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Implementing family-based childhood obesity interventions

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Current statistics estimate that 17% (12.5 million) of children in the United States are obese.[1] Childhood obesity is defined as a body mass index (BMI) at or above the 95th percentile for a child's age and gender, as plotted on CDC growth charts.[1] Childhood obesity has been recognized by Healthy People 2020 as a leading health indicator; objectives target a reduction in the percent of obese children and adolescents ages 2 to 19 to 14.6%.[2] With the majority of childhood obesity cases being seen and treated in the primary care setting, it is becoming increasingly important that primary care providers, including pediatric nurse practitioners (PNPs), be aware of how to manage this condition and its potential sequelae.[3]

Obesity is largely recognized as a multifactorial condition resulting from multiple influences, but recent literature has begun to highlight the importance of the family and home environment as a key contributor to childhood obesity.[4-7] Consequently, the family unit has been investigated as a potential agent of change in childhood obesity; multiple studies have demonstrated efficacy in using the family as a treatment tool in managing a child's weight.[8-10] Family-centered care (FCC) is a concept that focuses on shared healthcare decision making between the family and the healthcare provider and is considered the standard of care in pediatrics.[11] The American Academy of Pediatrics (AAP) recognizes that FCC results in better health outcomes for pediatric patients[12]; through FCC, the PNP is able to recognize and build on the family's strengths to develop successful treatment plans. When implementing a family-based childhood obesity intervention, the PNP must take a family-centered approach that focuses on partnership and collaboration between the family, child, and practitioner.

Evidence suggests that a multidisciplinary approach works best to treat childhood obesity.[13] The most successful treatment regimens include a team approach that utilizes specialist services, such as those provided by nutritionists, exercise specialists/physiologists, and behavioral therapists.[13,14] However, there are a limited number of obesity specialists available for referral, especially in rural and medically underserved areas.[15] An estimated 66% of nurse practitioners (NPs) practice in outpatient primary care facilities, and 20% of these are located in rural or frontier settings where access to specialty medical services is limited.[16] The likelihood that the PNP will be the sole manager of a child's obesity intervention necessitates that the PNP be familiar with obesity treatment guidelines and comfortable with the involvement of the family in obesity intervention. The PNP must work with the family to create a successful weight-loss environment for the child; interventions initiated by the PNP should include those that would otherwise come from a group of specialists.

Key words: childhood obesity, family-based interventions, pediatric nurse practitioner

Abstract: Family-based interventions have been effective in managing childhood obesity, and pediatric nurse practitioners (PNPs) are positioned to provide obesity interventions in both patient and family primary care settings. The purpose of this article is to guide the PNP in implementing family-based childhood obesity interventions, including identification, diagnostic evaluation, and management.

The family's role in childhood obesity

The American Medical Association (AMA) recognizes that the overwhelming majority of children being treated for obesity are seen in the outpatient setting.[17] A recent retrospective study found that up to 23% of pediatric patients seen in primary care were obese, and 8% of the total patients were severely obese (BMI ≥ 99th percentile).[18] The diagnosis, treatment, and management of childhood obesity has been described by the AAP, the AMA, and the National Association of Pediatric Nurse Practitioners (NAPNAP). Guidelines assist the PNP in determining diagnostic testing and frequency of visits in a weight management program (see *Recommendations for diagnosing and managing childhood obesity*).

Obese children are at higher risk than nonobese children to develop cardiovascular diseases (hypertension, hypercholesterolemia, and type 2 diabetes mellitus) and suffer complications in other body systems (metabolic, pulmonary, gastrointestinal, skeletal, and neurological).[20-22] Overweight and obese children are more likely than average-weight children to develop coronary artery disease later in life, and one study has demonstrated that childhood obesity is a strong predictor for premature death from endogenous causes.[24] Migraine headaches and asthma are more prevalent in obese children.[20,25] Childhood obesity is also related to obstructive sleep apnea, which can lead to excessive sleepiness and a disruption of daily activities.[20]

