



Position paper

Preventing and Treating Adolescent Obesity: A Position Paper of the Society for Adolescent Health and Medicine



The Society for Adolescent Health and Medicine

Executive Summary and Positions

Adolescent obesity is an international problem that is a major public health concern with short- and long-term health consequences. Its prevention and treatment require that all health care professionals (HCPs) work together. To date, very little evidence supports effective treatment approaches for adolescents.

This position paper provides expert consensus and evidence wherever possible to increase professionals' ability to prevent, screen, treat, and advocate effectively for obesity prevention and healthy weight promotion. Our positions are summarized in the following section:

- I. HCP should have the knowledge, skills, and resources to prevent and treat obesity while incorporating the biopsychosocial stages of adolescent development.
- II. For all adolescent patients, the committee recommends that HCP:
 - a. Determine weight status by calculating body mass index (BMI) and identifying BMI percentile for age and sex.
 - b. Assess for medical complications.
 - c. Screen for behaviors, including nutrition and physical activity, and family history, that increase the risk of, or worsen, obesity.
 - d. Reinforce healthy behaviors, and when appropriate, counsel adolescents regarding body-image, inappropriate dieting, and weight stigmatization.
- III. Once a diagnosis of obesity has been established, HCP should work with dietitians, behavioral health providers, and exercise specialists to guide the patient through an evaluation for comorbidities, deliver evidence-based lifestyle counseling, and if indicated, refer to more intensive treatment options such as weight loss surgery, monitored diets, or residential care.

HCPs are uniquely positioned to advocate for changes within and outside the health care setting to address the obesity epidemic. Areas for advocacy include: increasing availability of clinical and community resources to prevent and treat obesity; leveraging support for adolescent-focused research; promoting

environmental and policy changes related to healthy eating and active living; improving reimbursement for multidisciplinary care; eliminating policies and practices that stigmatize obese adolescents both explicitly and implicitly; and integrating the prevention approaches of the obesity and eating disorder fields that address weight-related disorders.

Background

Obesity is a state of excess adiposity caused by an imbalance between energy intake and expenditure. Although various methods exist to measure excess body fat, BMI (kg/m^2) is the most widely utilized measure of excess adiposity and risk for related diseases. Standardized growth charts and International Obesity Task Force cut points are used to classify BMI and determine degree of obesity. See [Table 1](#).

Obesity is an international problem, with few countries spared by the epidemic [1]. In the United States, obesity rates remain high, affecting more than 20% of adolescents with 4%–6% having severe obesity [2]. The prevalence of obesity in children, adolescents, and adults has increased in both developed and developing countries [1].

The physical, psychological, and social changes of adolescence greatly influence obesity development. During puberty, body composition changes such that adiposity increases in females while decreasing in males. Increased autonomy alters adolescents' access to food, with increased eating outside the home, the ability to purchase their own food, and the inclusion of food during peer interactions contributing to increased caloric intake. Cognitively, adolescents are vulnerable to making choices that may or may not support health and positive self-esteem and empowerment.

Obesity is a chronic health problem, and its presence during adolescence is associated with numerous medical and psychological consequences. Medical comorbidities include diabetes, dyslipidemia, hypertension, cardiovascular disease, obstructive sleep apnea, fatty liver disease, reproductive complications, alterations in puberty, musculoskeletal complications, and cancers [3]. Psychological comorbidities and concerns include depression, being teased or bullied, and being subjected to discrimination, leading to an impaired quality of life. Obesity has been associated with lower academic achievement and decreased socioeconomic status [3,4]. Childhood obesity and

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Table 1
Weight classification^a

Category	2–19 years	>19 years
	BMI percentile	BMI cut point (kg/m ²)
Underweight	<5th	<18.5
Normal	5th–84th	18.5–24.9
Overweight	85th–94th	25–29.9
Obese	≥95th	Class I: 30–34.9 Class II: 35–39.9
Morbid obesity	99th or above ≥ 120% of 95th percentile	≥40

BMI = body mass index.

^a www.cdc.gov.

cardiovascular risk factors track strongly through adolescence into adult life [5].

