

# Promoting healthy lifestyles: Behavior modification and motivational interviewing in the treatment of childhood obesity

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## KEYWORDS:

Behavior modification;  
Childhood;  
Health-related quality  
of life;  
Motivational  
interviewing;  
Obesity;  
Overweight;  
Pediatric

**Abstract.** Childhood obesity has increased dramatically during the past two decades. The growing incidence of childhood obesity is alarming, given the significant short- and long-term health consequences associated with obesity and the strong tracking of obesity from childhood to adulthood. Lifestyle plays an important role in the development and maintenance of obesity. Behavior modification programs targeting eating, exercise, and diet behaviors continue to be the mainstay for treating obese children. Although family-based behavioral weight management programs have resulted in significant improvements in weight status, maintaining improvements in weight status continues to be a challenge, with many interventions resulting in considerable relapse. Motivational interviewing is one innovative approach, used alone or in conjunction with standard behavioral modification programs, which has been proposed to have the potential to enhance motivation for change and therefore improve long-term treatment outcomes for obese children. A broad literature search using two electronic databases, Medline and PsycINFO, to identify studies that used an intervention with a motivational interviewing component to modify diet and/or physical activity in the prevention or treatment of childhood obesity identified two studies that targeted weight as a primary outcome. The studies reviewed indicate that, although initial findings are encouraging, further research is needed to determine the effectiveness of motivational interviewing for prevention and treatment of childhood obesity. Concerted efforts are clearly needed to elucidate the mechanisms for maintenance of initial treatment gains, as well as the ultimate achievement of more ideal weight once formal treatment ceases.

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The term *obesity* refers to a weight range that exceeds what is generally considered healthy for a specific height and has been shown to increase the chances of certain diseases and health problems.<sup>1</sup> Body mass index (BMI), a number that conveys the weight-for-height relationship as a

ratio (weight in kilograms divided by the square of height in meters), is the standard measure for assessing obesity in children and adolescents.<sup>2</sup> According to the 2005 Institute of Medicine report,<sup>3</sup> children and adolescents ages 2 to 18 years with a BMI of >30 or ≥95th percentile for age and gender—whichever is smaller—are considered obese. A recent expert committee<sup>2</sup> also recommended that children and adolescents with a BMI ≥85th percentile but <95th percentile or a BMI of 30—whichever is smaller—be considered overweight. Although BMI is the standard measure

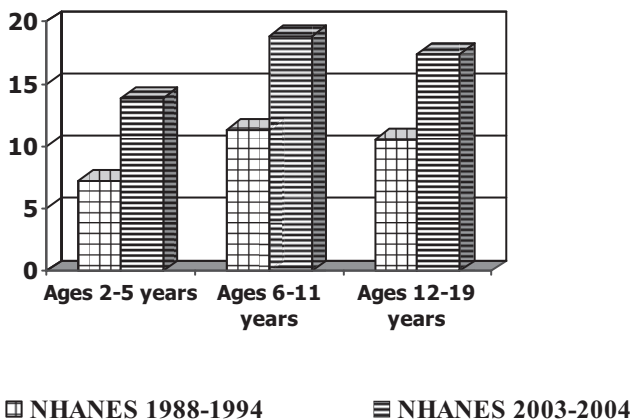
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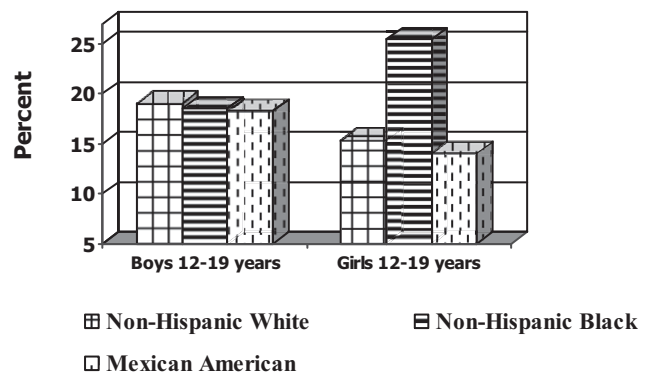
Submitted December 27, 2007. Accepted for publication March 17, 2008.

for evaluating obesity in children and adolescents, it is not comprehensive, and other assessments, such as skinfold thickness, waist circumference, and evaluations of medical history, diet, physical activity, and family history, can be important for diagnosis.<sup>1</sup> Evaluation of associated risk factors, including hypertension, elevated blood pressure, dyslipidemia, acanthosis nigricans, and insulin resistance, is also recommended.<sup>2</sup> The reader is referred to Krebs and colleagues<sup>2</sup> for a detailed discussion of measures of overweight and obesity and assessments of associated risk factors.

