Behavioral Health Factors Affecting Adult Patients with Diabetes

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Objectives

• Provide an overview of common mental health conditions that affect patients with type 1 and type 2 diabetes.

• Describe the prevalence of these conditions.

• Discuss empirically-validated treatment options.

• Address what you can do to assist your patients achieve treatment targets.
Diabetes and Mental Health

Interrelationships between diabetes and:

- Diabetes-Related Distress
- Depression
- Anxiety Disorders
Diabetes-Related Distress
Diabetes-Related Distress

*Definition:*

- Feelings of emotional burden in response to:
  - Medical treatment regimen
  - Interpersonal factors
  - **Physician care** (Polonsky et al., *Diab. Care* 1995; Welch et al., *Diab. Care*, 1997)
Diabetes-Related Distress Measures

- **Problem Areas in Diabetes Scale** (PAID; Polonksy et al., *Diab. Care*, 1995).
  - 20-item measure; 6-point Likert scale: 0=“Not a problem” 5=“Serious problem”; 100 point total scale
  - Clinical Threshold: Total score > 40

- Validated in multiple international populations (e.g. Japan, Mexico, Netherlands, Turkey, China)


Diabetes-Related Distress Measures

- **Diabetes Distress Scale** (DDS; Polonsky et al., *Diab. Care*, 2005)
  - 17-item measure
  - “Feeling that I am often failing with my diabetes regimen”
  - 6-point Likert scale: 0=“Not a problem” 5=“Serious problem”
  - Clinical thresholds: Item means:
    - > 2.0-2.9 moderate distress
    - > 3.0 High distress
  - Adapted for use with spouses (Franks, *Families, Systems and Health*, 2011)
Diabetes-Related Distress

Prevalence Characteristics

- T2DM adult point prevalence: 18-22% (Fisher et al., *Diab. Med*, 2008; Karlsen 2011; Snoek et al., 2011; 2012)

- Persistent over time

- Rising rates: 18% → 29%

- Predictors: Female gender, younger age, diabetes complications, comorbidities
Diabetes-Related Distress

Relationship to Glycemic Control:

- Associated with elevated A1c in cross-sectional data; significant time concordant association (Fisher, 2010; Franks 2012)
- Mixed longitudinal associations:
  - DDS predicted A1c over 6 months (Aikens, Diab. Care, 2012)
  - No association of DDS with A1c over 18 months (Fisher 2010)
- Magnitude of Association
  - PAID: 1 pt. increase associated with .03% increase in A1c (Polonsky 1995)
  - PAID scores > 42 = 1.13 RR for elevated A1c (> 7.0%) (Hayashino, 2012)
  - PAID correlated with A1c: $r = 0.2$ (Ogbera et al., 2011).
Distress and Glycemic Control

Differential Effect of Distress on A1c by Diabetes Treatment Type

- Diet alone treatment most sensitive to impact of distress on A1c (Welch, 1997)
- PAID scores > 42 = 1.81 RR for elevated A1c (> 7.0%) (Hayashino, 2012)
- No effect of distress on A1c outcomes for OHA or insulin treatment in T2DM samples (Hayashino, 2012)
Diabetes-Related Distress

Self-Care Behaviors:

• DDS more strongly predicted decreased dietary and exercise adherence than CESD (Fisher et al., 2007; Fisher et al., 2010)
• DDS and PHQ-8 predicted dietary and medication adherence (Fisher et al., 2010)
• Associated with lowered social support from family and physicians (Karlsen, 2011)
• Marital satisfaction and sharing meals lowers distress (Franks, 2011)
• Spouse pressure on spouses increases spouse distress (Franks, 2011)
Diabetes Distress Interventions

Diabetes Education Interventions

• T1DM:
  – UK DAFNE: Improved PAID scores and decreased A1c (Hopkins et al., *Diab. Care*, 2012)

• T2DM:
  – Baystate Medical Center: PAID 10 pt. decrease = .25%-.55% decrease in A1c for Hispanic and Non-Hispanic Whites (Zagarins, 2012; Leyva, 2011)
Diabetes-Related Distress

