Diabetes and Depression

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- Read the enclosed course.
- Complete the questions at the end of the course.
- Return your completed Evaluation to NetCE by mail or fax, or complete online at www.NetCE.com. (If you are a behavioral health professional or Florida nurse, please return the included Answer Sheet/Evaluation.) Your postmark or facsimile date will be used as your completion date.
- Receive your Certificate(s) of Completion by mail, fax, or email.

Faculty

Diane Thompson, RN, MSN, CDE, CLNC, has an extensive history in nursing and nursing education. She possesses a strong background in diabetes and cardiac care, starting her professional career at the cardiac care area of the Cleveland Clinic in Cleveland, Ohio. Ms. Thompson took the knowledge and experience she learned from the Cleveland Clinic and transferred it into the home health arena in rural Ohio, after which she moved to Florida and obtained further knowledge while working as a PRN nurse in all areas, including medical/surgical, intensive care, emergency, critical care, and cardiology. With a desire to have a specific area to concentrate her profession, Ms. Thompson accepted a position as a pneumonia case manager, which led into a diabetes case manager career. (A complete biography appears at the end of this course.)

Faculty Disclosure

Contributing faculty, Diane Thompson, RN, MSN, CDE, CLNC, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

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The division planners and director have disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

Audience

This course is designed for all nurses, social workers, counselors, therapists, dietitians, and allied mental health professionals with a desire to better understand the mental health issues facing a person with diabetes.

Accreditations & Approvals

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Designations of Credit

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Special Approvals

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Disclosure Statement

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Course Objective

The purpose of this course is to provide nurses and allied mental health professionals with the information necessary to identify depression in patients with diabetes and to intervene to improve these patients' quality of life.

Learning Objectives

Upon completion of this course, you should be able to:

1. Discuss the epidemiology and diagnosis of diabetes.
2. Evaluate the pathophysiology of depression and identify types that can impact patients with diabetes.
3. Analyze tools available to screen for depression in patients with diabetes.
4. Identify treatment options for clinical depression in diabetic patients.
5. State the educational needs for individuals with diabetes complicated by depression.

Sections marked with this symbol include evidence-based practice recommendations. The level of evidence and/or strength of recommendation, as provided by the evidence-based source, are also included so you may determine the validity or relevance of the information. These sections may be used in conjunction with the course material for better application to your daily practice.

INTRODUCTION

Depression is the leading cause of disability in the world and the third most common reason for seeking healthcare advice and care. It is 1.5 times more common among people with diabetes than it is in the general population [1]. Major depression is present in 15% to 20% of individuals with diabetes, regardless of the type [2]. Comorbid depression in patients with diabetes is associated with higher medical symptom burden, additional functional impairment, poor self-care, a greater number of cardiac risk factors, and increased microvascular and macrovascular complications, resulting in higher blood glucose levels, greater healthcare costs, and a higher mortality [3]. So, the need to effectively manage depression and prevent further complications is imperative [4].

The large-scale international study Diabetes Attitudes, Wishes, and Needs (DAWN) assessed the role of brief empathetic listening intervention to enhance diabetes care and patient well-being [2]. The study revealed that individuals with diabetes rated their compliance with treatment recommendations as poor and clinicians' estimations were even lower. Approximately 70% of clinicians cited psychologic problems and depression as playing a major role in inadequate psychologic well-being and adherence to treatment plans. Despite this widely acknowledged impact, only 10% of patients had received any psychologic treatment [1].

Depressive symptoms have also been found to predict the incidence of type 2 diabetes, with the relationship only partially explained by demographics, metabolic traits, and lifestyle factors [5]. Female sex, older age, patients' locality, body mass index, and fasting blood sugar also may be predictive factors [6]. The involvement of neuroendocrine mediators in the stress-obesity-diabetes relationship requires further study and evaluation [5]. Diabetes may increase the risk of depression as a result of the sense of threat and loss associated with the diagnosis and the substantial lifestyle changes necessary to avoid the development of debilitating complications [7].

Unfortunately, despite the known risks, depression is recognized and treated in only one-third of cases in individuals with diabetes [2]. If depression is not treated prior to the diagnosis of diabetes, it may be underdiagnosed afterwards, particularly in patients with complex clinical pictures [5].

AN OVERVIEW OF DIABETES

EPIDEMIOLOGY

Diabetes is a progressive disease process influencing fuel metabolism by the body [5]. Carbohydrate, protein, and fat metabolism are altered when insulin, the mediator of fuel, is not available. Insulin deficiency can result from defects in insulin secretion and/or diminished tissue response to insulin. The result of this defect in insulin secretion and/or insulin resistance is hyperglycemia [1]. The chronic metabolic dysregulation associated with diabetes can result in long-standing damage to various organs, including the eyes, kidneys, nerves, heart, and blood vessels [5].

