

# Depression in people with type 2 diabetes

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People with diabetes are twice as likely to develop depression than the general population. Depression is characterised by changes in mood, behaviour and thinking patterns, usually lasting longer than 2 weeks and resulting in social- or work-related problems (American Psychiatric Association, 2000). A number of questionnaire-based tools are available for the assessment of depression in primary care. This article explores the incidence and prevalence of the condition in people with type 2 diabetes, the effects it has on diabetes control, and discusses ways in which healthcare professionals can assess symptoms of depression and treat the condition.

In its mildest form, depression may be experienced as “low spirits” where the individual may feel pessimistic, discouraged and have a reduced capacity for enjoyment. A severe episode may include overriding feelings of inadequacy and hopelessness, often with somatic symptoms such as early morning waking and marked psychomotor retardation (World Health Organization [WHO], 1992), which can become life-threatening if the individual feels suicidal.

## Extent of the problem

Depression is not a rare condition. One person in every six will become depressed at least once in their life (Mind, 2008), those who are older and with a chronic condition have an increased risk of developing depression.

Type 2 diabetes has been linked with a 30–50% higher incidence of mental health problems (Das-Munshi et al, 2007), which, in turn, are linked to worse health outcomes, reduced quality of life and high use of health services (Katon, 2003; Katon et al, 2005; Wexler et al, 2006). Meta-analyses suggest that people with type 2 diabetes are nearly twice as likely to experience a depressive episode as those without the condition (Anderson et al,

2001). It is important to note that prevalence estimates can vary considerably depending on the screening tool used, but one estimate produced as a result of a recent meta-analysis suggests that over a lifetime, around 24% of women with diabetes suffer from depression compared with 12.8% of men. Diabetes in men, however, increases the risk of developing depression by 100% compared with a 30% increase in females (Ali et al, 2006). Overall, depression is more of a problem in females, but the added risk for depression is larger in males with diabetes.

## The relationship between depression, distress and diabetes

The relationship between diabetes and depression is complex. Longitudinal studies point towards a bi-directional causal link, where the psychological stress associated with diabetes management has been proposed to cause psychological problems over and above those that would be expected in untreated people with diabetes (Golden et al, 2008).

Depression may also result from the metabolic effects of diabetes on the brain. Metabolic abnormalities in people with poorly controlled

## Article points

1. The relationship between diabetes, depression and distress is a complex and challenging issue.
2. There are numerous quick and reliable methods to screen for depression that could be used routinely in clinical practice.
3. The short-term benefits of medication may help people to access sources of support and information, but depressive symptoms are likely to re-surface at a later stage unless the underlying factors that gave rise to the condition are also tackled.
4. Structured education programmes might be a good start for empowering people to deal with their diabetes before it becomes unmanageable.

## Key words

- Depression
- Diabetes distress
- Screening
- Type 2 diabetes

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### Page points

1. Longitudinal research has shown that even a single episode of self-reported depression can be reliably linked with an increased risk of developing diabetes in older adults.
2. The ICD-10 suggests that for individuals to be diagnosed with clinical depression they need to have experienced at least two of the three core symptoms (feeling sad or unhappy, having little energy, losing interest in activities they previously enjoyed) for most of the day, almost every day for a minimum of 14 days.

diabetes have been found to affect brain structure and adversely influence higher cognitive processes, (Jacobson et al, 2002; Bruhl et al, 2007), and may trigger or accelerate depression.

Other longitudinal research has shown that even a single episode of self-reported depression can be reliably linked with an increased risk of developing diabetes in older adults (Carnethon et al, 2007). More recent research suggests that the chances of a depressed individual developing diabetes are considerably higher compared with somebody with diabetes developing depression (Mezuk et al, 2008a). In addition, weight gain and obesity are risk factors for diabetes and depression, with insulin treatment leading to further weight gain. Some individuals will enter a vicious cycle of depression leading to excessive eating, which in turn worsens diabetes status and depression (Everson et al, 2002). Another common factor in this relationship may be low birth weight, which has been found to be associated both with depression (Bohnert and Breslau, 2008) and diabetes (Harder et al, 2007). Clearly there is scope for more research on causality.

