Screening for Eating Disorders in Youth with Diabetes

TRISH LIEBERMAN, MS, RD, CDE, LDN, CEDRD
Certified Diabetes Educator
Certified Eating Disorders Registered Dietitian

OBJECTIVES

- Describe an overview of eating disorders
- Explain the prevalence and clinical manifestations of eating disorders in youth with diabetes.
- Identify 3 screening tools to detect eating disorder risk in youth with diabetes

I have no related conflicts of interest or disclosures

EATING DISORDERS (ED) OVERVIEW

- Complex, serious biopsychosocial illnesses
- Medical and psychiatric morbidity and mortality regardless of weight
- Affect people of all ages, body size, gender, race, ethnicity, socioeconomic groups
- Most common EDs include:
  - Anorexia Nervosa (AN)
  - Bulimia Nervosa (BN)
  - Binge-Eating Disorder (BED) – most common ED in T2D
  - “Diabulimia” – most common ED in T1D

National Eating Disorders Association (NEDA)
ANOREXIA NERVOSA (AN)

1) Restriction of energy intake relative to requirements leading to a significantly low body weight in the context of age, sex, developmental trajectory, and physical health.

2) Intense fear of gaining weight or becoming fat, even though underweight.

3) Disturbance in the way in which one’s body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.

***Atypical Anorexia - includes those individuals who meet the criteria for anorexia but who are not underweight despite significant weight loss

BULIMIA NERVOSA (BN)

1) Recurrent episodes of binge eating characterized by both of the following:
   - Eating an amount definitely larger than most people would eat during a similar period of time/similar circumstances.
   - Sense of lack of control over eating

2) Recurrent compensatory behavior to prevent weight gain (self-induced vomiting, misuse of laxatives, diuretics, or other medications (i.e. insulin), fasting, excessive exercise.

3) Binge eating and compensatory behaviors both occur, on average, at least 1x/week for 3 months.

4) Self-evaluation is unduly influenced by body shape and weight.

5) The disturbance does not occur exclusively during episodes of anorexia nervosa.

BINGE-EATING DISORDER (BED)

1) Recurrent episodes of binge eating

2) Binge eating episodes are associated with three (or more) of the following:
   - Eating much more rapidly than normal.
   - Eating until feeling uncomfortably full.
   - Eating large amounts of food when not feeling physically hungry.
   - Eating alone because of feeling embarrassed by how much one is eating.
   - Feeling disgusted with oneself, depressed, or very guilty afterward.

3) Marked distress regarding binge eating is present.

4) The binge eating occurs, on average, at least 1x/week for 3 months.

5) Binge eating not associated with use of compensatory behaviors
“DIABULIMIA”

- ED-DMT1

- Intentional manipulation of insulin for the purpose of weight control
- Glucose trapped in bloodstream
- Filtered through kidneys
- Urinating away glucose calories (aka purging)
- Cells are starving → body breaks down tissues → further weight loss occurs

- DSM-5 Diagnosis Criteria for eating disorders
- BN - lists insulin omission as a compensatory behavior
- ED diagnosis ends up being related to body weight and eating disorder behaviors

Gaudiani, 2019

CLINICAL RELEVANCE

Eating disorders (EDs) have the highest mortality rate of any mental illness along with increased suicide risk.

Individuals with co-occurring ED+T1D:
- 5-17 times the mortality rate compared to DM alone
- Higher A1C values by ~2% points or more
- Higher rates of DKA hospitalisations
- Increased rates of diabetes complications with complications developing at younger ages
- Patients with BN and BED – 2.5 fold and 4 fold higher risk of retinopathy (Toni et al., 2017)
- In a cohort of adolescent girls with T1D, disordered eating behaviors at baseline predicted a tripled risk of retinopathy 4 years later. (Hydall et al)
- Disordered eating behaviors associated with recurrent severe hypoglycemia

Goebel-Fabbri AE et al, 2008
Nielson S et al, 2002

CLINICAL RELEVANCE

Eating disorders are under-diagnosed and under-treated in people with diabetes.

Disordered eating behaviors in youth with T1D are likely to persist into adulthood, especially if left untreated.” [Toni et al., 2017]

Early diagnosis with intervention and earlier age at diagnosis are correlated with improved outcomes in patients who have eating disorders. (Pritts et al., 2003)
PREVELANCE OF EATING DISORDERS IN YOUTH WITH DIABETES

• 21.2% of the participants with T1D and 50.3% of those with type 2 diabetes had disordered eating behaviors, with the highest percentage in those aged 15 to 19 years in both groups (24.9% and 67.8%, respectively) (Diabetes Care, 2019)

• A study followed 126 girls with T1D (ages 9-13 years) over a 14 year period found that 32.4% met criteria for an ED (Diabetes Care, 2015)