According to the Centers for Disease Control and Prevention (CDC), the prevalence of diagnosed diabetes has increased from 0.93% of the U.S. population in 1958 to 8.7% in 2019 [8]. It is important to note that 8.5 million people have diabetes but remain undiagnosed [8; 9]. By 2025, it is predicted that 15% to 20% of all Americans will have a diagnosis of diabetes or impaired glucose tolerance [10].

The scope of the diabetes problem is vast and diverse. From 1994 through 2015, the prevalence of diagnosed diabetes increased across all states in the United States. In 1994, only one state had a prevalence greater than 6.0%. In 2018, all states had a prevalence greater than 6.0% and 35 states had rates exceeding 9.0% [11]. According to data from the Behavioral Risk Factor Surveillance System, West Virginia has the highest rate of adults with diabetes (13.4%). Eight of the 10 states with the highest rates (12% to 12.9%) are in the South. Colorado ranked last with 6.6% [12]. Genetics, race, age, and lifestyle significantly influence the onset and progression of the disease process [1]. According to 2022 National Diabetes Statistics Report, the

percentage of adults with diagnosed diabetes was highest among American Indians/Alaska Natives (14.5%), non-Hispanic Black Americans (12.1%), and people of Hispanic origin (11.8%), followed by non-Hispanic Asian Americans (9.5%) and non-Hispanic White Americans (7.4%) [8]. Native Americans/Alaska Natives present the greatest risk for the development of type 2 diabetes; their risk is more than two times greater than that of White Americans. Among Native American subgroups, the rate of diabetes among Alaska Natives is 6.0%, while Native Americans in Southern Arizona have rates of 22% [8].

DIAGNOSIS

The most common types of diabetes are type 1 and type 2. However, gestational diabetes is also relatively common and is a source of significant morbidity and mortality. Gestational diabetes complicates approximately 10% of all pregnancies [13; 14]. It is first recognized in pregnancy, usually after 24 weeks of gestation, and typically resolves after the birth of the child [13]. Other less common types of diabetes include [10; 15]:

- Maturity-onset diabetes of the young: A genetic, autosomal-dominant defect of the pancreatic beta cells, resulting in insulin deficiency and decreased insulin release without the presence of insulin resistance and obesity. This form of diabetes typically develops in patients younger than 25 years of age. It is a different clinical entity than type 2 diabetes of the adolescent, which presents with insulin resistance.
- Diabetes related to diseases of the exocrine pancreas, such as cystic fibrosis, and various endocrine diseases, such as Cushing syndrome, acromegaly, and chromocytoma
- Drug-induced diabetes resulting from the use of certain medications, particularly high-dose corticosteroids

American Diabetes Association (ADA) criteria for screening for diabetes or prediabetes in asymptomatic adults include [13]:

- Testing should be considered in adults with overweight or obesity (body mass index ≥25 kg/m^2 or ≥23 kg/m^2 in Asian Americans) who have one or more of the following risk factors [16]:
  - First-degree relative with diabetes
  - High-risk race/ethnicity (e.g., African American, Hispanic American, Native American, Alaskan Native, Pacific Islander, Asian American)
  - History of cardiovascular disease
  - Hypertension (blood pressure ≥140/90 mm Hg or on therapy for hypertension)
  - HDL cholesterol level <35 mg/dL and/or a triglyceride level >250 mg/dL
  - Women with polycystic ovarian syndrome
  - Physical inactivity
  - Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)
- Patients with prediabetes (A1c ≥5.7%, impaired glucose tolerance, or impaired fasting glucose) should be tested yearly.
- Women who were diagnosed with gestational diabetes should have lifelong testing at least every three years.
- For all other patients, testing should begin at 35 years of age. If results are normal, testing should be repeated at a minimum of three-year intervals, with consideration of more frequent testing depending on initial results and risk status.
- People with human immunodeficiency virus (HIV)

The diagnostic criteria for type 2 diabetes are fairly straightforward and are based on fasting plasma glucose and postprandial plasma glucose levels (***Table 1***). After a diagnosis of type 2 diabetes has been definitively made, education on self-care man-

DIAGNOSTIC CRITERIA FOR TYPE 2 DIABETES			
Stage	**Fasting Plasma Glucose Level**	**Two-Hour Postprandial Plasma Glucose Level**	**Glycated Hemoglobin Components**
Prediabetes	>100–125 mg/dL	≥140–199 mg/dL	5.7% to 6.4%
Diabetes[a]	≥126 mg/dL	≥200 mg/dL	≥6.5%
[a]A random blood glucose level ≥200 mg/dL with symptoms of hyperglycemia is also indicative of diabetes.			
Source: [13]			*Table 1*

agement is necessary in order to obtain euglycemia and prevent complications related to the detrimental effects of hyperglycemia [13]. It is estimated that as many as 90% of patients with type 2 diabetes will require oral medications to achieve adequate glucose control within five years of diagnosis [13]. When glucose levels cannot be adequately controlled with oral medications, the use of injectable medications is necessary. If elevated blood glucose levels are untreated and continue to rise, the result can be hyperosmolar hyperglycemia syndrome (HHS) and ultimately death [17].