Childhood obesity has increased dramatically during the past two decades.<sup>4,5</sup> The Centers for Disease Control and Prevention report that 16% of children (>9 million) in the United States, ages 6 to 19 years, are overweight or obese—a number that has tripled since 1980.<sup>1</sup> Figures 1 and 2 present data from the National Health and Nutrition Examination Surveys. Figure 1 illustrates the growing prevalence of overweight among US children and adolescents ages 2 to 19 years over time. Figure 2, which depicts data from the 2003–2004 National Health and Nutrition Examination Surveys on the prevalence of overweight by race/ethnicity for adolescent girls and boys ages 12 to 19 years, demonstrates the higher incidence of overweight among non-Hispanic black adolescent girls compared to non-Hispanic white and Mexican American adolescent girls. The growing prevalence of childhood obesity is alarming, given the significant short- and long-term health consequences associated with obesity. Obese children have an increased likelihood of displaying adverse levels of insulin, lipids, blood pressure, and acanthosis nigricans.<sup>6–8</sup> With the growing incidence of childhood obesity has come a dramatic rise in the prevalence of type 2 diabetes in children and adolescents.<sup>9</sup> Obesity during childhood also appears to be a precursor to various chronic health conditions in adulthood,



**Figure 1** Percentage of overweight among US children and adolescents ages 2 to 19 years; National Health and Nutrition Examination Surveys (NHANES). Gender- and age-specific body mass index (BMI)  $\geq$ 95th percentile based on Centers for Disease Control and Prevention growth charts. (From the Department of Health and Human Services Centers for Disease Control and Prevention. About BMI for children and teens. [http://www.cdc.gov/nccdphp/dnpa/bmi/childrens\\_BMI/about\\_childrens\\_BMI.htm](http://www.cdc.gov/nccdphp/dnpa/bmi/childrens_BMI/about_childrens_BMI.htm).)



**Figure 2** Percentage of overweight by race/ethnicity for adolescent boys and girls ages 12 to 19 years; National Health and Nutrition Examination Survey (NHANES) 2003–2004. Gender- and age-specific BMI  $\geq$ 95th percentile based on the Centers for Disease Control and Prevention growth charts. (From the Department of Health and Human Services Centers for Disease Control and Prevention. About BMI for children and teens. [http://www.cdc.gov/nccdphp/dnpa/bmi/childrens\\_BMI/about\\_childrens\\_BMI.htm](http://www.cdc.gov/nccdphp/dnpa/bmi/childrens_BMI/about_childrens_BMI.htm).)

including cardiovascular disease, high cholesterol, hypertension, dyslipidemias, and non-insulin-dependent diabetes mellitus.<sup>7,10</sup> Childhood obesity is additionally associated with psychosocial problems, including low self-esteem, peer teasing, depression, and disordered eating.<sup>11–14</sup>

### Health-related quality of life and childhood obesity

A number of authors have argued that improving quality of life is the ultimate goal of health care.<sup>15,16</sup> Health-related quality of life (HRQOL) has emerged as the most appropriate term for quality-of-life dimensions that represent a patient’s perceptions of the impact of an illness and its treatment on their own functioning and well-being and which are thus within the scope of health care services and medical products.<sup>17,18</sup> HRQOL is a multidimensional construct, consisting at the minimum of the physical, psychological (including emotional and cognitive), and social health dimensions delineated by the World Health Organization.<sup>17,19</sup> HRQOL measurement has been increasingly acknowledged as an essential health outcomes measure in clinical trials and health services research and evaluation involving overweight and obese children and adolescents.<sup>20–26</sup> Well-validated HRQOL measures provide a common metric on which to compare interventions for different problems and different behaviors.<sup>27</sup> As such, HRQOL instruments provide an important outcomes measure for evaluation of pediatric obesity interventions.

In 2003, Schwimmer and colleagues<sup>21</sup> published one of the first studies examining the HRQOL of a clinical sample of severely obese children and adolescents. Using the PedsQL 4.0 Generic Core Scales, the authors found that compared to healthy children and adolescents, severely

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