

Handbook of Obesity Intervention for the Lifespan

Larry C. James • John C. Linton
Editors

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 Springer

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Larry C. James
Wright State University
Dayton, Ohio, USA
Larry.James@US.Army.Mil

John C. Linton
West Virginia University School
of Medicine, Charleston
West Virginia, USA
jlinton@hsc.wvu.edu

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To the lovely and talented ladies in my life, Devon and Lesley, daughters who would make any father proud, Alina Margaret, whose youthful eyes are filled with wonder, and to my wife Shareen, who is simply the best, this book is dedicated with affection and gratitude.

JCL

This book is dedicated to the memory of my mother Mary Harden-James.

LCJ

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Contributors

Brook L. Barbera, MA

Pennington Biomedical Research Center, Louisiana State University System, Baton Rouge, LA, USA

E. McCrea Fry, RN, BSN

Department of Pediatrics, UAMS College of Medicine, Arkansas Children's Hospital, Little Rock, AR, USA, wardbegnochewendyl@uams.edu

Larry C. James, PhD, ABPP

School of Professional Psychology, Wright State University, 3640 Colonel Glenn Highway, Dayton, OH, USA, Larry.James@Wright.Edu

Reginald Labossiere, MD, CNSP

Donald W. Reynolds Department of Geriatric Medicine, University of Oklahoma Health Science Center and VA Medical Center, Oklahoma City, OK, USA

John C. Linton, PhD, ABPP

Department of Behavioral Medicine and Psychiatry, West Virginia University School of Medicine, Charleston, WV, USA

Vicki McNeill, PT, DPT

Department of Pediatrics, UAMS College of Medicine, Arkansas Children's Hospital, Little Rock, AR, USA

Duncan C. Meyers, MA

Department of Psychology, Barnwell College, University of South Carolina, Columbia, SC, USA

Valerie H. Myers, PhD

Pennington Biomedical Research Center, Louisiana State University System, Baton Rouge, LA, USA, valerie.myers@pbrc.edu

Tracie L. Pasold, PhD

Department of Pediatrics, UAMS College of Medicine, Arkansas Children's Hospital, Little Rock, AR, USA

K. Deane Peck, MS, RD, LDN

Department of Pediatrics, UAMS College of Medicine, Arkansas Children's Hospital, Little Rock, AR, USA

Samiya Razzaq, MD, FAAP

Department of Pediatrics, UAMS College of Medicine, Arkansas Children's Hospital,
Little Rock, AR, USA

Karen M. Ross, MD

*Donald W. Reynolds Department of Geriatric Medicine, University of Oklahoma Health
Sciences Center, Oklahoma City, OK, USA*

Robert B. Shin, MD, FACS

CAMC Weight Loss Center, Charleston Area Medical Center, Charleston, WV, USA

Stephen B. Sondike, MD

Department of Pediatrics, West Virginia University School of Medicine, Adolescent
Medicine, Charleston Area Medical Center, Charleston, WA, USA,

ssondike@hsc.wvu.edu

Kristen H. Sorocco, PhD

*Donald W. Reynolds Department of Geriatric Medicine, University of Oklahoma Health
Sciences Center and VA Medical Center, Oklahoma City, OK, USA,*

Kristen-sorocco@ouhsc.edu

Mark Verschell, PsyD

Health Psychology Service, *Department of Psychology*, Tripler Army Medical Center,
Honolulu, HI, USA, mark.verschell@us.army.mil

Wendy L. Ward-Begnoche, PhD

Department of Pediatrics, UAMS College of Medicine, Arkansas Children's Hospital,
Little Rock, AR, USA

Dawn K. Wilson, PhD

*Department of Psychology, Barnwell College, University of South Carolina, Columbia, SC,
USA, wilsondk@mailbox.sc.edu*

K. Beth Yano, PhD

Child Psychology Service, Department of Psychology, Tripler Army Medical Center,
Honolulu, HI, USA, kbethyano@hawaii.rr.com

Karen L. Young, MD, FAAP

Department of Pediatrics, UAMS College of Medicine, Arkansas Children's Hospital,
Little Rock, AR, USA

