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Commissioned Systematic Review

The Task Force commissioned 2 systematic reviews to support this guideline [Treatments of Pediatric Obesity: An Umbrella Systematic Review (5); The Association of Weight Loss and Cardiometabolic Outcomes in Obese Children: Systematic Review and Meta-Regression (6)]. The first was an umbrella review of randomized controlled trials (RCTs) that had a duration >6 months and evaluated medication, surgery, lifestyle, or community-based interventions in overweight or obese children or adolescents. The purpose of this review was to estimate the effectiveness of these interventions and to rate the quality of supporting evidence. This review summarized data from 133 RCTs enrolling 30,445 patients and provided an evidence profile for each intervention. The second was a study-level meta-regression that identified changes in BMI associated with cardiometabolic changes (lipid panel, liver function tests, systolic blood pressure, diastolic blood pressure, hemoglobin A1c (HbA1c), and fasting blood glucose) in pediatric overweight and obese subjects.

The Problem With Obesity

Pediatric obesity is a persistent, epidemic, international problem, and preventing pediatric obesity and its comorbidities is of paramount importance. Treating children or adolescents is difficult and requires changes in diet, activity, and environment. Intensive lifestyle interventions, contacting both patient and family at least monthly (and weekly if possible) for the first 3 months, and providing dietary and nutritional education, a physical activity prescription, and behavioral therapy are poorly reimbursed, which often impedes these services. Additionally, there is inadequate national and international recognition of the value of addressing global obesity prevention and treatment, and we must work with key policymakers to improve this. Elevated BMI among US children and adolescents 6 to 19 years of age is associated with 1.4 billion dollars of additional health care dollars for outpatient visits and other health care expenditures compared with children and adolescents with normal BMIs (7). The Brookings Institution predicted that if all 12.7 million US children and adolescents with obesity became obese adults, the individual average cost would be >\$92,000, and the societal costs during their lifetimes might be >\$1.1 trillion (8).

1.0 Diagnosing overweight and obesity

- 1.1 We recommend using BMI and the CDC normative BMI percentiles to diagnose overweight or obesity in children and adolescents ≥ 2 years of age. (1|⊕⊕⊕⊕)
- 1.2 We recommend diagnosing a child or adolescent >2 years of age as overweight if the BMI is ≥ 85 th percentile but <95th percentile for age and sex, as obese if the BMI is ≥ 95 th percentile, and as extremely obese if the BMI is $\geq 120\%$ of the 95th percentile or $\geq 35 \text{ kg/m}^2$ (1|⊕⊕⊕⊕). We suggest that clinicians take into account that variations in BMI correlate differently to comorbidities according to race/ethnicity and that increased muscle mass increases BMI. (2|⊕⊕⊕⊕)
- 1.3 We suggest calculating, plotting, and reviewing a child's or adolescent's BMI percentile at least annually during well-child and/or sick-child visits. (Ungraded Good Practice Statement)
- 1.4 We suggest that a child <2 years of age be diagnosed as obese if the sex-specific weight for recumbent length is ≥ 97.7 th percentile on the WHO charts, as US and international pediatric groups accept this method as valid. (2|⊕⊕⊕⊕)

Definitions

Children and adolescents ≥ 2 years of age are diagnosed as overweight if the BMI is ≥ 85 th percentile but <95th percentile and obese if the BMI is ≥ 95 th percentile for age and gender on the revised 2000 CDC charts. A child <2 years of age is obese if the weight for recumbent length is ≥ 97.7 th percentile of WHO growth standards (9). Extreme obesity is defined as a BMI $\geq 120\%$ of the 95th percentile or $\geq 35 \text{ kg/m}^2$ (10). A recent proposal suggests redefining this state as class 2 obesity, as it relates to the definition of class 2 obesity in adults; class 3 pediatric obesity is proposed (but not yet fully accepted) to be BMI $\geq 140\%$ of the 95th percentile or $\geq 40 \text{ kg/m}^2$, as this is considered to represent an even higher risk group. Class 2 and class 3 obesity are increasing significantly in girls of all ages, most clearly between 6 and 11 years of age, and in boys between 12 and 19 years of age with a nonsignificant trend in boys <12 years of age (11).

Evidence

The CDC BMI charts (12) are the accepted standards for US children and adolescents ≥ 2 years of age and provide a means for determining changes in pediatric obesity prevalence. The US Preventive Services Task Force found that the BMI of children and adolescents correlates reasonably well to percentile rankings of percent body fat measured by more direct methods (13). However, BMI