The relationship between diabetes, depression and distress is another challenging issue. For example, the ICD-10 diagnostic criteria (WHO, 1992) suggest that for individuals to be diagnosed with clinical depression they need to have experienced at least two of the three core symptoms (feeling sad or unhappy, having little energy, losing interest in activities they previously enjoyed) for most of the day, almost every day for a minimum of 14 days (see *Box 1*). However, it is quite possible that many people with diabetes will not fully meet these criteria. Indeed, people with diabetes with elevated depressive affect may not necessarily be clinically depressed, but instead may be suffering from high levels of “diabetes-related distress” such as irritability, hypochondriasis and insomnia (Fisher et al, 2007).

Fisher et al (2007) suggest that diabetes-specific distress can be seen as qualitatively different from clinical depression in that it is specifically related to the actual struggles in dealing with the demands of diabetes and its management, including regimen adherence, diabetes-related health care, comorbidities, and resulting economic, social and family difficulties. It was observed that those with subclinical depression, but with high diabetes distress scores, did worse on a range of behavioural tests and biomarkers (physical activity, HbA<sub>1c</sub>).

Clinicians need to be aware that elevated distress symptoms might jeopardise self-care in as significant a way as clinical depression, and that successful treatment of clinical depression among people with diabetes may have little effect on diabetes management if it does not also deal with the reasons for diabetes-related distress.

### Effects of depression on people with diabetes

The effects of depression on people with diabetes are multiple and sometimes similar to those of diabetes itself. In addition to the effects of increased feelings of helplessness, hopelessness and loss of motivation (Perlmutter et al, 1984), people with depression may feel less able to adapt to the demands of their diabetes (Lustman et al, 2000a), and such people have been found to present with higher HbA<sub>1c</sub> levels (Lustman and Clouse, 2005). As a result of a reduced ability to adapt to the demands of their condition, people with diabetes

### Box 1. Definition and diagnosis of depressive episodes.

Depressive episodes can be mild, moderate or severe. In all forms, the individual usually suffers from depressed mood, loss of interest and enjoyment, and reduced energy leading to increased fatigability and diminished activity. Marked tiredness after only slight effort is common.

The ICD-10 (World Health Organization, 1992) defines a “mild depressive episode” as follows:

At least two of the following three symptoms must be present:

- Depressed mood to a degree that is definitely abnormal for the individual, present for most of the day and almost every day, largely uninfluenced by circumstances, and sustained for at least 2 weeks.
- Loss of interest or pleasure in activities that are normally pleasurable.
- Decreased energy or increased fatigability.

An additional symptom or symptoms from the following list should be present, to give a total of at least four:

- Loss of confidence and self-esteem.
- Unreasonable feelings of self-reproach or excessive and inappropriate guilt.
- Recurrent thoughts of death or suicide, or any suicidal behaviour.
- Complaints or evidence of diminished ability to think or concentrate, such as indecisiveness.
- Change in psychomotor activity, with agitation or retardation (either subjective or objective).
- Sleep disturbance of any type.
- Change in appetite (decrease or increase) with corresponding weight change.

engage in more health-compromising behaviours such as smoking (Clark, 2003) and inadequate medication adherence (Kilbourne et al, 2005).

Depression has also been hypothesised to compound any cognitive dysfunction that may already be present in people with diabetes (Watari et al, 2006), thus further undermining self-care efforts. Depression lowers quality of life (Jacobson et al, 1997) and is related to increased diabetes complications, such as cardiovascular disease (Clouse et al, 2003) and retinopathy (Robertson et al, 2006), which may in turn worsen distress or symptoms of depression.

The prevalence of diabetes-related psychological distress and resulting depression is increased in people from lower socioeconomic backgrounds, in those with lower levels of educational achievement (Mezuk et al, 2008b), of Black or Asian ethnicity, with functional limitations, with lower adherence to dietary recommendations, and with unhealthy lifestyles such as smoking, obesity and inactivity (Egede and Zheng, 2003; Engum et al, 2005; Lin et al, 2004). Depression therefore affects every aspect of diabetes – from self-care to complications – raising serious concerns about untreated depression.

### Screening and assessment for depression

Depression is under-diagnosed in diabetes (Li et al, 2009) because its symptoms are not always easy to notice; they are often very similar to those that are associated with poor glycaemic control, such as low motivation and feeling “low”, making it difficult for healthcare professionals to differentiate between a case of poor glycaemic control, a depressed individual or a case where the two have interacted.

