REVIEW ARTICLE

Diabetes and Mental Health: A Review

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ABSTRACT

Diabetes is a staggering health concern globally. Its management prioritizes hyperglycemia and complications, and associated mental health (MH) issues remain unidentified and unaddressed. People with diabetes mellitus (DM) experience emotional challenges due to the necessary lifestyle changes and the diagnosis itself. They may go through various stages similar to experiencing grief, *denial* for diabetes diagnosis, *anger* as to why they have suffered this diagnosis despite a healthy lifestyle, *bargaining* that they can manage it by themselves, *depression* since it is an ongoing everyday struggle and finally *acceptance*, i.e., learning to live with diabetes with days where it is well managed and days where it flares out of control. There seems to be a bidirectional relationship between diabetes and MH. People with diabetes have an increased risk of psychological and psychiatric disorders like anxiety, depression, etc., and vice versa. Thus, addressing MH is important for effective diabetes management.

Keywords: Diabetes, mental health, lifestyle, cognitive functions

Diabetes is a major health problem globally and is characterized by hyperglycemia. It is often associated with high morbidity. In 2021, the International Diabetes Federation (IDF) Atlas estimated that 537 million people worldwide are living with diabetes, and this number was predicted to increase to 643 million by 2030, and 783 million by 2045[1]. The Indian Council of Medical Research-INdia DIABetes (ICMR-INDIAB) study estimated that 62.4 million people are living with diabetes in India, which is further expected to rise up to 101 million in 2030[2].

Generally, physicians taking care of people living with diabetes focus on managing hyperglycemia and the associated complications neglecting mental health (MH). However, the management of diabetes mellitus (DM) is multidimensional and complex. MH should also be considered in management of DM as mental illness in people living with diabetes may affect treatment compliance, which may further increase the risk for serious complications. Thus, to improve clinical outcome and quality of life (QoL) of people living with DM, appropriate attention should be paid to MH as people with DM experience a range of emotions grieving the loss of their health, loss of independence, and impact of diagnosis on future plans. As they process their diagnosis and adjust to reality, they may experience and move through various stages of grief like denial for diabetes diagnosis, anger as to why they have suffered this diagnosis despite a healthy lifestyle, bargaining that they can manage it by themselves, depression since it is an ongoing everyday struggle and finally acceptance of learning to live with diabetes, with days where it is well managed and days where it flares out of control.

Psychological challenges faced by diabetes patients range from unhelpful health beliefs, low self-efficacy, diabetes distress to mental illnesses like anxiety and depression. Low self-efficacy refers to an individual's belief that they are helpless and will not be able to manage their anxiety. Diabetic distress refers to distressed feelings of fear, anger, frustration, low mood related to diabetes and its management. Presence of depression and anxiety can significantly affect self-care.

Diabetes and its management can largely be influenced by patient's perceptions and their behavior. Better metabolic control indicators are seen in people with diabetes with positive health beliefs[3]. Thus, in the

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last few decades, the impact of DM on QoL, MH, and physical health is being increasingly recognized[4].

In this review, we will discuss the reciprocal relation between MH issues in people living with DM.

MENTAL HEALTH ISSUES IN PEOPLE LIVING WITH DM

Diagnosis of a chronic illness like diabetes can be a life-changing event for the patient and their caregivers, and is usually associated with barriers like acceptance of illness and treatment participation[5,6]. The experience of living with diabetes is also associated with struggles because of several stigmas and fears. These are psychological issues also called as diabetes distress. Also, there are other psychiatric issues like depression, anxiety, bipolar disorder, schizophrenia, and many more.

PSYCHOLOGICAL ISSUES IN PEOPLE LIVING WITH DM

Psychological Reaction to Diagnosis of DM

Both the patient and the family members are usually overwhelmed with diagnosis and denial is the first response. Once there is acceptance, then comprehension regarding complication, management, and extent of personal and family responsibility may cause distress.

Psychological Issues due to Stigma of DM

Social stigma of DM may be very disturbing for the patient because of several social judgments like curse of God, will spread to others and many more. The diagnosis of DM comes with several restrictions in lifestyle, which brings the feeling of social outcast in people living with DM. Also, several restrictions can lead to compromised well-being and hence reduced motivation for self-care.

Psychological Issues Related to Financial Burden

Diabetes is considered to be an expensive lifelong illness. The management of DM and its associated complications incurs considerable costs, thus affecting the MH of people with DM.

Psychological Issues Related to Future Life

Diabetes is a chronic illness associated with several acute and chronic complications. Fear of these complications affects the MH and QoL.

Psychological Issues Related to Substance Abuse

Substance abuse as a tool to reduce stress and overcome anxiety is not uncommon in people living with DM. But substance abuse causes more harm as also suggested in studies that tobacco consumption has debilitating effects on health but people with diabetes are affected more. Abuse of psychoactive drugs like opioids, stimulants, LSD (Lysergic acid diethylamide), etc. can interfere with glycemic control.