Prevention and Screening

Primary prevention of obesity may be supported by tracking patients' growth and by providing information to patients and families about maintaining a healthy weight [6]. HCP must measure height and weight and calculate BMI at every encounter. The Centers for Disease Control and Prevention (www.cdc.gov), the World Health Organization (WHO) BMI charts, and online calculators can be used to determine BMI percentile for age and sex as well as the International Obesity Task Force cutoffs. Weight gain that crosses BMI percentiles is particularly concerning [5]. New onset obesity in adolescence also suggests opportunities for prevention. It is important to assess eating behaviors, physical activity, sedentary and screen time, and family history to determine health risk [6]. HCP should reinforce healthy behaviors. One counseling tool is 5-2-1-0, which promotes daily consumption of 5 fruits and vegetables, less than 2 hours of screen time, at least 1 hour of physical activity, and 0 (or limited) consumption of sugar-sweetened beverages [7]. These interventions are appropriate for all patients, regardless of BMI, and serve as secondary prevention measures for those who are obese. Secondary prevention individualizes the approach to risk reduction in adolescents and identifies other

risk factors for obesity and related conditions. Tertiary prevention of obesity is best performed by providers with the expertise and knowledge to screen for and manage physical and mental comorbid conditions, including depression, anxiety, and disordered eating.

Assessment and Treatment

The WHO report of the Commission to End Childhood Obesity (2016) recommends a family-based, multicomponent approach that includes diet, physical activity, and psychosocial support from a multidisciplinary team. When this fails, pharmacological or surgical interventions may be necessary [6]. Despite decades of research studying pediatric obesity, there is limited evidence to inform providers on the content, structure, or intensity of interventions [8]. The consensus is that once a diagnosis of obesity has been established, HCP should work as part of a multidisciplinary team (dietitian, exercise specialist, behavioral counselor, and primary care provider) to (1) guide the patient through their initial assessment, including evaluation for comorbidities; (2) deliver evidence-based lifestyle counseling; and (3) refer to more intensive treatment options such as weight loss surgery (WLS) and monitored diets when appropriate. We recommend that the initial assessment include a family history, thorough physical examination, including pubertal staging, assessment of sleep, menstrual status, and screening for complications, as listed in Table 2 [4,6,7]. The American Academy of Pediatrics and country-specific guidelines provide additional guidance on comorbidity evaluation [6,7,9,10].

There is great variability about which treatment method (groups vs. one-on-one visits), provider type (dietitian, health educator, nurse practitioner, and physician), location (clinic or community), or intensity (weekly, monthly) [10,11] is best. It is important that HCPs stay informed of evolving best practices and become familiar with country-specific obesity treatment recommendations. Treatment selection should be based on the individual patient's specific needs and attributes: BMI percentile, pubertal status, and the presence of physical and mental health comorbidities. Overall, successful treatment is associated with lower severity (BMI 85th–97th percentile), inclusion of the entire family [11], the absence of significant psychosocial or mental

Table 2
Comorbidity screening if BMI ≥95%

Condition	Indicators and risk factors	Screening tests ^a	Follow-up and referral
Diabetes	FHx DM, non-white race, signs/symptoms of insulin resistance, HTN, PCOS, dyslipidemia	Fasting glucose 2-hour OGTT Hemoglobin A1c (glycated hemoglobin)	Every 2 years if normal Pre-DM: every 1 year, 7% weight loss or change meds If DM: refer to endocrine
Hypertension	Dyslipidemia, OSA, FHx of DM, CHD, PCOS, renal problems	Annual BP PreHTN (≥120/80), repeat ×2 by auscultation Stage 1 (≥95th percentile, <99th + 5 mmHG) Stage 2 (≥99 percentile + 5 mmHg), repeat ×3 by auscultation at that visit	Annually if normal PreHTN: repeat in 6 months Stage 1: repeat in 1–2 weeks Stage 2: refer to pediatric HTN specialist within 1 week
Dyslipidemia	If not screened between 9–11 years, or • New dx of parent with TG >240 • Universal (ages 17–21 years)	Fasting lipid panel ×2, at least 2 weeks–3 months apart	6 months Refer if TG >250 mg/dL or LDL-C ≥250 mg/dL
Liver	+FHx, DM, acanthosis nigricans, metabolic syndrome, OSA, hyperlipidemia, abnl ultrasound, non-black	Liver panel (AST, ALT, Bili, GGT, Alb) Fasting lipids Abd ultrasound	ALT every 3–6 months If persists, refer to liver specialist

Abd = abdomen; Alb = albumin; ALT = alanine aminotransferase; AST = aspartate aminotransferase; Bili = bilirubin; BMI = body mass index; BP = blood pressure; CHD = congenital heart disease; DM = diabetes mellitus; FHx = family history; GGT = gamma glutamyl transferase; HTN = hypertension; LDL-C = low density lipoprotein cholesterol; nl = normal; OGTT = oral glucose tolerance test; OSA = obstructive sleep apnea; PCOS = polycystic ovary syndrome; TG = triglycerides.

