

Doctors Lim and Burton offer a concise and easy-to-read review of the latest research regarding the prevention and treatment of pediatric obesity. This book offers critical guidance, given that pediatric obesity is a widespread public health concern with long-term mental and physical health consequences. An interprofessional approach to prevention strategies and lifestyle interventions, this book is a necessary read for a wide range of health care professionals.

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1 OVERVIEW OF PEDIATRIC OBESITY

Psychological, Public Health, and Diversity Implications

Pediatric obesity is a significant public health concern that is multifaceted in regard to its development, maintenance, and treatment. The purpose of this book is to review psychological factors important to consider in the treatment of pediatric obesity through a health equity and diversity-inclusive lens. The goals of the book are to review treatment strategies, including prevention, lifestyle interventions, medications, and weight loss surgery, specific to pediatric obesity, as well as psychological factors that affect patient and family engagement in prevention and treatment approaches. We also highlight evidence-based treatments for clinical child and adolescent psychology that can be implemented in the treatment of pediatric obesity, as well as review other special considerations, such as body image concerns. The intended audience consists of psychologists, behavioral health practitioners, and trainees who provide care to children and adolescents across various settings (e.g., primary care, mental health clinics, specialty medical settings, schools, community organizations) and who focus on preventing and treating pediatric obesity. Thus, we anticipate readers will have foundational knowledge of and experience with both child clinical psychology and pediatric obesity.

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Psychological Approaches to the Treatment of Pediatric Obesity, by C. S. Lim and E. T. Burton

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The purpose of this initial chapter is to discuss the format and structure of the book and provide background with regard to defining pediatric obesity and introducing pediatric obesity as a critical public health issue.

The book consists of three main parts: Part I, including this chapter, provides an overview of pediatric obesity, specifically focusing on definitions and evidence of public health impacts, diversity and healthy equity issues, weight stigma and discrimination, and potential causes of obesity development and maintenance that influence medical and psychological treatment of the disease. The chapters in Part II review prevention and treatment approaches to address pediatric obesity in various contexts, such as school-based prevention programs; retail and immersion programs, such as summer camps; and medications and surgical treatments that take place in specialized medical contexts. Part III discusses specific psychological factors, such as comorbid psychological disorders, that are important to consider in pediatric obesity prevention and treatment efforts. We include case study descriptions and a focus on evidence-based psychological treatments that can improve health and psychological outcomes for children and families.¹ Each chapter concludes with “Key Points” to highlight main takeaways, as well as a “Thinking Outside the Box” question intended to provoke deeper thought about content presented in the chapter.

DEFINITION OF PEDIATRIC OBESITY

Before we move on to identifying pediatric obesity as a significant public health issue, it is important to define what we will be referring to throughout the book as “pediatric obesity.” First, in adults, the diagnosis of overweight and obesity is generally made by calculating the body mass index (BMI), which is based on height (m) and weight (kg) measurements (i.e., $BMI = kg/m^2$). For adults in the United States, a diagnosis of overweight is considered a $BMI \geq 25$, and a diagnosis of obesity is considered at $BMI \geq 30$. Severe obesity is diagnosed as a $BMI \geq 40$. Because of expected height and weight growth trajectories in children, BMI and BMI percentiles are calculated on the basis of age- and sex-normed growth charts (Hales et al., 2022; Kuczmarski et al., 2000). In youth, overweight is defined as a BMI ≥ 85 th percentile, and obesity is considered a BMI ≥ 95 th percentile. Severe obesity in youth is diagnosed as $\geq 120\%$ of the 95th percentile on the U.S. Centers for Disease Control and Prevention extended growth charts (Gulati et al., 2012; Hales et al., 2022).

¹All case studies included in this book are fictional composites or have been disguised to protect confidentiality.