Fortunately, there are numerous quick and reliable methods to screen for depression that could be used routinely in clinical practice. The Quality and Outcomes Framework (British Medical Association, 2006), following NICE (2004) recommendations, has introduced two screening questions (*Box 2*) for depression associated with diabetes and coronary heart disease. An answer of “Yes” to either of these questions is indicative of depression.

Concerns have been raised about the risk of over-diagnosing depression, in particular through

the use of very short assessment tools (Mitchell and Coyne, 2007). Matters can be improved considerably by adding a third question on whether people would like to get help with the emotional problems they report (Arroll et al, 2005).

An initial assessment of depression and diabetes-related distress can be achieved with the help of various reliable and valid self-report measures. These are normally brief, easy-to-score questionnaires that people can complete in 5–10 minutes while sitting in a waiting room (*Box 3*). The Geriatric Depression Scale (GDS), for example, has been designed for older people and is probably one of the most detailed, and also longest, measures at 30 items (Sheikh and Yesavage, 1986). The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) is equally comprehensive, can be used with adults of any age and is shorter than the GDS. Finally, the Hospital and Anxiety Scale (HADS; Zigmond and Snaith, 1983) uses 14 self-report items to assess both anxiety and depression, is quick and easy to score, is available in several languages and has been shown to work well with people with diabetes (Lloyd et al, 2000). Another popular tool is the Patient Health Questionnaire (PHQ-9; Kroenke et al, 2001), which consists of nine questions and is one of the quickest to answer. All scales provide a quantitative indication of the severity of the problem.

Although different depression questionnaires vary in sensitivity (Cameron et al, 2008), questionnaires should be used to reduce the number of cases where depression is falsely diagnosed. For example, Gjerdingen et al (2009) looked at post-partum depression and showed that adding a depression questionnaire to the screening questions reduced the number of false positives. In practical terms, a stepped approach is recommended, ideally asking the two questions plus the additional “help” question, followed by one of the depression questionnaires.

### Treating depression

A lot of attention has been paid to the effectiveness of pharmacological treatment with the suggestion that antidepressant medication is no more effective than placebos, especially for minor depression (Moncrieff and Kirsch,

### Page points

1. Depression lowers quality of life and is related to increased diabetes complications, such as cardiovascular disease and retinopathy, which may in turn worsen distress or symptoms of depression.
2. Depression is under-diagnosed in diabetes because its symptoms are not always easy to notice; they are often very similar to those that are associated with poor glycaemic control, such as low motivation and feeling “low”, making it difficult for healthcare professionals to differentiate between a case of poor glycaemic control, a depressed individual or a case where the two have interacted.
3. An initial assessment of depression and diabetes-related distress can be achieved with the help of various reliable and valid self-report measures.

### Box 2. Screening for depression in primary care.

The two questions suggested by NICE (2004) and adopted into the Quality and Outcomes Framework by the British Medical Association (2006) that should be asked in primary care settings to detect depression:

1. During the last month, have you often been bothered by feeling down, depressed or hopeless?
2. During the last month, have you often been bothered by having little interest or pleasure in doing things?

Additional "help question" (Arroll et al, 2005)

3. Is this something with which you would like help? with three possible responses:
  - No
  - Yes, but not today
  - Yes

2005); for a rebuttal see McAllister-Williams (2008). Nevertheless, other work has shown some benefits of drug therapy. Lustman et al (2007) found that in the short-term, glycaemic control and insulin resistance improved with bupropion, and that these gains are sustained throughout the subsequent depression-free interval; however, antidepressant medication led to recovery of depression in only 50% of participants and a third of those had a relapse within a year. Benefits have also been shown for nortriptyline (Lustman et al, 1997), fluoxetine

(Lustman et al, 2000b), and sertraline (Lustman et al, 2006), but with similar limitations.

Irrespective of the controversy around the use of pharmacotherapy, one major problem with using medication to tackle depression is that it deals with the consequences of the illness but has little effect on any underlying psychological causes. The short-term benefits of medication may help people to access sources of support and information, but depressive symptoms are likely to re-surface at a later stage unless the underlying factors that gave rise to the condition are also tackled.

Dealing with the underlying cause of a diabetes-induced depression may be quite complex. On receiving a diagnosis of diabetes the individual must learn and adapt to complex and intensive treatment regimens that need to be managed carefully in view of the serious consequences of non-adherence.