AN OVERVIEW OF DEPRESSION

PATHOPHYSIOLOGY

Although much research has been conducted on the neurobiologic causes of depression, the exact underlying pathophysiology of depression (specifically major depression) remains unknown [18]. One consistent observation is that stress or emotional trauma, especially when experienced earlier in life, is associated with increased risk of developing depression [19]. It is believed that 40% to 50% of the risk for developing depression is due to genetic factors and that the interactions between genetic and environmental factors across the lifespan underlie depressive vulnerability in most patients [20]. Early-life stress can result in persistent neuroendocrine, physiologic, behavioral, and psychologic changes that negatively affect the development of brain systems involved in learning, motivation, and stress response, and that may also reflect a biologic priming for the development of depression, especially with additional stress exposure [18; 21].

Until recently, explanations of the pathophysiology of depression have focused on imbalance among specific neurotransmitter systems, most prominently serotonin, norepinephrine, and dopamine. Considerable evidence does support the notion that major depression involves an alteration in the balance of neurotransmitters and/or their function. A decrease in the functional balance of specific neurotransmitters has been hypothesized to cause certain types of depression; decreased norepinephrine would cause dullness and lethargy, while decreased serotonin would result in irritability, hostility, and suicidal ideation [22].

However, depression is now realized to be a heterogeneous disorder in which different biologic abnormalities contribute to the disruptions in sleeping, eating, energy, and emotional reactions [23]. The four domains of cognitive function that are disturbed in persons with depression are executive control, memory, affective processing, and feedback sensitivity [24]. Although enormous gaps remain in understanding depression and its treatment, there is an increasing focus on dysregulated neural circuitry as the underlying pathophysiology of depression, with a corresponding de-emphasis on specific neurotransmitter system dysfunction [22].

TYPES OF DEPRESSION

There are many different types of depression of varying degrees and characteristics. A full discussion of all of the various types of depression and specifiers is beyond the scope of this course, but the following section will outline some of the most common types to affect persons with diabetes.

Persistent Depressive Disorder

Chronic depression can be mild to severe in its debilitation of the patient and may persist for years if untreated [5; 25]. It is defined as a chronically depressed mood that is present more than half the time for a minimum of two years in adults or one year in children and adolescents [26; 27].

The exact cause of mild chronic depression is unknown, although it occurs with greater frequency in women compared to men. Many individuals have a history of long-term medical conditions or mental health disorders, such as anxiety or substance abuse. Approximately half of individuals with this type of depression will experience a major depressive episode at some point in their life [25].

Major Depression

Major depression is a mood disorder characterized by feelings of sadness, loss, anger, and/or frustration that interfere with everyday life and last for weeks or longer [25]. The essential feature of major depression is depressed mood or anhedonia (loss of interest in usual activities) experienced most of the day and nearly every day for a period of at least two weeks [2; 27].

As noted, major depressive disorder has a higher incidence among persons with diabetes compared to the general public, and individuals with diabetes and depression are more likely to stay depressed than those without diabetes [1]. Major depression is typically recurrent in individuals with diabetes; even after successful treatment, studies show it will reoccur in as many as 80% of individuals with diabetes, with an average of four episodes during a five-year period [2].

Major Depression with Psychotic Features

Individuals with chronic illnesses, including diabetes, have an increased risk of major depressive episodes with psychotic symptoms (e.g., delusions, hallucinations [typically auditory]) in comparison to the general population [2]. Major depression with psychotic features is considered a severe form of the disease, and diagnosis can be complicated [26].

Seasonal Affective Disorder

Seasonal affective disorder (also referred to as major depression with seasonal pattern) is a cyclic type of depression defined by depressive episodes experienced only during certain times of the year, most commonly the fall and winter [5; 27]. It is more frequently noted in women than men and in younger individuals than older adults [26]. Seasonal affective disorder is often considered to be related to a lack of exposure to sunlight and may be treated with bright visible-spectrum light therapy [25].

Postpartum Depression

Postpartum mood disorders are generally divided into three categories: postpartum blues (or "baby blues"), postpartum depression, and postpartum psychosis. These conditions do not exist on a continuum; each category is a distinct postpartum state [28].