In many clinical and research settings, the BMI and BMI percentile are quick, easy, and inexpensive to implement and are recognized as a reliable proxy for body fat percentage and health outcomes (Nuttall, 2015). Thus, BMI-related values are often the indicator of choice for assessing weight status in both children and adults in a variety of clinical and community-based settings. BMI, BMI percentile, or BMI z score are often primary outcomes of interest in randomized controlled trials examining the efficacy and effectiveness of pediatric prevention and weight management treatments. However, it is also important to recognize there has been debate regarding the utility of BMI calculations for persons with diverse body types, such as athletes. In addition, growth charts were initially developed decades ago primarily with White/Caucasian samples. Previous research that has examined the clinical utility of BMI has also been conducted with samples that lack racial/ethnic diversity that is characteristic of the current and projected U.S. population (Rahman & Berenson, 2010). Thus, there are questions regarding the validity of BMI for use in racially and ethnically diverse populations. For example, associations between body fat and BMI have been found to differ by race and ethnicity in children and adolescents (Freedman et al., 2008). Although a full review of this specific issue is beyond the scope of this book (readers are referred to Nuttall [2015] for additional reading on this topic), BMI is a relevant tool and area of inquiry in clinical efforts to prevent and treat pediatric obesity.

PEDIATRIC OBESITY IS A SIGNIFICANT PUBLIC HEALTH ISSUE

In recent decades, there has been increased recognition that obesity is a significant public health problem in the United States and worldwide. This is in part due to increasing prevalence rates in the prior 50 years and the significant impact felt by national and private health care systems. According to the World Health Organization (WHO, 2021), the number of adults with obesity has tripled since 1975, with more than 1.9 billion adults in the world being considered overweight and 650 million considered obese in 2016. In 2018, more than 42% of U.S. adults were considered obese, and 9% were diagnosed with severe obesity (Hales et al., 2020). In children, the prevalence of overweight and obesity has risen tenfold since 1975 (H. J. Lim et al., 2020); specifically, more than 39 million children under age 5 years, and 340 million youth ages 5 to 19 years, were considered overweight or obese in 2016 (WHO, 2021). Figure 1.1 compares surveillance prevalence data of obesity and severe obesity in youth ages 2 to 19 years in the United States from 1999 to 2018 (Ogden et al., 2020).

