

Diabetes in psychiatric disease

Richard IG Holt

Abstract

The interactions between diabetes mellitus and psychiatric diseases are complex, with diabetes increasing the risk of a number of psychiatric disorders, while mental illness and its treatment affect the risks and outcomes of diabetes. The mechanisms underlying the association include genetic, lifestyle and psychological factors as well as biological and treatment effects. Where co-morbidity occurs, it presents a significant clinical challenge for clinicians and worsens the outcomes of both conditions for patients. Diabetes healthcare professionals need heightened awareness of the possibility of mental health problems, and knowledge of screening for and treatment of these disorders. Similarly, mental health professionals should be aware of how to screen for and prevent diabetes while understanding the care pathways for those who develop diabetes.

Keywords Antidepressant medication; antipsychotic medication; bipolar affective disorder; cognitive behaviour therapy; depressive disorder; diabetes mellitus; schizophrenia; screening; self-care

Introduction

The prevalence of a number of psychiatric illnesses is higher in people with diabetes mellitus than would be expected by chance, and vice versa (Figure 1). Where co-morbidity occurs, it presents a significant clinical challenge for clinicians, and worsens the outcomes of both conditions for patients. Knowledge of the consequences and additional challenges that occur when diabetes and a psychiatric disorder coincide is essential if optimal care is to be provided. As it is not possible to cover all mental health problems experienced by people with diabetes, this section concentrates on the association between diabetes and depression and severe mental illness (schizophrenia and bipolar disease), and highlights the importance of screening and treatment.

Depression

Epidemiology of diabetes and depression

Approximately 1 in 4 people with diabetes report depressive symptoms, while a formal diagnosis of depression is made in

Richard IG Holt PhD FRCP is Professor in Diabetes and Endocrinology at the University of Southampton and Honorary Consultant Physician at University Hospital Southampton NHS Foundation Trust, UK.

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Key points

- Diabetes mellitus increases the risk of a range of psychiatric disorders, while mental illness and its treatment affect the risks and outcomes of diabetes
- Screening for and treating mental health problems, if present, in someone with diabetes are integral components of holistic diabetes care and lead to improved quality of life and better diabetes self-care
- Screening for diabetes in people with severe mental illness is needed because of the high prevalence of undiagnosed diabetes
- Treatment of diabetes in people with mental illness should follow currently available treatment algorithms but requires a collaborative approach involving both physical and mental healthcare professionals

10–15% of those with diabetes, approximately 2-fold higher than for the general population.¹ The association between depression and diabetes is bi-directional as adults with depression are at increased risk of developing type 2 diabetes, and vice versa. Although general population risk factors for depression, including female sex, marital status, childhood adversity and social deprivation also apply to people with diabetes, a number of diabetes-specific risk factors are associated with depression. These include insulin treatment, complications of diabetes (especially painful neuropathy and sexual dysfunction), poor glycaemic control and hypoglycaemia.

Depression is often considered an understandable reaction to the diagnosis of a chronic physical illness with incapacitating complications and significant treatment demands. However, other explanations, including the effect of hypoglycaemia and hyperglycaemia on brain function, lifestyle, and biological and treatment factors, probably contribute to the association (Figure 2).

Physical inactivity, imprudent diet and poverty all predispose to both conditions. Poor self-care management can lead to hyperglycaemia, worsening depressive symptoms and, in turn, deteriorating self-care behaviours, thus perpetuating a vicious cycle. Biological changes that can underlie the association of depression and diabetes include hypothalamus–pituitary–adrenal axis dysfunction, manifesting as subclinical hypercortisolism, increased inflammation and disrupted sleep patterns. Finally, some antidepressants may contribute to the risk of diabetes, possibly through their effect on body weight, although whether this association is causative remains unproven.

Clinical consequences of co-morbid depression and diabetes

The presence of co-morbidity worsens the outcome of both conditions. Quality of life is diminished, and although depression has only a minor effect on glucose control, it is associated with

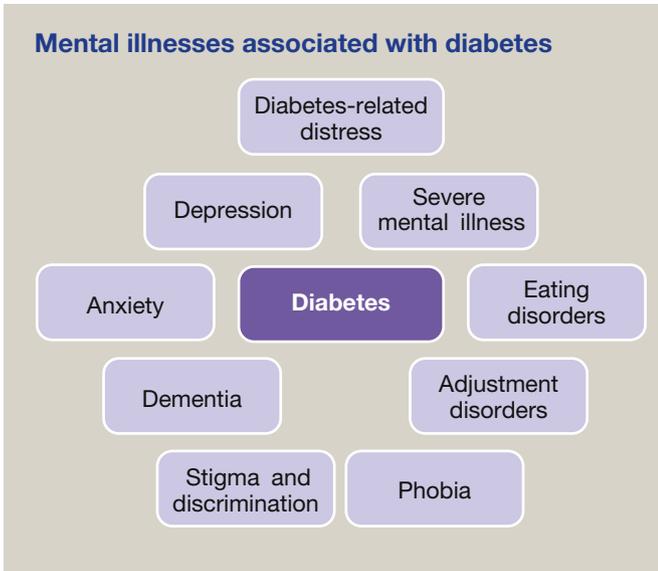


Figure 1

an increased prevalence and worsened severity of diabetes complications and premature mortality through a range of physical conditions, notably cardiovascular disease. Conversely, poorly treated hyperglycaemia can perpetuate low mood.

