 months and beyond.

• Children should eat breakfast every day.
Families should take a positive approach to eating by eating meals together at home as often as possible.

Families should exercise together.

Reinforce positive lifestyle behaviors together such as reading labels, eating more fruits and vegetables at every meal, and watching portion sizes rather than restricting favorite foods.

Children should drink 3-4 eight ounce glasses of nonfat milk or non-dairy calcium – vitamin D fortified milk daily.

Excessive intake (more than 12 ounces) of 100% fruit juice should be avoided, and sugar sweetened beverages should either be limited or preferably avoided.

Portion sizes should be limited to the amount of calories recommended by age.

Children and adolescents should get at least one hour of physical activity every day.

Television and other electronic screens should be kept out of children’s bedrooms.

(AHA, 2008, p. 2)

Treatment recommendations for children with overweight and obesity follow a staged approach, such as mentioned above in the recommendations from the AAP. The treatment stages are based upon the child’s age, BMI, related comorbidities, weight status of parents, and progress in treatment: a prevention plus protocol; structured weight management; comprehensive multidisciplinary protocol; and pediatric tertiary weight management. The AHA strongly encourages the child’s primary caregivers and families be integrally involved in the process.
National Association of Pediatric Nurse Practitioners (NAPNAP). NAPNAP encourages all pediatric health care providers to "partner with parents, families, and communities in the prevention and early identification of overweight, obesity and obesity-related morbidity across the lifespan." (NAPNAP Position Statement, 2009, p.15A)

NAPNAP recommendations are forthright:

- Focus on early identification of childhood overweight through accurate measurement and documentation of height and weight parameters and BMI beginning at the age of 2 years, and Blood pressure beginning at the age of 3 years.
- Conduct a thorough history including family history, eating and physical activity patterns,
- Use culturally sensitive family focused interventions when working with children who are overweight or obese and focus on health, not weight.
- Increase community awareness about the impact of the psychosocial consequences of overweight with children, families and the public.
- Implement motivational interviewing (MI) techniques use when counseling youth and families on lifestyle changes.
- Partner with a variety of related disciplines to support community-based obesity prevention programs aimed at teaching both healthy eating and healthy activity habits.
- Advocate for school and public policies that support healthy eating and activity education for children, availability of appropriate nutrition and foods and physical activity and healthy lifestyles.
- Include didactic and clinical practicum experiences related to pediatric overweight and obesity in the educational programs of nurse practitioners who care for children.
• Continually expand knowledge and skills in overweight/obesity prevention and management.

• Generate, participation, and utilize evidence-based practice and research focused on the prevention and management of overweight and obesity in childhood.

NAPNAP emphasizes the “critical role of pediatric health care providers in identifying childhood overweight and in partnering with families to meet this important goal.” (NAPNAP Position Statement, 2009 p.16A).

**Centers for Disease Control and Prevention and the American Medical Association.**

Two further recommending bodies have had a large voice in shaping the recommendations for child and adolescent obesity prevention and treatment: the CDC and the American Medical Association (AMA). Together the CDC and AMA along with Health Resources and Services Administration (HRSA) “convened an Expert Committee to revise the 1997 childhood obesity recommendations” (American Medical Association, 2007, p. 1). They completed these recommendations and published them as “An Implementation Guide from the Childhood Obesity Action Network” in 2007. These recommendations follow a Step-wise approach. Step 1 - Obesity prevention at well care visits. This step utilizes assessment and prevention measures health care providers should perform. The action steps include assessment of all children for obesity at all well care visits for those ages 2-18 years old. At these visits the health care provider should measure blood pressure (BP) using a cuff large enough to cover 80% of the upper arm and measure the pulse in the standard manner. In addition to the pulse and BP screening, the health care provider should take a focused family history and assess the family for behaviors and attitudes in regard to diet, physical activity and readiness to change. All patients should have a thorough physical which includes appropriate laboratory tests for risk factors present. Another
recommendation encourages the use of BMI to screen for obesity and subsequently using the results to make a weight category diagnosis using BMI percentile. And lastly, a healthcare provider should give consistent, evidence based messages for all children regardless of weight while using an Empathize/Elicit, Provide/Elicit style of counseling to improve the effectiveness of the counseling. Step 2- Prevention plus visits address treatment needs. The recommendations for this step include developing an office based approach for follow up of overweight and obese children using a staged approach. In addition it is suggested healthcare providers use motivational interviewing at Prevention Plus visits for ambivalent families and to improve the success of action planning. All offices of healthcare providers should develop a reimbursement strategy for Prevention Plus visits. Lastly, Step 3- Going beyond your practice focuses on what a healthcare provider can do to advocate for prevention and treatment for those children and adolescents who are overweight. Suggestions are to advocate for improved access to fresh fruits and vegetables and safe physical activity the healthcare providers community and schools. Another suggestion encourages healthcare providers to identify and promote community services which encourage healthy eating and physical activity. Additionally, healthcare providers are urged to identify or develop more intensive weight management interventions for families who do not respond to Prevention Plus recommendations. Finally, healthcare providers are invited to join the Childhood Obesity Action Network to learn from colleagues in order to accelerate the progress of obesity prevention plans.