• A study of adolescents across 3 Canadian cities found that young women with T1D were 2.4 times more likely to have an eating disorder than those without T1D (BMJ, 2000)

RISK FACTORS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Risk Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>7-18 years; puberty</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
</tr>
<tr>
<td>Nutrition Focus</td>
<td>Focus on food portions, carb counting, carb restrictions, label reading</td>
</tr>
<tr>
<td>BMI</td>
<td>Overweight, obesity, weight change at diagnosis, weight comments</td>
</tr>
<tr>
<td>Body Perception</td>
<td>Body dissatisfaction</td>
</tr>
<tr>
<td>Personal Characteristics</td>
<td>Anxious, poor quality of life</td>
</tr>
<tr>
<td>Family Support</td>
<td>Poor attention in family to healthy eating, maternal overweight or binge eating disorders in mothers</td>
</tr>
</tbody>
</table>

Other – coping with a chronic disease; transition to adult care a vulnerable time

Academy for Eating Disorders, 2016

WARNING SIGNS OF ED

• Precipitous weight loss or gain in otherwise healthy individuals can be a potential marker of an ED
• In children and adolescents, failure to gain expected weight or height, and/or delayed pubertal development
• Sudden changes in eating/dieting (i.e., elimination of food groups, becoming vegetarian/vegan)
• Body image disturbance, wanting to lose weight despite normative weight, extreme dieting
• Abdominal complaints in the context of weight loss behaviors
• Electrolyte abnormalities (hypokalemia, hyochloremia, elevated bicarbonate)
• Inappropriate use of appetite suppressants
• Avoiding social situations with food

Academy for Eating Disorders, 2016
**WARNING SIGNS OF “DIABULIMIA”**

- Consistently high A1C (>9.2%)
- Mismatch between BG and A1C
- Recurrent hospitalizations for DKA
- Reduced frequency BG checks
- Forgetting to bring meter to appointments
- Missed diabetes appointments
- Rapid changes in weight/eating patterns (gain or loss)
- Low energy, fatigue
- Frequent urination
- Excess thirst
- Discomfort taking insulin, or eating, in front of others
- Hoarding food

**ADA Standards of Care for Diabetes 2019**

- Consider screening for ED when hyperglycemia and weight loss are unexplained by reported behaviors
- Begin screening youth with T1DM for EDs between 10 and 12 years of age.
- The Diabetes Eating Problems Survey-Revised (DEPS-R) is a reliable, valid, brief screening tool for identifying disturbed eating behavior
- Screening early detection, effective treatment options and minimize adverse effects on diabetes management and health

**SCREENING**

1) General measures of EDs may misidentify what is an appropriate level of attention to food intake for a person with T1D as disordered eating behavior

2) General measures for EDs do not identify disordered eating behaviors that are unique to individuals with T1D (i.e. insulin restriction)
SCREENING TOOLS

1) mSCOFF Questionnaire
2) DEPS-R
3) SEEDS

mSCOFF QUESTIONNAIRE

• Original SCOFF
  • 5-item eating disorder screening questionnaire looks at basic markers of anorexia nervosa and bulimia nervosa
  • Reliable and valid screening instrument
  • Positive screen is two or more positive responses

Zuijdwijk et al, 2014

mSCOFF Questionnaire

S – Do you make yourself sick because you feel uncomfortably full?
C – Do you worry you have lost control over how much you eat?
O – Have you recently lost more than one stone (14lbs) in a 3-month period?
F – Do you believe yourself to be fat when others say you are too thin?
D – Would you say food dominates your life? Do you ever take less insulin than you should?

*Positive screen is two or more positive responses

Zuijdwijk et al, 2014
mSCOFF QUESTIONNAIRE

- mSCOFF
  - Compared against the modified Eating Disorder Inventory (mEDI)
    - mEDI is a reliable, valid, 91 item self-report measure for screening
    - mEDI is validated for use in adolescents with T1D
    - mEDI modified from original EDI to eliminate questions related to diabetes-imposed dietary restrictions
    - mEDI not practical to administer given length, cost and scoring requirements
  - mSCOFF can be quickly administered during routine clinic visits

Zuidema et al, 2014

DIABETES EATING PROBLEM SURVEY (DEPS)

- Originally validated in adults
- Higher scores on the DEPS indicate more disordered eating behaviors
- 28-item self-report questionnaire
- Demonstrated excellent internal consistency and significantly correlated with diabetes distress in an adult population
- In revising the DEPS for use in a pediatric population, eliminated any items that did not appear to measure disordered eating. When duplicative questions were found, included the item with the higher item to total correlation.

