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Relationship between diabetes and psychiatric disorders: A review

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Abstract
Diabetes and psychiatric disorders have a bidirectional relationship in which they mutually influence each other in numerous ways. Diabetes and mental health issues have a reciprocal relationship in which each condition influences the other in a unique manner. In addition, the presence of a concurrent psychiatric disorder, such as depression, may hinder the management of diabetes by reducing medication adherence. Blood glucose testing and insulin injection are only two examples of how diseases such as needle and injection anxiety can confound investigations and treatments.

Keywords: Diabetes, psychiatric disorders, relationship

Introduction

Fig 1: Show mental health & diabetes

Diabetes and psychiatric disorders have a bidirectional relationship in which they mutually influence each other in numerous ways. Endocrinologists and psychiatrists have been interested in the relationship between diabetes and mental health treatment for a long time. Thomas Willis contended in the 17th century that diabetes was caused by "persistent melancholy and various depressions".

Within a decade of its discovery, insulin was utilised in insulin coma therapy, a psychiatric treatment. This connection has only received significant scientific attention within the last few decades. Diabetes and mental health issues have a reciprocal relationship in which each condition influences the other in a unique manner. This article discusses a variety of aspects of this link. Tobacco and alcohol, for instance, have been shown to influence the pharmacokinetics of oral hypoglycemic medications.

In addition, the presence of a concurrent psychiatric disorder, such as depression, may hinder the management of diabetes by reducing medication adherence. Blood glucose testing and insulin injection are only two examples of how diseases such as needle and injection anxiety can confound investigations and treatments. Additionally, patients with mental health issues are less likely to seek assistance.

Lifestyle factors

The association between depression and diabetes is hypothesised to be initiated or exacerbated by lifestyle factors. Depression increases the likelihood of developing type 2 diabetes, in part because depressed individuals are less active and more likely to consume a diet high in saturated lipids and refined carbohydrates while consuming fewer fruits and vegetables.

Patients with a diagnosis of diabetes and concurrent symptoms of depression are also more likely to not adhere to self-care management. Noncompliance with diabetes treatment guidelines, such as attending medical visits, eating well, exercising, taking medications as prescribed, monitoring glucose levels, and caring for one's feet, was significantly associated with depression in a meta-analysis of 49 separate samples. This supports the notion that poor self-care can contribute to high blood sugar, which can exacerbate depressive symptoms and make it more difficult to treat them.

Delirium

Hypoglycemia and diabetic ketoacidosis are two possible causes of delirium in diabetic patients. In terms of clinical manifestations, delirium represents the most severe manifestation of these phases. Hypoglycemia-induced delirium is more prevalent in patients with pre-existing mental health disorders. Due to the use of overlapping terminologies in the current corpus of research, it is impossible to ascertain the true prevalence of delirium in diabetes using existing noesiological methods. However, low blood sugar (hypoglycemia) or diabetic ketoacidosis can cause delirium, and both of these conditions are common in patients with diabetes.

Delirium has been linked to several unfavourable outcomes, including prolonged hospitalisations, diminished cognitive and functional abilities, increased morbidity, and even mortality. Reduced psychomotor activity and a general sensation of calm characterise the clinical picture. Additionally, both types share a sense of perplexity and diminished sensory abilities. Delirium is characterised by hallucinations, altered sleep-wake patterns, and impaired cognitive function.

Typically, there will be a mixture of sunny and cloudy areas. Rapid diagnosis of delirium can significantly improve prognosis. Palliative care is essential, but addressing the underlying cause of the patient's suffering is more important. To control disruptive behaviour, low doses of dopaminergic antagonists (typical antipsychotics) may be administered. Strong medications, such as haloperidol, are advised.

Tobacco

Tobacco comes in both combustible (cigarettes, bidi, hookah, and cigars) and noncombustible (chewing tobacco) varieties (gutkha, tobacco powder, khaini, snuff). It has been demonstrated that the proportion of diabetics who smoke is comparable to that of the general population, at least according to research conducted by Western scientists. Cigarette smoking is one of the risk factors for developing diabetes, but it is a manageable risk factor. It appears that the increased risk of diabetes is dose-dependent. Smokeless tobacco use has also been linked to an increased risk of developing type 2 diabetes, although the evidence is less convincing.

Cigarette smoking increases a person's risk of developing micro vascular complications such as nephropathy, retinopathy, and neuropathy, as well as macro vascular complications such as coronary heart disease (CHD), stroke, and peripheral vascular disease (the strongest association in type 2 diabetes). In diabetics, gum gnawing is associated with more severe periodontal disease and tooth pain. Smoking is believed to induce hyperglycemia, hyperinsulinemia, and hypertension, as well as impaired endothelial function and the pro-diabetogenic activity of tobacco smoke components (e.g. cadmium). Important tobacco-related queries to ask and provide to patients include whether they smoke or not.

