Diabetes and Mental Health

Introduction

Research is increasingly demonstrating a relationship between mental health disorders and diabetes. Patients with serious mental illnesses, particularly those with depressive symptoms or syndromes, and patients with diabetes share reciprocal susceptibility and a high degree of comorbidity.

The mechanisms behind these relationships are multifactorial. Some evidence shows that treatment for mental health disorders may actually increase the risk of diabetes, particularly when second-generation (atypical) antipsychotic agents are prescribed. Biochemical changes due to the mental health disorders themselves also may play a role. Lifestyle changes and symptoms of mental health disorders are also likely to contribute.

Depression

The prevalence of clinically relevant depressive symptoms among patients with diabetes is in the range of 30%. The prevalence of major depressive disorder (MDD) is approximately 10%, which is double the overall prevalence in people without a chronic medical illness. Individuals with depression have an approximately 60% increased risk of developing type 2 diabetes. The prognosis for comorbid depression and diabetes is worse than when each illness occurs separately. Depression in patients with diabetes amplifies symptom burden by a factor of about 4. Episodes of MDD in individuals with diabetes are likely to last longer and have a higher chance of recurrence compared to those without diabetes.

Studies examining differential rates for the prevalence of depression in type 1 vs. type 2 diabetes have yielded inconsistent results. One study found that the requirement for insulin was the factor associated with the highest rate of depression, regardless of the type of diabetes involved.

Risk factors for developing depression in individuals with diabetes are as follows:

- Female gender
- Adolescents/young adults and older adults
- Poverty

- Few social supports
- Stressful life events
- Poor glycemic control, particularly with recurrent hypoglycemia
- Longer duration of diabetes
- Presence of long-term complications

Risk factors (with possible mechanisms) for developing diabetes in patients with depression are as follows:

- Physical inactivity and obesity, which leads to insulin resistance, and
- Psychological stress, leading to chronic hypothalamic-pituitary-adrenal activation with cortisol release.

Comorbid depression worsens clinical outcomes in diabetes, possibly because the accompanying lethargy lowers motivation for self-care, resulting in lowered physical and psychological fitness, higher use of healthcare services and reduced adherence to medication regimens. Depression also appears to worsen cardiovascular mortality. Treating depressive symptoms more reliably improves mood than it does glycemic control .

Bipolar Disorder

Patients with bipolar disorder have been found to have prevalence rates estimated to be double that of the general population for metabolic syndrome and triple for diabetes .

Anxiety

Anxiety is commonly comorbid with depressive symptoms. One study estimated that 14% of individuals with diabetes suffered from generalized anxiety disorder, with double this figure experiencing a subclinical anxiety disorder and triple this figure having at least some anxiety symptoms.

Eating Disorders

Eating disorders, such as anorexia nervosa, bulimia nervosa and binge eating, have been found to be more common in individuals with diabetes (both type 1 and type 2) than in the general population. Depressive symptoms are highly comorbid with eating disorders, affecting up to 50% of patients. Type 1 diabetes in young adolescent women appears to be a risk factor for development of an eating disorder, both in terms of an

increased prevalence of established eating disorder features as well as through deliberate insulin omission or underdosing (called diabulimia). Night eating syndrome (NES) has been noted to occur in individuals with type 2 diabetes who have depressive symptoms. This is characterized by the consumption of >25% of daily caloric intake after the evening meal and waking at night to eat, on average, at least 3 times per week. NES can result in weight gain, poor glycemic control and an increased number of diabetic complications.

Schizophrenia

Schizophrenia (SZ) and other psychotic disorders may contribute an independent risk factor for diabetes. People diagnosed with psychotic disorders were reported to have had insulin resistance/glucose intolerance prior to the advent of antipsychotic medication; however, this matter is still open to debate. The Clinical Antipsychotic Trials for Intervention Effectiveness (CATIE) study found, at baseline, that of the individuals with SZ who participated in the study, 11% had diabetes (type 1 and 2 combined) (1). The prevalence of metabolic syndrome was approximately twice that of the general population. Whether the increased prevalence of diabetes is due to the effect of the illness, antipsychotic medications or other factors, individuals with psychotic disorders represent a particularly vulnerable population.