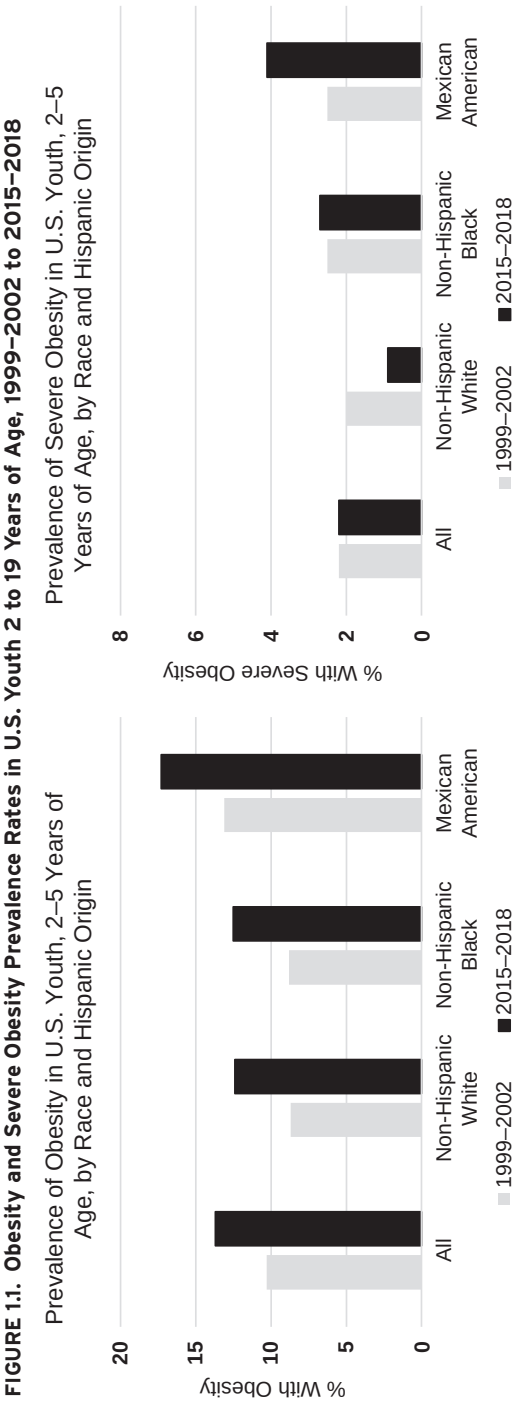
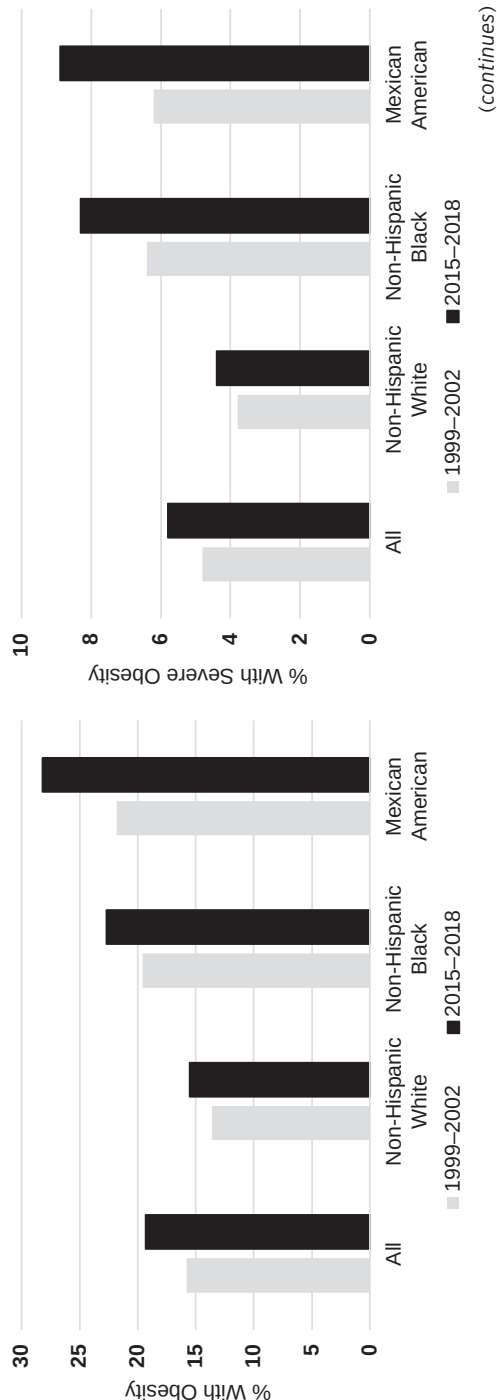
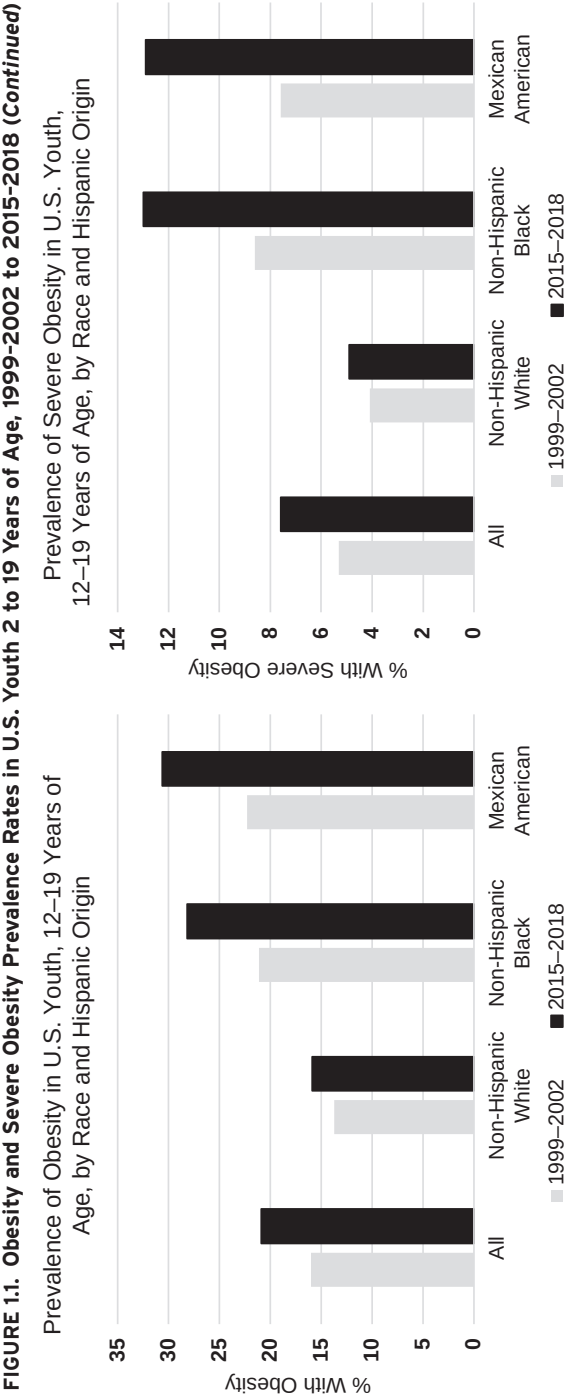