Postpartum depression (diagnosed as major depression with peripartum onset) occurs in approximately 10% of new mothers [27; 28; 29; 30]. A study of low-income mothers found that the presence of diabetes during pregnancy was associated with an almost twofold increase in the incidence of postpartum depression compared to women without diabetes [31]. The study did not specify if the diabetes diagnoses were present prior to the pregnancy. One study examined the association between gestational diabetes and depression incidence during both the pre- and postnatal periods. Of 58,400 mothers, women with gestational diabetes had a nearly twofold greater risk of being diagnosed with depression compared with those without gestational diabetes during the prenatal period [32].

Symptoms of depression usually occur shortly after childbirth but may occur during pregnancy or as late as one year after delivery. Postpartum depression is a serious, long-lasting type of depression in women that can have harmful consequences for the mother and child if undetected and untreated.

DIABETES DISTRESS

Diabetes distress (also known as diabetes-specific distress or diabetes-related distress) is the emotional response to living with diabetes; it affects one in five people with diabetes [33; 34]. In a large cohort study, severe diabetes distress was reported in one of four people with type 1 diabetes, one in five people with insulin-treated type 2 diabetes, and one in 10 people with non-insulin treated type 2 diabetes [33]. Diabetes distress is sometimes mistaken for depression but is more common than depression [33]. Managing diabetes is a full-time activity that involves the need to continually make decisions and take actions, often with varied, unexpected, or unsatisfactory outcomes. The symptoms of diabetes distress may overlap with the symptoms of depression, but they are unique conditions requiring different assessment and management strategies [33]. Diabetes distress is associated with adverse outcomes, including [33]:

- Suboptimal self-management
- Elevated A1c
- More frequent severe hypoglycemia
- Impaired quality of life

The accumulation of the pressures of managing diabetes (diabetes distress) can lead to diabetes burnout—a state of physical or emotional exhaustion resulting from feelings of powerlessness. Patients feel that, despite their best efforts, the results of self-care are unpredictable or disappointing. Signs of diabetes burnout include [33]:

- Disengagement from self-care tasks
- Unhealthy or uncontrolled eating
- Risk-taking behaviors
- Non-attendance at clinic appointments

It is important for healthcare providers to recognize these signs of burnout and to avoid labeling the patient as "difficult," "non-compliant," or "unmotivated" [33]. Monitoring for diabetes distress at each clinical encounter can help prevent diabetes burnout.

SIGNS OF DEPRESSION IN PATIENTS WITH DIABETES

As stated, it is common for individuals with diabetes to experience emotional distress as a result of living with the disease, its complications, and treatment and self-monitoring [2]. The most common factor affecting psychologic well-being, reported in about one-third of individuals with diabetes, is worrying about the future and the possibility of diabetes complications. Other areas endorsed as "serious" by patients with diabetes include [2]:

- Guilt and anxiety about noncompliance with treatment
- Fear and depression about living with diabetes
- Being unsure if mood changes are related to blood glucose levels
- Being constantly concerned about food and eating
- Feeling deprived around food

Other signs of depression in patients with diabetes include appetite disturbances and weight change, sleep disturbances, physical agitation, decreased energy, feelings of worthlessness or excessive guilt, difficulty concentrating and thinking, and even suicidal thoughts [1].

SCREENING FOR DEPRESSION IN PATIENTS WITH DIABETES

The American Diabetes Association (ADA) has made several recommendations regarding screening for depression in patients with diabetes. Their recommendations include [13]:

- Routine screening for psychosocial problems (e.g., depression, diabetes-related distress, eating disorders)
- Evaluation of cognitive function and depression screening/treatment in adults 65 years of age and older with diabetes
- Stepwise collaborative care for patients with comorbid diabetes and depression

Many barriers can make detection of depression particularly challenging for healthcare providers in the medical setting. These include [2]:

- Lack of time during office visits
- Somatization (i.e., physical symptoms such as fatigue, appetite changes, and sleep disruption, but no affective or cognitive symptoms)
- Stigmatization
- Comorbid medical conditions that may have similar symptoms

As such, special attention should be paid to the affective components of depression, including changes in mood, loss of interest in usual activities, guilt, or suicidal ideations [13]. If time constraints are a particular problem, the brief Patient Health Questionnaire-2 (PHQ-2) has been found to identify depressive symptoms with a sensitivity and specificity of 97% and 67% in adults and 74% and 75% in adolescents, respectively [35]. The PHQ-2 asks just two questions [2; 5; 35]:

- Over the last two weeks, have you been feeling down or depressed more of the time than not?
- Over the last month, have you lost interest in doing things that usually bring you pleasure?