Medical Management Interventions:
Distress improves; depressive symptoms do not (Welch 2010)

• Comprehensive Diabetes Management Program (Welch 2011)
  – Culturally tailored to Hispanic T2DM patients
  – Improved distress (PAID) and A1c; no change in depressive symptoms (PHQ-9)


• Distress associated with lower levels of culturally competent care; decreased trust and Doctor Communication Positive Behaviors (Slean, 2012)
Depression and Diabetes
DSM-V Depression Criteria

- Depressed mood or a lack of pleasure or interest in usual activities lasting at least 2 weeks

- Associated features:
  - Hypo- or hypersomnia
  - Changes in appetite or weight
  - Fatigue
  - Decreased ability to concentrate or attention
  - Psychomotor retardation or agitation
  - Excessive guilt or worthlessness
  - Suicidal ideation, intent or plan

American Psychiatric Association, 2014
Continuum of Constructs

Psychiatric Syndromes and Diagnoses

Non-Specific Psychologic Distress

Depressive Symptoms

Diabetes-Related Distress
Prevalence

• 1 in 4 adults with diabetes will develop depression in their lifetime (Anderson et al., *Psychosom Med*, 2001)

• People with diabetes are 2 times more likely to experience depression than peers without diabetes

• Patients with type 1 and type 2 diabetes show comparable rates of depression.
Prevalence

- Diabetes: 25.3% vs. Non-Diabetes 11.4%
- Type 1: 21.3% vs. Type 2: 27.0%
- Female: 28.2% vs. Male: 18.0%
- Dx. Interview 11.4% vs. Self-Report 31.0%

Depression in Diabetes: Prevalence

- Women have 60% increased risk of depression (Anderson et al, Psychosom Med., 2001)

- Comparable rates of depression across ethnic groups (de Groot, et al., Diabetes Care, 2007)

- Depression is persistent (Lustman et al., Diabetes Care, 1988; de Groot et al., Diabetes Care, 2016).
  - Up to 79% relapse within a 5-year period
  - Depression episodes last ~21 months compared to 22 weeks in the general population.
Bi-Directional Relationship of Depression and Diabetes

- Prospective studies demonstrating increased risk of developing type 2 diabetes:
  - Eaton et al., *Diabetes Care*, 1996
  - Kawakami et al., *Diabetes Care*, 1999
  - Knol et al., *Diabetologia*, 2006
    - 37% increase in risk for T2DM with a lifetime history of depressive symptoms
  - Chen, et al., *Diabetes Care*, 2013
    - 1.43 Hazard ratio: diabetes predicting depression
    - 2.02 Hazard ratio: depression predicting diabetes
Impact of Depression and Diabetes

• Glycemic Control (Lustman et al., *Diabetes Care*, 2000)

• Diabetes Complications (de Groot, et al., *Psychosomatic Medicine*, 2001)

• Adherence and Medical Costs (Egede, et al., *Diabetes Care*, 2002; Ciechanowski, et al., *Arch Intern Med*, 2000)

• Functional Disability (Egede, *Gen Hosp Psychiatry*, 2007)

Treatment for Depression in Diabetes
What Can I Do to Treat Depression in People with Diabetes?

- Screen for depression
- Provide a rationale to the patient how depression treatment may improve diabetes outcomes
- Consider multiple forms of treatment for depression:
  - Antidepressant medications
  - Therapy
  - Exercise
- Referral to allied providers – integrated and coordinated care
- Follow-up screening and monitoring medications at subsequent visits
Depression Screening

• Depression is consistently under-diagnosed and under-reported (Gary et al., Diabetes Care, 2000)

• When we ask, patients share (Robinson & Roter, Soc Sci Med, 1999)

• Ethnically diverse patients are hesitant to share depressive symptoms (Wagner et al., Diab. Res. Clin. Pract, 2009)

• Patient attitudes are positive once treated (de Groot et al, Diabetes Care, 2006)
Depression Screening

• Clinical questions:
  – How has your mood been in the past two weeks?
  – Have you felt depressed or down for most of the day of the past two weeks?

