Screening for Eating Disorders in Youth with Diabetes

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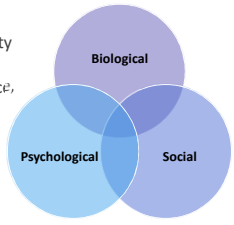
OBJECTIVES

- 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**

Diagnostic and Statistical Manual of Mental Disorders – 5th Edition

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.

Diagnostic and Statistical Manual of Mental Disorders – 5th Edition

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

Diagnostic and Statistical Manual of Mental Disorders – 5th Edition

"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 hospitalizations**
- Increased rates of **diabetes complications** with complications developing at **younger ages**
- Patients with BN and BED – 2.5 fold and 1.4 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. (Rydall 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)

National Eating Disorders Association (NEDA)

RISK FACTORS

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

Toni G. et al 2017

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

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

Site text

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 **S**ick because you feel uncomfortably full?

C – Do you worry you have lost **C**ontrol over how much you eat?

O – Have you recently lost more than **O**ne stone (14lbs) in a 3-month period?

F – Do you believe yourself to be **F**at when others say you are too thin?

~~F – Would you say **F**ood 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

Zuijdwijk 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 avoid checking my blood sugar when I feel like it is out of range
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

Park Nicollet International Diabetes Center and Melrose Center

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*

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Powers et al. , Journal of Treatment and Prevention, Oct 2015

12.	How often do you think about your body shape and size?	All the time						Not at all
13.	How do you describe your mood?	Grumpy						Cheerful
14.	How satisfied are you with your body shape?	Very dissatisfied						Very satisfied
15.	How satisfied are you with your body size?	Very dissatisfied						Very satisfied
16.	How do you describe your moods?	Up and down						Steady
17.	How much do you think you matter to your family?	Not at all						Very much
18.	How do you feel when others around you talk about body shape and size?	Uncomfortable						Comfortable

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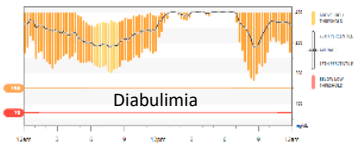
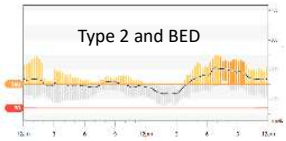
How to Score SEEDS Add the assigned numbers for each response to get a total score.

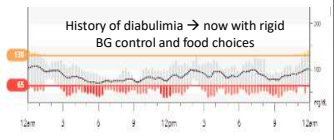
	Low Risk	Moderate Risk	High Risk
Total Score	≤ 68	69–84	≥ 85
Recommended Action	At least annual SEEDS screening through adolescence and adulthood	Consider referral for eating disorder assessment. Repeat SEEDS screening annually and maintain open discussion at intervals within the year.	Referral for eating disorder assessment is highly recommended. If not diagnosed with ED-DMT1, repeat SEEDS screening annually. Maintain open discussion at intervals within each year.

Powers et al, *Eating Disorders*, 2016

EATING DISORDERS PRESENT IN DIFFERENT WAYS







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…?

Goebel-Fabbri, 2017
Park Nicollet Melrose Center for Eating Disorders and Diabetes

*"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]

Goebel-Fabbri, 2017

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

Toni G., Berioli M.G., et al. (2017). Review: Eating Disorders and Disordered Eating Symptoms in Adolescents with Type 1 Diabetes. *Nutrients*, 9, 906

National Eating Disorders Association (NEDA). (2019). *Statistics & Research on Eating Disorders.* Retrieved from https://www.nationaleatingdisorders.org/statistics-research-eating-disorders

Gaudiani, J.L. (2019). *Sick Enough: A Guide to the Medical Complications of Eating Disorders*. NY: Routledge

Markowitz, J.T., et al. (2010). Brief Screening Tool for Disordered Eating in Diabetes. *Diabetes Care, 33(3)*

AED Report 2016, 3rd Edition. Academy for Eating Disorders: A Guide to Medical Care. Retrieved from https://www.massgeneral.org/psychiatry/assets/pdfs/EDCRP/eating-disorders-medical-guide-aed-report-2016.pdf

Jones, M., et al. (2000). Eating disorders in adolescent females with and without type 1 diabetes: cross sectional study. *BMJ*, 320(7249)

REFERENCES

Angel, SY, et al. (2019). Disordered Eating Behaviors in Youth and Young Adults with Type 1 or Type 2 Diabetes Receiving Insulin Therapy: The SEARCH for Diabetes in Youth Study. *Diabetes Care*.

Powers, M.A., et al. (2016). Development and validation of the Screen for Early Eating Disorder Signs (SEEDS) in persons with type 1 diabetes. Eating Disorders, 24(3), 271-288. *Journal of Adolescent Health, 2014*

Zuijdwijk 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)*

Goebel-Fabbri, A. (2017). *Prevention and Recovery from Eating Disorders in Type 1 Diabetes: Injecting Hope.* NY: Routledge.