Mental Health Considerations for Pediatric Obesity

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Learning Objectives

1. Learn about the interconnection between childhood obesity and social and emotional health
2. Identify common mental health concerns that co-occur with obesity
3. Identify treatment opportunities for addressing mental health concerns
Outline

- Developmental Conceptualization
- Attention Deficit Hyperactivity Disorder
- Depression
- Anxiety
- Emotional Eating
- Loss of Control/Binge Eating
- Applying CBT to Pediatric Obesity
- Social Consequences Associated with Obesity
- Assessment Tools

Developmental Conceptualization
Harrison et al. 2011

Figure 1. The Sin Co-developmental ecological model of contributors to overweight and obesity in childhood.
Proposed Causes and Risk Factors: Development of Obesity
(Boeminger et al, 2019)

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetics and epigenetics</td>
<td>Congenital leptin deficiency, Bardet-Biedl syndrome</td>
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<tr>
<td>Gut-brain hormones</td>
<td>Ghrelin, leptin, insulin</td>
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<tr>
<td>Eating behaviors</td>
<td>Binge eating, loss of control eating, hunger, food addiction</td>
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<td>Disease states</td>
<td>Cushing’s disease, hypothyroidan</td>
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<tr>
<td>Medications</td>
<td>Steroids, atypical antipsychotics, insulin</td>
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<td>Psychological conditions/mood</td>
<td>Depression, anxiety</td>
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<td>Physical activity</td>
<td>Sedentary lifestyle, increased screen time</td>
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<td>‘Obesogenic’</td>
<td>Microbiome, metabolome, transcongenitus, proteome</td>
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<td>Pre- and perinatal exposures</td>
<td>Prenatal weight gain, gestational diabetes in mother</td>
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<td>Adverse life events</td>
<td>Adverse childhood experiences</td>
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<td>Environmental</td>
<td>Advertising for calorically dense foods</td>
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<td>Cultural norms</td>
<td>Portion sizes, body image norms</td>
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<td>Built environment and area deprivation</td>
<td>Walkability, green spaces</td>
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<tr>
<td>Socioeconomics</td>
<td>‘Food desert’, ‘food swamps’</td>
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<tr>
<td>Education status</td>
<td>Low education level</td>
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*Nonexclusive.
- Strength of the relationship between ADHD and Obesity appears to get stronger over the course of development
- There is more evidence that ADHD precedes obesity
  - ADHD symptoms at age of 7 – 8 predict adolescent obesity (Khalife, et al 2014)
- Hypothesis that obesity may lead to ADHD via sleep disordered breathing
- Factors underpinning the association:
  - Genetics
    - E.g., those with high ADHD symptoms and greater dopaminergic activation in key brain reward areas have a higher BMI
  - Alterations in hot executive functioning/affective decision making
  - Increased prevalence of loss of control eating (LOC)
    - Over 70 percent of children with ADHD had recurrent LOC eating compared with 20 percent of children without ADHD (Reinblatt et al., 2015)
  - Sleep issues
    - Children with ADHD often have difficulty falling asleep.
    - Short sleep duration increases the likelihood of dysregulated eating
  - Inattention associated with reduced physical activity in childhood
  - Children with ADHD have 50% lower odds of sports participation than children with asthma

### Treatment

- Address sleep concerns including OSA, if relevant
- Opportunities for physical activity
  - Clinical Experience: Young children with significant ADHD are less apt to participate in organized sports
- Behavior management training for parents (especially for young children)
- Address academic under performance
- Consider medication management of symptoms
• Bidirectional association between depression and obesity
  
  • Children with obesity or overweight are significantly more likely to have depression
    • Children and adolescents younger than 21 with obesity have a 34% higher risk of developing depression and are more likely to present with depressive symptoms than their peers with healthy weight (Quek, Tam, Zhang, & Ho, 2017)
  
  • More severe depression in groups with more severe obesity
  
  • Depression and antidepressant usage are independently associated with BMI
  
  • Factors underpinning the association with obesity:
    • Depression associated with physical inactivity and binge eating
    • Peer victimization, bullying, and teasing increase with obesity status and are strongly associated with depression
    • Sleep may be a mediator of the relation between depression and obesity

Depression Jebeile et al 2019

Treatment

• Participation in structured and professionally run obesity treatment interventions with a dietary component are associated with a reduction in symptoms of depression
  
  • Even a small reduction during obesity treatment may reduce the susceptibility to worsening of symptoms during adolescence
  
  • Greater reduction in depressive symptoms found in studies with more severe obesity at baseline
  
  • Improvement in symptoms not related to weight related outcomes – could be due to changes in dietary intake or other specific intervention components (Omega 3?)