Table 2 compares the differences and similarities of all the afore mentioned recommending bodies, giving a visual impression of what the APN and other healthcare providers are to do in addressing assessment, prevention and treatment of the child or adolescent with overweight or obesity.
## Table 2
Comparison of Recommending Bodies in Assessment, Prevention, and Treatment

<table>
<thead>
<tr>
<th>Recommending Body</th>
<th>Assessment</th>
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<tr>
<td><strong>United States Preventive Services Task Force</strong></td>
<td>Screen children &gt; 6 years old using BMI</td>
</tr>
<tr>
<td><strong>Centers for Disease Control and Prevention (CDC)</strong></td>
<td>Screen for BMI, Physical exam, BP, Focused family History, Assess medical/behavioral risks/attitudes</td>
</tr>
<tr>
<td><strong>American Medical Association (AMA)</strong></td>
<td>Screen all children for BMI and medical and behavioral risks</td>
</tr>
<tr>
<td><strong>American Academy of Pediatrics (AAP)</strong></td>
<td>Screen all children &gt; 2 years old for BMI and medical and behavioral risks</td>
</tr>
<tr>
<td><strong>American Heart Association (AHA)</strong></td>
<td>• Screen all children &gt; 2 years old for BMI and medical and behavioral risks</td>
</tr>
<tr>
<td></td>
<td>• Yearly assessment of weight in all children</td>
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<tr>
<td></td>
<td>• Assessment of dietary, screen time, physical activity at each well child visit</td>
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<tr>
<td></td>
<td>• Thorough physical for all overweight children with BMI, pulse, BP, testing for FLP, FBG, AST, ALT and if obese BUN</td>
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<tr>
<td></td>
<td>• Focused family history</td>
</tr>
<tr>
<td><strong>National Association of Pediatric Nurse Practitioners (NAPNAP)</strong></td>
<td>• Assess using BMI beginning at age 2 years old, annually document on problem list if BMI greater than 85%</td>
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<td></td>
<td>• Assess BP starting at age 3 years old annually</td>
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<td>• Perform thorough family history and physical</td>
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<td></td>
<td>• Perform and document Sexual Maturity Rating annually(Tanner Stages)</td>
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<td></td>
<td>• Perform testing FBG, total cholesterol or lipid panel if BMI &gt; 95%</td>
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<td></td>
<td>• Assess physical activity patterns</td>
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<td>• Use Motivational Interviewing techniques</td>
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<tr>
<td>Recommending Body</td>
<td>Prevention</td>
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<tr>
<td>USPSTF</td>
<td>Found insufficient evidence to recommend for or against routine screening for overweight children 6 years old and younger</td>
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<td>CDC (collaborated with AMA convening an Expert Committee to revise the 1997 childhood obesity recommendations)</td>
<td><strong>Stage 1- Prevention Plus</strong>&lt;br&gt;Use patient-centered counseling and motivational interviewing&lt;br&gt;Patient has family visits with health professional that has had training in pediatric weight management/behavioral counseling. Individualize to family needs and risk factors and consider monthly visits&lt;br&gt;- 5 fruits and vegetables per day&lt;br&gt;- 2 hours or less screen time per day&lt;br&gt;- 1 hour physical exercise per day&lt;br&gt;- 0 minimize or eliminate sugar sweetened beverages&lt;br&gt;- Limit meals outside the home,&lt;br&gt;- Eat a healthy breakfast daily&lt;br&gt;- Involve the whole family in lifestyle changes&lt;br&gt;- Prepare more meals at home as a family&lt;br&gt;- Goal is weight maintenance&lt;br&gt;Advance to stage 2 if no improvement in weight/BMI or velocity in 3-6 months and family is ready to make changes</td>
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<td><strong>Stage 2- Structured weight management</strong>&lt;br&gt;- Develop a plan of balanced macronutrient diet, small amounts of energy dense foods&lt;br&gt;- Structured daily meals and snacks&lt;br&gt;- Supervised active play of 60min/day&lt;br&gt;- 1 hour screen time each day&lt;br&gt;- Increased monitoring by provider, patient and family (logging screen time, physical activity, dietary intake, and restaurant intake)&lt;br&gt;Goal is weight maintenance and not to exceed weight loss of 1 lb. per month</td>
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<td>Recommending Body</td>
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<td><strong>AMA</strong>&lt;br&gt;(collaborated with CDC convening an Expert Committee to revise the 1997 childhood obesity recommendations)</td>
<td><strong>Stage 1- Prevention Plus (Same as CDC)</strong>&lt;br&gt;<strong>Stage 2- Structured weight management (Same as CDC)</strong></td>
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<td><strong>AAP</strong></td>
