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# Psychiatric aspects of diabetes mellitus

Peter Trigwell & Robert Peveler

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In 1899, Maudsley wrote:

“Diabetes is a disease which often shows itself in families in which insanity prevails: whether one disease predisposes in any way to the other or not, or whether they are independent outcomes of a common neurosis, they are certainly found to run side by side, or alternately with one another more often than can be accounted for by accidental coincidence or sequence”.

Recent research confirms that a range of psychological problems and psychiatric disorders are common in people with diabetes. Such problems are important not only because of the suffering caused, but also because of their impact upon the management and outcome of the diabetes itself. This article reviews the psychosocial impact of diabetes and its treatment, describes the range of psychological problems and psychiatric disorders which commonly occur in people with diabetes, and outlines the role of the psychiatrist in the recognition and management of these clinical problems.

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## Diabetes mellitus

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### *Clinical features*

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Diabetes mellitus is a common, chronic condition caused by diminished availability or effectiveness of endogenous insulin. About 1% of the population of the UK are recognised to be suffering from diabetes, but most authorities estimate that another 1% have the condition, but go undiagnosed or

untreated. Diabetes is either primary (idiopathic) or secondary (with various possible causes, including pancreatic destruction by malignant tumour or pancreatitis, and insulin antagonism by steroid therapy). There are two principal forms of the disease.

#### **Type I diabetes**

Often called insulin-dependent diabetes mellitus, this type usually develops during childhood or adolescence, presenting acutely with severe symptoms of malaise, fatigue, weight loss, polyuria, polydipsia, infections and sometimes coma.

#### **Type II diabetes**

Often called non-insulin dependent diabetes mellitus, this tends to occur in the overweight and the elderly. It is often asymptomatic and detected by routine urine testing, but sufferers may present with infection or vascular complications.

### *Medical complications*

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Diabetes (particularly Type I) is accompanied by long-term microvascular, neurological and macrovascular complications. These include retinopathy, nephropathy, neuropathy, cardiovascular disease and peripheral vascular insufficiency. They are a major cause of morbidity and mortality, but research has confirmed that good glycaemic control significantly reduces the risk of eventual medical complications (Diabetes Control and Complications Research Group, 1993).

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## Physical management

Of all chronic disorders, diabetes arguably requires the greatest level of active involvement in management and self-care. In addition to the multi-disciplinary services that he or she might receive, a person with diabetes must, in many ways, be their own doctor, nurse, dietician and biochemist (paraphrasing R. D. Lawrence, founder of the British Diabetic Association). In broad terms, management of diabetes consists of balancing events which raise blood glucose (e.g. consuming foodstuffs which contain carbohydrate) with events which lower blood glucose (e.g. exercise, insulin or oral hypoglycaemic medication). The aim is to keep the blood glucose within the normal range as far as possible, and hence to avoid later medical complications. A high blood glucose level may lead to symptoms of hyperglycaemic ketoacidosis (similar to the presenting symptoms of Type I diabetes as listed above). A low blood glucose level causes hypoglycaemia, leading to hunger, sweating, agitation and confusion. Coma may follow, with the possibility of irreversible brain damage. The day-to-day management of diabetes is described in Box 1.

## Coping with diabetes

In view of the importance of self-care, the way in which people adjust to having diabetes is crucial to

### Box 1. Components of successful day-to-day management of diabetes

*Diet* – increased intake of fibre and complex carbohydrates and reduced fat intake are encouraged

*Medication* – oral hypoglycaemic medication may be necessary in Type II diabetes in addition to dietary management; regular subcutaneous injections of exogenous insulin are also required in Type I diabetes (and sometimes in Type II)

*Exercise* – aerobic exercise is valuable for weight loss, decreasing insulin resistance in Type II diabetes and reducing the risk of hypertension and cardiovascular disease

*Monitoring* – blood and/or urine glucose levels are monitored to allow immediate decisions concerning other aspects of management

the outcome. It determines the risk both of serious medical complications and of psychological problems or psychiatric disorder. The onset of diabetes, especially Type I, brings many pressures and difficulties. Following diagnosis there will often be a 'honeymoon period' lasting for a few weeks or months. During this time the person may appear to be adapting well to the demands and restrictions of the treatment regime. There may be an element of novelty, so that monitoring and administration of medication is interesting and not too onerous. Eventually, a proportion will begin to cope less well. They may pass through stages similar to those seen in a bereavement reaction: disbelief, denial, anger and depression. The similarity with grief is probably because the diagnosis of diabetes threatens various losses: of job or career potential, of sexual function and reproductive potential, of eyesight or limbs, or of a sense of control over one's life and future.