In addition to the threats obesity poses to a child's physical health, psychological health may also be impacted. Obese children are more likely to report low self-esteem and body dissatisfaction, have an increased risk of depression, and are more likely to be bullied because of their weight. Obese individuals also appear to be at a greater risk for suicide.[28]

A child's family environment influences health status. Although there is a general consensus among researchers and health professionals that the family environment is a major factor in a child's adiposity, literature recognizes that the family is an influential change agent in a child's health.[4,7,27,28] Parents are most often responsible for creating the food environment for a child and are the primary influence on a child's food preferences and mealtime behaviors. Furthermore, family participation in physical activity impacts the overall activity level of a child.[28]

Family-based interventions

Recent literature suggests that successful childhood weight management programs should target not only the child but the entire family unit.[10,14,17,] The social nature of the family creates an environment that allows for support, which is crucial in the treatment of obesity.[28] A home life that promotes healthy family habits is essential to treating the obese child. Behavioral interventions such as dietary modifications are more likely to become long-term lifestyle changes when presented to the entire family rather than directed pointedly at changing one individual's attitudes and habits.[29] As primary care providers, PNPs must be aware of how to utilize assessment, diagnostic, and education skills to implement an effective family-based obesity intervention.

Recommendations for diagnosing and managing childhood obesity[14,19]

Childhood obesity is defined as a BMI ≥ 95th percentile.
A physical exam, height, weight, and BMI measurement should be done at every wellness visit or at every visit in an active weight management program.
Listed below are the recommended diagnostic tests for obese children.

BMI percentile	Fasting glucose	Lipid panel	Alanine aminotransferase (ALT)/ aspartate aminotransferase (AST)
85th-94th	If two other risk factors present*: biannually beginning at puberty or 10 years old	Obtain regardless of risk factors; repeat testing depends on results**	If other risk factors: biannually beginning at puberty or 10 years old
≥ 95th	Biannually beginning at puberty or 10 years old	Obtain regardless of risk factors; repeat testing depends on results**	Biannually beginning at puberty or 10 years old

Frequency of provider visits in an obesity treatment program is dependent on the overweight percentage. Ideally, visits should be weekly for 8 to12 weeks and then monthly to maintain healthy behaviors.

*Risk factors include BMI ≥ 85th percentile, family history of diabetes, Black, Hispanic, or American Indian background, other related conditions (polycystic ovary syndrome, acanthosis nigricans, or cardiovascular risk factors).[14]

**If cholesterol and triglyceride levels are within normal limits, repeat testing may be done every 3 to 5 years. If abnormal results, frequency of retesting depends on intervention.[19]

Epstein and colleagues demonstrated the efficacy of a family-based childhood obesity treatment program.[8] In their 10-year randomized, controlled trial, diet and nutrition education was delivered to three groups: in group 1, parents and children were both targeted for weight loss; in group 2, children were targeted for weight-loss; and families in group 3 were given diet and exercise education but lacked a specific target for weight loss. Children who participated in group 1 (targeting both parent and child) had significantly greater decreases in BMI when compared to group 3 at both 5 ($P < 0.001$) and 10 ($P = 0.009$) years poststudy; the children in the parent-child group also had significant BMI decrease in comparison with the child-only group at 5 years ($P = 0.025$). Furthermore, 43% of the children in the parent-child group maintained an overweight percentage decrease by at least 20% from their baseline at the study's 10-year follow-up. Twenty-two percent of children in the child-only group and 29% of children in the nonspecific group maintained similar weight decrease. Kalarchian and colleagues conducted a study, which included a 6-month parent-child group meeting format that focused on family diet and exercise habits.[30] Children who participated in the parent-child intervention group had a 7.58% decrease in overweight percentage, compared to a 0.66% decrease in the control group ($P = 0.0027$). Changes in parental BMI are also a strong predictor for changes in child BMI. Boutelle, Cafri, and Crow demonstrated that when parents were educated on dietary modification, physical education, behavioral change, and parenting skills, children whose parents decreased their BMI significantly predicted a reduction in child BMI by the study's end.[31]

McGovern and colleagues completed a systematic review and meta-analysis investigating the efficacy of pediatric obesity intervention programs.[32] Combination treatment plans that emphasize healthy diet and exercise behaviors for both the child and family resulted in greater weight loss for obese children than did those interventions aimed solely at children participants. The children participating in combination plans that targeted the child alone had an average standard mean difference in BMI of −0.17 (−0.40, −0.05, 95% confidence interval), while obese children whose families were targeted in the weight-loss intervention decreased their BMIs a standard mean deviation of −0.64 (−0.88, −0.39, 95% confidence interval).