Monitoring Metabolic Risks

Patients with diabetes and comorbid psychiatric illnesses are at an elevated risk for developing metabolic syndrome, possibly due to a combination of the following factors:

- Patient factors (e.g. lifestyle choices, diet, tobacco consumption, substance use, exercise, obesity, low degree of implementation of education programs)
- Illness factors (e.g. proinflammatory states from MDD or depressive symptoms, possible disease-related risks for developing diabetes)
- Medication factors (i.e. psychiatric medications have a variable effect on glycemic control, weight and lipids)
- Environmental factors (e.g. access to healthcare, availability of screening and monitoring programs, social supports, education programs)

Psychiatric medications (primarily second-generation/atypical antipsychotics, but in some cases antidepressants as well) have the potential to affect weight, lipids and glycemic control in patients without diabetes.. A weight gain of between 2 to 3 kg was found within a 1-year time frame with amitriptyline, mirtazapine and paroxetine (51). A study of patients with type 2 diabetes and SZ who were treated with antipsychotic medications also showed worsening glycemic control requiring the addition of insulin therapy over a 2-year period with a hazard ratio of 2.0. The reported weight gain over a 1-year period ranges from <1 kg to >4 kg for various antipsychotic medications. Olanzapine and clozapine have been shown to have the greatest weight gain, with a mean increase of >6 kg over a 1-year span compared with 2 to 3 kg for quetiapine and risperidone, and 1 kg for aripiprazole and ziprasidone, also over a 1-year time frame. The main impact on lipid profile is an increase in triglyceride and total cholesterol levels, especially with clozapine, olanzapine and quetiapine.

Psychological Effects of Diabetes

Diabetes, both type 1 and 2, is a psychologically challenging disease for patients and their family members. It interferes with quality of life and is a risk factor for diabetes-related distress as well as the psychiatric disorders listed above. Challenges accompanying the diagnosis of diabetes include adjustment to the disease, adherence to the treatment regimen and psychosocial difficulties at both a personal and an interpersonal level. Stress, deficient social supports and negative attitudes toward diabetes can impact on self-care and glycemic control. Diabetes management strategies ideally incorporate a means of addressing the psychosocial factors that impact on individuals and their families. Both symptom measures (e.g. self-report measures of depressive or anxiety symptoms) and methods to arrive at mental disorder diagnoses (e.g. structured interviews leading to *Diagnostic and Statistical Manual of Mental Disorders* [Fourth Edition, Text Revision] [DSM-IV-TR] diagnoses have been assessed. Given that the person with diabetes carries out 95% of diabetes management, identifying depressive syndromes in diabetes is important since depression is a risk factor for poor diabetes self-management and outcomes, including early mortality. MDD has been found to be underdiagnosed in people with diabetes.

Screening for Psychological/Psychiatric Symptoms

Individuals with diabetes should be regularly screened for psychological distress and psychiatric disorders via directed interviews. No data presently demonstrate the superiority of one particular depression screening tool over another. Currently available screening instruments have a sensitivity of between 80% and 90% and a specificity of 70% to 85%. Screening instruments fall into three categories:

- Diabetes-specific measures, such as the Problem Areas in Diabetes (PAID) Scale or the Diabetes Distress Scale (DDS)
- Quality of life measures, such as the WHO-5 screening instrument
- Depressive/anxiety symptoms, such as the Hospital Anxiety and Depression Scale (HADS), the Patient Health Questionnaire (PHQ-9), the Centre for Epidemiological Studies–Depression Scale (CES-D) or the Beck Depression Inventory (BDI)

Treatment of Psychological/Psychiatric Risk Factors

Given the burden associated with the demands of diabetes self-management, efforts to promote well-being and moderate distress should be incorporated into diabetes management for all individuals. Motivational interventions, coping skills, self-efficacy enhancement, stress management and family interventions all have been shown to be helpful. Case management by a nurse working with the patient's primary care physician and providing guideline-based, patient-centred care resulted in improved glycated hemoglobin (A1C), lipids, blood pressure and depression scores. Individuals with diabetes distress and/or psychiatric disorders benefit from professional interventions, either some type of psychotherapy or prescription medication. Evidence from systematic reviews of randomized controlled trials supports cognitive behaviour therapies (CBT) and antidepressant medication, both solely or in combination. No evidence presently shows that the combination of CBT and medication is superior to these treatments given individually. A pilot study of 50 patients with type 2 diabetes who initially had a moderate level of depression at baseline showed an improvement in the severity of their depression (moving to the mild range) with a 12-week intervention of 10 CBT sessions combined with exercise in the form of 150 minutes of aerobic activity weekly. This effect was sustained at 3 months.

Gains from treatment with psychotherapy are more likely to benefit psychological symptoms and glycemic control in adults than will psychiatric medications (which

usually only reduce psychological symptoms). A meta-analysis of psychological interventions found that glycemic control (A1C) is improved in children and adolescents with type 1 diabetes. Furthermore, evidence suggests interventions are best implemented in a collaborative fashion and when combined with self-management interventions.

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