

# Obesity and Children



Nancy T. Browne, MS, PPCNP-BC

## KEYWORDS

- Pediatric • Obesity • Weight stigma • Bullying • Victimization • Pharmacotherapy
- Obesity treatment • Social determinants

## KEY POINTS

- Pediatric obesity is a heterogeneous, chronic, relapsing disease
- Obesity in childhood is associated with metabolic and psychosocial complications
- Weight-based victimization is common with metabolic and psychosocial implications
- Evidence-based guidelines are available to treat childhood obesity
- Nurses are positioned to positively impact children with obesity by providing affirmation, clinical management, and psychosocial support

## INTRODUCTION

The constructs of optimal diet, activity, sleep, and environmental elements are integral to a child's health. The observation that some children with "good health habits" develop obesity, whereas others with "poor health habits" do not, speaks to the complexity of energy dysregulation in children. Ongoing research examines why some children are more susceptible to obesity, why some develop obesity earlier with a steeper trajectory, and why some are more responsive metabolically to therapy than their counterparts. The goal of pediatric obesity disease is prevention; the secondary goal is successful treatment that is the least invasive with minimal consequences.

Optimal treatment strategies are a current research focus. Treatment options and combinations are being explored, studied, and implemented. Personalized, interdisciplinary care is necessary to meet the complexity and wide disease variance found in pediatric obesity. Complications of obesity in children and adolescents encompass a wide range of metabolic and psychosocial conditions, many traditionally only seen in older adults. In particular, weight-based victimization (WBV) threatens the health of children with obesity as much as metabolic obesity-related complications.<sup>1</sup> Nurses play a key role in mitigating this threat to children's physical and psychosocial health. The purpose of this review is to discuss the complexity of pediatric obesity and its unique components and consequences. Evidence-based pediatric guidelines and treatment recommendations are shared that advocate for their implementation in all

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25 Andrews Avenue, Falmouth, ME 04105, USA

E-mail address: [nancytkacz@sbcbglobal.net](mailto:nancytkacz@sbcbglobal.net)

Twitter: [@nancytbrowne](https://twitter.com/nancytbrowne) (N.T.B.)

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levels of pediatric practice. The review shares how nurses in multiple practice areas can make a meaningful impact on the lives of children and adolescents with obesity.

## DEFINITION AND PREVALENCE OF PEDIATRIC OBESITY

Obesity in children is measured by body mass index percentiles obtained by plotting weight and height on gender-specific standardized growth charts.<sup>2,3</sup> The Centers for Disease Control and Prevention<sup>4</sup> define adiposity in children as overweight (85th–94th percentiles), obesity (95th–98th percentiles; class 1 obesity), and severe obesity (>99th percentile; class 2 and class 3 obesity). Specific growth charts are available to track severe obesity (percentage of the 95th percentile) classifying greater than or equal to 120% to 140% of the 95th percentile as class II obesity and greater than or equal to 140% of the 95th percentile as class III obesity.<sup>5,6</sup> Growth charts tailored to the needs of children with Down syndrome, achondroplasia, and Turner syndrome are also available.<sup>7–9</sup>

The prevalence of overweight and obesity in children living in the United States currently approaches 33%.<sup>10</sup> The severity of pediatric obesity increases with age: 41.5% of US adolescents 16 to 19 years old are classified with class 1 or 2 obesity and 4.5% meet the criteria for class 3 obesity. Globally, obesity affects more than 337 million children.

## HEALTH CONSEQUENCES ASSOCIATED WITH OBESITY IN CHILDREN AND ADOLESCENTS

Obesity-related complications and co-occurring conditions present a challenge to pediatric clinicians. Traditionally, minimal health screening is performed for children and adolescents beyond yearly well child visits, which are heavily scripted for anticipatory guidance and immunizations. With obesity now affecting a third of US children, many will have significant obesity-related disease burden requiring diagnosis and treatment.<sup>11–13</sup> More than 200 obesity-related conditions affecting all organ systems have been identified.<sup>14,15</sup> **Table 1** lists the most common obesity-related complications in children.