<td><strong>Stage 1- Prevention Plus Same as (CDC and AMA)</strong>&lt;br&gt;Council patient and families to  &lt;br&gt;- eat a daily breakfast  &lt;br&gt;- limit meals outside the home  &lt;br&gt;- eat family meals at least 5-6 times/wk  &lt;br&gt;- allow child to self-regulate his or her meals  &lt;br&gt; - avoid overly-restrictive behaviors  &lt;br&gt;If no improvement in BMI or weight after 3-6 months, advance to stage 2  &lt;br&gt;<strong>Stage 2- Structured weight management (Same as CDC and AMA)</strong>&lt;br&gt;Goal is weight maintenance and not to exceed weight loss of 1 lb. per month</td>
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<td><strong>AHA</strong></td>
<td><strong>Stage 1-Use Prevention Plus Protocol (Same as CDC and AMA)</strong>&lt;br&gt;- Breast feed to age 6 mos., add solid foods and continue to breast feed to 12 mos. and beyond  &lt;br&gt;- Eat breakfast each day  &lt;br&gt;- Read labels and watch portion sizes  &lt;br&gt;- Eat meals together at home  &lt;br&gt;- Exercise together, reinforcing positive lifestyle behaviors  &lt;br&gt;- Drink 3-4 8-oz. glasses of non-fat milk daily  &lt;br&gt;- Avoid &gt; 12 oz. 100% fruit juice each day  &lt;br&gt;- Limit or avoid sugar sweetened beverages  &lt;br&gt;- Engage in 1 hour of physical activity each day  &lt;br&gt;- Remove TV and other screens from children's rooms.</td>
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<td><strong>NAPNAP</strong></td>
<td><strong>Educate parents and patients about child's growth pattern and physical development, clearly identifying status if at risk of, or overweight</strong>&lt;br&gt;- screen for depression  &lt;br&gt;- Monitor nutritional intake at least yearly  &lt;br&gt;- Identify barriers to healthy eating  &lt;br&gt;- Educate patient and families regarding recommended nutritional intake and limit portion sizes</td>
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<tr>
<td>Recommending Body</td>
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| **USPSTF**        | - Comprehensive intensive behavioral interventions to promote improvement in weight status  
|                    | - Use of Pharmacologic agents Sibutramine and Orlistat in children 12 years old or older |
| **CDC**           | Stage 2- Structured weight management plan  
|                    | - Develop a plan of balanced macronutrient diet, small amounts of energy dense foods  
|                    | - Structured daily meals and snacks  
|                    | - Supervised active play of 60min/day  
|                    | - 1 hour screen time each day  
|                    | - Increased monitoring by provider, patient and family (logging screen time, physical activity, dietary intake, and restaurant intake)  
|                    | Goal is weight maintenance and not to exceed weight loss of 1 lb. per month  
|                    | Stage 3- Comprehensive multidisciplinary intervention (using a multidisciplinary team with experience in childhood obesity)  
|                    | - Frequency is often weekly for 8-12 weeks with follow-up  
|                    | Stage 4- Tertiary care intervention  
|                    | - (Medications-sibutramine, orlistat, very-low-calorie diets, weight control surgery-gastric bypass or banding)  
|                    | Recommend for select patients only when provided by experienced programs with established clinical or research protocols. Gastric banding is in clinical trials and not currently FDA approved. |
| **AMA**           | **Stage 2**- Structured weight management plan (Same as CDC)  
| **AAP**           | **Stage 3**- Comprehensive multidisciplinary intervention (Same as CDC)  
|                    | **Stage 4**- Tertiary care intervention (Same as CDC)  
| **AMA**           | Stage 2- Can be done by an obesity educated primary care provider and/or in conjunction with a multidisciplinary team  
<p>| <strong>AAP</strong>           | Stage 2- Structured weight management |</p>
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<th>Recommending Body</th>
<th>Treatment</th>
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| AAP               | (AAP Treatment cont.)  
|                   | **Stage 3**- Comprehensive multidisciplinary intervention  
|                   | **Stage 4**- Tertiary Care  
|                   | - This stage only for children > 11 years of age with BMI > 95%. Who have significant comorbidities and who have not been successful in stages 1-3 or children with BMI > 99%  
|                   | This stage requires a referral to a pediatric tertiary weight management center with access to a multidisciplinary team with expertise in childhood obesity, a center operating under a designed protocol including diet and activity counseling with such additions as meal replacement, very low-calorie diet, medication and surgery |
| AHA               | **Stage 3**- Structured weight management  
|                   | Comprehensive disciplinary protocol  
|                   | **Stage 4**- Pediatric tertiary weight management  
|                   | Include all primary caregivers and families involved in the child’s care process |
| NAPNAP            | - Refer patient and family to community nutritional and physical activity resources including a registered dietician |
Gaps and Needs in Research