The PHQ-9 is increasingly administered for confirmation of a positive PHQ-2 result. The PHQ-9 can be completed in less than five minutes and has a demonstrated 61% sensitivity and 94% specificity in adults and 89.5% sensitivity and 77.5% specificity in adolescents [35]. In addition to the questions included on the PHQ-2, the PHQ-9 inquires regarding sleep problems, lack of energy, changes in appetite, feelings about self, trouble with concentration, changes in speech/movement, and thoughts of self-harm or suicide [35]. Other screening options are the Problem Areas in Diabetes (PAID)-1 scale and the Diabetes Distress Scale (DDS), both of which are self-administered questionnaires designed to help clinicians assess the emotional distress of individuals with diabetes [13; 16]. The most practical tool for one's clinical setting should be used [35].

The PAID-1 scale is a 20-item evaluation covering a range of emotional problems frequently reported in patients with diabetes [5]. Each item is scored based on the severity of the problem, with 100 total points possible. A higher score is indicative of greater emotional distress. Studies using this questionnaire have demonstrated the greatest worries for these patients to be related to an undefined future, the possibility of serious complications, and guilt due to treatment noncompliance [36]. Greater emotional distress according to PAID-1 scale results is correlated to poor glycemic control [37].

The DDS consists of 17 items assessing levels of distress linked to diabetes and pinpointing specific patient concerns [16]. Studies indicate that it is consistent and highly sensitive to emotional/psychologic stress related to diabetes when administered in a variety of settings.

SCREENING FOR DEPRESSION IN CHILDREN WITH DIABETES

Children with diabetes experience a rate of depression that is two to three times higher than the general population, yet the majority of research exploring diabetes and depression has been conducted in adults. Little is known about the association between adolescent-onset depression and the development of type 2 diabetes; however, researchers are beginning to identify risk factors [38; 39; 40]. An examination of prospective data from 92 youths from the time of diabetes diagnosis found that 47.6% met the diagnostic criteria for psychiatric comorbidity at some point during the 10-year study period [41]. Another study found depression to be more likely in girls, with less frequent SMBG, poorer metabolic control, and greater perceived diabetes burden [42]. The nationwide SEARCH for Diabetes in Youth Study (SEARCH study), which enrolled 2,672 youth, found that girls had higher mean depression scores than boys, and boys with type 2 diabetes were at greater risk for depression than those with type 1 diabetes [43]. Despite the identification of some risk factors for depression in adolescents with diabetes, many youth are not quickly identified as experiencing symptoms of depression. As stated, barriers exist that make early detection difficult. However, routine screening for

depression can help [40]. Screening tools such as the Children's Depression Inventory 2 (CDI 2) and the Center for Epidemiological Studies Depression Scale (CES-D) are brief self-report measures that can help identify youth at risk for depression [44; 45; 46; 47; 48; 49; 50; 51].

IMPACT OF DEPRESSION ON DIABETES CONTROL

Approximately 16% of Americans will suffer a major depressive disorder at some point in their lives, although the rate is greater when other forms of depression (e.g., persistent depressive disorder) are included. A great number of Americans also have diabetes, and these two diseases can interact in harmful ways. Depression is associated with poor health behaviors, such as smoking, physical inactivity, and excessive caloric intake, that increase the risk of type 2 diabetes. Furthermore, depression is related to central adiposity, obesity, and impaired glucose tolerance [7; 52]. Likewise, psychologic stress and depression have significant effects on metabolism by increasing counter-regulatory hormones, resulting in elevated blood glucose levels even in patients without diabetes [2]. Depression is linked with worse clinical outcomes. A study of more than 900,000 U.S. veterans found that comorbid depression in patients with diabetes is associated with increased risk of developing chronic kidney disease and poor cardiovascular outcomes [53]. Depression is also associated with physiologic abnormalities, including activation of the hypothalamic-pituitary-adrenal axis, sympathoadrenal system, and proinflammatory cytokines, which can induce insulin resistance and contribute to an increased risk for diabetes [7; 54].

Depression and insulin resistance are both associated with atrophy of the limbic system of the brain as well as with difficulties with memory and attention. A reciprocal interaction between proper insulin function and cognitive abilities is strongly suggested by the persistence of insulin resistance and memory and attention problems in individuals with depression. Experts believe insulin function to be central to proper mood regulation and maintenance of memory and attention, and understanding and treatment of depression should account for this underlying metabolic dysregulation [55]. Although it has been shown that depression and diabetes may independently increase the risk for dementia, no studies have examined whether the risk for dementia is increased in people who have both diabetes and depression. Danish researchers examined health data for more than 2.4 million individuals 50 years of age or older, including 477,133 with depression, 223,174 with diabetes, and 95,691 with both diabetes and depression [56]. When compared with adults who did not have diabetes or depression, the risk for dementia was 20% higher in adults with diabetes alone, 83% higher in adults with depression alone, and 117% higher in adults with both diabetes and depression [56]. This again underscores the need for better understanding and treatment of depression in individuals with diabetes.