Part I
Child and Adolescent Obesity Applications

Introduction

Larry C. James and John C. Linton

Weight problems and obesity in America have continued to accelerate at an unprecedented rate. From childhood through adulthood to old age, Americans are shouldering the burden of obesity and its co-morbid disorders. Weight problems are created by a complicated array of factors that many struggle with on a daily basis. The intricate combination of a sedentary lifestyle, physical illness, psychological issues, genetics, food selection, and environmental forces makes long-term weight loss difficult to achieve. For example, adults and seniors have become less active, and unlike school systems years ago, many public schools no longer offer physical education programs, while young people more readily opt for long stretches of time before a television screen, rather than engaging in active play. In the United States, inactive computer gaming now substitutes for the jump ropes and ball fields of the past.

What causes obesity, and is it mostly environmental or genetic? Do the causes vary in their influence over the life of an individual patient? Are there key components to any successful weight loss program, and can obesity be effectively treated over the lifespan? Are surgical interventions to be the cure of the future for this obesity crisis?

These are but a few questions *Treating Obesity Across the Lifespan* addresses in a practical style. Few books on obesity serve as a one-source reference on this topic, since most are confined to teenage or adult weight problems, whereas this book examines obesity over the lifetimes of patients.

The authors are a collection of scientists and practitioners from throughout the United States, who offer an applied handbook for the healthcare provider in the clinical setting. Unlike most research books, this also provides the reader with useful suggestions for treating weight problems and obesity in their patients.

This handbook began as an obesity project in Hawaii, when the first author began a multi-disciplinary treatment program for adults in 1995. The success of the program led to the creation of a similar program for youth as well as older adults. Both of the programs were extremely successful, and the authors sought to capture the nucleus of these and similar efforts in a single handbook reference for the clinician.

Part I of the book is devoted to the understanding and treatment of childhood and adolescent obesity. Part II focuses exclusively on obesity treatment applications for the adult and elderly populations. Part III provides a list of resources that might be of assistance to clinicians treating patients with weight problems. This handbook offers empirically based clinical interventions that consider a wide variety of patient variables.

L.C. James (✉)
School of Professional Psychology, Wright State University, 3640 Colonel Glenn Highway,
Dayton, OH, USA
e-mail: Larry.James@Wright.Edu

Topics range from in-depth examination of core literature to specific recommendations for the 10 steps to a healthy lifestyle, regardless of one's age.

We have found that obesity is best conceptualized as a disease that requires treatment across the life of the patient. Accordingly, we have organized a clinical handbook that is rare in the field, one that provides assessment and treatment options for clinicians who work with obese patients, young or old.

Chapter 1

Childhood Obesity Treatment Literature Review

Wendy L. Ward-Begnoche, Tracie L. Pasold, Vicki McNeill, K. Deane Peck, Samiya Razzaq, E. McCrea Fry, and Karen L. Young

Childhood obesity is an urgent problem deserving clinical attention and community resources. There are several key treatment concepts that are unique to the treatment of children: (1) treatment must be family centered, (2) treatment must be developmentally appropriate, (3) weight goals are complicated in growing children, and (4) malnutrition must be addressed and good nutrition continued during treatment to maintain normal linear growth and health (Barlow & Dietz, 1998; American Academy of Pediatrics, 2003; Expert Committee, 2007). Furthermore, complications of obesity can be both medical and psychological, which must be uncovered and treated in order to have optimal health and successful weight management. Common medical problems encountered involve the cardiovascular and respiratory systems (Calderon, Yucha, & Schaffer, 2005; Gidding et al., 2004), chronic pain (Marcus, 2004), insulin resistance (Young-Hyman, Schlundt, Herman, De Luca, & Counts, 2001), and other endocrine disorders (Quattrin, Liu, Shaw, Shine, & Chiang, 2005). They are at risk of developing type 2 diabetes, which causes an increase in adult mortality and morbidity rates (Must & Strauss, 1999). They are also at risk of developing multiple psychiatric and psychological disorders such as depression, anxiety, and low self-esteem (Zametkin, Zoon, Klein, & Munson, 2004). Finally, as obese children become adults, they are likely to remain obese and are at risk of developing many weight-related co-morbidities, which cause an increase in adult mortality and morbidity rates (Must & Strauss, 1999).