A systematic literature review by Gerards and colleagues examined the effects of general parenting interventions in the prevention and treatment of childhood obesity.[10] General parenting, or parenting style, can be described in terms of how demanding or responsive a parent is to a child's needs and wants. First described by Baumrind, demanding behaviors refer to supervision, discipline practices, and confrontation when a child disobeys[33]; responsive behaviors are those which are intended to foster individuality, self-regulation, and self-assertion and require parents to be attuned to and supportive of their child's needs. Parenting styles are labeled authoritative (both demanding and responsive), authoritarian (highly demanding but not responsive), permissive (highly responsive but not demanding), or uninvolved (low in both demanding-ness and responsiveness). Intervening to promote an authoritative parenting style has a significant influence on children's weight patterns and support interventions that address parenting styles in order to treat childhood obesity. General parenting interventions (setting good examples, establishing clear ground rules, spending quality time with children, backing up rules with consequences) had an effect on weight loss that was small to moderate in child subjects (effect sizes ranging from 0.2 to 0.6; $P < 0.05$).

Literature suggests that childhood weight management programs should target the entire family unit.

Role of the PNP

The role of the PNP is to meet the ever-changing and growing health needs of the pediatric patient[34]; when treating an obese child in the primary care setting, the PNP serves as diagnostician, educator, and care coordinator.[35] In accordance with the AAP's recommendations on FCC, the PNP must form a collaborative relationship with the family and educate them as to why their involvement is essential to the child's success in a weight management program.[12] Parents are able to use their authority and role modeling behaviors to provide an environment that is conducive to weight loss; they are able to be agents of change in modifying the child's poor eating habits and eating-related attitudes.[10] Furthermore, the family is able to provide social support, a critical element in promoting and sustaining healthy behavior.[36]

Assessment and diagnosis

Prior to initiating a weight-loss program, the PNP must rule out organic causes of obesity in the child. Hormonal conditions such as hypothyroidism, genetic syndromes, gene associations, and illnesses such as polycystic ovarian syndrome and Cushing disease are potential causes of

childhood obesity (see *Recommended review of systems to detect obesity-related complications*).[4] Medications such as certain antidepressants and corticosteroids have also been linked to weight gain in children and must be considered prior to the start of a weight management program.

After establishing a diagnosis of primary obesity, the PNP should determine if there is a presence of or risk for developing health conditions that result from obesity.[14] A thorough history and physical exam is conducted to rule out cardiovascular disease, endocrine disorders, respiratory problems, gastrointestinal problems, sleep issues, nervous system complications, orthopedic problems, psychiatric issues, and skin conditions related to obesity.[14] A complete review of systems is necessary when initiating an obesity treatment plan; the review of systems must be comprehensive and aimed at detecting any obesity-related complications. Should the PNP detect any comorbid health problem, the child must be treated accordingly and referred to a specialist if necessary.

Upon initiating a family-based obesity intervention, the PNP must thoroughly assess the family's strengths, weaknesses, motivation, and readiness for change, and potential barriers to success. The PNP should examine the family structure, strength of communication skills, the child's desire to lose weight, and the family's willingness to participate. Barriers to implementing a family-based obesity intervention include unstable family structure, poor communication between parents and children, and parents' refusal to acknowledge their child's obesity.[28] Prior treatment experiences must be discussed, and the PNP should inquire

Recommended review of systems to detect obesity-related complications[3,14,20,21]