According to the Institute for Clinical Systems Improvement, depression impacts the ability of a person with diabetes to achieve blood glucose control, which in turn impacts the rate of development of diabetes complications. As such, identification and management of depression are important aspects of diabetes care.

(https://www.icsi.org/wp-content/uploads/2019/02/Diabetes.pdf. Last accessed November 18, 2022.)

Level of Evidence: Consensus Statement/Expert Opinion

TREATMENT OPTIONS

During the day, hyperglycemia and hypoglycemia may produce feelings of fatigue or anxiety. Ensuring good control of diabetes and compliance with the treatment plan may help alleviate some depressive symptoms. It is also important to investigate when the individual felt that he/she was successful in dealing with the problem. This is the basis of cognitive-behavioral therapy—what individuals think and say to themselves determines how they feel and what they do [26]. Helping a patient recognize negative self-talk and identify a more positive, realistic perspective can minimize the emotional distress associated with diabetes [5].

After possible physical causes are ruled out or addressed, referral to a psychiatrist, psychologist, psychiatric nurse, licensed social worker, and/or professional counselor is warranted. Psychotherapy or counseling should be the first-line therapy, with pharmacotherapy and other approaches used for patients with severe depression or depression that does not respond to counseling [4]. Depression-specific psychologic treatment is more effective than general supportive counseling, and the level of glycemic control and the presence or absence of diabetes complications is predictive of the response to depression treatment [1]. A review of available evidence indicates that psychosocial interventions, particularly cognitive-behavioral therapy, can effectively treat depressive symptoms in patients with diabetes [57]. However, it is unclear whether these interventions are also effective in improving self-care and physical health outcomes. Studies of individuals with diabetes and major depressive disorder demonstrate improvement in symptoms of depression as well as blood glucose levels with active treatment with an effective antidepressant [57]. In studies of comorbid diabetes and depression, nortriptyline (a tricyclic antidepressant) has led to worsening glucose control, whereas bupropion, fluoxetine, and sertraline were correlated with reductions in glucose levels [57].

A combination approach using psychotherapy, psychopharmacology, and diabetes education is often the most effective treatment. One systematic review found that collaborative care (compared with primary care alone) was associated with significantly better depressive outcomes and treatment adherence in patients with depression and diabetes [58]. Strategies for preventing (rather than treating) comorbid depression are an emerging area of research [59]. Other options exist and may be indicated, including electroconvulsive therapy, herbal medications/supplements, acupuncture, sleep deprivation, and bright-light therapy [5]. It is important to consider how these therapies might affect blood glucose or interact with diabetes medications prior to initiating treatment.

PATIENT EDUCATION

Education for any individuals diagnosed with or at risk for depression should include recognition of signs and symptoms of depression, discussing fears related to the stigma of depression, and treatment options available [1]. When psychologic counseling is recommended, it is essential the individual understands the importance of [60]:

- Maintaining all appointments with the mental health professional(s)
- Being honest and open with the counselor/therapist
- Asking questions
- Working cooperatively (e.g., completing tasks as assigned within sessions)

When an individual with diabetes is being treated for depressive symptoms, it is crucial to convey the need for self-care regardless of the severity of the depression. Steps to ensure proper self-care include [4]:

- Sleeping at least 7 to 8 hours but not more than 12 hours
- Maintaining a healthy, nutritious diet
- Adding omega-3 fatty acids to one's diet
- Exercising regularly
- Avoiding excessive alcohol consumption
- Becoming involved in enjoyable activities
- Engaging in relaxation techniques
- Seeking spiritual guidance, when appropriate

The patient and family or support system should be advised to be aware of signs and symptoms of worsening depression that necessitate notifying their healthcare provider or contacting emergency services. This includes [4; 35; 61]:

- Thoughts of harming oneself or others
- Hallucinations (visual or auditory)
- Unrelenting low mood and helplessness
- Withdrawal from friends and/or social activities
- Sleep problems

- Loss of interest in personal appearance, hobbies, work, and/or school
- Increased alcohol and/or drug use
- Recent impulsiveness and taking unnecessary risks
- Making a plan (e.g., giving away prized possessions, sudden or impulsive purchase of a firearm, or obtaining other means of killing oneself, such as poisons or medications)
- Unexpected rage, anger, or other drastic behavior change
- Recent humiliation, failure, or severe loss (especially a relationship)
- Unwillingness to "connect" with potential helpers

It is imperative to inform individuals that changes to the treatment plan may be necessary in order to effectively manage depression [60]. Antidepressants begin to work gradually, so therapy must be adhered to for several weeks before determining effect. Patients should continue antidepressant therapy even if they feel better or symptoms improve; discontinuing these medications abruptly can be dangerous. Patients should be aware that the goal of treatment is complete remission, though it may require trials of different therapies to identify the best combination [60].