Evidence-based treatment of overweight and obese children incorporates a multidisciplinary approach, including medical treatment, nutrition education, physical activity education, family involvement, and behavior modification (Jefferson, 2005; Zametkin et al., 2004; AAP, 2003; Expert Committee, 2007). Recommendations from health-care providers should address the following areas: medical care, food choices and eating patterns, physical activity choices and patterns, family strengths and challenges (family eating and activity patterns, parenting skills, parent perceptions of weight and health status), personal strengths and challenges (motivation, disordered eating patterns, psychological state), and environmental and community access/support. Individualized goal setting is critical and must take into account all of these factors.

W.L. Ward-Begnoche (✉)

Department of Pediatrics, UAMS College of Medicine, Arkansas Children's Hospital, Little Rock, AR, 72202-3591, USA

e-mail: wardbegnochewendyl@uams.edu

Medical Evaluation and Treatment of Children

Abnormal weight gain is defined as an upward crossing of percentiles on the body mass index (BMI) portion of the growth chart for children and adolescents between 2 and 19 years. For babies and toddlers between birth and 2 years, BMI is not utilized. Instead, the weight/length chart is used for those under 2 years. Any child noted to have abnormal weight gain should have a detailed evaluation to determine the underlying etiology for the abnormal weight gain (AAP, 2003). Medical providers should assess weight status by calculating and plotting BMI. They should also assess diet and exercise patterns in all children and adolescents yearly. Children or adolescents found to be either overweight (BMI between the 85th and 95th percentiles for age and gender) or obese (BMI \geq 95th percentile for age and gender), or babies under 2 years with weight/length \geq 95th percentile, should have focused family histories, physical examinations, and laboratory studies done in addition to specific intervention (AAP, 2003).

Evidence-based treatment of overweight youth now is a staged protocol, as recommended by the Expert Committee on the Assessment, Prevention and Treatment of Child and Adolescent Overweight and Obesity, released on June 8, 2007. This committee, made up of representatives from 15 health professional organizations, was convened by the American Medical Association (AMA). The first two stages can be implemented by the primary care physician or allied health-care provider who has some training in pediatric weight management/behavioral counseling. At these stages the provider counsels the family to implement healthy lifestyle changes in diet and physical activity and to decrease sedentary activities, with a goal to maintain the weight while age and height increase. The level of intervention becomes more intensified if the patient does not respond at the first two stages of treatment.

Child and Family Goals: Stage 1

- Five or more fruits and vegetables/day
- Two or less hours of screen time/day
- No TV in bedroom
- One hour or more of physical activity
- No sugar-sweetened beverages
- Eat breakfast daily
- Limit meals eaten out
- Family meals 5-6 times/week
- Allow the child to learn to self-regulate food intake
- Try to maintain weight
- If no improvement in BMI in 3-6, advance to Stage 2

Source: Spear B., Barlow S., Ervin C., Ludwig D., Saelens B., Schetzline K., Taveras E. (2007). Recommendations for Treatment of Child and Adolescent Overweight and Obesity, *Pediatrics*, 120, S254–288.

At stage three, it is recommended that a comprehensive multidisciplinary intervention is instituted by a specialty obesity care team. At stages three and four, the multidisciplinary team should employ the following activities: structured behavior management program with training of primary caregivers and food and activity monitoring. The multidisciplinary team should address meal replacement, very low calorie diet, medication, and surgery as indicated (Expert Committee, 2007).