System	Possible complication	Assess for	Additional tests/referrals
Sleep	• Obstructive sleep apnea obesity • Hypoventilation syndrome	Snoring, pauses in breathing, restless sleep, daytime somnolence, tonsillar hypertrophy, elevated carbon dioxide levels	Polysomnography
Respiratory	Asthma	Shortness of breath, exercise intolerance	Pulmonary function testing
Gastrointestinal	• Nonalcoholic fatty liver disease • Gallstones, cholecystitis • Gastroesophageal reflux disease	Abdominal pain/tenderness of varying degree and intensity, hepatomegaly, abnormal liver function tests	Ultrasound, AST, ALT
Endocrine	• Type 2 diabetes mellitus • Polycystic ovary syndrome • Hypothyroidism • Cushing disease	Polyuria, polydipsia, abnormal lab levels, overall short stature and physical features of Cushing disease	Fasting glucose, reproductive hormone tests, thyroid function testing, referral to endocrinologist for further testing if Cushing disease is suspected
Nervous	Pseudotumor cerebri	Severe headaches, photophobia, double vision, blurred optic disk margins	Requires urgent referral to neurologist
Cardiovascular	• Hypertension • Lipid level abnormalities	Elevated BP, abnormal cholesterol and triglyceride levels	Fasting lipid profile; may require referral to cardiologist
Orthopedic	• Blount disease • Fracture • Slipped capital femoral epiphysis	Bowing of lower extremity, pain with walking	Radiographs; will need orthopedic specialist intervention
Skin	• Acanthosis nigricans • Infection	Darkened skin around neck, chronic skin irritation	May need dermatology referral for chronic infection
Psychiatric	• Depression • Anxiety • Body dissatisfaction • Eating disorders	Flat affect, anxiety, excess eating, fatigue, extreme diet habits, difficulty sleeping	May require referral to psychiatric specialist

about the family's food environment, eating patterns, and level of physical activity. The family should also be interviewed about their knowledge and perceptions of obesity as a health issue.[13]

Goal setting

Next, the child, family members, and PNP set treatment goals as a team. Goals must be realistic and focused on the overall health of the child and made in accordance with the diet and nutrition education provided by the PNP. It is important to emphasize that goals may be small and taken as a step-by-step process to achieve an overall weight target.[3] Parents must encourage and support their child in reaching these goals; parental support and modeling are important factors in successful child weight loss.[37]

Diet and exercise education

Another role of the PNP is to provide education to the family regarding current dietary guidelines and to discuss the influence parents and other family members exert on a child's food choices. Healthy People 2020 objectives aimed at reducing childhood obesity focus on increasing fruit and vegetable consumption and decreasing calorie intake from solid fats and added sugars.[38] Families may be directed to the MyPlate website (www.choosemyplate.gov), which provides current, interactive information to help determine dietary recommendations based on an individual's gender and age.[38] The United States Department of Agriculture (USDA) has issued statements regarding daily recommended consumption of the basic food groups (see *Current dietary recommendations from the USDA*). In addition, offering examples of healthy food alternatives and preparation is the PNP's role.[14] Emphasizing the importance of a healthy breakfast every morning and the implementation and consistency of eating together as a family are two successful strategies the PNP can discuss with the family unit.[14]

Physical activity for the entire family must also be addressed and encouraged. Healthy People 2020 objectives target children and adolescents to reach the federally recommended amount of daily physical activity and meet recommended limits for screen time.[2] Parents should be aware that their child should be physically active for a minimum of 60 total minutes each day (may be split up into shorter segments throughout the day).[14] Enjoyable activities that include all members of the family, such as family walks or bike rides, may be advantageous in increasing the child's level of physical activity and should be encouraged.[3] Families should also be instructed to limit TV and other screen time to no more than 2 hours each day in an effort to decrease the amount of time the child spends in sedentary behaviors; the AAP recommends no screen time for children under the age of 2.[14]

Current dietary recommendations from the USDA*,[38]

Food group	Key consumer message
Fruits and vegetables	Make half the plate fruits and vegetables**
Grains	Make at least half of the grains whole grains
Protein foods	Select a variety of protein foods to improve nutrient intake***
Dairy	Switch to fat-free or low-fat (1%) milk
Empty calories (from solid fats and/or added sugar)	Limit based on age/gender. AAP recommends no more than one serving of sugar sweetened beverages/day

*See www.myplate.gov for daily serving recommendations based on age and gender.[38]

**AAP guidelines recommend ≥ 5 servings of fruits and vegetables each day.[14]

***USDA considers protein foods to be meat, poultry, seafood, beans and peas, eggs, processed soy products, nuts, and seeds.

