



Diabetic Depression - A Concealed Epidemic: A Review

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Abstract

There is sufficient evidence that diabetes and depression have connection, with depression occurrence is two to three times higher in people with diabetes mellitus. It may be due to increased body weight in individuals with diabetes are less likely to engage in healthy behaviors like exercise, sports activity. Changes in blood sugar levels may cause mood swings, anxiety, despair and disordered eating. So, screening test for such association should be done as mass strategy. A multidisciplinary approach of patients would decrease number of disability adjusted life years and mortality also, thus improving outcome of the disease. Through this article, we are trying to make people aware about interlinkage between these two diseases.

Keywords: diabetes, depression, health, disease

Introduction

Diabetes mellitus (DM) and depression together make a catastrophic combination. DM is not merely a physical and economic liability but also a social and mental obstacle that may result into psychosomatic disorders and promote suicidal thoughts in one's mind. A significant public health concern is seen as a result of comorbid diabetes and depression, there is interlinkage between metabolic diseases and disorders related to mental health.¹

Relation Between Diabetes And Depression:⁹⁻¹⁷

People suffering from diabetes have increased risk of depression⁷. It may be due to the relationship between insulin resistance caused by increased cortisol release in depression, which further causes dysregulation of brain neurotransmitters implicated in depression.^{8,9} There seems to be bidirectional relationship as diabetes may lead to depression & anxiety and depression may end up causing diabetes mellitus.¹⁰

Insulin plays a vital role in serotonin synthesis due to its influence on the amount tryptophan in blood and depression results in decrease in serotonergic activity.^{13,12,14} Increase insulin activity stimulates the uptake of glucose and large neutral amino acids into the muscle cells and promotes increased influx of tryptophan into the brain which promotes serotonin synthesis.^{11,17}

Genes are one of the major factors which contribute to depression, the amount of stress in your life, and how you think about yourself and your environment. However, it is seen that patient who does not have family history of depression are also suffering from it because of their poor / stressful time table. The same is with the case of diabetes. Diabetes is something that maybe inherited from parents (heredity) or may be acquired during your life span because of your poor eating habits or poor routine.⁵

Many a times, diabetes and depression proceed concurrently because DM is not something that is

only related with your heart, kidney or nervous system but it is also related with your emotions. In this fastest growing world, everything is going so fast that people forget to take care of one's health. They do not take prudent diet, avoid regular exercise, take lot of stress which ultimately end up causing diabetes.

When person is suffering from diabetes, they have to follow a lot of rules and restriction regarding their dietary intake, avoiding food which have higher glycemic index. They also not allowed to eat their favorite food which make them frustrated. And at that point depression enter their life which makes their life more difficult and pessimistic.⁴

According to studies, depression stimulates the release of counter regulatory hormones to insulin such as glucagon, growth hormone, cortisol, adrenaline. These hormones increase blood glucose level by enhancing gluconeogenesis and glycogenolysis. Thus, increase in blood glucose level leads to stress related diabetes.

On the other hand, diabetes being a chronic and complex metabolic ailment having so many microvascular (retinopathy, neuropathy and nephropathy) and macrovascular complications such as atherosclerosis; it builds a sense of fear in minds of people with hopelessness. When diagnosed with diabetes people first experience a phase of denial and sometimes it is difficult for them to believe that something is wrong with their health. Lifelong oral anti-hyperglycemic drugs and insulin therapy as well as diet control have negative impacts on quality of life. This gradually leads to a black hole of anxiety and depression.⁶

Due to the overlapping of both these diseases with each other, it is difficult to treat and suggest the drug to the patient. Both these parallel running diseases need extra care and treatment. if they remain untreated then they will become like a toxic which slowly and slowly make you weaker physically, mentally and economically.⁷

Epidemiology:

The incidence of both disorders is increasing but depression is two times more common in patients with diabetes in comparison with the ones without Diabetes. According to studies, approximately 1/3rd

of T2DM patients is suffering from depression as well.

Diabetes is diagnosed easily because of its evident signs and symptoms, but about 50% of diabetic patients having depression remain unidentified, unexplored, undiagnosed and untreated. Without treatment, depression even gets worse. Both these disorders go hand in hand where depression being the 4th reason for disability adjusted life years and diabetes is ranked 8th reason for the same.¹⁰ According to one of the meta-analytical studies, the prevalence of depression was positivity correlated and interlinked with pre-diabetes (with odds ratio: 1.11), undiagnosed diabetes (with odds ratio: 1.27) and previously diagnosed diabetes (with odds ratio 1.80) compared with normoglycemic individual.