FIGURE 1.1. Obesity and Severe Obesity Prevalence Rates in U.S. Youth 2 to 19 Years of Age, 1999–2002 to 2015–2018 (Continued)
Prevalence of Obesity in U.S. Youth, 6–11 Years of Age, by Race and Hispanic Origin
Prevalence of Severe Obesity in U.S. Youth, 6–11 Years of Age, by Race and Hispanic Origin





Note. This figure was created on the basis of information presented in Ogden et al. (2020).

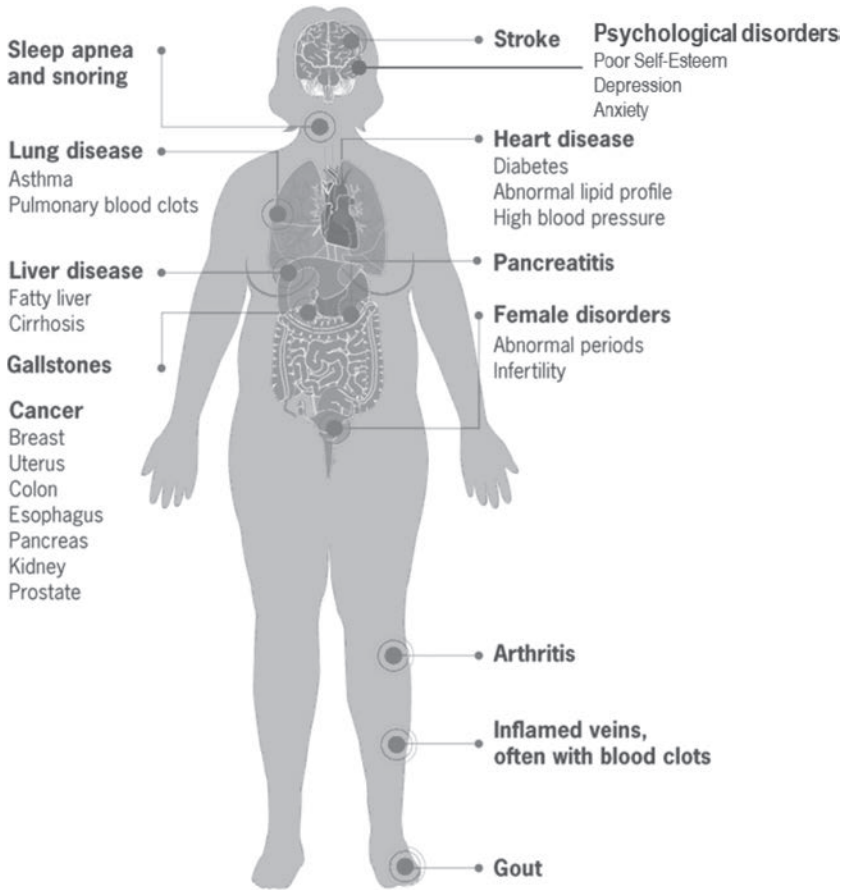
In the United States, there are also substantial racial and ethnic differences regarding the prevalence of obesity and severe obesity. For example, Mexican American men and non-Hispanic Black women have the highest rates of obesity, and Mexican American men have experienced a more rapid increase in obesity prevalence compared with non-Hispanic White men (Ogden et al., 2020). In U.S. adolescents, the increased obesity prevalence is largely attributed to prevalence increases in non-Hispanic Black and Mexican American youth (Ogden et al., 2020). We incorporate a health equity and diversity lens throughout this book to help psychologists and other behavioral health practitioners understand the role race/ethnicity and other social determinants of health play in the prevention, development, treatment, and intractability of pediatric obesity.