### *Psychosocial and Associated Complications*

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Psychosocial obesity-related complications are common. Children experiencing weight stigmatizing events are at increased risk for adverse metabolic and psychosocial outcomes.<sup>16,17</sup> In particular, depression and anxiety are increased in children with severe obesity.<sup>18</sup> Chronic stress from ongoing WBV, bullying, and teasing breaks down normal functioning of energy regulatory pathways and weakens normal immune responses.<sup>1,17</sup> Quality of life is significantly affected by these stressors resulting in further threats to mental and cardiometabolic health.<sup>19</sup>

As the understanding of energy regulation physiology and pathophysiology deepens, so does an understanding of other diseases that share the same injured metabolic pathways, particularly in the central nervous system and brain. Diseases sharing these pathways and co-occurring with obesity include attention-deficit/hyperactivity disorder,<sup>20,21</sup> sleep disorders,<sup>22</sup> loss of control eating disorder/binge eating disorder,<sup>23</sup> and anxiety.<sup>24</sup> It is important for nurses to assess for obesity co-occurring conditions regardless of why the child presented for health care.

## GENETICS AND EPIGENETICS

Obesity is a complex and heritable disorder, resulting from the interplay between genetic susceptibility, epigenetics, plasticity, and the environment.<sup>25</sup> Genetic involvement

<b>Medical</b>	<b>Psychosocial</b>
Cancers	Attention-deficit/hyperactivity disorder
Cholelithiasis	Anxiety
Gallbladder disease	Bulimia nervosa
Gastrointestinal reflux	Bullying
Hyperinsulinemia	Depression
Insulin resistance	Low quality of life
Joint disorders (osteoarthritis)	Low self-esteem
Liver disease (nonalcoholic fatty liver disease, nonalcoholic steatohepatitis)	Night eating syndrome
Obstructive sleep apnea	Poor school performance
Thyroid disease	Sleep-related eating disorder
Dyslipidemia	Teasing
Idiopathic intracranial hypertension	Weight bias/discrimination
Metabolic syndrome	
Asthma	
Hypertension	
Sleep disorder syndromes	
Prediabetes	
Polycystic ovary syndrome	
Insulin resistance	
Orthopedic conditions (Blount disease, slipped capital femoral epiphysis)	
Cardiovascular disease	
Type 2 diabetes	

Data from: Skinner AC, Perrin EM, Moss LA, et al. Cardiometabolic risks and severity of obesity in children and young adults. *N Engl J Med.* 2015;373(14):1307-1317. <https://doi.org/10.1056/NEJMoa1502821>; Puhl RM, Lessard LM. Weight stigma in youth: Prevalence, consequences, and considerations for clinical practice. *Curr Obes Rep.* 2020;9(4):402-411. <https://doi.org/10.1007/s13679-020-00408-8>.

in childhood obesity is defined as monogenic (syndromic and nonsyndromic), polygenic, and epigenetic.<sup>26</sup>

Monogenic obesity disorders consist of a single gene mutation and are less affected by environmental factors. These disorders are rare and typically characterized by severe hyperphagia and steep trajectories in weight gain during early childhood.<sup>27</sup> Monogenic obesity disorders are caused by mutations in leptin–melanocortin hypothalamic pathways, which regulate appetite, hunger, and satiety.

Monogenic obesity is further depicted as syndromic and nonsyndromic. In syndromic obesity, clinical phenotypes, such as intellectual and developmental delays, severe hyperphagia, and dysmorphic features occur in association with obesity.<sup>27</sup> In nonsyndromic obesity, the main symptom is severe obesity. **Figs. 1 and 2** list monogenic nonsyndromic and syndromic conditions associated with pediatric obesity.<sup>27,28</sup>

Polygenic obesity is multifactorial and involves several obesity-related polymorphic genes interacting with environmental factors, such as diet, physical activity, and

Disease	Characteristic Features	Comments
Congenital Leptin Deficiency	Early-onset severe obesity and hyperphagia, altered immune function, delayed puberty	Mutations: <i>ob</i> gene Undetectable serum leptin levels Treatment: leptin
Congenital leptin receptor deficiency	Early-onset severe obesity and hyperphagia, altered immune function, delayed puberty	Normal serum leptin levels
Melanocortin 4 receptor (MC4-R) Mutation	Tall stature Rapid growth	Normal mental status
Pro-opiomelanocortin (POMC) Mutation	Red hair, pale skin, low blood pressure or rapid pulse, corticotropin deficiency, adrenal insufficiency	Hypopigmentation Isolated ACTH deficiency

