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Diabetes Mellitus and Depression: A Literature Review

Muhammad Novran Chalik^{1*}

¹Department of Internal Medicine, Faculty of Medicine, Universitas Sriwijaya/ Mohammad Hoesin General Hospital, Palembang, Indonesia

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*Corresponding author:

Muhammad Novran Chalik

E-mail address:

chnovran@gmail.com

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ABSTRACT

Diabetes Mellitus is a long-term condition characterized by excessive glucose or blood sugar levels. Diabetes mellitus (DM) type 2 patients are at a greater risk of developing depression. Diabetes mellitus causes vascular damage, particularly brain vascularity, which is linked to depression symptoms. Other than that, depression in diabetic patients is linked to poor blood sugar control, the family's lack of motivation to be concerned about diabetic complications. The situation will create a vicious spiral that will exacerbate diabetes and sadness.

1. Introduction

Diabetes mellitus (DM) and depression are serious global public health issues, and their prevalence rates are quickly rising.³ “Diabetes is extremely common in European adults, with a prevalence rate of roughly 10.3% for men and 9.6% for women. “In 2013, the International Diabetes Federation estimated that 382 million individuals worldwide had type 2 diabetes. In 2015, one in every 11 persons had diabetes, and one in every 15 adults had impaired glucose tolerance, according to the World Health Organization. These figures are likely to rise even further, particularly among the urban population, posing further medical and economic issues on top of the present diabetes-related global health expenditure of 12%”.⁴

In 2011, epidemiological research in “United Nations countries reported a global prevalence of diabetes of 8.3% among persons aged 20–79 years, with a projected increase to 9.9% by 2030.”¹

Depression is linked to poorer diabetes management and treatment adherence, increased diabetic complications, and a higher risk of death in adults with diabetes.⁵ Diabetes Mellitus is a long-term condition characterized by excessive glucose or blood sugar levels. Diabetes mellitus (DM) is a long-term metabolic illness caused by the pancreatic organ's inability to create enough insulin to meet the body's needs, or by the body's inability to effectively use the insulin produced.⁶

Diabetes mellitus (DM) type 2 patients are at an increased risk of depression.³ When compared to the general population, depression rates in persons with type 1 diabetes could be three times higher and twice as high in people with type 2 diabetes.⁴ Diabetes mellitus raises the chance of depression, and vice versa. Comorbid depression in DM is associated with a higher risk of complications and a poorer treatment

outcome than these illnesses alone, as well as higher health-care expenses. Depression is a direct result of neurochemical alterations associated with diabetes, which have a deleterious impact on health outcomes. A decline in functional capacities is linked to the combination of diabetes and depression.⁷

Diabetes mellitus and depression

Depressive symptoms at baseline were linked to an increased incidence of type 2 diabetes over a 3-year period; treated type 2 diabetes was linked to an increased risk of developing depressive symptoms over the 3-year period, but baseline impaired fasting glucose and untreated type 2 diabetes were linked to a lower risk of depression.⁸ Diabetes and depression are inextricably linked. Depression is a mental illness that manifests itself in a variety of ways, including feelings of sadness, loss of interest, guilt, low self-esteem, poor eating and sleeping habits, difficulties concentrating, and exhaustion.⁶

Depression may have a role in poor diabetes control, complications, and ineffective depression management. Irregular diabetes control will lead blood glucose levels to rise over normal levels, resulting in a variety of problems. Essentially, various aspects connected to DM and its treatment, such as medical, psychological, and social issues, can cause depression. Patients with diabetes who are depressed as a result of their chronic illness may develop depression. Anhedonia has been linked to poor glucose control, with a thirty percent increase in the risk of having HbA1c values of 7. Furthermore, anhedonia (rather than dysphoria) was linked to an increased risk of death, which was mediated by physical activity.^{2,6}

The use of numerous antidepressant subtypes increased significantly the levels of Hb A1C in persons with diabetes, suggesting that antidepressant medication may be a risk factor for suboptimal glycemic control. Prior research has showed that short-term antidepressant treatment of nondiabetic sad patients improves insulin sensitivity while also decreasing depression, while the long-term effects may be the opposite. The only class of antidepressants

having documented beneficial benefits on glycemic control in both short and long term use is selective serotonin reuptake inhibitor therapy, which may enhance glycemic control in depressed DM patients.⁴

Depression early in life may raise the risk of type 2 diabetes because people with depression are more likely to engage in harmful behaviors such as sedentary behavior, obesity, and smoking.² The direct negative physiological effects of depression on glucose metabolism like (increased counterregulatory hormone release and action, changes in glucose transport function, and increased immunoinflammatory activation) may increase insulin resistance and glucose uptake, raising the risk of type 2 diabetes.⁴

Depressive feelings are linked to poor glycemic control and increased diabetic complications; on the other hand, poor metabolic control and functional impairment as a result of growing complications can induce or worsen depression, as well as reduce antidepressant responsiveness.⁸ Patients with diabetes mellitus experience severe health, social, and economic implications as a result of depression. It has a deleterious impact on the progression of diabetes by affecting the body's ability to make and use insulin through hormonal, neurological, and immune system alterations.³

Fatigue is linked to pain and inflammation in diabetic patients with a "HbA1c >7%. Inflammation has been linked to anhedonia and weariness, and they may be convergent constructs in DM. Within the first year of starting an oral antidiabetic drug, a higher prevalence of depression has been found.⁹ Depression symptoms may be exacerbated by DM. Depression can be exacerbated by stress related to diabetes management and the consequences of diabetes on the brain. Chronic stress activates the hypothalamus-pituitary-adrenal axis (HPA-axis) and the sympathetic nervous system (SNS) in diabetics, increasing cortisol production in the adrenal cortex and adrenalin and noradrenalin production in the adrenal medulla.⁶

Insulin resistance, visceral adiposity, metabolic syndrome, and diabetes type 2 are all promoted by

chronic hypercortisolemia and prolonged SNS activity. Chronic stress, on the other hand, has behavioral consequences: noradrenalin, cortisol, and other hormones activate the fear system, which causes anxiety, anorexia, and hyperphagia. The same mediators create reward system tachyphylaxis, which results in depression and food, substance, or stress cravings. Cortisol excess disrupts neurogenesis in the hippocampus, which is linked in both depression and DM2.⁴ Antidepressants, such as selective serotonin reuptake inhibitors (SSRIs), have been demonstrated to be beneficial in treating and preventing depression. Antidepressants, such as selective serotonin reuptake inhibitors (SSRIs), have been demonstrated to be useful in treating depression in diabetic patients and preventing recurrence.⁹

2. Conclusion

The findings point to an unfavorable relationship between national diabetes care quality and depression symptoms among diabetics. Diabetes was linked to a minor increase in depressive symptoms in countries with high-quality diabetes treatment, but diabetes was linked to a bigger rise in depressive symptoms in countries with lower-quality care. When individual demographic, clinical, and behavioral variables were taken into account, the connection remained. Diabetes care quality may thus be crucial not just for physical consequences, but also for depressive symptoms and psychosocial outcomes.⁵ Antidepressants, such as selective serotonin reuptake inhibitors (SSRIs), have been demonstrated to be useful in treating depression in diabetic patients and preventing recurrence.⁹

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