Motivation

In addition to setting goals and providing education, major responsibilities of the PNP in family-based childhood obesity intervention are to motivate the child and family in weight-loss endeavors and to provide support for the family's behavior modification.[3] The PNP must encourage parents to use their authority as a tool by creating a food environment that facilitates healthy behaviors and weight loss.[14] Parents should be prepared for potential barriers and setbacks throughout their child's weight-loss journey, but they must also be aware of the large influence they have on their child's dietary and activity habits.[39] It is essential that the PNP be available as a support system for both the child and the family throughout the entire obesity intervention process.

Follow-up and referral

Follow-up visits are crucial in managing childhood obesity, and the frequency of such visits should be based on the severity of the child's obesity.[14] Monthly office visits are appropriate for children whose BMI falls between the 85th and 94th percentile on the CDC growth chart for age and gender. For the child whose BMI is in the 95th percentile or above, the PNP should see the patient and family weekly for a minimum of 8 to 12 weeks.[14] Monthly visits are then adequate to reinforce and help the child and family maintain healthy habits. The frequency of visits should be altered as appropriate if the child has comorbid health conditions. The PNP is also responsible for initiating a referral to a specialist when the

child's weight can no longer be managed in the primary care setting. A multidisciplinary approach should be considered for a child whose BMI falls above the 99th percentile; tertiary care intervention (medication, very low-calorie diet, surgical intervention) may be considered for those with a BMI greater than the 99th percentile only after a comprehensive approach has been attempted.[14] A multidisciplinary program may also be initiated in children whose BMI is greater than the 85th percentile if the family wishes to participate or if past treatment strategies have failed.[14]

School-based intervention and the family's role

In addition to providing family-based childhood obesity interventions in the traditional clinic setting, the PNP can address childhood obesity in the school setting. School-based health clinics are becoming increasingly common, and while they are designed to provide services in conjunction with the child's primary care provider, the school clinic often becomes the primary place of healthcare for students.[40] This provides the PNP an additional outlet for addressing childhood obesity; evidence supports the involvement of school-based clinics in the management of childhood obesity.[40] School-based interventions are unique in that they present an opportunity to reach large numbers of children and influence them to make healthy lifestyle changes in their diet and physical activity.[41]

Parental involvement may be an essential component to the success of school-based obesity intervention. A systematic review by Van Lippevelde and colleagues recognizes the need for further studies comparing school-based childhood obesity interventions with and without parental involvement; however, the authors did note the positive effects of parental involvement on children's health behaviors.[42] The authors of this study concede that limited data exists in this area of study, but their review suggests that obesity intervention programs that involve a parent component may have more positive results than those lacking a parental component.

A community-based approach, combining both family and school interventions, would be beneficial to reducing childhood obesity. The role of the PNP partners with the community—both family and school—to assess, diagnose, and treat the obese child through the public health sector.[43]

Moving forward

This literature review highlighted the critical role of family in managing childhood obesity and provided guidance for the PNP in treating the condition. Current literature also stressed the efficacy of incorporating the family into childhood obesity intervention, and recommendations from NAPNAP, the AAP, and the AMA support the use of family-based intervention when treating childhood obesity. As primary care providers, the role of the PNP will be to assess, diagnose, and treat childhood obesity. The PNP must be aware of childhood obesity treatment guidelines and be able to incorporate the family into a child weight-loss program. The PNP will guide the child and family by providing appropriate weight-loss education and support necessary for successful family-based intervention. NP