## Psychological hurdles

Diabetes, in common with any chronic physical illness, poses numerous psychological hurdles (Maguire & Haddad, 1996).

### Uncertainty about the future

The range of possible long-term outcomes in diabetes is very wide, from no significant medical complications to blindness, amputation, renal failure or severe neuropathic pain. Examples of poor outcomes are repeatedly encountered in the diabetes clinic, and uncertainty about outcome is likely to be a particular problem for those who have had adverse experiences of diabetes in friends or relatives. These concerns must be actively and empathically addressed in order to avoid unnecessary distress; the treatment and outcome of diabetes have improved a great deal since older relatives were diagnosed.

### Loss of control

Some perceive diabetes to have 'taken over' their life, leading either to a feeling of helplessness or an angry, rebellious response.

### Being secretive

As a result of concern over the acceptability of their diagnosis to others, particularly employers or insurers, some people may keep it a secret. In view of the possibility of hypoglycaemic episodes, and other potential problems, this can be very dangerous.

## *Coping styles and strategies*

Three factors are particularly important in determining how an individual reacts to the diagnosis.

### Individual perceptions

The extent of social disability varies according to how serious the person perceives their condition to be, rather than according to the degree of seriousness perceived by doctors. Because of this, it is particularly important to find out what the person's understanding and expectations are.

### Personality traits and previous ways of coping

Those with marked dependent, avoidant or obsessional traits are likely to adapt less well.

### Coping style

Denial has been found to be an adaptive and useful coping style in some physical disorders (Greer *et al*, 1979). In diabetes, however, it is a common but maladaptive reaction to the diagnosis. Some people may behave as if they do not actually have diabetes at all, and there may be an element of 'magical' thinking ('if I ignore this, and behave as if it doesn't exist, it will go away/I won't have it at all'). In some cases the result of this will be emergency admission due to severe hyperglycaemia. The overall coping strategy depends upon the balance between how much lifestyle is modified to accommodate diabetes, and how much the regime is made to fit around other activities with the minimum possible impact.

## *Adherence or self-care*

Adherence can be defined as the extent to which a person's behaviour (medication-taking, diet, or lifestyle change) coincides with medical or health advice (Haynes *et al*, 1979). There is a tendency to consider problems with coping as synonymous with non-adherence. However, this is an oversimplistic and unhelpful approach which assumes that one specific treatment plan exists which is effective in all situations. In fact, people must modify their regime in accordance with blood and urine test results, activity levels, infections and other illness episodes. In short, there is no clearly defined treatment for them to adhere to. A more useful term to describe this is self-care. There are many reasons why behaviour may deviate from the usual regime. When problems with glycaemic control arise it is important to look for any

mismatch between the regime and the preferred lifestyle. Recent research has examined the importance of motivation in diabetes, and it may prove possible to improve poor glycaemic control using a motivational interviewing approach (Trigwell *et al*, 1997).

## **Presentation of psychological problems**

People with diabetes may complain directly of psychological problems, but difficulties often present initially as a change in behaviour. For example, checking of blood glucose level may be reduced in frequency or cease completely, insulin injections may be missed, and good dietary habits abandoned. Risk-taking behaviour such as smoking or misusing alcohol or other drugs may begin or increase. In dealing with this situation there are several important points to remember (Box 2; see Peveler & Tooke, 1995).

Ability to cope with diabetes can be increased by a sympathetic and understanding approach, offering advice and effective education. Some people with diabetes and their families find the series of "Coping with..." booklets published by the British Diabetic Association very helpful. When problems with glycaemic control arise, however, they are usually not simply the result of educational deficits; evaluation of education as a means of improving inadequate self-care shows that it is largely ineffective. Diabetes nurse specialists are well placed to offer help, and tend to see the majority of those with poor coping and psychological problems. It is important, however, to recognise that they are carrying out this work and to provide suitable supervision and psychiatric back-up in order to facilitate it.

**Box 2. Points to remember when considering a change in self-care behaviour of people with diabetes**

Self-care behaviour may be used to express feelings that have nothing to do with the diabetes itself.

Poor glycaemic control should be approached as a problem of multi-factorial aetiology.

The person with diabetes must be managed in a sensitive way, using a combined approach by both medical and psychiatric teams.