Overweight and obesity have long-term impacts on morbidity and mortality. Worldwide, more people are affected by obesity than by malnutrition and underweight (WHO, 2021). In addition, obesity is attributed to more than 4 million deaths a year (WHO, 2021). Obesity affects every major organ system in the body, such as cardiovascular (i.e., high blood pressure), metabolic (i.e., dyslipidemia, type 2 diabetes), pulmonary (i.e., asthma, sleep apnea), gastrointestinal (i.e., nonalcoholic fatty liver disease, reflux), skeletal (i.e., Blount disease), and fertility (i.e., polycystic ovary syndrome) problems (Daniels, 2006; see Figure 1.2). In 2008, it was estimated that medical costs associated with obesity in the United States would cost more than \$147 billion a year (Finkelstein et al., 2009). Health care costs attributed specifically to pediatric obesity are estimated to be over \$14 billion per year (Trasande & Chatterjee, 2009). However, many indirect costs and impacts are not reflected in these estimates.

Research has demonstrated that children with obesity experience significant reductions in health-related quality of life, similar, in fact, to that experienced by children with cancer undergoing chemotherapy (Schwimmer et al., 2003). In addition, overweight and obesity puts children at risk for numerous psychosocial issues, such as bullying, depression, anxiety, behavioral problems, and suicidal ideation (C. S. Lim et al., 2015; Puhl & King, 2013; F. Wang & Veugelers, 2008; Zeller et al., 2006). The American Medical Association officially recognized obesity as a chronic medical condition in 2013, an act that signified decades of work demonstrating the complexity and chronicity of the disease (Kyle et al., 2016). Thus, like other pediatric chronic medical conditions, pediatric obesity requires comprehensive medical and psychological assessments and a chronic course of treatment.

Despite prevention and treatment efforts, prevalence rates of overweight and obesity in adults and youth, as well as health care costs, are expected to

FIGURE 1.2. Physical Health Impacts of Pediatric Obesity



Note. Adapted from the U.S. Centers for Disease Control and Prevention (2012).

continue to increase in the coming decades. In fact, estimates predict that by 2030 more than half of the adult population in the United States will have obesity and the prevalence of obesity in youth will have doubled (Y. Wang et al., 2008). Thus, it is likely psychologists and other mental health providers working in various settings will be tasked with providing prevention and treatment strategies and addressing psychological factors that influence the development and maintenance of obesity in youth.