REFERENCES

1. Centers for Disease Control and Prevention. Childhood overweight and obesity. 2011. http://www.cdc.gov/obesity/childhood/.
2. United States Department of Health and Human Services. Office of Disease Prevention and Health Promotion. Healthy People 2020. 2012. http://www.healthypeople.gov/2020.
3. Baker JL, Farpour-Lambert NJ, Nowicka P, Pietrobelli A, Weiss R. Childhood Obesity Task Force of the European Association for the Study of Obesity. Evaluation of the overweight/obese child—practical tips for the primary health care provider: recommendations from the Childhood Obesity Task Force of the European Association for the Study of Obesity. *Obes Facts*. 2010;3(2):131-137.
4. Crothers L, Kehle T, Bray M, Theodore L. Correlates and suspected causes of obesity in children. *Psychology in the School.* 2009;46(8):787-796.
5. Harrison K, Bost K, McBride B, et al. Toward a developmental conceptualization of contributors to overweight and obesity in childhood: the six-Cs model. *Child Development Perspectives.* 2011;5(1):50-58.
6. Skouteris H, McCabe M, Ricciardelli L, et al. Parent-child interactions and obesity prevention: a systematic review of the literature. *Early Child Development and Care.* 2012;182(2):153-174.
7. Silventoinen K, Rokholm B, Kaprio J, Sørensen TI. The genetic and environmental influences on childhood obesity: a systematic review of twin and adoption studies. *Int J Obes (Lond).* 2010;34(1):29-40.
8. Epstein LH, Valoski A, Wing RR, McCurley J. Ten-year outcomes of behavioral family-based treatment for childhood obesity. *Health Psychol.* 1994;13(5):373-383.
9. Latzer Y, Edmunds L, Fenig S, et al. Managing childhood overweight: behavior, family, pharmacology, and bariatric surgery interventions. *Obesity (Silver Spring).* 2009;17(3):411-423.
10. Gerards SM, Sleddens EF, Dagnelie PC, De Vries NK, Kremers SP. Interventions addressing general parenting to prevent or treat childhood obesity. *Int J Pediatr Obes.* 2011;6(2-2):e28-e45.
11. Kuo DZ, Houtrow AJ, Arango P, Kuhlthau KA, Simmons JM, Neff JM. Family-centered care: current applications and future directions in pediatric health care. *Matern Child Health J.* 2012;16(2):297-305.
12. Committee on Hospital Care. American Academy of Pediatrics. Family-centered care and the pediatrician's role. *Pediatrics.* 2003;112(3 Pt 1):691-697.
13. Ross MM, Kolbash S, Cohen GM, Skelton JA. Multidisciplinary treatment of pediatric obesity: nutrition evaluation and management. *Nutr Clin Pract.* 2010;25(4):327-334.
14. Barlow SE; Expert Committee. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics.* 2007;120(suppl 4):S164-S192.
15. Rural Assistance Center. Obesity and weight control. http://www.raconline.org/topics/obesity/.
16. Cronenwett L, Dzau V. Who will provide primary care and how will they be trained? 2010. http://www.vcnp.net/documents/MacyPCReport2010.pdf#page=169.
17. Rao G. Childhood obesity: highlights of AMA expert committee recommendations. *Am Fam Physician.* 2008;78(1):56-63.
18. Benson L, Baer HJ, Kaelber DC. Trends in the diagnosis of overweight and obesity in children and adolescents: 1999-2007. *Pediatrics.* 2009;123(1):e153-e158.
19. Daniels SR, Greer FR; Committee on Nutrition. Lipid screening and cardiovascular health in childhood. *Pediatrics.* 2008;122(1):198-208.
20. Daniels SR. The consequences of childhood overweight and obesity. *Future Child.* 2006;16(1):47-67.
21. Daniels S. Complications of obesity in children and adolescents. *Int J Obes (Lond).* 2009;33(suppl 1):S60-S65.
22. Lee Y. Consequences of childhood obesity. *Annals of the Academy of Medicine of Singapore.* 2009;39(1):75-81.