**Fig. 1.** Monogenic nonsyndromic obesity. ACTH, adrenocorticotropic hormone. (Data from Chung WK. An overview of monogenic and syndromic obesities in humans. *Pediatr Blood Cancer* 2012;58(1):122–8; and Mason K, Page L, Balikcioglu PG. Screening for hormonal, monogenic, and syndromic disorders in obese infants and children. *Pediatr Ann* 2014;43(9):e218–24.)

endocrine disruptors. Individual responses to these environmental components are influenced by susceptibility genes.<sup>29</sup> In polygenic obesity, a greater number of obesity-related gene mutations increases the risk for obesity phenotypes.<sup>29</sup>

Epigenetics refers to factors that can affect gene function without modifying the gene's DNA sequence. Environmental influences during early life may induce epigenetic variation affecting later metabolism and chronic disease risk including obesity.<sup>30</sup>

## CONSIDERATIONS UNIQUE TO CHILDREN IMPACTING OBESITY TREATMENT

### *Plasticity*

Obesity treatment for children is conceptually unique in several ways. The first unique concept is plasticity, which is the ability to reprogram development based on internal

Disease	Key Characteristics	Comments
Prader-Willi Syndrome	Short stature, hypotonia, developmental delay, hyperphagia	Increased ghrelin level
Bardet-Biedl Syndrome (Laurence-Moon)	Retinitis pigmentosa, polydactyly, hypogonadism, hypotonia, developmental delay	Autosomal recessive
Albright Hereditary Osteodystrophy	Developmental delay, short stature, and short fourth and fifth metacarpals, hypocalcemia	Pseudohypoparathyroidism; Precocious puberty
Fragile X	Intellectual disability, large ears, large testes, CCG trinucleotide affecting <i>FMR-1</i> gene on X chromosome	FISH Hybridization
Chen Syndrome	Obesity, hypotonia, microcephaly, prominent incisors	Auto Recessive
Beckwith-Wiedemann Syndrome	Macroglossia, macrosomia, hypoglycemia, ear pits, midline abdominal wall defects	Increased cancer incidence (Wilms tumor, hepatoblastoma)
Alström Syndrome	Sensorial hearing loss, blindness, IR and hyperinsulinemia, DM, dilated cardiomyopathy, hepatic and renal failure	Mutation in <i>ALMS1</i> gene

**Fig. 2.** Monogenic syndromic obesity. DM, diabetes mellitus; FISH, fluorescence in situ hybridization; IR, insulin resistance. (Data from Chung WK. An overview of monogenic and syndromic obesities in humans. *Pediatr Blood Cancer* 2012;58(1):122–8; and Mason K, Page L, Balikcioglu PG. Screening for hormonal, monogenic, and syndromic disorders in obese infants and children. *Pediatr Ann* 2014;43(9):e218–24.)

and external factors affecting the organism.<sup>30,31</sup> There are critical developmental periods for endocrine and metabolic systems where plasticity may exhibit positive and negative effects depending on the child's responses to environmental influences. Questions for ongoing research, particularly for the child with obesity, include can early intervention reset the body's energy set point (preset normal weight range, controlled by genetic DNA) and change accelerated weight trajectory,<sup>32</sup> and is there a point where the plasticity effect is lost and change in trajectory no longer possible?

### ***Adiposity Rebound***

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In normal growth, adiposity rises rapidly in the first year of life (time of accelerated growth); then growth rate declines, reaching its lowest rate at approximately 6 years of age. Adiposity rebound is the age at which the growth rate rises again.<sup>33</sup> Early adiposity rebound (as early as 2–4 years old) is a marker of later obesity development and an indication for early obesity intervention.

### ***Off-Label: What It is and what It is Not***

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Off-label is a common concept in pediatric care with implications for pediatric obesity treatment options. Off-label does not mean illegal; rather, it means that there is not enough (or any) evidence from double-blinded, randomized trials to demonstrate the efficacy of a treatment for a particular indication. Therapies for pediatric conditions, including those for obesity treatment, are often guided by clinical practice guidelines and best practice evidence. Pediatric clinicians are guided by the American Academy of Pediatrics (AAP) statement on off-label medication use in children.<sup>34</sup>

## **PEDIATRIC OBESITY TREATMENT**

### ***Goals and Principles of Treatment***

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The goal of pediatric obesity treatment is to improve the child's health and quality of life. Numerous guidelines, statements, and recommendations from pediatric and obesity specialists are available for the clinician (**Table 2**). In 2007, the AAP outlined a progressive recommendation of four stages of pediatric obesity treatment: primary care with increasing intensity (stages 1 and 2) and interdisciplinary obesity treatment teams (stages 3 and 4).<sup>35</sup> Revised AAP pediatric obesity treatment guidelines are anticipated in 2022.