CASE STUDY

Patient A is a white woman, 68 years of age, with a 15-year history of type 2 diabetes. She presents to her primary care provider for a three-month follow-up appointment. She is brought to the appointment by her daughter-in-law. She is 5 feet 4 inches tall and weighs 220 pounds, 10 more pounds than her last appointment. Other pertinent medical history includes hypertension, coronary artery disease, two transient ischemic attacks lasting 30 minutes each, cerebrovascular accident nine months previously resulting in right-side weakness, and peripheral neuropathy of the bilateral lower extremities.

Her vital signs are:

- Blood pressure: 165/86 mm Hg
- Respirations: 24 breaths per minute
- Temperature: 36.2° Celsius

Blood is drawn, and the results indicate:

- Hemoglobin: 11.2 g/dL
- Creatinine: 0.9 mg/dL
- Glomerular filtration rate: 90 mL/min/1.73 m^2
- Serum albumin: 3.3 g/dL
- Glycated hemoglobin (HgA1c): 9.1%
- Low-density lipoprotein (LDL): 155 mg/dL
- HDL: 42 mg/dL
- Glucose (random): 219 mg/dL
- Albumin: 29 mg/g CR
- Calcium: 8.8 mg/dL
- Phosphorus: 4.0 mg/dL

During the visit, Patient A sits quietly and only answers questions with yes or no. When asked if she has ever received formal education to care for her diabetes, Patient A states she did when she was first diagnosed, but it was many years ago. Understanding that Patient A now qualifies to receive education for diabetes self-management under Medicare, the need for further education is discussed with the patient and her daughter-in-law. They agree, although the daughter-in-law is reluctant to participate. The primary care provider refers Patient A to an ADA-recognized education program.

Patient A's initial education appointment is delayed three weeks due to conflicts with her daughter-in-law's schedule. They arrive at the education center five minutes late. When Patient A attempts to apologize for their tardiness, her daughter-in-law snaps at her to just sit down. Patient A takes a seat and begins reading a magazine. During the assessment phase of the visit, the diabetes educator, Ms. R, asks Patient A about her support system and finds that Patient A started living with her son and daughter-in-law after the death of her husband one year ago in a car accident. The move had been a decision out of necessity. Patient A's daughter-in-law receives a telephone call and leaves the room to take it.

While the daughter-in-law is out of the room, Ms. R asks Patient A about her home life. Patient A indicates that it has been a struggle to adapt to her new life. When asked about her daily routine, Patient A states she gets up in the morning and attempts to make breakfast, but it usually takes too long, which causes her daughter-in-law to get impatient and take over. When asked what she likes to do during the day, Patient A replies, "Nothing." Ms. R asks what she liked to do prior to living with her son's family. Patient A states she liked her monthly lunches with a prayer group from church and that she misses them. Patient A also recalls date nights she used to have with her husband. In addition, the couple would attend Mass every Sunday and go out to brunch with good friends afterward.

At the conclusion of the appointment, Ms. R inquires whether Patient A has anything to add. Patient A states, "What's the use? I just exist now anyway. I am so mad at my husband for leaving me here. I was supposed to go first." When Ms. R asks how long she has felt this way, she admits it has been difficult since the death of her husband, but it has been worse the past two months. Patient A states she has been sad or depressed most of the time over the past two weeks.

The daughter-in-law returns and inquires if there is anything else or if they can leave, having already made the next appointment to fit her schedule. Ms. R reassures Patient A that she will see her at the next visit. After the patient leaves, Ms. R documents the visit and calls Patient A's primary care provider to communicate her concerns that she is experiencing depression.

Patient A's physician calls and requests an appointment for the next week. Although her daughter-in-law is unhappy about the additional appointment, she agrees to drive the patient to the office.

The patient arrives to see her physician and is taken into a room; the daughter-in-law is asked to stay in the waiting room. When the physician enters, he asks Patient A about her week. Patient A only shrugs her shoulders and avoids eye contact. The physician states that he is worried about her and thinks talking to someone might help. Patient A indicates that she talks to her son when he has time, but lately he has been working long hours. The only other conversation she reports is with the nurse at the education center. The physician tells the patient that Ms. R is concerned about her as well. Due to the many changes and stressors of the past year, the physician recommends that she see a mental health professional so she can talk to someone outside her immediate family.