PSYCHOLOGISTS' ROLE IN PREVENTION AND TREATMENT OF PEDIATRIC OBESITY

In 2007, the American Academy of Pediatrics published expert treatment recommendations, as well as staged treatment, for the prevention and assessment of pediatric obesity (Barlow & The Expert Committee, 2007). Staged treatment begins with Stage 1 (Prevention Plus), which focuses on promoting healthy eating and physical activity in youth diagnosed with overweight and related health risks or youth diagnosed with obesity. This treatment could occur in a primary care pediatric clinic. It continues through Stages 2 and 3 (Structured Weight Management and Comprehensive Multidisciplinary Intervention, respectively) to Stage 4 (Tertiary Care Intervention), which consists of youth diagnosed with severe obesity receiving care in a pediatric weight management center in which an interdisciplinary team provides comprehensive treatment ranging from very-low-calorie diets, to medications, to weight loss surgery. These recommendations were then updated in 2023 as clinical practice guidelines specific to evaluating and treating youth with obesity (Hampel et al., 2023a). Given the medical complexity related to the development and maintenance of excess weight in youth and its affect on major organ systems, the initial expert panel recommended comprehensive medical assessments and evaluation of weight-related medical issues in pediatric primary care settings when children have a BMI percentile in the overweight range ($\geq$ the 85th percentile; Barlow & The Expert Committee, 2007). The medically recommended assessment and screening includes weight status assessment (e.g., BMI calculation); parental and family history of obesity and type 2 diabetes; and medical assessments specific to sleep problems, breathing problems, gastrointestinal issues, endocrine disorders, cardiovascular disorders, nervous system disorders, orthopedic issues, skin conditions, and genetic syndromes (Barlow & The Expert Committee, 2007). Vitals (heart rate, blood pressure) and other laboratory blood tests to assess for obesity-related comorbidities should also be implemented (Hampel et al., 2023a).

Social determinants of health are also critical components to include in assessment and screenings conducted for pediatric obesity and related comorbidities (Hampl et al., 2023a). Examples of social determinants of health that behavioral health providers should consider include “policies and systems, institutions and organizations (e.g., schools), neighborhoods and communities, and family, socioeconomic, environmental, ecological, genetic, and biological factors” (Hampl et al., 2023b, p. 2). Screening for psychiatric issues, such as depression, anxiety, eating disorders, and trauma, are also recommended in the pediatric primary care setting (Barlow & The Expert Committee, 2007). Pediatricians, other health care providers, and psychologists in a primary care setting would be appropriate providers to screen for these potential symptoms and social determinants of health. The most recent clinical practice guidelines also specifically state that motivational interviewing should be used by pediatricians and other health care providers to engage and treat youth with overweight and obesity and their families (Hampl et al., 2023a). As experts in understanding thoughts and behaviors, as well as trained informally and formally in motivational interviewing, psychologists and other mental health professionals are often involved in assisting with weight management efforts (American Psychological Association [APA], 2013). Psychologists are involved clinically in pediatric obesity prevention and treatment in various settings, such as specialty medical clinics, integrated primary care settings, and private practice. As experts in behavior change strategies, psychologists play an important role in the context of interdisciplinary care (APA, 2013). In interdisciplinary specialty care settings, such as pediatric weight management programs comprising clinicians from multiple disciplines (e.g., consistent with Stage 3 and Stage 4 treatment described by Barlow & The Expert Committee, 2007), mental health providers assess the child’s and family’s psychosocial environment and psychological concerns (APA, 2013). Specific constructs that psychologists should assess and consider in these settings are listed in Table 1.1. Assessments of these various constructs can range from unstructured to semistructured interviews to domain-specific questionnaires. Table 1.1 also provides examples of questionnaires or assessments that can assess specific constructs in pediatric obesity prevention and treatment settings. The use of specific standardized questionnaires should be determined on the basis of the setting and specific time- and funding-related limitations given that copyrighted questionnaires often have costs associated with both purchasing the questionnaire and scoring them. Other psychosocial factors that should be included in assessments include school functioning, social functioning, peer relationships (e.g., bullying, peer victimization), family relationships,

TABLE 1.1. Areas Psychologists Should Assess in Prevention and Treatment Settings for Pediatric Obesity