The Obesity Medicine Association pediatric obesity algorithm reviews pediatric age groups, obesity complications, and pediatric obesity treatment.<sup>36</sup> The Obesity Medicine Association treatment pyramid (**Fig. 3**) depicts the stepwise approach to advanced pediatric obesity care that mirrors AAP stages 2 to 4. All pediatric obesity treatment is built on the standard foundation of evidenced-based dietary, activity, behavioral health, and environmental support (intensive lifestyle therapy [ILT]). All further advanced treatments are additive and administered with ongoing ILT support by an obesity-trained interdisciplinary team.

### ***Clinical Assessment***

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A focused clinical assessment of the child with suspected obesity is additive to their general clinical examination. The focused areas specific to obesity include particular attention to growth history, accurate weight and height (weight percentile), growth trajectory, and age of onset of increased weight. What has been tried, what has worked, and what has not worked in the management of accelerated weight gain guides the clinician in identifying potential obesity subtypes. A weight graph drawn by the parents or child (if able) is helpful to see the pattern of weight gain (linear in trajectory or

<b>Citation</b>	<b>Guidance</b>	<b>Organization</b>
Armstrong et al, <sup>49</sup> 2019	Pediatric metabolic and bariatric surgery	American Academy of Pediatrics
Barlow & Expert Committee, <sup>35</sup> 2007	Pediatric staged obesity management and prevention	American Academy of Pediatrics <sup>a</sup>
Cuda et al, <sup>36</sup> 2020	Pediatric obesity treatment algorithm	Obesity Medicine Association
Estrada et al, <sup>40</sup> 2014	Consensus statements on childhood obesity comorbidities	Children's Hospital Association
Frattarelli et al, <sup>34</sup> 2014	Off-label use of drugs in children	American Academy of Pediatrics
Institute for Healthy Childhood Weight, <sup>41,b</sup>	Algorithm for assessment and management of childhood obesity	American Academy of Pediatrics
Jastreboff et al, <sup>15</sup> 2019	Obesity as a disease: Position Statement	The Obesity Society
Pont et al, <sup>56</sup> 2017	Weight stigma experienced by children and adolescents	The Obesity Society
Pratt et al, <sup>50</sup> 2018	Pediatric metabolic and bariatric surgery guidelines	American Society of Metabolic & Bariatric Surgery
Rubino et al, <sup>19</sup> 2020	International consensus statement for ending obesity stigma	International obesity organizations
Rudd Center for Food Policy & Obesity <sup>c</sup>	Weight bias, stigma tool kit for adults and children	Rudd Center for Food Policy & Obesity
Srivastava et al, <sup>51</sup> 2019	Clinical considerations regarding obesity pharmacotherapy in adolescents with obesity	Multicenter expert panel
Styne et al, <sup>42</sup> 2017	Pediatric obesity assessment, treatment, and prevention practice guidelines	The Endocrine Society
US Preventive Services Task Force, <sup>44</sup> 2017	US Preventive Services Task Force Recommendation Best Practice Statement	US Preventive Services Task Force

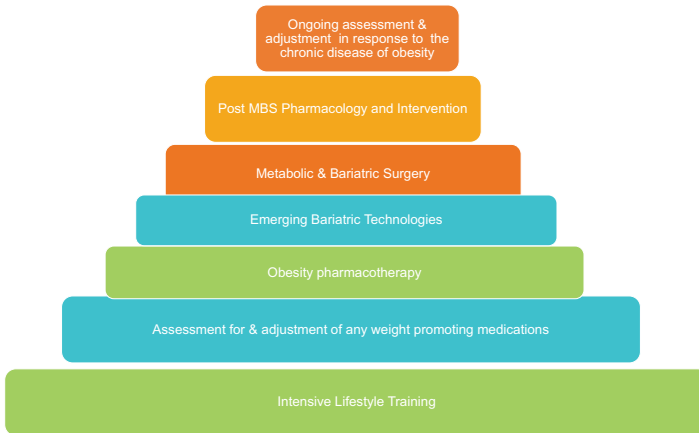
<sup>a</sup> Revised American Academy of Pediatrics recommendations expected 2022.