• Bariatric Surgery
  
  • Initial improvement in depression but return of symptoms with weight regain

• Psychotherapy

• Pharmacotherapy

• Address sleep concerns including OSA, if relevant

• Opportunities for increasing physical activity
  
  • Relation between “does” of exercise and therapeutic response for depression remains understudied
  
  • More recent focus on affective based exercise – identifying exercise where you consistently derive pleasure
Anxiety
Pediatric Obesity Algorithm
2018 - 2020

- Odds of having severe obesity versus obesity were 5x higher for those with anxiety
- Anxiety with increased BMI greater in females than in males
- Strong association with obesity and social anxiety in elementary aged patients
- Factors underpinning the association
  - Imbalance in the Hypothalamic Pituitary Adrenal Axis and altered cortisol
  - Loss of control eating
  - Low self esteem and negative self image
  - Weight bias

Treatment
- Obesity intervention programs including structured exercise classes had a greater reduction in anxiety compared with studies providing physical activity education alone
  - Longer obesity interventions have a greater reduction in anxiety
- Recent evidence that Mindfulness based intervention plus dietary intervention led to reductions in anxiety, BMI, and body fat in children with obesity and anxiety
- Psychotherapy
- Pharmacotherapy
- Address sleep concerns including OSA, if relevant
- Opportunities for physical activity
Emotional Eating
Pediatric Obesity Algorithm
2018 - 2020

- Occurs when individuals eat in response to negative emotions or stress
- Etiology
  - History of high dietary restraint
  - Difficulty identifying hunger and satiety
  - Emotion dysregulation - associated with PTSD and depression
- Treatment:
  - Focus on emotion regulation skills
  - Dialectical behavior therapy with a focus on mindfulness, emotion regulation, and distress tolerance

Loss of Control (LOC) Framework
Tanofsky-Kraff, M., Schvey, N.A., & Grilo, C.M. (2020)
LOC Eating
Tanofsky-Kraff, M., Schvey, N.A., & Grilo, C.M. (2020)

- Issue of what constitutes as abnormally large in youth (9-year-old female versus 16-year-old male) leading researchers to examine LOC eating in youth, instead of binge eating
- 50 percent of youth seeking weight loss treatment report past or current LOC
- Youth as young as 8 years of age report LOC eating
- Risk Factors for LOC eating:
  - Mothers with binge eating more apt to have a child with LOC eating
  - The FTO high risk A allele (a polymorphism placing youth at greater risk for obesity) has been linked to LOC eating
  - Dieting, emotional eating, and eating in the absence of hunger are risk factors for LOC in adolescents
  - Increased impulsivity and reward sensitivity may put youth at risk for LOC eating

Binge Eating
Tanofsky-Kraff, Schvey, & Grilo, 2020

- Defined as the consumption of an abnormally large quantity of food while experiencing a lack of control
- BED: recurrent binge episodes in the absence of regular compensatory behaviors and must have 3 of the following: eating faster than usual, eating until uncomfortably full, eating large portions when not hungry, eating alone because one feels shame, feeling disgust or guilt after
- Etiology:
  - Model hypothesizes that negative affect, elevated reward responsivity for food, and alterations in executive functioning increase risk for development of binge eating
Binge Eating
Tanofsky-Kraff, Schvey, & Grilo, 2020

Binge Eating Treatment

- Importance of addressing co-occurring disorders that impact BED
  - Anxiety, ADHD, Depression
- Pharmacotherapy
  - Lisdexamfetamine dimesylate (Vyvanse) may have clinical utility for BED in adolescents (Guerdjikova et al., 2019; Srivastava et al, 2019)
  - Naltrexone? (Stancil et al., 2019)
- Psychotherapy
  - CBT, DBT, Interpersonal Therapy
### Social Consequences of Obesity

- **Adverse Childhood Experiences (ACEs)**
  - Those predicting obesity in childhood and adolescence include death of parent, family economic hardship, sexual abuse, witnessing domestic violence, physical abuse

- **Weight Stigma** – the social devaluation of people because of their body weight (Puhl, Himmelstein, & Pearl, 2020)
  - Contributes to:
    - Maladaptive eating behaviors
    - Physiological stress
      - Stigma positively associated with circulating C-reactive protein and increased cortisol reactivity in adults
    - Weight gain
    - In children – related to increased psychosomatic symptoms, decreased physical activity and fitness, increased blood pressure, and poorer self-rated health

- **Bullying** – manifestation of stigma
  - Overweight one of the most common reasons children are bullied
  - Teasing associated with increased gain in BMI and fat mass over time
  - Verbal teasing most common
  - Increases risk of depression

### Early Intervention: Targeting Preschool Children

- Parenting interventions for children at risk for behavioral difficulties at age 4 associated with lower BMI and improved health behaviors near adolescence (Brotman et al. 2012).