23. Franks P, Hanson R, Knowler W, et al. Childhood obesity, other cardiovascular risk factors, and premature death. New England Journal of Medicine. 2010; 362(6): 485-493.
24. Rosenbloom A, Silverstein J, Amemiya S, et al. Type 2 diabetes in children and adolescents. *Pediatric Diabetes.* 2009;10(s12):17-32.
25. Nordqvist C. Migraine linked to overweight in children. 2006. http://www.medicalnewstoday.com/articles/45736.php.
26. Sgrenci, A. & Faith, M. *Psychosocial Aspects of Childhood Obesity: Prevalence and Etiology.* New York: Springer New York, 2011.
27. Rosenkranz RR, Dzewaltowski DA. Model of the home food environment pertaining to childhood obesity. *Nutr Rev.* 2008;66(3):123-140.
28. Gruber KJ, Haldeman LA. Using the family to combat childhood and adult obesity. *Prev Chronic Dis.* 2009;6(3):A106.
29. Kitzman K, Beech B. Family-based interventions for pediatric obesity: methodological and conceptual challenges from family psychology. *Couple and Family Psychology: Research and Practice.* 2011;1(suppl):45-62.
30. Kalarchian MA, Levine MD, Arslanian SA, et al. Family-based treatment of severe pediatric obesity: randomized, controlled trial. *Pediatrics.* 2009;124(4):1060-1068.
31. Boutelle KN, Cafri G, Crow SJ. Parent predictors of child weight change in family based behavioral obesity treatment. *Obesity.* 2012; 20(7): 1539-1543.
32. McGovern L., Johnson JN., Paulo R., et al. Clinical review: Treatment of pediatric obesity: A systematic review and meta-analysis of randomized trials. *Journical of Clinical Endocrinology and Metabolism.* 2008;93(12): 4600-4605.
33. Baumrind D. Current patterns of parental authority. *Developmental Psychology.* 1971;4(1):101-103.
34. Freed G, Dunham K, Lamarand K. et al. Pediatric nurse practitioners: Roles and scope of practice. *Pediatrics.* 2010;126(5):846-850.
35. McWhorter JW, Wallmann HW, Alpert PT. The obese child: motivation as a tool for exercise. *J Pediatr Health Care.* 2003;17(1):11-17.
36. Shields CA, Spink KS, Chad K, Muhajarine N, Humbert L, Odnokon P. Youth and adolescent physical activity lapsers: examining self-efficacy as a mediator of the relationship between family social influence and physical activity. *J Health Psychol.* 2008;13(1):121-130.
37. Heinberg L., Kutchman E., Berger N., et al. Parent involvement is associated with early success in obesity treatment. *Clinical Pediatrics.* 2010; 49(5): 457-465.
38. United States Department of Agriculture. ChooseMyPlate.gov. http://www.choosemyplate.gov/.
39. Skouteris H, McCabe M., Swinburn B, Newgreen V, Sacher P, Chadwick P. Parental influence and obesity prevention in pre-schoolers: A systematic review of interventions. *Obesity Reviews.* 2011; 12(5): 315-328.
40. Oetzel KB, Scott AA, McGrath J. School-based health centers and obesity prevention: changing practice through quality improvement. *Pediatrics.* 2009;123(suppl 5):s267-s271.
41. Brown, T. & Summerbell, C. Systematic review of school-based interventions that focus on changing dietary intake and physical activity levels to prevent childhood obesity: an update to the obesity guidance produced by the National Institute for Health and Clinical Excellence. *Obesity Reviews.* 2009;10:110-141.
42. Van Lippevelde W, Verloigne M, Bourdeaudhuij I, et al. Does parental involvement make a difference in school-based nutrition and physical activity interventions? A systematic review of randomized controlled trials. *International Journal of Public Health.* 2012; 57(4): 673-678.
43. Greening L, Harrell K, Low A, Fielder CE. Efficacy of a school-based childhood obesity intervention program in a rural southern community: TEAM Mississippi project. *Obesity.* 2011;19(6):1213-1219.

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