• Use of screening questionnaires:
  – Patient Health Questionnaire (PHQ-9) (Kroenke et al., *JGIM*, 2001; Kroenke et al., *Med Care*, 2003)
  – Beck Depression Inventory (Beck, 1996)

PHQ-9

Over the last 2 weeks, how often have you been bothered by any of the following problems?

<table>
<thead>
<tr>
<th>Problem</th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Little interest or pleasure in doing things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Feeling down, depressed, or hopeless</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Trouble falling or staying asleep, or sleeping too much</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Feeling tired or having little energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Poor appetite or overeating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Kroenke et al., *JGIM*, 2001
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down

7. Trouble concentrating on things, such as reading the newspaper or watching television

8. Moving or speaking so slowly that other people could have noticed? Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual

9. Thoughts that you would be better off dead or of hurting yourself in some way
If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

<table>
<thead>
<tr>
<th>Not difficult at all</th>
<th>Somewhat difficult</th>
<th>Very difficult</th>
<th>Extremely difficult</th>
</tr>
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</table>
Effective Treatments For Depression in Diabetes

- Antidepressant Medications
- Psychotherapy
Effective Treatments for Depression: Medication

- Tricyclic Antidepressants (TCAs):
  - Nortriptyline 25-50 mg/daily (Lustman et al., *Psychosom Med*, 1997)
  - Higher therapeutic dosage for depression
  - Opportunity to treat neuropathic pain and depression simultaneously
Effective Treatments: Medication

Selective Serotonin Reuptake Inhibitors (SSRIs)

• Fluoxetine
  – 40 mg/daily (Lustman et al., *Diabetes Care*, 2000);
  – 20 mg/daily (Gulseren et al., *Arch Med Res*, 2005)

• Paroxetine
Effective Treatments: Medication

• Sertraline
  – 50 mg/daily (Goodnick, et al., Psychopharmacology Bull, 1997)
  – Maintenance M=118 mg/day (Lustman et al., Arch Gen Psychiatry 2006; Williams et al, Diabetes Care, 2007)

• Buproprion XL
  – 150 mg/daily to 450 mg/daily (Lustman et al., Diabetes Care, 2007)
Effective Treatments for Depression: Psychotherapy

• Cognitive Behavioral Therapy (Beck et al., 1995)

![Diagram showing the relationship between thoughts, feelings, and behaviors in cognitive behavioral therapy.](image-url)
Delivery Modalities

• **Individual Psychotherapy**
  - Mental Health Providers (e.g. Lustman et al., *Arch Intern Med*, 1998)
  - Trained Nurse Case Managers (e.g. Katon et al., *Arch Gen Psychiatry* 2004)

• **Multidisciplinary Team Care** (Katon et al., *NEJM*, 2010)
  - Case identification within primary care practices
  - Problem-Solving Treatment
  - Psychiatric and medical management to achieve A1c, HTN and cholesterol outcomes

• **Web-Based Approaches (CBT)** (van Bastelaar et al., *Diabetes Care*, 2011)
  - Self-directed care; Improved depressive symptoms
  - No impact on A1c
Exercise and Depression

- American Psychiatric Association Task Force recommends exercise as an addition to treatment regimens for Major Depressive Disorder (Freeman, et al., J. Clin. Psychiatry, 2010)
Evidence for Exercise and Depression

- Recent meta-analysis of 13 exercise trials for patients diagnosed with clinical depression (non-diabetes) (Krogh et al., *J. Clin. Psychiatry*, 2009)
- Exercise was effective in reducing depression in patients immediately following intervention (medium effect size .4).
- Longer exercise showed less effect on mood improvement
- Exercise has a short-term effect on mood
Exercise as a Treatment for Diabetes and Depression

- VA Walking Study (Piette et al. Medical Care, 2011)
  - 291 VA patients with elevated depressive symptoms randomized to telephone-based counseling and walking vs. UC
  - Improvements in depression (58% treatment group vs. 39% UC)
  - No change in A1c
Exercise Treatment for Diabetes and Depression

Program ACTIVE II (de Groot et al., Annals of Behav. Med., In press.)