Structured Weight Management: Stage 2

- Balanced macro-nutrient diet, with low amounts of energy-dense foods
- Structured daily meals and snacks
- Screen time 1 hour or less/day
- Monitoring logs (screen time, physical activity, food intake) checked by provider
- Weight goal of maintenance or loss not to exceed 1 lb/mo in ages 2-11 or 2 lb/wk in teens

Comprehensive Multidisciplinary Protocol: Stage 3

- Should optimally be referred to a multidisciplinary obesity care team
- Eating and activity goals are the same as in Stage 2
- Should also include a structured behavior modification program
- Involve primary caregivers and family in training for behavior modification
- Weight goals may be weight maintenance, or no more than 1 lb/mo in 2-5 years or 2 lb/wk in older children and teens

Tertiary Care Protocol: Stage 4

- Referral to pediatric tertiary weight management center
- Continued diet and activity counseling
- Consideration of such additions as meal replacement, very-low-calorie diet, medication, and surgery

Source: Spear B., Barlow S., Ervin C., Ludwig D., Saelens B., Schetzine K., Taveras E. (2007). Recommendations for Treatment of Child and Adolescent Overweight and Obesity, *Pediatrics*, 120, S254–288.

Any child examined by their physician and noted to have abnormal weight gain should have a detailed evaluation to determine the underlying etiology (AAP, 2003). It is important to screen for obesity-related co-morbidities such as hypertension, dyslipidemia, hyperinsulinemia, impaired glucose tolerance, and obstructive sleep apnea (AAP, 2003). This is particularly important if the patient is currently symptomatic or has a personal or family history of the disease.

Cardiovascular Conditions

In the Bogalusa Heart study, more than 60% of obese children had at least one risk factor for cardiovascular disease (Dietz and Robinson, 2005). Metabolic syndrome in children has been found to be a sensitive predictor of future cardiovascular disease (Litwin et al., 2007). Hypertension is a common problem in overweight individuals. All children should have their blood pressure monitored if they have an elevated BMI. It is important to use the proper method and equipment. The latest blood pressure charts for the pediatric age group use age, sex, and height percentile to determine norms (National High Blood Pressure Education Program, 2004). A low-salt, low-fat diet along with a regular exercise program is initiated when the blood pressure elevation is first detected. Urinalysis, BUN, and creatinine should be checked. If persistently elevated at least three times on different visits, recommendations are to typically follow a no-added-salt, low-fat, no-concentrated-sweets diet and have regular exercise. If the blood pressure does not normalize, medication management should be considered.

Overweight children are identified as being particularly at high risk for cardiovascular disease if there is at least one family member with a history of cardiovascular disease, especially a first-degree relative. Fatty streaks have been found in the arteries of adolescents as young as 13 years of age (Strong, Malcom, Newman, & Oalman, 1992). A lipid panel should be ordered to assess for dyslipidemia. If abnormal, defined as elevated total cholesterol, elevated LDL cholesterol, elevated triglycerides, or decreased HDL cholesterol, therapeutic lifestyle and dietary modifications should be initiated. Treatment consists of low-cholesterol and/or low-fat diet, combined with regular physical activity for at least 3–6 months. If the child is at least 9 years old and has not responded to dietary intervention, then adding a statin medication is considered.

Insulin Resistance–Associated Conditions

There are several obesity-related conditions due to insulin resistance. These include conditions that directly lead to type 2 diabetes: hyperinsulinism, impaired fasting glucose, and also such diverse sounding conditions as non-alcoholic fatty liver disease and polycystic ovarian syndrome. One study evaluated 103 obese (BMI \geq 95th percentile) children and adolescents 2–18 years of age. Abnormal glucose homeostasis was identified in 46% (hyperinsulinism in 40%, impaired fasting glucose in 0.8%, and impaired glucose tolerance in 11%) (Vincer, Segal, Lichtarowicz-Krynska, & Hindmarsh, 2005). Insulin resistance is likely to be present if the child has acanthosis nigricans on physical examination. If there is a family history of diabetes or the child is of Hispanic or African-American background, the risk is even higher. Having a high insulin level causes abnormal hunger, perpetuating the cycle of abnormal eating behaviors. Screening for diseases related to insulin resistance may help families understand the seriousness of their child's obesity-related disease and increase their compliance with the dietary treatment. To help the child who has insulin resistance, the health providers must get the child's insulin level down (See Nutrition Section). If insulin resistance can be reversed, the child's acanthosis nigricans will lighten and may even disappear, the insulin level and hunger will normalize, and the risk for diabetes will drop.