Due to lack of specific, validated, preventive therapeutic interventions, ineffective methods to implement guidelines persist. The AAP acknowledges that too few studies on prevention have been performed. It is clear more research is needed to establish preventive therapeutic interventions that are evidence based and reliable. ("AAP Policy," 2003, p. 425)

Secondly, there are no validated measures to evaluate patient and family readiness to change. In addition studies should be generated to examine harm from interventions in patients and families not ready for change or intervention. This area is highly important, as no success can be appreciated in implementing obesity prevention measures until the patient and family are ready.

Thirdly there is a need for chronic disease practice applications that apply to obesity. At this time many are trying to treat obesity in an acute care practice setting with discouraging results. Obesity is a chronic disease and needs a chronic disease management approach. This opportunity for policy changes will enhance assessment and prevention measures by placing children under the appropriate care from the beginning of their diagnosis.

Patient, Provider and Systemic Barriers to Prevention and Treatment Recommendations

Although recommendations exist, applying them in the clinical setting is difficult. Three main types of barriers are significant to primary care practice; psychosocial, time, and lack of resources.

The most often observed psychosocial barriers in patients and their families include denial, ambivalence and lack of knowledge. Yet, engaging the whole family can be challenging.
Studies show that effective change in nutrition and activity depends on a whole family effort. The “best long-term intervention study to date suggests the superior efficacy of a family–based approach to lifestyle change particularly for younger children” (Gottesman, 2003, p. 214). Early eating patterns are established with parents being the most influential instructors in setting up these patterns. Grimes-Robison (2008), notes that “parents exert a powerful influence on children’s exposure to food, food selection and other health promoting behaviors”. Statistics show that 30–40% of parents are overweight or obese, and consequently are not modeling healthy eating and activity to their children. It is not difficult to recognize their denial when the vast majority of parents do not recognize when their children are overweight or obese. For example, De LaO et al. (2009) states that 86% of parents of obese and overweight children misclassified them as overweight or normal weight, respectively” (p. 218). In fact, studies found great ambivalence when “mothers of overweight children often do not define their children as overweight and may find it difficult to deny additional food to their children” (AHA, 2008, p. 6).

Most importantly, a majority of families and children of all ages have a lack of understanding of appropriate food and nutrition needs which negatively influences their food choices. Unless parents have become familiar with counting calories and monitoring nutrients of food intake, they usually are unaware of how many calories or nutrients are present in their child’s daily intake. Power et al found that most early adolescents demonstrated a limited understanding of what constitutes “healthy eating” (Power, Bindler, Goetz, & Daratha, 2009, p17). Many parents complain that because of time constraints, family structure (single parents), and work schedules or lack of resources, they are not actively involved in the weight management process for their child. As these parents choose to stay oblivious to their child’s
nutritional status, the chronic disease process of obesity begins to create a burden for the APN, school and others involved with the care and management of the overweight or obese child.