<sup>b</sup> [https://ihcw.aap.org/resources/Documents/algorithm\\_brightfutures\\_032819.pdf/](https://ihcw.aap.org/resources/Documents/algorithm_brightfutures_032819.pdf/).

<sup>c</sup> [www.uconnruddcenter.org/](http://www.uconnruddcenter.org/).

intermittent). A complete list of the child's current medications allows for identification of drugs that cause unintentional weight gain. **Table 3** lists focused areas of obesity assessment.

A psychosocial assessment identifies stressors that may exacerbate obesity illness. Bullying, teasing, and weight discrimination are common for children with obesity leading to complications, such as anxiety, depression, decreased self-esteem, and decreased coping skills.<sup>1</sup> Appropriate counseling and referrals for more intense



**Fig. 3.** Building blocks of pediatric obesity treatment. MBS, metabolic and bariatric surgery. (With permission: © Obesity Medicine Association® 2020-2022.)

<b>Table 3</b>	
<b>Focused pediatric obesity assessment</b>	
<b>Assessment Area</b>	<b>History of</b>
Previous weight management experience	What has worked; what has not When did excessive weight gain begin Discuss weight graph drawn by family
Current medications	Weight promoting, weight neutral, weight decreasing
Diet history	Who shops and cooks Daily and weekly diet routine Fluid intake (water, sugar-sweetened beverages)
Hunger and satiety assessment	“Out of control” related eating “Hungry all the time” “Food hoarding and sneaking” Eating related to emotions?
Food insecurity	Evaluate for food insecurity
Psychological assessment	Past traumas/severe stress Anxiety, depression, psychological diagnosis Bullying/teasing/weight stigma history
Social assessment	Caretakers, guardians With whom does the child live and when Social or racial determinants of health
Obesity-related complications	Metabolic Psychosocial Sleep disturbances
Activity	Daily and weekly pattern Opportunities and limitations Preferences

*Data from:* Barlow SE, Expert Committee. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics*. 2007;120 Suppl 4:S164-S192. <https://doi.org/10.1542/peds.2007-2329C>; Cuda S, Censani M, O’Hara V, et al. Pediatric Obesity Algorithm, presented by the Obesity Medicine Association. 2020-2022. [www.obesitymedicine.org/childhood-obesity](http://www.obesitymedicine.org/childhood-obesity) (Accessed February 2021).

psychosocial support are often necessary. Unfortunately, it is common that parents and children believe that they are at fault for the child's excess weight with family, educators, and even health professionals suggesting that weight gain is a failure in self-control and/or parenting.<sup>1</sup> Developing a supportive, therapeutic relationship with the child and family allows for rebuilding of trust.

Psychosocial evaluation is conducted in the context of a child's social determinants of health, which impact the child's family and environment. Stressors can include economic instability; discrimination; and threats to health care access, housing, and safety. Food insecurity is a frequent stressor associated with childhood obesity and is screened for at each visit.<sup>37,38</sup> Because chronic stress contributes to obesity severity, efforts to decrease environmental stress for the child and family are a priority.<sup>39</sup>

A complete review of systems and physical examination focuses on characteristics connected with obesity disease including acanthosis nigricans (insulin resistance), joint dysfunction (pain and joint degeneration from physical stress), and hirsutism (polycystic ovary syndrome). For children higher than the 95th percentile for weight, baseline screening includes fasting glucose, hemoglobin A1c, lipid and liver panels, and blood pressure using an age-appropriate cuff size.<sup>40,41</sup> Further testing based on initial screening results may include sleep study, liver scan, and fasting insulin.<sup>36,42</sup> In collaboration with the child and family, a plan of care tailored to the child's specific needs and treatment options is devised.<sup>20</sup>