## Brittle diabetes

An extreme example of maladaptation to diabetes is 'brittle diabetes'. This is characterised by gross fluctuations in glycaemic control, often with repeated emergency admissions. It is now widely accepted that brittle diabetes is a behavioural rather than a pathophysiological problem (Williams *et al*, 1991). In an influential paper in this area, Tattersall & Walford (1985) concluded that:

"...such patients are neither 'mad' nor 'bad' but indulge in potentially dangerous behaviour, partly because they are ignorant of its consequences but more often because it 'pays' in the sense of fulfilling other needs, whether for love, shelter, approval or escape from an otherwise insoluble conflict."

Sensitivity and tact are essential to engage the person (who may be very reluctant or even hostile) in psychological work, and blunt confrontation should be avoided. Assessment should identify and address important psychosocial factors. A link is then made between periods of worse glycaemic control and emotional distress or social difficulties. A firm and consistent approach is essential, requiring close liaison between psychiatric and medical teams. A period of in-patient management on a medical ward may be needed, with a senior physician taking the lead role in dealing with the person and coordinating the team approach. Confrontation is not necessarily helpful: the mark of success in these difficult cases is containment and stabilisation of the situation, with eventual improvement in the underlying problems, improved glycaemic control, and, hopefully, reduced need for admission.

## Psychiatric disorder in diabetes

Difficulties in coping with diabetes may contribute to the causation of psychiatric disorder, but often such disorders have the same range of causes as those seen in non-diabetic people; genetic risks, life events unrelated to disease, and chronic social difficulties. Psychological difficulties exist on a continuum from mild to severe, and the 'cut-off' point for psychiatric disorder is arbitrary. What may be considered a mild disorder in an otherwise well person may assume greater clinical significance when it occurs in conjunction with a chronic physical disease, in view of its effects upon behavioural management and physical outcome. Rates of psychiatric disorder diagnosed according to standardised criteria are higher in diabetes than those expected in the general population (see Table 1), although it appears that the suicide rate is not elevated overall (Harris & Barraclough, 1994). It is

Table 1. Increased prevalence of psychiatric disorder in diabetes

Study	Prevalence (%)		Sample
	Male	Female	
Wilkinson <i>et al</i> , 1988	18	24	IDDM hospital sample
Mayou <i>et al</i> , 1991	12	19	Young patients with diabetes mellitus
Rodgers & Mann, 1986	3.8	8.6	General population
	Overall		
Weyerer <i>et al</i> , 1989	43.1		Patients with diabetes
	26.2		Healthy control subjects

IDDM, insulin-dependent (Type I) diabetes mellitus

notable that specific subgroups suffer particularly high rates of psychiatric disorder: those with medical complications, frequent admissions for stabilisation, or brittle diabetes (Tattersall, 1985; Wulsin *et al*, 1987; Wrigley & Mayou, 1991).

## Depressive disorders

Depressive illness, with or without anxiety, is the most common psychiatric disorder seen in people with diabetes. Some studies suggest that depression and/or anxiety may affect up to 50% of young people with poorly controlled Type 1 diabetes (Orr *et al*, 1983; Tattersall & Walford, 1985). The prevalence of depression is significantly higher than in the general population, and at the high end of the continuum of depression prevalence in the physically ill (Fris & Nunjandapper, 1986; Mayou *et al*, 1991; Lustman *et al*, 1992). It is presumed that at least part of this increased risk is due to the psychosocial difficulties which accompany diabetes, although it has been suggested that organic factors may also be important (Geringer, 1990).

## Treatment of depression in diabetes

For mild depressive syndromes the initial treatment is to offer advice, information, explanation and practical support to people with diabetes and their families (Popkin *et al*, 1985). For more persistent cases, specific psychological treatment such as problem-solving therapy, cognitive-behavioural therapy or interpersonal psychotherapy may be used (although the lack of published studies of psychotherapy for depression in diabetes mean that

this approach lacks an evidence base). It is important to note that the presence of the symptoms and signs of a major depressive disorder have exactly the same significance in a person with diabetes as they would in a person who is physically well. Thus, the characteristics of a depressive disorder that suggest a probable response to treatment in the physically well also apply in those who have diabetes. It is a common error to assume that the depression is 'understandable under the circumstances' and not to attempt to treat it. Depression in people with diabetes has been demonstrated to respond to antidepressant medication and to electroconvulsive therapy (Kaplan *et al*, 1960; Fakhri *et al*, 1980; Turkington, 1980; Finestone & Weiner, 1984).

