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The Prevalence and Specificity of Depression Diagnosis in a Clinic-Based Population of Adults With Type 2 Diabetes Mellitus

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Objective: *To estimate the crude prevalence of minor depressive disorder (MinD) in a clinic-based population of adults with type 2 diabetes.* **Methods:** *We screened a clinical sample of 702 adults with type 2 diabetes for depressive symptoms using the Patient Health Questionnaire-2 and performed a structured diagnostic psychiatric interview on 52 screen-positive and a convenience sample of 51 screen-negative individuals. Depressive disorder diagnoses were made using Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV) Text Revised criteria and categorized as MinD, major depressive disorder (MDD), or no depressive disorder. We estimated prevalence of MinD and MDD and derived 95% CIs.* **Results:** *The crude prevalence of current, past, and current or past MinD was 4.3% (95% CI: 0.9–9.2%), 9.6% (95% CI: 3.9–15.9%), and 13.9% (95% CI: 7.7–21.2%), respectively. The crude prevalence of current, past, and current or past MDD was slightly higher—5.0% (95% CI: 1.9–9.4%), 12.0% (95% CI: 6.1–19.5%), and 17.0% (95% CI: 10.1–24.8%), respectively. There was a high prevalence of coexisting anxiety disorders in individuals with MinD (42.2%) and MDD (8.1%). Hemoglobin A1c levels were not significantly different in individuals with MinD or MDD compared to those without a depressive disorder.* **Conclusions:** *MinD is comparably prevalent to MDD in patients with type 2 diabetes; both disorders are associated with concomitant anxiety disorders. MinD is not included in the DSM-5; however, our data support continuing to examine patients with chronic medical conditions for MinD.*

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Key words: type 2 diabetes mellitus, major depressive disorder, minor depression, anxiety disorders.

It is estimated that worldwide 43 million people with diabetes have symptoms of depression.[1] Major depressive disorder (MDD) is associated with higher risk of type 2 diabetes (T2DM), as well as with an increased risk of microvascular and macrovascular complications, worse metabolic control, and all-cause mortality. There is less evidence supporting similar associations between minor depression (MinD) and T2DM or its secondary complications. In adults with

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diabetes, the prevalence of MDD is estimated at 11.4%.[2] However, the prevalence of "elevated depressive symptoms" based on self-reported questionnaires is much higher at 31%,[2] suggesting that a large number of patients with diabetes have a milder depressive disorder. Prior studies assessing depression in T2DM using self-report questionnaires are unable to distinguish MDD from MinD and may conflate individuals with depressive and anxiety disorders. MinD is defined in the Diagnostic and Statistical Manual of Mental Disorders IV-Text Revision (DSM-IV-TR) as a distinct syndrome that does not meet criteria for MDD or other depressive disorders (i.e., depressive disorder not otherwise specified, adjustment disorder with depressed mood).[3]

Few studies have examined the prevalence of non–MDD depressive disorders in T2DM. One study found the prevalence of dysthymia in adults with diabetes to be 3.5% in the United States.[4] In that study, however, the prevalence of MinD as defined by DSM-IV-TR was not reported, diabetes was assessed by self-report, and it is unclear whether participants had type 1 diabetes or T2DM or both. The low prevalence of dysthymia in this study suggests that most individuals with diabetes and depressive symptoms have MinD. Although 8% of individuals with diabetes were estimated to have MinD in the Pathways Study based on Patient Health Questionnaire-9 (PHQ-9) criteria, to our knowledge, the prevalence of MinD has not been estimated using DSM-IV-TR diagnostic criteria based on a structured psychiatric interview.[5,6] In this study, we sought to estimate the specific, crude prevalence of MinD using a diagnostic interview in a population of adults with T2DM, and to compare it to the prevalence of MDD and other psychiatric disorders.

MATERIAL AND METHODS

Study Population and Depression Screening

Participants with physician-confirmed T2DM who were 18 years of age or older were recruited from the Diabetes Center clinics at Johns Hopkins Hospital, where 5 physicians, 3 nurse practitioners, and a nutritionist see patients daily. As part of routine practice, patients were screened for depressive symptoms using the PHQ-2. The PHQ-2 asks the following 2 questions, which were scored between "0" (not at all) and "3" (nearly every day): "Over the past 2 weeks how often have you been bothered by any of the following problems?"

(1) Little interest or pleasure in doing things.
(2) Feeling down, depressed, or hopeless.

Individuals were considered screen positive with a score of ≥ 3 (summing answers from both questions), which reflects a 75% probability of having any depressive disorder.[7] We also asked participants if they had been told that they have MDD or were being treated with antidepressants or psychotherapy, to capture individuals with MDD not detected by the PHQ-2 because their symptoms were adequately controlled. We included these individuals among those who screened positive on the PHQ-2 to avoid misclassification and underestimation of the prevalence of MDD. Otherwise, individuals scoring < 3 on the PHQ-2 were considered not to have clinically significant depressive symptoms.

Participant Recruitment for Psychiatric Diagnostic Interview

Between February 1, 2011 and June 30, 2013, all patients with T2DM seen in the clinic underwent PHQ-2 screening as a routine clinical practice and had psychiatric history obtained, providing the sample prevalence of those screening positive and negative for depression for our T2DM clinic population. Individuals who screened positive for depressive symptoms on the PHQ-2 (score ≥ 3), who carried a diagnosis of MDD, or who were taking antidepressant medications (collectively referred to as "screen positive" henceforth) were asked about their willingness to participate in our study. Patients with positive screening for depressive symptoms who provided written informed consent were enrolled, completed questionnaires, underwent a formal indepth structured diagnostic interview to further characterize their depressive disorder and to detect past, as well as current, depressive symptomology. At the time of study enrollment in 2011, we excluded individuals taking antipsychotic medications, as these individuals were likely to have a