## Clinical Management

### Foundational pediatric obesity treatment

The cornerstone of obesity treatment is ILT and management of weight-promoting medications and obesity complications. Childhood and adolescence are dynamic times and principles of growth and development guide all treatment.<sup>43</sup> In collaboration with the family and child, a treatment plan consisting of small, achievable goals is implemented. Coordination with dietitians, activity specialists, and behavioral professionals trained in obesity care is recommended.<sup>35,42</sup> Guided by chronic disease management principles, obesity care is ongoing with expected relapses and times of educational repetition. The US Preventive Services Task Force recommends comprehensive ILT ( $\geq 26$  hours) over 2 to 12 months for children with obesity disease.<sup>44</sup>

The child's medications are identified as weight promoting, weight neutral, or weight reducing (Figs. 4 and 5). The cause of weight gain for many children is often related to

	Significant Weight Gain		Small to Neutral Weight Gain		Weight Loss (neutral to mild)
ADHD			Guanfacine		Atomoxetine Lisdexamfetamine Amphetamine Methylphenidate
Anti-Seizure	Valproate Vigabatrin	Pregabalin Gabapentin	Carbamazepine Oxcarbazepine	Lamotrigine Levetiracetam Phenytoin	Topiramate Zonisamide Felbamate
Migraine	Amitriptyline Divalproex Flunarizine	Gabapentin Metoprolol Propranolol	Timolol Levetiracetam		Zonisamide Topiramate
Diabetic Medications	Insulin and analogs				Liraglutide, Exenatide, Semaglutide, Dulaglutide Metformin
Other Medications	Glucocorticoids Gleevec Depo Provera		Benzodiazepines Statins Antihistamines (Cyproheptadine) Carvedilol Oral Contraceptive Pills		

**Fig. 4.** Nonpsychiatric medications that affect weight. ADHD, attention-deficit/hyperactivity disorder. (With permission: © Obesity Medicine Association® 2020-2022.)



	Significant Weight Gain	Small to Neutral Weight Gain	Weight Loss
Antipsychotics	Clozapine Olanzapine Chlorpromazine Quetiapine Risperidone	Aripiprazole Haloperidol Ziprasidone	
Antidepressants	Paroxetine* Amitriptyline Olanzapine Citalopram Nortriptyline Doxepin Mirtazapine	Lithium Desipramine Imipramine Duloxetine Escitalopram	Venlafaxine Fluvoxamine Sertraline Trazodone Fluoxetine  Bupropion*
Mood Stabilizers	Valproate Lithium Gabapentin		Topiramate
Anxiolytics		Lorazepam Diazepam Oxazepam	

**Fig. 5.** Psychiatric medications that affect weight. (With permission: © Obesity Medicine Association® 2020-2022.)

pharmacotherapy necessary to manage a separate medical condition. Medications as complex as steroids or as commonplace as antihistamines for seasonal allergies may trigger unusual weight gain in susceptible children. Coordination to manage medical conditions with the least weight-promoting side effects is complex but essential to best outcomes.

### **Advanced pediatric obesity treatment**

Advanced treatment of severe obesity and its complications may include antiobesity pharmacotherapy, device therapy, metabolic and bariatric surgery (MBS), or a combination of these modalities.<sup>45</sup> MBS safety and efficacy in adolescents, including psychosocial outcomes, have been demonstrated in single and multi-institutional studies managed by interdisciplinary groups that reinforce ILT throughout preoperative and postoperative care.<sup>46–48</sup> MBS outcomes in adolescents mirror adult weight loss along with improvement of obesity-related conditions and general health.<sup>46</sup> Guidelines for MBS in the pediatric population are available from the AAP and the American Society for Metabolic and Bariatric Surgery.<sup>49,50</sup>

Antiobesity pharmacotherapy also is used as an adjunct to ILT in pediatric obesity care. Antiobesity pharmacotherapy options may be Food and Drug Administration (FDA)-approved for weight loss in certain pediatric age groups or FDA-approved for other indications (type 2 diabetes) and administered using off-label pediatric protocols.<sup>34</sup> Best practice use of antiobesity pharmacotherapy in children and adolescents includes ongoing care by an interdisciplinary team trained in pediatric obesity management.<sup>51,52</sup>

Antiobesity device therapy includes space-occupying devices (intra-gastric balloons), malabsorptive endoscopic luminal sleeve, vagal nerve stimulation, and aspiration devices. These devices are temporary, removable, and adjustable, which may be an advantage in children and adolescents because of plasticity of pediatric obesity disease.<sup>53</sup> Device therapy is not currently FDA-approved in the pediatric population in the United States.