Etiology:

Depression and diabetes share similar biological origin

1. Deregulation of hypothalamic-pituitary-adrenal axis, causing overactivation of innate immunity which leads to cytokines mediated inflammatory response. Proinflammatory cytokines affects the brain and cause depressive symptoms and anxiety attacks.
2. Overstimulation of sympathetic nervous system.
3. Arterial stiffening due to microvascular dysfunction.
4. Others include behavioral and environmental factors.¹²

So, we say that metabolic deregulation maybe caused by behavioral, physiological and genetic factors in neuro-immunological and neuroendocrinal alternation and long-lasting microvascular dysfunction play a notable role in comorbid depression and diabetes.

Management

While treating, diabetes and depression should be emphasized equally. Screening test of depression such as PHQ-9 (most valid screening test) in periodic diabetes follow up help to detect the unrecognized cases. True positive cases should undergo treatment modalities such as self-management programs of diabetes (life style changes), therapeutic approaches including psychotherapy (cognitive behavioral therapy), pharmacotherapy and collaborative care.

There are drugs which help to decrease and manage these diseases. but the best treatment remains self-management, like good sleep, regular exercise, healthy food and meditation. These are the things which keep your mind calm and keep your body healthy.¹⁷ Good sleep is very important for a person because during this process our body and mind get restored. When insomnia or poor quality of sleep persist for long time, it can increase tension, difficulty in concentration, depressed mood and so on. Regular exercise for 30 minutes a day is also very important as it not only increases our blood circulation but also boosts our mind .

Study shows that some Selective serotonin reuptake inhibitors and tricyclic antidepressants increase the risk of incidence of diabetes.¹⁹ On the other hand, cross-sectional study conducted by Berge et al. showed patients on oral anti-hyperglycemic drugs in the age group of 40s had two times more association with depression compared with the patients of age group 70. However, some studies' results have also concluded that fluoxetine (long-acting SSRI) and phenelzine (nonselective hydrazine monoamine oxidase inhibitors) have enhanced glycemic control and decreased insulin resistance.

Dealing With Negative Thought And Feeling:¹⁵

During diabetes or depression, the most common symptoms is feeling low, feeling guilty and a lot and lots of negative thoughts that are coming in one's mind. But you need to understand one thing that it is not so difficult to deal with anything, there are solution of each and every problem. Maybe the techniques are different maybe it takes long time but the thing that you need is to believe on yourself and be patient about that.

Patient of diabetes along with psychosomatic disorder are unable to strictly adhere to balanced diet, medication and regular relaxation exercises which may worsen the situation. So, we need to evaluate the individuals with DM periodically.¹⁸ In addition to this, there should be monitoring and management of depression and other mental health disorder for better and more productive diabetes management. Symptoms of depression such as feeling sad, overeating or anorexia (loss of appetite), insomnia or oversleeping (sleeping too much), have problem in concentrating (feel distracted), feeling of tiredness, anxiousness, hopelessness, irritability, losing interest

in favorite activities, having headaches, cramps, or digestive problems, and they have propelling thoughts of suicide or death. If these symptoms persist one should definitely visit mental health counselor along with endocrinologist.

Conclusion:

At last, it is not so difficult to conclude that both these comorbid diseases (diabetes and depression) are very much inter-related to each other. Sometimes it is very difficult to start medications because it creates confusion whether it is due to biological or due to psychological cause.

At last, this review article tries to attract attention towards vast gap between mental ailment burden and available resources to prevent and treat them.²⁰ According to WHO, 4 out of 5 people belonging to lower- and middle-income countries don't get mental health services and care that they require. Therefore, it is the need of hour to recognize the disease hidden in the iceberg in order to prevent the global pandemic of such comorbid diseases. What we diagnose today is just the tip of iceberg and the whole of it remain unnoticed. So, screening test should be done on mass strategy. A multidisciplinary approach of patients would decrease number of disability adjusted life years and mortality also, thus improving outcome of the disease.

Various mental health programs have been established by the government; people should be acquainted with such programs so that they get benefited by such initiatives. Through this article, we are trying to make people aware about interlinkage between these two diseases, ill effects of undiagnosed and untreated disorders. We must remember that, earlier diagnosis results in better prognosis.

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