People with diabetes often live with great levels of fear (Eaton et al, 1996). Regular self-monitoring of blood glucose may be perceived as an enforced, unpleasant and intrusive burden without any tangible gain (Franciosi et al, 2001), and high blood glucose readings can bring about feelings of guilt and powerlessness (Gallichan, 1997). Strains and losses (for example, of work and participation in social activity) may arise from dietary and lifestyle adjustments, constricted social life, insulin injections, threats of loss of consciousness and other complications of poor diabetes control, sexual dysfunction, marital problems, and discrimination (Ludman et al, 2004; Schmitt and Neubeck 1985). It should, therefore, follow that many people with diabetes might feel overwhelmed. So what can clinicians do to help?

The authors of the current article propose that structured education programmes such as X-PERT (Deakin et al, 2006) or DESMOND (Diabetes Education and Self Management for Ongoing and Newly Diagnosed; Davies et al, 2008), which adopt a person-centred approach to helping individuals with diabetes develop skills for successful self-management, might be a good start for empowering people to deal with their diabetes before it becomes unmanageable. In fact, DESMOND has been shown to improve diabetes distress and depression.

### Box 3. Recommended depression severity measures.

**Geriatric Depression Scale (GDS; Sheikh and Yesavage, 1986):**

- Suitable for older people.
- 30 patient-reported questions.
- Downloadable free from: <http://www.stanford.edu/~yesavage/GDS.html>.
- Takes around 5 minutes.

**Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977):**

- Suitable for the general population.
- Free to download.
- 20 patient-reported questions.
- Takes around 5 minutes.
- Categorises depression as normal, mild, moderate and severe.

**Hospital Anxiety and Depression Scale (HADS-D; Zigmond and Snaith, 1983):**

- Low costs (around £60 for manual and recording forms).
- 14 patient-reported questions.
- Takes around 5 minutes.
- Categorises depression as normal, mild, moderate and severe.

**Patient Health Questionnaire (PHQ-9; Kroenke et al, 2001):**

- Free to download.
- Nine patient-reported questions.
- Take around 3 minutes.
- Uses the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-4; American Psychiatric Association, 2000) criteria to categorise severity as minimal, mild, moderate, moderately severe and severe.

An approach that might be suitable when depression has already begun is cognitive behaviour therapy (CBT). CBT interventions are very successful in tackling depressive illness (NICE, 2004) and have also been found to be helpful in people with diabetes (Ismail et al, 2004; Cuijpers et al, 2008). Although psychologists can offer CBT, waiting times are likely to be an obstacle. There are, however, resources available that seem to promise people with depression improved access to sources of help (self-help software and books on CBT as well as the Government's new initiative on Improving Access to Psychological Therapies (IAPT; <http://www.iapt.nhs.uk>).

GPs and nurses have an important role to play in ensuring that people with long-term conditions such as diabetes, engage with IAPT services. GPs are usually the first point of contact for people with physical illness, and they may need to sensitively prepare people for psychological therapies by explaining how depression or anxiety disorders may be linked to physical problems. Practice nurses seeing people with diabetes at annual review meetings may also be in a good position to detect symptoms of depression.

Other healthcare professionals, such as specialist nurses, may be well placed to identify the existence of depression and anxiety and could provide an important referral route to appropriate services, including the IAPT services, if and when available, while any physical health needs are also being addressed. Alternatives, such as local counselling services or clinical psychological services in the case of major or recurrent depression, should be considered.

### Conclusion

Depression and diabetes distress are a common problem in people with type 2 diabetes. There are, however, easy ways in which clinicians can screen for and assess depression. Treating depression can be achieved either through pharmacological or behavioural methods, and structured education and psychological support for people with diabetes and depression may well minimise the debilitating effects of both conditions. ■

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### Page points

1. Cognitive behavioural therapy interventions are very successful in tackling depressive illness and have also been found to be helpful in people with diabetes.
2. GPs are usually the first point of contact for people with physical illness, and they may need to sensitively prepare people for psychological therapies by explaining how depression or anxiety disorders may be linked to physical problems.
3. Treating depression can be achieved either through pharmacological or behavioural methods and structured education, and psychological support for people with diabetes and depression may well minimise the debilitating effects of both conditions.