Chronic disease management principles guide the care of children with obesity.<sup>54</sup> Obesity as a chronic disease tends to improve and relapse, necessitating ongoing assessment of treatment efficacy and adjustment of treatment options. Combination therapy uses ILT and advanced therapies in a multitude of groupings to manage obesity-related complications and maintain optimal health. The interdisciplinary

team, particularly obesity-trained counselors, plays an important role in supporting children, adolescents, and their families in the realization and understanding that obesity disease is chronic and requires ongoing care. The principles of patient- and family-centered care are used throughout the spectrum of care.<sup>55</sup>

## **IMPLEMENTATION INTO PEDIATRIC PRACTICE**

Building on concepts discussed throughout this article, this section considers how to maximize the impact of pediatric obesity care at the nursing practice, clinical office, community, and professional nursing levels. Pediatric nurses encounter children and adolescents with obesity in a variety of professional settings. In some encounters, the purpose for the visit is to address concerns regarding weight and obesity-related complications. In other settings, the primary reason for the encounter has a different focus, which challenges the nurse in how to intervene to a health-related concern requiring a timely and sensitive conversation.<sup>19</sup> Effective communication is central to meeting this challenge; perhaps with direct conversation with the child and family or perhaps with the child's primary provider. The key point is that the child with obesity has a chronic disease with obesity-related conditions that threaten overall health.

### ***Pediatric Nursing Specific Strategies***

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At the individual nursing practice level, in addition to strategies already discussed, education of the family remains a primary goal. The disease of obesity is observable. Frequently, children with obesity and their families receive ongoing, unrelenting variations of weight-related bias, teasing, bullying, unsolicited advice, and outdated theories leading to internalized bias with psychosocial and metabolic consequences.<sup>17</sup> A safe haven clinical space grounded in evidence-based obesity care provides the child and family with optimal clinical and emotional support.<sup>56</sup>

### ***Pediatric Office and Community Considerations***

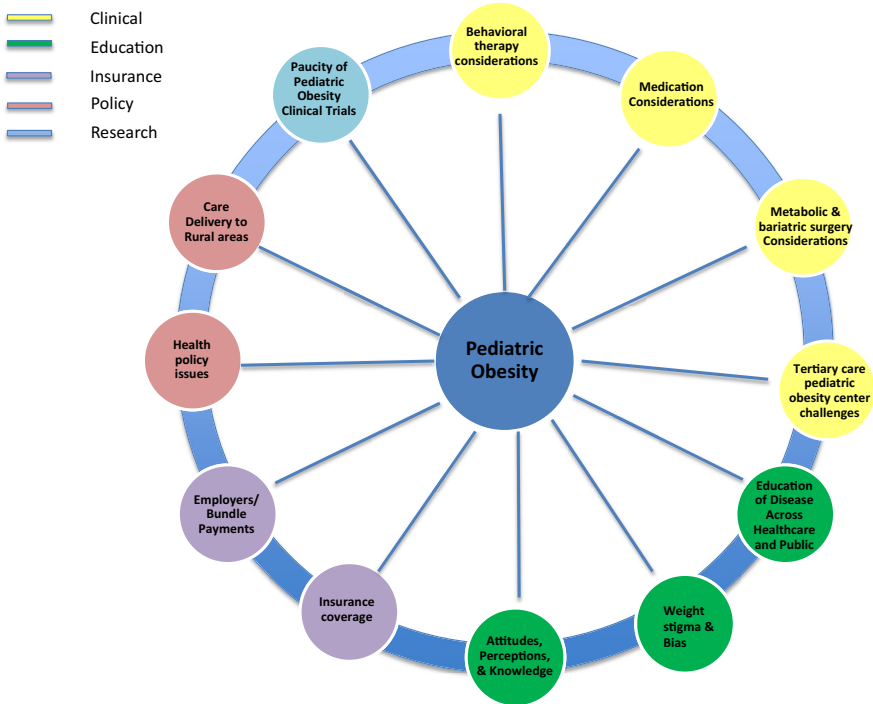
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In primary care practice, all members of the office and clinical team play a role in providing optimal care for the child with obesity. Sadly, research demonstrates that health care providers may inadvertently contribute to poor weight-related interactions with patients.<sup>1</sup> Nurses can open conversations with other team members regarding feelings in caring for children with the disease of obesity. Opportunities for education include obesity etiology, psychosocial risks (bullying, teasing), office environment (appropriately sized/weight limit for chairs, examination table, gowns, blood pressure cuffs), and sensitivity around obtaining weights (privacy, permission). Evolving a culture that is sensitive, educated to the disease of obesity, and supportive of person-first language promotes optimal obesity care for the child and family. The nurse plays a key role in educating and modeling these concepts.