Treatment of depression

Diagnosis: several well-validated short questionnaires can reliably identify individuals at risk of depression, including the widely used the Patient Health Questionnaire (PHQ-9). Another

straightforward method that can be used in a diabetes clinic is to ask two simple questions:

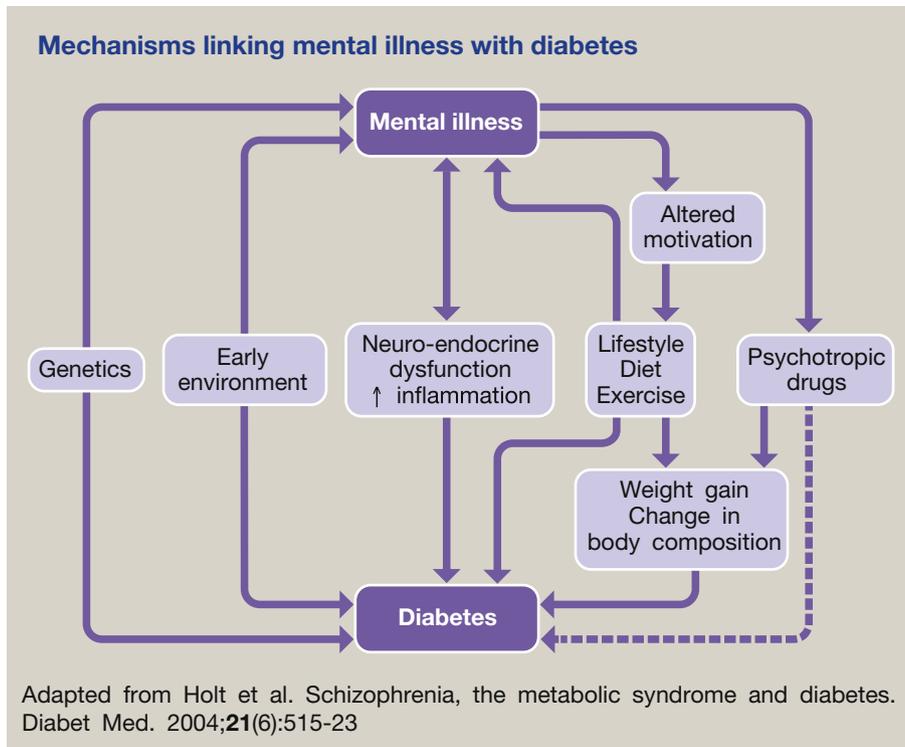
- ‘During the past month, have you been bothered by having little interest or pleasure in doing things?’
- ‘During the past month, have you been bothered by feeling down, depressed or hopeless?’

If the answer to either is ‘yes,’ the individual should be asked if they want help with this problem. If the answer to this is also ‘yes,’ the patient should be formally assessed by a diagnostic interview and offered appropriate referral and treatment.

Depression should not be confused with ‘diabetes-related distress’, which captures the emotional distress associated with living with diabetes. Although some individuals report both diabetes-related distress and depressive symptoms, diabetes-related distress is a distinct construct in terms of its association with self-management and glycaemic control. ‘Diabetes-related distress’ can be diagnosed using the Problem Areas in Diabetes (PAID) questionnaire.

Treatment: a range of psychological therapies, including cognitive behavioural therapy, and problem-solving techniques, and antidepressant medication improve psychiatric symptoms in people with diabetes.² There is a more modest beneficial effect on glycaemic control.

The antidepressant of choice depends largely on the adverse effect profile, patient preference and individual response, but selective serotonin reuptake inhibitors are most widely used because they are less cardiotoxic than tricyclic antidepressants and safer in overdose (Table 1). Some antidepressants, including mirtazapine, paroxetine and some tricyclic antidepressants, can induce significant weight gain and are less suitable. Antidepressant treatment



Adapted from Holt et al. Schizophrenia, the metabolic syndrome and diabetes. Diabet Med. 2004;21(6):515-23

Figure 2

Considerations when choosing an antidepressant for someone with diabetes

- A selective serotonin reuptake inhibitor should be considered as the treatment of choice for most people with diabetes
- A serotonin–norepinephrine reuptake inhibitor can also be considered where there is co-morbid depression and anxiety
- Duloxetine can be useful in people with depression and diabetic painful peripheral neuropathy
- Tricyclic antidepressants and monoamine oxidase inhibitors are best avoided because of cardiac safety, e.g. cardiotoxicity and cardiomyopathy
- Some antidepressants, e.g. mirtazapine, amitriptyline and paroxetine, can cause significant weight gain

Table 1

should be continued at an adequate dose for at least 4–6 months after remission of symptoms to reduce the risk of relapse.