### Other benefits of antidepressants in diabetes

Tricyclic antidepressants such as amitriptyline and imipramine (as well as low-dose phenothiazines and carbamazepine) may be helpful in the treatment of painful diabetic neuropathy. It has also been suggested that antidepressant treatments including imipramine, lithium, fluoxetine and electroconvulsive therapy may reduce hyperglycaemia and have 'antidiabetic effects', possibly by increasing insulin sensitivity, although further research is needed (Saran, 1982; Normand & Jenike, 1984; True *et al*, 1987).

### Cautions

Selective serotonin reuptake inhibitors (SSRIs) should be used with caution as they have been reported to cause hypoglycaemic episodes (mainly in non-insulin-dependent (Type II) diabetes mellitus) and their side-effects (tremor, nausea, sweating and anxiety) can be mistaken for hypoglycaemia (Bazire, 1996). There is also a need for caution with tricyclic drugs, as their side-effects (urinary bladder dysfunction, sedation, cardiotoxicity, weight gain and adverse effects on sexual function) can be troublesome. Particular care must be taken if using antidepressants in people with renal dysfunction.

### Eating disorders

As with other disorders, there is a spectrum of disturbance of eating habits and attitudes in people with diabetes. Physicians long suspected that there was an increased incidence of eating disorder in people with diabetes, although studies of 'full-blown' anorexia nervosa or bulimia nervosa, diagnosed according to standard criteria, suggest that rates are not raised greatly, if at all (Fairburn *et*

*al*, 1991; Peveler *et al*, 1992). Nevertheless, because such disorders are common in the general population, particularly among teenage and young adult women, and because sub-threshold cases or 'partial syndromes' may also be clinically significant when occurring in people with diabetes, they constitute an important clinical problem.

The clinical features of people with both an eating disorder and diabetes differ little from those of non-diabetic patients. The principal difference is that people with diabetes have available to them an additional means of weight control: the under-use or omission of insulin. Such self-induced glycosuria is not restricted to people with eating disorders, being common in younger women seeking to lose weight. Eating disorder sufferers appear to have a poor physical prognosis, with a high risk of physical complications of diabetes (Steele *et al*, 1987), although systematic studies are still required.

Satisfactory management depends upon successful detection of the condition. Sufferers are often ashamed of or secretive about their behaviour, and do not volunteer information about it in the clinic. Poor glycaemic control, repeated episodes of ketoacidosis or hypoglycaemia and weight fluctuations are important clues to diagnosis. Sensitive but direct questions about eating habits and attitudes need to be asked whenever the index of suspicion is raised, and opportunities offered for interviews in more confidential surroundings than an open ward or a busy clinic.

Specific psychological treatments (cognitive-behavioural therapy and interpersonal psychotherapy) have been shown to be of benefit in non-diabetic patients, and can be translated to the treatment of people with diabetes, although management is more complex (Peveler & Fairburn, 1992). A major difficulty is that psychological treatment services are not well equipped to deal with such a combination of problems, and dedicated liaison psychiatry services are probably best placed to do this work, where they exist.

Unfortunately, no research evidence exists to guide the management of the large number of people with dietary problems falling short of full eating disorder. Dietary advice is usually given by the dietician or specialist nurse, but clinical experience indicates that this is usually ineffective.

### Psychosexual problems

Sexual problems are common in diabetes. Overall, erectile dysfunction occurs in approximately 50% of men with diabetes (McCulloch *et al*, 1980). Transient erectile dysfunction may be a problem at times of poor glycaemic control, and retrograde

ejaculation and ejaculatory failure may also occur. In women, orgasmic dysfunction and reduced vaginal lubrication have been reported (Kolodny, 1971; Jensen, 1981).

The sexual problems encountered in diabetes may initially be the result of neurological and vascular complications, but frequently a mixture of physical and psychological factors are important. For example, a young man with diabetes may notice a slight reduction in the strength of his erection due to early microvascular changes, but this may be exacerbated by anxiety and lead to presentation with impotence. It is important to try to establish the extent to which physical and psychological factors are contributing to the problem, but a considerable degree of uncertainty may need to be tolerated regarding the relative importance of the various aetiological factors (Hawton, 1985). The situation will usually become clearer as psychosexual therapy proceeds. Alternatively, there are an increasing number of options for physical treatment, especially of erectile dysfunction, including oral yohimbine and newer agents, intracavernosal injection of prostaglandin E, and penile surgery (still considered a last resort).