Providers are finding many obstacles to reversing the epidemic of obesity. Practice logistics are complicated with efforts to come up with workable solutions which are time and resource consuming. The most prominent provider barriers include time, motivation, knowledge deficits, and resource constraints.

It is becoming apparent that contemporary healthcare delivery is “not well suited to meet the long term needs of overweight children and families” (Daniels, Arnett, & Eckel, 2005, p.2001). Direct face to face time presents a large conflict when it comes to counseling a patient on diet, exercise and sedentary time management. The average office visit for a non-complicated patient is from 7-15 min in duration. The amount of time to educate a patient on the meaning of weight management and what it takes to accomplish the goals is many times more than the allotted time frame. Most successful weight loss programs engage the child or adolescent for a period of 6 months with one or more visits per week. The logical conclusion from these facts is that one or two extra visits outside a well-child check are an unrealistic expectation for affecting weight loss. Time to accomplish education on appropriate intake and adequate energy output is a formidable barrier in our present primary healthcare system.

Child and adolescent obesity management and treatment require expertise that the average APN or primary care provider does not have. The average APN has had only one undergraduate class in nutrition by the time they are in daily pediatric practice. The short exposure to nutritional training with its distance to actual practice causes the APNs to feel unsure of what should actually be addressed and the manner of counseling on a topic in which they are not experts. Homer states, that “health professionals have also been unsure what do, because no
unequivocal direct scientific evidence links clinician counseling to the prevention of obesity” (Homer, 2009, p. S253). It is not surprising then when “many providers indicate they are not up to the challenge [of childhood obesity management] due to the lack of information, training or guidelines” (Daniels, Jacobson, McCrindle, Eckel, & McHugh Sanner, 2009, p2121). Lack of motivation in healthcare providers is clear when tools to accomplish the task are not available.

In addition to time, information and training barriers, lack of resources including specialized services for obese patients is another major hurdle for health care providers to face. Most offices do not have multidisciplinary teams available to them for more intensive weight and obesity treatments. There are few, if any, registries for these specialty programs and because of the lack of referral resources this inconvenience is passed on to patients and their families to travel or obtain inpatient obesity related assistance.

Another deficiency in resources is lack of reimbursement. This is at the top of most health care providers list of barriers interfering with their ability to prevent and treat overweight and obesity problems. The AAP policy statement notes that even with serious comorbidities present, insurance reimbursement is limited ("AAP Policy," 2003, p. 424). There appears to be a chasm between efforts of health care providers to prevent and treat childhood obesity and reimbursement for these services by health insurances. It has been noted that many families receiving state insurance, which covers obesity issues, are unaware that they are eligible for this specialized care. (Daniels et al., 2009) In addition, these families often do not have the time, resources and discipline to make their way through the complicated paperwork to receive the reimbursement for services. Provider offices as well do not have the information needed, billing codes, and staff support to process reimbursement information. The AHA promotes that these
efforts of insurance reform “need to be coordinated through public policy interventions that target reimbursement practices at the public and private level” (Daniels et al., 2009, p. 2121).

These barriers of time, motivation, knowledge deficits and lack of resources are more than discouraging to healthcare providers. Now is the time to search for solutions, before problems worsen.

**Significance and Implications for Nurse Practitioner Practice**

Applying the recommendations with solutions to the barriers will aid in increasing the promotion of preventive care in the primary care setting. Changing the atmosphere of futility experienced by healthcare providers is possible and can significantly improve outcomes for children with overweight and obesity. To begin this change requires education of the APN, screening and education of all ages of pediatric patients and their families, utilizing presently available tools to apply the national recommendations to practice, and collaborating with other healthcare professionals.

Further education in prevention, management, and treatment and of the problem of child and adolescent overweight and obesity is becoming readily available. APN’s are urged to educate themselves even in short courses to improve their knowledge and confidence in addressing obesity issues. Gance-Cleveland and associates (2009) note that with a brief, 4 hour presentation on management of child and adolescent obesity APNs felt more confident in assessment and treatment of this population (p.223).

In addition, APN’s should educate themselves in regard to billing and reimbursements available for treating the overweight and obese patient. Web-based programs and websites may offer information “to assist providers in overcoming frequently encountered barriers (to reimbursement) such as billing codes frequently accepted by third-party payers” suggests Small
and associates (2009). This can “decrease the sense of futility when working with overweight children and their families” (Small, Anderson, Sidora-Arcleo, & Gance-Cleveland, 2009, p. 240).