Severe mental illness

Epidemiology of diabetes and severe mental illness

Around 10–15% of people with severe mental illness (schizophrenia and bipolar disorder) have diabetes, predominantly through an increase in type 2 diabetes.³ Up to 70% of cases of diabetes are undiagnosed in people with severe mental illness. The mechanisms underlying the association between diabetes and severe mental illness are multifactorial and include genetic and lifestyle (poor diet, physical inactivity, smoking) as well as biological (similar to depression) and treatment factors (Figure 2).

Clinical consequences of co-morbid diabetes and severe mental illness

People with severe mental illness are more likely to develop acute metabolic complications, more likely to develop chronic microvascular and macrovascular complications, and >6-fold more likely to die from diabetes. Despite this increased clinical need, people with severe mental illness are less likely to be screened for microvascular complication and cardiovascular risk factors, less likely to be prescribed cardiovascular preventive medication, and less likely to receive diabetes education despite more clinical contact. This suggests that some of the health inequality experienced by people with severe mental illness could be addressed by a redesign of clinical services.

Screening for diabetes

The increased prevalence of diabetes, particularly undiagnosed, makes a strong imperative to screen for diabetes.³ Screening by blood testing (glucose, glycated haemoglobin (HbA_{1c})) should begin before the onset of antipsychotic treatment or as soon as is reasonably possible. It should then be carried out 2–3 months later to assess any acute change in glucose in response to treatment, and thereafter on an annual basis. Caution should be made

when interpreting an HbA_{1c} reading when glucose values can be changing rapidly, for example shortly after the start of treatment, as HbA_{1c} can be normal even in the face of marked hyperglycaemia.

Prevention of diabetes

Although diabetes prevention trials have not been undertaken in people with severe mental illness, the National Institute for Health and Care Excellence concluded that lifestyle interventions were effective in reducing body weight in the short term, but whether there were effects beyond 6 months was unknown.⁴ Longer term studies of lifestyle interventions have produced more mixed results, with only 2 of 6 studies included in a meta-analysis showing benefit after 1 year.⁵ The two successful studies were highly intensive and may not be replicable in other health settings. Furthermore, many participants had mental illnesses other than schizophrenia; this is important because those with schizophrenia may be less able to make lifestyle change in response to the intervention. Interventions should therefore be tailored to the individual.

Preliminary evidence from short-term studies suggests that metformin can attenuate antipsychotic-induced weight gain or promote weight loss; it should therefore be considered as a second-line treatment where lifestyle change is not feasible.³ However, longer term studies are needed to confirm these findings.

Treatment of diabetes

The treatment of diabetes in people with severe mental illness should follow currently available treatment algorithms, although agents that induce less weight gain may have advantages given the high prevalence of obesity in people with severe mental illness. The additional challenges of managing co-morbid diabetes and mental illness require close collaboration between mental and physical health services. ◆

KEY REFERENCES

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TEST YOURSELF

To test your knowledge based on the article you have just read, please complete the questions below. The answers can be found at the end of the issue or online [here](#).

Question 1

A 52-year-old man presented with a 4-week history of low mood, tearfulness and loss of interest in work and golf. He had had diabetes for 8 years. He had recently started treatment with insulin because of a raised glycosylated haemoglobin concentration. He had a past history of myocardial infarction and erectile dysfunction.

What is the likely diagnosis?

- A. Anxiety
- B. Adjustment disorder
- C. Needle phobia
- D. Depression
- E. Diabetes-related distress

Question 2

A 47-year-old woman presented with a 6-week history of depression that had not responded to psychological treatments. She has diabetes, complicated by painful diabetic peripheral neuropathy.

Which antidepressant would be the treatment of choice?

- A. Amitriptyline
- B. Sertraline
- C. Duloxetine
- D. Mirtazapine
- E. Paroxetine

Question 3

A 25-year-old man presented with thirst, polydipsia and weight gain of 10 kg. Four years previously, he had developed schizophrenia. This had been successfully treated with clozapine, a second-generation antipsychotic, for the previous 3 months.

What is the next best action?

- A. Check the plasma glucose concentration
- B. Check the HbA_{1c} concentration
- C. Reassure him that these are anticholinergic adverse effects
- D. Refer to the psychiatry team for assessment of psychogenic polydipsia
- E. Check the serum calcium concentration