^a All evaluations include medical/family/sleep history and physical exam.

health barriers, and the availability of community resources for physical activity [6,7]. The role of the HCP is to serve as a guide within the chronic care model: identifying risk, making a treatment plan, and facilitating referrals.

Depending on the patient's pubertal status and BMI percentile, the treatment goal may be weight stabilization or loss. Motivational interviewing and promotion of incremental change both show some potential effectiveness [12]. Utilization of behavior change theory, specifically the use of skill-building techniques, and delivery of lifestyle counseling messages in a developmentally appropriate way, are the most effective methods for adolescents [9]. The counseling should involve the entire family but also foster emerging adolescent independence. It should target behaviors to reduce weight gain by decreasing sugar-sweetened beverages, sedentary behaviors, and screen time while increasing dietary intake of fiber, fruits and vegetables, eating meals regularly, and having family meals. The WHO recommends limiting energy intake from total fats and sugars; increasing consumption of fruits and vegetables, as well as legumes, whole grains and nuts; and engaging in regular physical activity (60 minutes a day) [6]. Tools such as ChooseMyPlate.gov Web site, stoplight diet, meal plans, or low glycemic index educational models may be moderately effective when provided with guidance from a registered dietitian and implemented by the adolescent and family [7]. Monitored diets are a key component of intensive behavioral therapy. These are usually calorie restricted and take the form of formula-based regimens, preprepared foods, or detailed meal plans. These approaches are available through commercially based programs or close monitoring with a clinic-based dietitian [11]. Patients with a BMI >97th percentile are unlikely to experience weight loss with clinic-based lifestyle counseling alone [11]; therefore, weight stabilization may be the most reasonable goal. Intensive behavioral therapy, monitored diets, medication, and WLS are becoming more common for the treatment of adolescents with extreme obesity [11,13]. Residential treatment, both inpatient and through private nonhospital-based programs, shows significant weight loss, but regain is common, most likely due to the families' inability to maintain the changes in the home environment. Through partnerships with mental health colleagues, some programs employ cognitive behavioral therapy or dialectical behavioral therapy, especially for patients with disordered eating and/or other mental health comorbidities [11].

Pharmacologic treatment options are currently limited. The only FDA-approved medications for weight loss in those <18 years of age are orlistat and phentermine. Orlistat is approved for adolescents 12 and older and is available without a prescription. Rebound weight gain is common with discontinuation, and its use is limited by unpleasant gastrointestinal side effects. Although there is limited data of its efficacy, phentermine is approved for adolescents over 16. For those over 18, lorcaserin, combination phentermine/topiramate, and naltrexone/bupropion are also available [3,11]. Some clinicians use topiramate and metformin as single agents and/or adjuncts for weight loss, especially for binge eating; however, their use is considered experimental and off label [3,11]. Some adolescents may employ extreme and/or illegal pharmacological methods for weight loss, for which providers should screen and discourage use [3].

There is growing evidence to support WLS as a treatment modality with positive initial outcomes including resolution of diabetes and improved psychological well-being/body-image dissatisfaction, but longitudinal studies are lacking [13]. WLS care must include intensive screening, in-depth mental health and psychosocial assessments, nutrition counseling and extensive follow-up. WLS options include the adjustable gastric band, sleeve gastrectomy, and the Roux-en-Y gastric bypass. Data are most promising for the sleeve gastrectomy in terms of long-term outcomes and fewer complications [13].

Medication, WLS, and more intensive treatments are frequently unavailable to adolescents due to a lack of programs, low capacity of existing programs, lack of insurance coverage for obesity treatments, and low awareness among providers.