Secondly, the most important task for the APN is to screen and educate all patients for overweight and obesity. Primary prevention involves starting early, at the very first visit, to introduce healthy eating and exercise habits. Begin screening using BMI and height/weight charts with each new patient assessment for obesity risk factors by conducting a thorough family and personal history, obtaining vital signs at each visit, weight and height with documentation of BMI on appropriate growth charts. After review of the gathered assessment information, assess the family for readiness to change using behavioral approaches to interventions such as motivational interviewing. And finally, sharing relevant, evidence-based counseling and guidance at each visit can make a difference in child and adolescent obesity outcomes.

Engage the family in learning how to model healthy diet and lifestyle. Include council on exercise and activity appropriate for the child’s age at each visit. Include all patients, whether the patient is overweight or not, in appropriate eating and exercise education. Awareness is the first step to making a change.

Thirdly, APNs should use available assessment and treatment tools to simplify and reduce costs of assessing and treating child and adolescent obesity. There are several tools readily available for download and use.
### Website Access Tools for Applying the Recommendations

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<th>Childhood Obesity Action</th>
<th>Network</th>
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<td>California Medical</td>
<td><a href="http://www.dhcs.ca.gov/services/chdp/Documents/CMAF.HEALTHNET.FLIP.READONLY.pdf">http://www.dhcs.ca.gov/services/chdp/Documents/CMAF.HEALTHNET.FLIP.READONLY.pdf</a></td>
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<tr>
<td>Association Foundation</td>
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<tr>
<td>Center for Disease</td>
<td><a href="http://www.cdc.gov/HealthyYouth/obesity/">http://www.cdc.gov/HealthyYouth/obesity/</a></td>
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<td>Control</td>
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<td>Tennessee</td>
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<td>Children’s Healthcare</td>
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<td>Quality</td>
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And fourthly, in addition to using assessment and treatment tools APNs are encouraged to collaborate with other health care offices and facilities. Pooling resources results in reduced cost to practice groups as well as to the patient, increasing the convenience to all involved. Primary care practices may wish to provide classes and group visits for further education and weight management for specific patients or patient populations as these “group visits can be more cost effective and have therapeutic benefit” (American Academy of Pediatrics Expert Committee, 2009, p. 2). These classes can be used in conjunction with other healthcare providers and additional community resources.
Furthermore, collaborating with other healthcare providers and patients using social networking with computers, twitter, phone applications and other electronic devices have limitless potential to meet patients’ needs for communication and instruction. Using these tools can specifically enable young people to gain self-motivation and self-sufficiency in their own weight management.

The APN is an ideal leader for curtailing increases in the epidemic of obesity. The APN’s efforts can extend beyond pediatric practices by demonstrating ways to improve intervention efforts “within healthcare, school, and community; and raising awareness of childhood obesity issues through advocacy efforts at the local, state and national levels” (Gottesman, 2003, p. 214).

**Summary**

Many sources agree that there is a problem of children in the United States who are overweight and obese. With these problems of overweight and obesity come obesity related illnesses, creating a crisis in the present healthcare system. New solutions are needed as we observe the problem of overweight and obesity worsening.

After examining these current valid recommendations for assessment and management of childhood and adolescent obesity, strategies and tools were found that can enable the APN to apply these recommendations. As current recommendations are implemented, the overweight and obesity epidemic can begin to be reversed. Finding solutions to the barriers of implementation by increasing the education of the APN and primary care providers in nutrition and obesity, and by staying current with recent research will improve the practitioner’s success in implementing assessment and prevention recommendations and treating the child or adolescent who is overweight or obese.
More research is needed in the areas of preventive therapeutic interventions as few studies exist at this time. Additionally, valid measures to evaluate patient readiness to change are needed. Using motivational interviewing aids the APN in effectiveness to change behaviors, but little research is available for evidence based practice guidelines. The prevention of overweight and obesity requires a change of practice in the healthcare system in regard to practice policy as well as changes in insurance reimbursements.

Despite these difficulties of changing our present method of treating the child with overweight or obesity, current research points out that prevention through screening, early diet and activity management can prevent much comorbidity. Positive guidance from the APN, in combination with patient lifestyle changes can reverse the process of overweight and obesity to provide this generation a decrease in the chronic disease of overweight and obesity. With this approach, children and adolescents with overweight and obesity can reclaim their health and quality of life.
References