### *Other psychiatric disorders*

Several other psychiatric disorders occur commonly in association with diabetes. These include:

- (a) phobias – especially related to needles and injections;
- (b) obsessive-compulsive disorder – which may involve blood glucose monitoring and other attention to detail which is particularly necessary in Type I diabetes;
- (c) alcohol and drug dependence;
- (d) panic disorder (note: symptoms of hypoglycaemia may precipitate or mimic a panic episode); and
- (e) schizophrenia.

There is little research into the treatment of these disorders in people with diabetes, but there is no reason to believe that the management which is appropriate and effective in the physically well will be any less so in patients who also have diabetes. It is important, however, to consider the possible effects of the psychiatric disorder upon the person's ability to manage his or her diabetes effectively, and to monitor their glycaemic control. It is also important for the mental health team to be aware of the possible effects of any treatments they use upon diabetes, and to make management choices with this in mind. For example, there have been isolated case reports of hyperglycaemia with both

mianserin and high-dose clozapine, and propranolol may lead to a prolonged hypoglycaemic response to insulin (Bazire, 1996).

## **Role of the psychiatrist**

When responding to a request to see a general hospital patient for assessment, there is a temptation to screen the person for formal (classifiable) mental disorder and to offer no further help if the person's symptoms do not strictly satisfy such criteria. This narrow 'mental model' is no more helpful than a narrow 'medical model' would be in such patients. It is not an adequate response to the original request for an opinion, which will invariably have been asking two main questions: are psychological factors important in the presentation of this case; and would a psychiatric intervention be helpful?

The psychiatrist needs to employ a broad-based biopsychosocial model in carrying out the assessment and, if the answers to the two questions are 'yes', to take a pragmatic, problem-based approach to helping with management. Both psychological and physical elements may be important in management, along with continued close liaison with the medical team. It cannot be over-stated that levels of psychological distress which might be

### Box 3. Key points

People with diabetes suffer from a spectrum of psychological problems, ranging from mild difficulties in adjusting to diabetes to 'full-blown' psychiatric disorders.

Good diabetes management makes extreme demands on patients' behaviour.

Disorders which may be regarded as mild in the physically well may assume greater significance when they occur together with diabetes, because of their impact on self-care and the consequent outcome of the diabetes.

Psychiatrists need to avoid the pitfall of not treating 'understandable' psychological problems.

Modifications to standard treatment approaches may be required when diabetes is present.

Close collaboration between the psychiatric and medical teams is necessary in dealing with patients who suffer from both diabetes and a psychiatric disorder.



considered subclinical in the physically well must be actively addressed in conditions such as diabetes in view of their effects upon self-care and, consequently, upon the future physical and psychological well-being of the patient. It is very important for the psychiatrist to identify and deal with any diagnosable psychiatric disorder but, in addition, he or she must be able to offer advice and support to the medical team regarding psychological problems of a lesser degree.

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## Multiple choice questions

- Major depressive disorder in a person with Type I diabetes:
  - should not be treated with antidepressant medication if it is an understandable reaction to the diabetes
  - does not respond to electroconvulsive therapy
  - may present with worsening glycaemic control
  - should generally be treated with fluoxetine as the first-choice antidepressant
  - may lead to proliferative retinopathy.
- Possible complications of diabetes mellitus include:
  - chronic neuropathic pain
  - blindness
  - obsessive-compulsive disorder

- d renal failure  
e retrograde ejaculation.
3. Hypoglycaemia:  
a only occurs in patients with Type I diabetes  
b can lead to permanent brain damage  
c may mimic a panic attack  
d occurs least frequently in those with 'brittle' diabetes  
e may be precipitated by SSRIs.
4. Research has shown people with diabetes to be at increased risk of:  
a depression  
b completed suicide  
c cardiovascular disease  
d severe anorexia nervosa  
e sexual dysfunction.
- 5 The following may be signs of psychiatric disorder in diabetes:  
a reduced frequency of blood testing  
b increased alcohol intake  
c increased frequency of blood testing  
d reduced clinic attendance  
e admission to hospital with hyperglycaemic ketoacidosis.
6. In Type I diabetes:  
a extreme and frequent fluctuations in glycaemic control are the result of abnormal insulin absorption  
b sexual dysfunction is almost always caused entirely by organic factors  
c the risk of later medical complications is increased in those with mild forms of psychiatric disorder  
d erectile dysfunction may improve with improved glycaemic control  
e denial is a particularly effective coping style.

## MCQ answers

1	2	3	4	5	6
a F	a T	a F	a T	a T	a F
b F	b T	b T	b F	b T	b F
c T	c T	c T	c T	c T	c T
d F	d T	d F	d F	d T	d T
e T	e T	e T	e T	e T	e F