Several treatment and research registries, such as the Pediatric Obesity Weight Evaluation Registry Study (<http://www.pcori.org/research-results/2013/toolbox-approach-obesity-treatment-primary-care>), aim to understand which patients achieve desired outcomes in multidisciplinary care. Funding for research is needed to support testing the effectiveness of high-intensity interventions and to understand how best to develop clinic-community partnerships, particularly those community-based organizations that focus on healthy nutrition and physical activity (e.g., HCP partnering with local food banks or recreation centers). Clinical trials in adolescents are needed to test the safety and efficacy of FDA-approved medications and devices currently used in adults. Electronic health records may facilitate identification and treatment of comorbidities, via longitudinal tracking of BMI, blood pressure, laboratory tests, and diagnoses.

Advocacy

Several professional medical associations, including the American Medical Association, the United Kingdom Royal College of Physicians, and the Australian Medical Council emphasize advocacy in relation to medical training and professionalism, and the American Board of Pediatrics requires advocacy training in all residency programs. Adolescent HCPs have scientific and clinical knowledge of obesity, as well as a trusted position within their communities [14]. They are therefore well positioned to advocate for changes to promote healthy weight within and outside of clinic settings.

Efforts to reverse the obesity epidemic and promote healthy weight must include community-level environmental systems changes and promotion of environments where the healthy choice is the easy choice for adolescents. Large-scale public and private sector initiatives apply environmental change strategies for obesity prevention [6]. Adolescent HCP should be aware of the stigmatization and discrimination faced by their adolescent patients with obesity and advocate on their behalf for fair and equal treatment.

Adolescent HCP may advocate on a variety of levels from the worksite, to the national or international level, and on topics ranging from food policy, the built environment, schools, and the clinical-care setting. Examples include: providers advocated to ensure affordable healthy food options are provided in hospital and clinic cafeterias and vending machines, as well as improved safety via appropriately stocked crash carts, large stretchers, high weight capacity operating room tables and clinic exam tables, oversized chairs, etc. Community-level advocacy may include

testifying before a local governmental body or working with a community coalition to establish joint use agreements, which allow adolescents and other community members to use schools' physical activity facilities during nonschool hours. At state and national levels, HCPs may connect with their professional organization's advocacy arm to learn about opportunities to participate in advocacy activities, such as meeting with legislators and participating in telephone or email or in-person meeting campaigns on a variety of specific issues to promote healthy weight in their communities.

There are resources for HCPs to receive training and support for their community-level advocacy. One example is the *Be Our Voice* project, which provides training and follow-up support to primary care providers to participate in community-based public health advocacy for adolescent obesity prevention in their communities. Visit www.nichq.org/advocacy for U.S.-based resources, including an advocacy training curriculum, examples of success stories from eight pilot communities, and state- and county-level fact sheets on policy issues impacting adolescent obesity. Additionally, email lists from the AAP, Families USA, Voices for America's Children, and PreventObesity.net (www.preventobesity.net) provide opportunities for HCP to connect with additional sources of data, individuals, or organizations in their area of advocacy interest. At the global level, the WHO provides general recommendations and country-specific resources.

While eating disorders can arise in people at any weight, including those who are obese, there is reason for concern that preventative and clinical efforts to reduce obesity may have the unintended consequence of promoting eating disorders. Clinicians and researchers have an important opportunity to use an integrated approach that aims to prevent obesity, eating disorders, and disordered eating behaviors among adolescents and young adults. Together, these fields could help prevent weight-related disorders and create environments that promote healthy eating, physical activity, and acceptance of varied body shapes and sizes [15].

Summary

Obesity is a significant chronic health problem affecting adolescents. There are many opportunities for clinical care, health promotion, advocacy, and research. There are also many barriers to effectively and safely preventing and treating obesity, including deep and complex societal and economic influences on adolescents' diets, physical activity, and body-image ideals; developmental challenges, both emotional and physical; the impact of health economics and reimbursement shortfalls; and the slow pace of pharmacologic and surgical developments for use in adolescents. Finally, adolescent HCPs must understand that healthy weight loss is extremely difficult and is an enormous challenge to their patients.

Society for Adolescent Health and Medicine endorses the position that all adolescent HCPs should be trained and supported in the assessment of obesity and its comorbidities; that primary prevention of obesity at the community and national level is required by advocacy, policy change, and cultural transformation; that unhealthy eating behaviors must be considered within the context of a spectrum of disordered eating and treated as such, leveraging the skills of interdisciplinary care teams; and that research is necessary to establish evidence-based standards of care ranging from primary care interventions to those

implemented in hospital-based inpatient units and operating rooms. Momentum toward these ends has begun to gather globally but much more remains to be done.

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