The daughter-in-law is then asked to join them in the examination room, where she listens to the physician's concerns and referral plan. She unenthusiastically agrees to assist Patient A attend psychiatry appointments.

Later that week, Patient A meets with Dr. M, a psychiatrist specializing in major depression. She attends the session with her son, who appears attentive and concerned about his mother. Patient A is able to verbalize her feelings and fears during the session, but she continues to experience unrelenting sadness and fatigue. So, an antidepressant is prescribed to improve her mood. Dr. M also suggests a family session involving Patient A's daughter-in-law in order to address issues in the family dynamic.

Six months later, Patient A returns to her primary care provider, who notes many improvements. Patient A is going to church regularly and has joined a prayer group and met two other women who are also widows. They now go out to dinner regularly. Her demeanor is improved, and she is engaged and more confident. The patient also reports having more energy and a better relationship with her daughter-in-law. To monitor her diabetes, blood is drawn, and the laboratory results indicate decreases in her HgA1c (7.2%) and random blood glucose (145 mg/dL).

CONCLUSION

The effects of diabetes can be staggering. In addition to well-known complications related to cardiovascular health, kidney function, and cerebrovascular accidents, diabetes has been shown to impact mental health as well. In susceptible individuals, diabetes can trigger and/or exacerbate depression. Further-

more, depression has been shown to precipitate the onset of diabetes. In patients with diabetes, one cannot be effectively managed without taking into consideration the other. It is vital for both health and mental health professionals to have a clear understanding of how these two highly prevalent conditions interact and impact patient health.

Implicit Bias in Health Care

The role of implicit biases on healthcare outcomes has become a concern, as there is some evidence that implicit biases contribute to health disparities, professionals' attitudes toward and interactions with patients, quality of care, diagnoses, and treatment decisions. This may produce differences in help-seeking, diagnoses, and ultimately treatments and interventions. Implicit biases may also unwittingly produce professional behaviors, attitudes, and interactions that reduce patients' trust and comfort with their provider, leading to earlier termination of visits and/or reduced adherence and follow-up. Disadvantaged groups are marginalized in the healthcare system and vulnerable on multiple levels; health professionals' implicit biases can further exacerbate these existing disadvantages.

Interventions or strategies designed to reduce implicit bias may be categorized as change-based or control-based. Change-based interventions focus on reducing or changing cognitive associations underlying implicit biases. These interventions might include challenging stereotypes. Conversely, control-based interventions involve reducing the effects of the implicit bias on the individual's behaviors. These strategies include increasing awareness of biased thoughts and responses. The two types of interventions are not mutually exclusive and may be used synergistically.

FACULTY BIOGRAPHY

Diane Thompson, RN, MSN, CDE, CLNC, has an extensive history in nursing and nursing education. She possesses a strong background in diabetes and cardiac care, starting her professional career at the cardiac care area of the Cleveland Clinic in Cleveland, Ohio. Ms. Thompson took the knowledge and experience she learned from the Cleveland Clinic and transferred it into the home health arena in rural Ohio, after which she moved to Florida and obtained further knowledge while working as a PRN nurse in all areas, including medical/surgical, intensive care, emergency, critical care, and cardiology. With a desire to have a specific area to concentrate her profession, Ms. Thompson accepted a position as a pneumonia case manager, which led into a diabetes case manager career.

Ms. Thompson has been employed in diabetes care since 2001, when she was hired as a diabetes case manager. After the completion of 1,000 hours of education to diabetes patients, Ms. Thompson earned her certification as a diabetes educator in 2003. From 2006 to 2018, Ms. Thompson was the Director of Diabetes Healthways at Munroe Regional Medical Center in Ocala, Florida. As the director of the diabetes center, Ms. Thompson was responsible for the hospital diabetes clinicians, hospital wound care clinicians, and out-patient education program. Today, she is the nurse manager of a heart, vascular, and pulmonary ambulatory clinic at Metro Health System in Cleveland, Ohio. Ms. Thompson has also lectured at the local, state, and national level regarding diabetes and the hospital management of hyperglycemia. Ms. Thompson is a member of the ADA, AADE, Florida Nurses Association, and the National Alliance of Certified Legal Nurse Consultants.

Ms. Thompson acknowledges her family as her greatest accomplishment. She is a wife of more than 30 years and a mother of a daughter and son, of which she is very proud. Ms. Thompson credits her husband for the support needed to set a goal and achieve it. He has been by her side through nursing school and completion of her Bachelor's degree and Master's degree, which she was awarded in 2015 from Jacksonville University in Florida.

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