PSYCHIATRIC ISSUES IN PEOPLE LIVING WITH DM

Depression

Depression is a major MH condition associated with diabetes. People with diabetes are twice as likely to experience depression throughout their lives compared to the general population[7]. A bidirectional relationship might exist between the two as type 2 diabetes increases the risk for onset of major depression, and vice versa, major depressive disorder increases risk of type 2 diabetes[7]. Type 2 diabetes and depression can thus create a vicious cycle. This may give feeling of being overwhelmed with concern about future and possibility of serious complication. Sometimes, when management is going poor, feeling of guilt creeps in.

Anxiety Disorders

People living with diabetes may experience varying levels of anxiety. Increased anxiety is first seen when the diabetes is first diagnosed and when diabetes complications first occur[7,8].

Anxiety disorders affect the management in people living with diabetes in several ways: 1) Symptoms of severe anxiety overlap with symptoms of hypoglycemia and make it difficult to differentiate and manage. 2) Pre-existing anxiety to injections, medications may hamper management as drawing blood for investigations and insulin injections may further precipitate severe anxiety. 3) Fear of hypoglycemia is a constant source of anxiety, which hampers proper control of blood glucose leading to onset of chronic complications.

Eating Disorders

Eating disorders like anorexia nervosa, bulimia nervosa, and binge eating disorder have been documented more commonly in people with DM compared to the general population[9]. Eating disorders are found more commonly and persistently, in females with type 1 diabetes[10,11].

Women with type 1 diabetes and comorbid eating disorders exhibit significantly worse glycemic control. This translates to increased hospital admissions for acute complications, along with a heightened risk of retinopathy, neuropathy, and premature mortality compared to their counterparts without eating disorders[12].

Night eating syndrome (NES) can disrupt sleep and weight management. People with NES consume more than a quarter of their daily calories after dinner and wake up at least 3 nights a week to eat. This is linked to type 2 diabetes and depression, and can worsen glycemic control in those with diabetes, potentially leading to more complications[13].

Sleep Disorders

The risk of type 2 diabetes is more common in people with disturbed sleep pattern, which may include total sleep time of less than 6 hours or more than 9 hours, sleep initiation difficulties, sleep maintenance difficulties, obstructive sleep apnea, and erratic sleep[13].

Sexual Disorders

DM is an established risk factor for sexual disorders. Erectile dysfunction (ED) is 3 times more common in males with DM when compared to men without DM. The possible etiologies for sexual disorders in people with diabetes are vascular, neurological, and psychological[14,15].

Schizophrenia and Spectrum Disorders

Schizophrenia and spectrum disorders increase the risk for DM. People with psychotic disorders often show signs of insulin resistance or impaired blood glucose regulation, even before starting medication[16].

Bipolar Disorders

The prevalence of type 2 diabetes is 2 to 3 times more common in patients with bipolar disorders as compared to general population. Approximately 50% of these patients exhibit impaired glucose metabolism, which appears to be correlated with worsening of glycemic control and mood disorder[5].

MANAGEMENT

Primary care physicians should be aware of possible MH issues in people living with DM and should enquire regarding the same. Considering the constraints within primary care, an eclectic approach can be helpful in managing psychological distress in patients with DM. First, the severity of distress should be assessed. Second, patients experiencing significant distress beyond what directly relates to DM should be referred to MH services for comprehensive treatment.

Distress related to diagnosis, stigma of DM, complications and QoL can be addressed by explaining the pathophysiology of DM briefly in simple terms. Issues related to financial burden can be discussed and medications can be prescribed accordingly.

Management of MH issues includes nonpharmacological and pharmacological components.

Nonpharmacological Interventions

This is also known as psychosocial treatment, which aims to promote sense of well-being and alleviate mental distress through nonpharmacological means. Meta-analyses have demonstrated that psychological interventions improved glycemic control (HbA1c) in all age groups[17,18]. The nonpharmacological psychological interventions are based on health belief models, which postulate six main dimensions as the basis for behavior:

- Perceived susceptibility of developing an illness
- Perceived severity of the condition
- Perceived benefits/belief in treatment efficacy
- Perceived costs/barriers
- Cues to action
- Self-efficacy.

Self-regulation theory (SRT) states that there is an internal control panel, which allows patients to manage their thoughts, feeling, and action. It impacts how they develop a tailor-made framework to manage their diabetes diagnosis. According to SRT, when we get sick, we develop beliefs about our illness. These beliefs, along with our emotions about it, affect how we manage the illness. This personal framework consists of beliefs rooted in understanding of symptoms, etiological basis of disease, duration and timeline of treatment, weighing of consequences if treated or left untreated, and finally whether disease will get cured or will it be only manageable. From the point of reference of their personal beliefs, patient develops their coping mechanism that determines the outcome of treatment. Teaching self-regulatory strategies as a part of psychological management had significant impact on lowering blood sugar in target group as compared to control group[19].

Various psychological interventions have proven effective to address challenges related to diabetes. Psychological interventions are important to build motivation for lifestyle management, develop coping mechanisms to manage stress, anxiety, and negative thoughts and for improving self-management skills and finally to accept and positively adjust to life with the reality of diabetes diagnosis. Evidence-based psychological interventions include cognitive-behavioral therapy (CBT), motivational interviewing (MI) technique, mindfulness-based

interventions, group therapy, acceptance and commitment therapy (ACT), etc.