- Participants in Talk Therapy (CBT) and/or Exercise reported fewer depressive symptoms (p<.01)
- Participants in Talk Therapy (CBT) and Exercise had greater recovery from depression than Usual Care (p<.03)
Effect of Depression Treatment on Diabetes Outcomes

• Medications:
  – Nortriptyline: hyperglycemic effect
  – SSRIs: euglycemic or hypoglycemic effects

• Psychotherapy (CBT)
  – Lustman (1998) observed .7% decrease in A1c
  – Problem-solving Therapy alone did not observe changes in A1c but significant effects (.58% reduction) were achieved using collaborative medical and psychiatric management
Exercise Treatment for Diabetes and Depression

Program ACTIVE II (de Groot et al., Annals of Behav. Med., In press.)

- HbA1c improved by 0.72 points in the Exercise arm \( (p<.03) \)
- 0.5 points or greater is clinically meaningful improvement in A1c.
Anxiety Issues and Diabetes
Psychological Insulin Resistance

Definition:

- Patient unwillingness to initiate and sustain insulin therapy
- Negative beliefs (M=3.1 beliefs per person)
  - Insulin = Behavioral Management Failure
  - Progression of diabetes/disease: “My grandmother went on insulin and she died 8 days later…”
  - “Makes my diabetes obvious to everyone”
  - Restrictive to lifestyle
- Prevalence among T2DM: 28% reported unwillingness to engage in insulin therapy
  (Polonsky et al., 2005)
Psychological Insulin Resistance

Intervention Approach:

• Patient education and cognitive behavioral therapy
  – Providing patient education about insulin
  – Reframing attributions about insulin (e.g. insulin in ‘hormone replacement therapy’)
  – Identifying core beliefs about identity, vulnerability, disease progression, self-efficacy
Fear of Hypoglycemia

Definition:
• Anxiety about hypoglycemia; patient deliberately maintains higher BG to avoid anxiety or humiliation associated with low BG.

Assessment:
• Fear of Hypoglycemia Scale (Irvine, Cox & Gonder-Frederick, 1994)

Intervention Approach:
• Identification of predisposing situations for hypoglycemia
• Exploration of emotional interpretation of low BG (low self-esteem, humiliation)
• Psychoeducation of negative effects of maintaining higher BG
• Coordination with diabetes educators/providers
Fears of Long Term Complications

Definition:

• Feelings of shame and anxiety about the onset or meaning of DM complications (Beverly, Ritholz, et al., 2012)

• Self-blame
  – “I wouldn’t have DM if I took care of myself”
  – “I did this to myself”

• Fatalism
  – Family heritage as a powerful teacher of the inevitability of complications
  – “Everyone in my family will develop diabetes eventually.”
Fear of Complications

• Feelings of defeat and hopelessness
  • “It’s too late. Nothing I do now will matter.”

• Betrayal of body at the time of development or exacerbation of complications
  – “I did everything right and I still developed proliferative retinopathy”
  – “I did this to myself because I couldn’t follow doctor’s orders”
Long-Term Complications

Intervention Approaches:

• Addressing meaning and self-blame associated with complications
• Redefining goals as process, not medical outcome
• Grief process
• Adaptation to physical limitations associated with complication (e.g. blindness; dialysis)
• Teachable moment for patients with denial
News You Can Use
What Can I Do to Help My Diabetes Patients?

• Listen and screen for psychological conditions (e.g. distress, depression, anxiety)
• Provide a rationale to the patient how treatment may improve diabetes outcomes
• Consider multiple forms of treatment:
  – Medications
  – Therapy
• Referral to allied providers – integrated and coordinated care
• Follow-up screening and monitoring medications at subsequent visits
Resources

National Diabetes Education Program:
Call 1-888-693-NDEP (1-888-693-6337)
or www.YourDiabetesInfo.org

The American Diabetes Association
www.diabetes.org

The National Institute of Diabetes, Digestive Diseases and Kidneys (NIDDK)
www.niddk.nih.gov

The American Psychologist, October 2016 Special Issue on Diabetes and Psychology

Coming Soon:
– December 2016 – Special Issue of Diabetes Care