Construct	Example questionnaires/assessments	Reporter
Eating behaviors	Questionnaire of Eating and Weight Patterns-5 (Yanovski et al., 2015)	Self
Feeding behaviors	Parent Feeding Questionnaire (Kaur et al., 2006)	Caregiver
	Children's Eating Behaviour Questionnaire (Wardle et al., 2001)	Caregiver
Food selectivity and availability	Children's Eating Behaviour Questionnaire (Wardle et al., 2001)	Caregiver
	U.S. Household Food Security Survey Module (Tanaka et al., 2020)	Caregiver
Maladaptive/disordered eating	Children's Eating Attitude Test (Maloney et al., 1988)	Self
Physical activity	Physical Activity Questionnaire for Older Children (Crocker et al., 1997)	Self
Sedentary behavior	Adolescent Sedentary Activity Questionnaire (Hardy et al., 2007)	Self
Sleep	Epworth Sleepiness Scale for Children and Adolescents (Johns, 2015)	Self
Psychological concerns		
Internalizing symptoms	Child Behavior Checklist (Achenbach & Rescorla, 2001)	• Self • Caregiver • Teacher
	Behavior Assessment Scale for Children (Reynolds & Kamphaus, 2015)	• Self • Caregiver • Teacher
Depressive symptoms	Patient Health Questionnaire-9 (Kroenke et al., 2001)	Self
Anxiety symptoms	General Anxiety Disorder-7 (Spitzer et al., 2006)	Self
Externalizing symptoms	Child Behavior Checklist (Achenbach & Rescorla, 2001)	• Self • Caregiver • Teacher
	Behavior Assessment Scale for Children (Reynolds & Kamphaus, 2015)	• Self • Caregiver • Teacher
ADHD or ODD symptoms	Vanderbilt ADHD Diagnostic Rating Scale (Wolraich et al., 2003)	Caregiver

Note. This table was created on the basis of information from the American Psychological Association (2013) and Cadieux et al. (2016). ADHD = attention-deficit/hyperactivity disorder; ODD = oppositional defiant disorder.

self-esteem, body image, motivation or readiness to change, and family support for changes (APA, 2013; Cadieux et al., 2016).

In addition to assessment, psychologists' role in interdisciplinary specialty care settings involves implementing behavioral components of weight management treatments that focus on dietary intake, physical activity, sleep, and other health behaviors associated with weight gain or lack of weight loss. These components may include monitoring lifestyle behaviors (e.g., eating and drinking, physical activity), increasing awareness regarding thoughts, feelings, and behaviors that are specifically related to food and eating or physical activity, and developing new skills to help modify lifestyle behaviors (APA, 2013). Specific psychological techniques and strategies related to behavioral components of pediatric weight management treatments are discussed in more detail in Part II of this book.