- Children participating in the Healthy Steps program, who were identified as at risk of social/emotional challenges, demonstrated lower rates of obesity at age 5 compared with children that did not participate (Gross et al., 2015).
Applying CBT to Pediatric Obesity
Kang & Kwack 2020

Table 1. Common components of CBT for obese children and adolescents

<table>
<thead>
<tr>
<th>Goal</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral approach</td>
<td>Psychoeducation: - information about obesity, establishing a positive relationship, presentation of treatment principles, establishing self-monitoring.</td>
</tr>
<tr>
<td>Nutrition and eating habits</td>
<td>Self-monitoring eating and physical activity habits, healthy food choices.</td>
</tr>
<tr>
<td>Physical activity</td>
<td>Manage eating cues, behaviors and consequences. Reduce sedentary activity. Increasing daily activity and time management. Establish family rules for TV and computer use, and find alternative activities. Identify barriers to behavior change.</td>
</tr>
</tbody>
</table>

Cognitive approach
- Recognition of negative thoughts and emotions: Recognize and record thoughts and emotions related to eating and physical activity habits. Discuss how the participants can influence their automatic thoughts. Challenge the validity and utility of negative cognitions. Strategies for emotion regulation. Avoid emotional eating. |

Precision Medicine
Cardel et al, 2020
Assessment Tool:
General Screen PSC
Jellinek et al 1988

Assessment Tool:
Preschool PSC
(Weitzman et al, 2015)
**Assessment Tool: ADHD**

Vanderbilt - Parent and Teacher

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**Assessment Tool: Depression**

CES-DC


Bright Futures
Assessment Tool: Anxiety
SCARED – Parent and Child
(Birmaher et al., 1999)

<table>
<thead>
<tr>
<th>Question</th>
<th>Not True or Rarely True</th>
<th>Occasionally True</th>
<th>Very True or Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When I feel depressed, it’s hard to think.</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>2. I feel hopeless when I am alone.</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>3. I don’t like to be with people I don’t know well.</td>
<td>O</td>
<td>O</td>
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<td>4. I feel afraid or worried more often than usual.</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>5. I feel sick or worried about something that happened to me.</td>
<td>O</td>
<td>O</td>
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<tr>
<td>6. I feel like I’m going to die.</td>
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<td>7. I feel nervous.</td>
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<td>8. I feel numbed or less aware of things going on around me.</td>
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<td>9. I feel lonely or isolated.</td>
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<td>10. People say that I look serious.</td>
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<td>11. I feel safe when people are around.</td>
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<td>12. I feel just left out.</td>
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<td>13. I feel like I can’t get well.</td>
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<td>14. I feel like I can’t do well at school.</td>
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<td>15. I feel like people are being hurtful.</td>
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<td>16. I feel like I don’t have a good way to feel.</td>
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<td>17. I feel like I can’t do what I want.</td>
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<tr>
<td>18. I feel like I am in constant pain.</td>
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<tr>
<td>19. I feel like I am in constant pain.</td>
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<tr>
<td>20. I feel like I am in constant pain.</td>
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<tr>
<td>21. I feel like I am in constant pain.</td>
<td>O</td>
<td>O</td>
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</tbody>
</table>

Loss of Control overeating Scale – Brief
Latner, et al. (2014)

In the last 4 weeks (28 days), how often have you had the following experiences during a time when you were eating? Please respond to each item using the following scale:

- 1. Never
- 2. Rarely
- 3. Occasionally
- 4. Often
- 5. Almost Always

1. I continued to eat past the point when I wanted to stop.
2. I felt like I had “blown it” and might as well keep eating.
3. I felt helpless about controlling my eating.
4. My eating felt like a ball rolling down a hill that just kept going and going.
5. I found myself eating despite negative consequences.
6. I felt like the craving to eat overpowered me.
7. I felt like I could not do anything other than eat.
Binge Eating Scale
J. Gormally, (1982)

https://psychology-tools.com/test/binge-eating-scale

Non-binging; less than 17
Moderate binging; 18-26
Severe binging; 27 and greater

1. a. I do not think about my weight or size when I'm around other people.
   b. I worry about my appearance, but it does not make me unhappy.
   c. I think about my appearance or weight and feel disappointed in myself.
   d. I frequently think about my weight and feel great shame and disgust.

2. a. I have no difficulty eating slowly.
   b. I may eat quickly, but I never feel too full.
   c. Sometimes after I eat I feel too full.
   d. Usually I swallow my food almost without chewing, then feel as if I ate too much.

3. a. I can control my impulses towards food.
   b. I think I have less control over food than the average person.
   c. I feel totally unable to control my impulses towards food.
   d. I feel totally unable to control my relationship with food and try desperately to fight my impulses towards food.

4. a. I do not have a habit of eating when I am bored.
   b. Sometimes I eat when I am bored, but I can often distract myself and not think about food.
   c. I often eat when I am bored, but I can sometimes distract myself and not think about food.
   d. I have a habit of eating when I am bored and nothing can stop me.

Assessment Tool:
Potential Outcome Measure
West & Sanders 2009

Lifestyle Behaviour Checklist
Binge eating is a behavior common among overweight children. It is important to understand the frequency and extent of such behavior, and to identify factors that may contribute to it. The following checklist is designed to help you assess the level of binge eating in your child. Please read each item carefully and circle the number that best describes your child's behavior. The numbers range from 1 (never) to 5 (all the time). The total score can range from 5 to 25. A score of 21 or above indicates a higher risk of binge eating.

Rate your child's behavior from 1 (I can't do it at all) to 5 (I can do it). How confident are you in assessing your child's behavior?

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Does your child eat when they are bored?</td>
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<tr>
<td>Does your child eat when they are upset?</td>
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<td>Does your child eat when they are hungry?</td>
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<td>Does your child eat when they are stressed?</td>
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How much of this problem is due to the behavior with your child?

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