### ***Professional Considerations***

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Professionally, nurses have a multitude of opportunities to advance pediatric obesity care. Education about normal energy regulation, pathophysiology resulting in obesity, phenotypes, obesity treatment options, and risks of weight-promoting medications can be shared within the nursing profession and also in the general community. Evidence-based information about how obesity affects children, along with correction of common obesity myths reduces obesity-related bias and discrimination. Pediatric nurses are respected and positioned to model person first language and actions. Advocacy extends to health care institutions (committees), professional organizations,



**Fig. 6.** Twelve barriers to care in pediatric obesity treatment. (With permission: Srivastava G, Kyle T, O'Hara V, et al. Caring for US children: barriers to effective treatment in children with the disease of obesity. *Obesity* 2021;29(1):46–55.)

and policy makers.<sup>57</sup> The consensus statement for ending obesity stigma includes a call-to-action pledge suitable for office display as a code of conduct.<sup>19</sup>

### BARRIERS TO PEDIATRIC OBESITY CARE INCLUDING MYTHS

Barriers to pediatric obesity care include incomplete clinical management, outdated education, poor insurance coverage, insufficient policy advances, and exclusion from research.<sup>58</sup> Central to these barriers is the disparity between current scientific knowledge of energy regulation and impact of dysregulation (obesity) and what is considered “common knowledge” in lay and health care education. WBV is pervasive in every facet of society. From lack of person-first language (“person with obesity” instead of “obese person”) to disrespectful portrayals on media channels, negative portrayal of children with obesity results in cultural stereotypes. Insurance coverage for pediatric obesity care is severely hampered by outdated beliefs that obesity treatment is cosmetic and optional. Nurses, through education and behavior modeling, can advocate to dispel these myths allowing for evidence-based care for children and adolescents with the disease of obesity. **Fig. 6** depicts these barriers in the clinical, education, insurance, policy, and research realms.<sup>58</sup>

### SUMMARY

Obesity is a heterogenous, chronic, relapsing disease with the strong potential to severely affect a child’s physical, mental, and spiritual life. The disease is associated

with multiple chronic conditions that can lead to debilitating metabolic and psychosocial complications in children and adolescents. WBV is particularly impactful on youth with obesity putting them at risk for psychosocial conditions, including anxiety, substance abuse, and suicidal ideation along with detrimental effects on academic advancement and social integration.<sup>1</sup>

Evidence-based recommendations offer guidance for stepwise treatment of obesity and associated conditions. Built on a foundation of nutrition, activity, and behavioral therapies supported by advanced obesity treatment, clinical management is tailored to the specific needs of the child. Treatment is guided by the child's response represented by their phenotype and individual disease trajectory. Not unlike treatment of other chronic diseases (eg, hypertension), obesity treatment is lifelong with ongoing therapy adjustment as per clinical needs. Successful obesity treatment is different for every child and family. Although the child's metabolic and psychosocial needs may be equally important to the health care team, WBV with unrelenting microaggressions is often the lens through which children see their obesity-impacted world. Nurses can make a significant impact in the lives of children living with the disease of obesity by listening, offering affirmation that WBV is wrong, providing and facilitating psychosocial support, and offering respite for children to escape the constant barrage of stress-related interactions.<sup>59</sup> By improving psychosocial health, the child receives metabolic and psychosocial benefits.

### CLINICS CARE POINTS

- Pediatric obesity is a heterogenous, chronic, relapsing disease
- Obesity in childhood is associated with metabolic and psychosocial complications
- Weight-based victimization is common with metabolic and psychosocial implications
- Evidence-based guidelines are available to treat childhood obesity
- Nurses are positioned to positively impact children with obesity by providing positive affirmation and psychosocial support

### DISCLOSURE

The author has nothing to disclose.

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