Markowitz, et al 2010

Items retained in DEPS-R

- Losing weight is an important goal to me
- I skip meals and/or snacks
- Other people have told me that my eating is out of control
- When I overeat, I don’t take enough insulin to cover the food
- I eat more when I am alone than when I am with others
- I feel that it’s difficult to lose weight and control my diabetes at the same time
- I make myself vomit
- I try to keep my blood sugar high so that I will lose weight
- I try to eat to the point of spilling ketones in my urine
- I feel fat when I take all of my insulin
- Other people tell me to take better care of my diabetes
- After I overeat, I skip my next insulin dose
- I feel that my eating is out of control
- I alternate between eating very little and eating huge amounts
- I would rather be thin than to have good control of my diabetes

Markowitz, et al 2010
DIABETES EATING PROBLEM SURVEY REVISED (DEPS-R)

• 16-item diabetes-specific self-report screening measure for disordered eating in youth with diabetes
• DEPS-R is rated on 6 point Likert Scale → Scored by summing all 16 items
• Positive score >/= 20
• Excellent internal consistency, construct validity, external validity.

Benefits:
• Takes less than 10 minutes to complete
• The DEPS-R could assist in helping the clinician determine whether a more extensive assessment is necessary

Limitations
• Small sample size (112 youth males and females with T1D 13-19 years old)  
Markowitz, et al 2010

Screen for Early Eating Disorder Signs (SEEDS)

• Developed using focus groups of people with ED-DMT1
• Non-suggestive screen to identify eating disorder risk in individuals with T1D
• Validated 20-item self-administered questionnaire
• For use among individuals with T1DM (12 years and older) in a clinical setting to identify: low, moderate, or high risk of developing an eating disorder.
• Includes items across 3 themes: Body Image, Feelings, Quality of Life
• Takes 2-5 minutes to complete
• SEEDS PDF can be found online at www.parknicollet.com/SEEDS  
Powers et al., Journal of Treatment and Prevention, Oct 2015

Use of SEEDS

• With all newly diagnosed patients with T1D 12
• Annual visits
• At times when puzzling symptoms are present such as:
  • Anxiety about being weighed in clinic
  • GI concerns with no resolutions
  • Large gaps between appointments
  • Unexplained erratic blood sugars
  • Increase in A1C and decrease in weight
  • Wide fluctuations in blood glucose control for no reason
  • Repeated hospitalizations for DKA

Powers et al., Journal of Treatment and Prevention, Oct 2015
Eating disorders present in different ways

Diabulimia

Type 2 and BED

History of diabulimia + now with rigid BG control and food choices

How to Score SEEDS: Add the assigned numbers for each response to get a total score.

<table>
<thead>
<tr>
<th>Total Score</th>
<th>Low Risk ≤ 50</th>
<th>Moderate Risk 60-84</th>
<th>High Risk ≥ 85</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended Action</td>
<td>At least annual SEEDS screening through adolescence and adulthood</td>
<td>Consider referral for eating disorder assessment. Repeat SEEDS screening annually and maintain open discussion at intervals within the year.</td>
<td>Referral for eating disorder assessment is highly recommended. First diagnosed with ED-MWL: report SEEDS screening annually. Maintain open discussion at intervals within each year.</td>
</tr>
</tbody>
</table>

Powers et al, Eating Disorders, 2016
DON’T BE AFRAID TO ASK HARD QUESTIONS

Do you have any weight or eating concerns?

Are you trying to lose weight; currently dieting/follow a meal plan?

Is it hard to control what you eat?

Do you ever adjust insulin to influence your weight?

Can you tell me a little more about that...

“I might not have volunteered it, but if somebody asked me, you know? How are you doing? Are you skipping shots? That is something that happens. I think that...would have allowed me to talk about it and would have allowed me to know I wasn’t the only one doing it...[instead] it was just like, ‘You do this, you do this, you do this, you do this, and it should be fine. And if you don’t do this, well you’re not being very responsible and you might lose a leg.’ - Chloe” [pg. 24]

TAKE HOME POINTS

- Increased risk for EDs in youth with diabetes worsens diabetes outcomes
- Pay attention to warning signs
- Educate yourself and colleagues
- Collaborate with local eating disorder programs
- Implement screening process
- Develop list of referrals and resources for patients and families
- Provide a safe, non-judgmental space to foster trust and rapport
REFERENCES


REFERENCES

Angel, S., et al. (2019). Disordered Eating Behaviors in Youth and Young Adults with Type 1 or Type 2 Diabetes Receiving Insulin Therapy: The SANCHI for Diabetes in Youth Study. Diabetes Care.
Zigmond et al. (2014). The mSCOFF for Screening Disordered Eating in Pediatric Type 1 Diabetes. Diabetes Care, 37
ADA Standards of Medical Care in Diabetes – 2019. The Journal of Clinical and Applied Research and Education, 42(1)