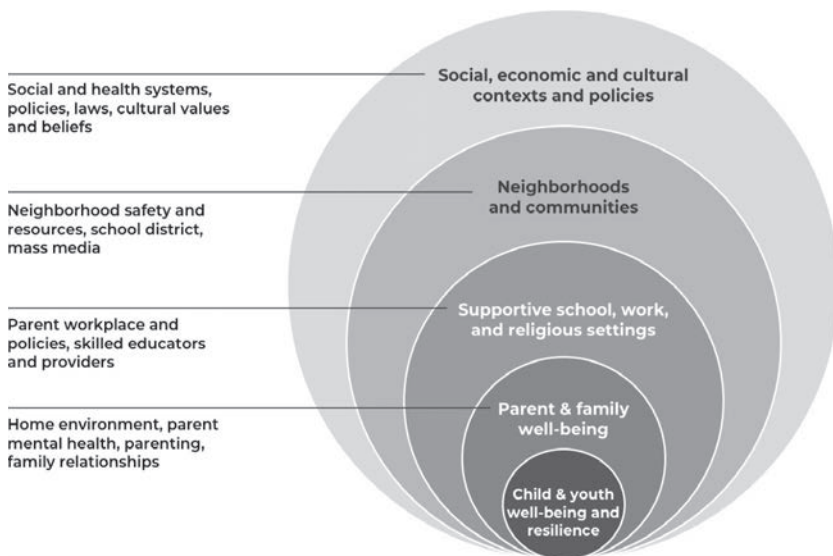
Psychologists provide treatment for specific psychological disorders in various settings treating patients with pediatric obesity. In primary care and interdisciplinary care settings, the treating psychologist should have knowledge, experience, and skills related to evidence-based treatments for psychological disorders with which children and adolescents with obesity may present. The application of specific evidence-based treatments in pediatric obesity are described in Part III of this book. Psychologists should also ensure that their treatment approaches and those of other health care providers are tailored to meet the specific needs of the child and family. In fact, the APA clinical practice panel for the treatment of overweight and obesity in children and adolescents “strongly recommends that providers be educated about the genetic, biological, psychological, social, and environmental complexities associated with obesity” (APA, 2018, p. 36). Bronfenbrenner's (1979) ecological model and bioecological theory (Bronfenbrenner, 1995) may be helpful frameworks. The ecological model purports that an individual's environment is divided into nested and interrelated systems (Ashiabi & O'Neal, 2015): the *microsystem*, *mesosystem*, *exosystem*, and *macrosystem*. The *microsystem* is the child's immediate environment and includes family, peers, and the school setting. The *mesosystem* involves interrelationships between different microsystems, and the *exosystem* is the setting in which the individual does not actively participate but has indirect effects on an individual's functioning. The *macrosystem* involves society and includes cultural values and economic conditions. Interrelations among the nested environments lead to patterns of interactions within these systems, which influence each other and affect individual outcomes (Bronfenbrenner, 1979). The bioecological model posits that reciprocal interactions occur between the person and the external environment

for extended periods of time during development (Bronfenbrenner, 1995; see Figure 1.3).

Pediatric psychologists have applied both the bioecological and biopsychosocial models to health behaviors in youth; specifically, Wilson and Lawman (2009) reviewed research examining health promotion strategies implemented in microsystems (families, peers), mesosystems (schools), exosystems (communities, mass media), and macrosystems (public policies). Other models have been developed to incorporate cultural and diversity-related factors, such as the African American Collaborative Obesity Research Network model (Kumanyika et al., 2007), which has broader implications for the prevention and treatment of obesity and obesity-related health disparities and can apply to other racial/ethnic and marginalized groups.

In 2015, The Obesity Society developed an infographic to represent contributors to obesity identified by previous research (The Obesity Society, 2015). In the figure, which visually represents the complexity of obesity, the potential causes of obesity are divided as occurring inside and outside the person (see Figure 4.1 for an adapted version of the figure).

FIGURE 1.3. The Bioecological Model



Note. From *The Bioecological Model*, by the Center for Child & Family Well-Being, University of Washington, 2021 (<https://ccfwb.uw.edu/about-us/the-bioecological-model/>). Copyright 2021 by the Center for Child & Family Well-Being. Reprinted with permission.

Given the complexities regarding the development, treatment, and intractability of pediatric obesity, we hope this book will be a helpful resource for current and future psychologists, trainees, and other mental health care providers working in various settings to prevent and treat obesity in youth and families while addressing psychological factors from a multicultural and diversity, equity, and inclusion lens.

CONCLUSION

Pediatric obesity is both a significant public health concern and a serious chronic health condition. The prevention and treatment of pediatric obesity require knowledge regarding psychological factors; social determinants of health, and diversity, equity, and inclusion issues that are associated with the development of obesity and may affect treatment strategies. This book is intended to be an evidence-based resource regarding these topics, one that is based on available research and clinical experience, for psychologists and other mental health providers working in settings focused on the prevention and treatment of pediatric obesity.

KEY POINTS

- Pediatric obesity is a complex chronic medical condition.
- Psychological factors, social determinants of health, and health disparity and health equity issues are important factors that must be considered.
- Psychologists and other behavioral health specialists play an important role in the prevention and treatment of this condition.

THINKING OUTSIDE THE BOX

What are arguments for
and against diagnosing obesity
on the basis of BMI?

2ND PAGES

About the Authors

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