Cognitive-behavioral therapy

CBT is a type of psychological intervention that focuses on faulty unhelpful thought processes that are anchored in certain behaviors and physiological reactions[20]. It helps identify and change negative thought patterns that contribute to emotional distress and hinder self-care behaviors. It is a time bound therapy and emphasizes on finding a solution to current problems[21]. Studies have shown that CBT has led to substantial improvement in terms of treatment adherence, improved QoL, managing daily routines, and developing a positive outlook towards life among diabetes patients having diabetes distress, anxiety, and depression[22].

Mindfulness-based stress reduction

Mindfulness is a technique that emphasizes on being in the moment, in here and now. Mindfulness-based stress reduction (MBSR) is a systematic approach, spread across 8 to 10 sessions, that brings together grounding exercises, body awareness, meditation techniques, nonjudgmental acceptance, and emotional regulation strategies aimed at improving emotional well-being. Mindfulness therapy is known to improve self-management (management of emotions and improving psychological well-being) in diabetes management. Research suggests that these practices can be helpful in managing blood sugar levels, as shown by lower fasting blood sugar and HbA1c readings[23,24].

Motivational interviewing

Motivational interviewing (MI) is a client-centered collaborative counseling technique, which involves building a patient's motivation for change. It helps people explore and increase their own motivation to change certain behaviors, which helps in fast healing. MI helps in overcoming the ambivalence with help of change talk. It typically involves various stages for change: Precontemplation, contemplation, preparation, action, maintenance, relapse. MI has been a proven care strategy over usual health care advises in management of diabetes[24].

Studies have indicated that MI helps in improving treatment compliance, maintaining healthy blood pressure levels, reducing HbA1c levels thereby reducing diabetes distress[25].

Group therapy

Finding a support group can be very rewarding for people with diabetes. Connecting with others in group therapy who understand the challenges of diabetes can provide shared experience, invaluable emotional support, and reduce stigma. Group therapy can facilitate self-management skills as a part of learning from peers who successful strategies for managing their diet, exercise, medicine routine, problem-solving in common scenarios, and also gain insights for coping with rough days[25]. Group therapy can boost mental well-being and holds potential to empower an individual to take charge of their health status and building resilience.

Acceptance and commitment therapy

ACT was developed by Steven C Hayes, a psychologist. A 2021 systematic review and meta-analysis of 678 publications concluded that ACT may be useful in reducing HbA1c, and also help in enhancing self-care ability and acceptance among people with DM. ACT focuses on reducing the struggle to control or eliminate unwanted thought, feelings, and emotions by learning to accept them for what they are. It helps in shifting focus from controlling emotions to managing behavior and actions that increase involvement in meaningful activities aligning with an individual's value and bring a sense of fulfillment. Psychological flexibility is achieved through acceptance, cognitive defusion, and mindfulness, self as context, identifying values, and committing to actions[26].

Pharmacological Intervention

Several types of psychiatric medications are available like antidepressants, antipsychotics, tranquilizers and sleeping pills, and mood stabilizers. Pharmacological treatment has its own benefits and risks, and therefore should be used cautiously under the supervision of an expert.

Antidepressants

Several classes of antidepressants are available like selective serotonin reuptake inhibitors, tricyclic antidepressants, monoamine oxidase inhibitors, serotonin-norepinephrine reuptake inhibitors[5]. Individuals with depression are at high-risk for developing DM; also, few antidepressants may cause dysglycemia. It is unclear if high blood sugar is caused by depression or the medications used to treat it. Weight gain is another common issue associated with depression and antidepressant medications, which can further aggravate dysglycemia and dyslipidemia.

But some studies have suggested that HbA1c is reduced in people with diabetes and depression who were treated with an antidepressant[27].

Antipsychotic medications

Antipsychotics have been classified into three generations. First generations are known as typical or conventional agents, second generations are known as atypical or novel agents, and third-generation antipsychotics are known by their mechanism of action like agonists, or partial-agonists[5].

Olanzapine and clozapine are known to have the highest risk of glucose dysregulation or DM in people with schizophrenia or bipolar disorder. Quetiapine, risperidone, and low-potency first-generation antipsychotics (e.g., chlorpromazine) have the next highest level of risk of developing DM. These medications are known to induce type 2 diabetes or cause dysglycemia by inducing weight gain, insulin resistance, or impairing insulin secretion.

Tranquilizers

Tranquilizers such as clonazepam, diazepam, lorazepam have calming effects and eliminate feelings of anxiety and fear. They do not have much effect on glycemic control.

Mood stabilizers

Lamotrigine, topiramate are few molecules of this class of drugs. Weight loss is a frequent side effect of topiramate. Hence, it can be used in obese patients, if indicated.

SUMMARY

Diabetes and MH are closely related and increase the risk of each other. Thus, physicians taking care of people with DM should properly address MH issues and refer for expert opinion, if required, to ensure treatment compliance and reduce the risk for serious complications. We also stress that nonpharmacological and pharmacological interventions for MH issues should be done under the guidance of an expert to obtain maximum benefits with minimum risks.

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