The majority of young individuals with diabetes begin smoking shortly after their diagnosis, so this information is highly relevant to this population. Smoking cessation is associated with weight gain and an increased risk of type 2 diabetes, both of which should be addressed by clinicians. However, these effects are either temporary or readily managed through changes in behaviour and lifestyle. In the years following cessation, smokers should receive assistance with weight management and be screened for diabetes. Also, it is suggested that the doses of various oral hypoglycemic medications that are processed by the enzyme system be monitored, as smoking causes the cytochrome P450 system to produce various isoforms.

Mood imbalances

Depression, mania, and hypomania are examples of mood disorders. Several epidemiological and clinical studies have identified a correlation between diabetes and mental health issues. This combination has been linked to higher morbidity and mortality rates. Recent research indicates that patients with diabetes have a 50 to 100 percent higher risk of depression than the general population. Hospital-based research and epidemiological surveys have discovered that the prevalence of diabetes among patients with bipolar disorder is either higher than in the general population or comparable.

Diabetes-related depression is associated with an increased incidence of complications, mortality, and healthcare costs. There is a causal connection in both directions between diabetes and melancholy. Depression is believed to contribute to the advent of diabetes. A recent meta-analysis revealed that depression was associated with a 60% increased risk of developing diabetes. All forms of depression, including mild, chronic, and untreated depression, increase the risk of developing diabetes, according to research. Regarding metabolic derangements, the database for mood stabilisers and antipsychotics used to treat bipolar disorders is larger.

The connection between antipsychotics and diabetes was recognised early on, as the term "phenothiazine diabetes" from the 1960s indicates. Due to their metabolic and cardiovascular adverse effects, contemporary atypical antipsychotics have garnered considerable interest. According to Hermanns *et al.*, individuals who take these medications are more likely to acquire weight and have a more difficult time controlling their glucose levels.

Anxiety problems

People with diabetes are significantly more likely than the general population to experience anxiety issues. According to research, anxiety disorders and their associated symptoms

are significant independent predictors of diabetes development. The risk of developing an anxiety disorder is inversely proportional to haemoglobin A1C levels, according to Green *et al.* It has been demonstrated that the prevalence of generalised anxiety disorder (GAD) is nearly three times that of the general population. In contrast, the frequencies of the following disorders were consistent with those reported in population studies: Panic disorder, obsessive-compulsive disorder, post-traumatic stress disorder (PTSD), and agoraphobia.

Compared to studies on the association between depression and diabetes, research on the association between anxiety disorders and diabetes is limited. In the context of diabetes, depression and anxiety have been examined primarily together. Diabetes has been linked to both hypoglycemia episode phobia and needle and injection phobia. They are likely to disregard glucose monitoring and insulin administration.

In addition, protracted hyperglycemia may be maintained by fear of hypoglycemia. Similar clinical symptoms, including perspiration, anxiety, trembling, tachycardia, and confusion, characterise hypoglycemic episodes and anxiety disorders. This is a possible diagnostic concern due to the dread of hypoglycemic episodes. People with high levels of anxiety may be more likely to misinterpret or disregard the signs of low blood sugar.

Schizophrenia and other psychotic conditions

Psychosis is one of a number of medical conditions significantly associated with diabetes. People with schizophrenia have a greater likelihood of developing type 2 diabetes compared to those with other conditions. Even first cousins of schizophrenia patients are at a significantly increased risk for developing type 2 diabetes. People with schizophrenia may have a threefold elevated risk of developing diabetes due to a favourable family history. According to the available data, both diabetes and schizophrenia are associated with an increased risk of mortality.

More individuals with schizophrenia are diagnosed with type 2 diabetes, which is associated with a greater mortality rate among those with schizophrenia. Both impaired glucose tolerance and insulin resistance have been linked to schizophrenia. Depending on their age, schizophrenia patients may have impaired glucose tolerance at a rate as high as 30%. Patients with schizophrenia have a higher risk of developing diabetes, which is likely due to both genetic and environmental factors. Lack of physical activity, poor nutrition, improper medical care, and the use of antipsychotic medications are also contributors.

Initial research indicates that schizophrenia may be a distinct diabetes risk factor. In addition, there is a 50% no adherence rate among those receiving treatment for schizophrenia. Their managers will be compelled to make difficult decisions as a result.

Conclusion

Diabetes is a developing concern for public health. Frequently due to mental illnesses or psychological and social issues, many diabetics struggle to improve their diabetes control. Diabetes can result in blindness, kidney failure, and amputations if left untreated. There are also implications for healthcare services as a consequence of an increase in diabetes-related hospital admissions and emergency department visits. Significant long-term costs are associated with complications such as renal failure and amputation. The individual and societal burdens of diabetes and its complications can be lessened by addressing the psychiatric and psychological barriers to good glucose control.

Conflict of Interest

Not available

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