



Features of Comorbid Anxiety-Depression Disorders and Personal Changes in Type 2 Diabetes Mellitus

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ABSTRACT

This article describes the polymorphism of mental disorders in patients seeking help in medical institutions of a somatic profile, is high. According to the WHO, more than half of patients suffering from moderate to severe somatic diseases have some kind of mental disorder. High prevalence, chronic course of the disease, polyetiology, polymorphism of somatic and mental disorders make diabetes mellitus the most suitable model for the study and systematization of mental disorders in somatic patients.

Keywords:

anxiety-depressive disorders, diabetes mellitus, personality changes, quality of life

Diabetes mellitus is a heterogeneous disease that can lead to serious illnesses with significant emotional impact. According to estimates of the International Diabetes Federation (IDF), in 2017 about 425 million adults aged 2 to 79 years suffered from diabetes, and, according to forecasts, by 2045 this number will increase to 629 million [1]. Although diabetes is an international health crisis, its prevalence is growing faster in low- and middle-income countries [2].

In recent decades, research has focused on concomitant mental illnesses associated with diabetes. The occurrence of anxiety and depressive disorders can be twice as high in people with diabetes. These mood disorders are associated with suboptimal diabetic self-care, unhealthy behavior, elevated HbA1c and other suboptimal metabolic parameters [4,5,6]. The available data indicate a bidirectional relationship between diabetes mellitus, anxiety

and depressive disorders. Patients with anxiety symptoms may have an increased risk of developing type 2 diabetes and vice versa [7]. Various factors can contribute to the development of anxiety disorders in diabetic patients, including personal and family history, stressful life events, substance use and somatic diseases [7]. It is possible that diabetes and depression originate from a similar or common etiology, or the presence of one condition may increase the prevalence of the other [8]. Possible risk factors that may contribute to the development of depression in patients with diabetes are personal and family history, stressful life events, domestic violence, physical illnesses and clinical factors [8,9,10,11]. Personality traits and quality of life (QOL) can influence the development and severity of mental disorders in diabetic patients, but this has not been comprehensively studied.

The purpose of the study: to study the features of the comorbid course of anxiety, depressive disorders and personality pathology in people with type 2 diabetes mellitus.

Materials and methods of research

The study used a cross-sectional design. The sample size was calculated based on previous estimates of the prevalence of depression and generalized anxiety disorder in diabetic patients [13, 14]. The required sample size was 92 people. The average age of the participants was 52 ± 3.4 years, the participants were tested according to inclusion criteria such as (1) age 18 years and older and (2) the presence of a confirmed diagnosis of type 2 or gestational diabetes mellitus. Patients with impaired mental abilities, for example, with psychotic features or cognitive impairments, were excluded from the study. All participants who were found to have depression and anxiety disorders were sent to the dispensary department of the Samarkand Regional Psychiatric Hospital for further examination.

Participants filled out a questionnaire that collected data on demographic, social and clinical characteristics. Demographic variables included age, gender, marital status, ethnicity, education level, employment status, family income, and religion. Social variables included perceived levels of social support, smoking, alcohol and drug use. Clinical variables included medical history, diabetes history (onset, type, and use of insulin therapy), body mass index (BMI), and self-assessment of diabetes management (assessed using a five-point Likert scale). The information provided from the questionnaire was supplemented with a review of patients' medical records, where applicable. In addition, participants were assigned a seven-part generalized anxiety disorder scale (GAD-7) to assess the prevalence of anxiety, the Beck Depression Questionnaire-II (BDI-II) to assess the prevalence of depression, the Big Five Questionnaire (BFI). To assess personal qualities and the World Health Organization for Quality of Life-BREF (WHOQOL-BREF) to measure quality of life (QOL).

The Seven-point Generalized Anxiety Disorder Scale (GAD-7) GAD-7 is a questionnaire designed to identify generalized anxiety disorder (GAD). It consists of seven points, each of which is rated on a Likert scale from 0 to 3. Thus, its total score varies from 0 to 21.

Assessment of depression on the Beck-II scale (BDI-II)

BDI-II is a questionnaire survey that is usually used to identify and assess the degree of depression. It consists of items related to symptoms of depression. It consists of 21 items, each of which is rated from 0 to 3. A score from 10 to 16 indicates mild depression, a score from 17 to 29 indicates moderate depression, and a score from 30 to 63 indicates severe depression.

BFI is a short tool for assessing personal qualities based on a five-factor model. The BFI includes 44 items divided into five subscales: extroversion, benevolence, conscientiousness, neuroticism and openness. Each question is evaluated on a five-point Likert scale in the range from 0 (I completely agree) up to 4 (strongly disagree)

Quality of Life of the World Health Organization - BREF (WHOQOL-BREF)

WHOQOL-BREF is a questionnaire survey that evaluates the quality of life. It consists of 26 items. Items 1 and 2 evaluate the overall quality of life, and the remaining items are grouped into four categories that evaluate different areas: physical health, psychological, social relationships and the quality of life of the environment. Each item is rated on a Likert scale from 1 to 5. WHOQOL-BREF has good psychometric characteristics and has proven its effectiveness and reliability as an alternative to WHOQOL-100 for measuring quality of life.

Research results

The majority of participants were diagnosed with type 2 diabetes mellitus ($n = 69$; 75%), while gestational diabetes mellitus was diagnosed in ($n = 23$; 25%). The average duration of diabetes was 14 years, while the median measurement of HbA1c was 7.6%. Almost half of the participants received insulin therapy ($n = 44$; 47.8%).

The GAD-7 study showed that only a small proportion of participants experienced anxiety (9%, $n = 8$), while the BDI-II screening showed that a relatively large proportion of participants suffered from depression (84.7%; $n = 78$). In the BFI assessment, the median extraversion was 3.38, compliance - 3.78, conscientiousness - 3.67, neuroticism - 2.50, and openness - 3.30. The WHOQOL-BREF study showed that the median assessment of physical health was 14.29, psychological assessment - 15.33, social relations assessment - 16.00, and environmental assessment - 15.00.

Depression is associated with four demographic characteristics ($p < 0.25$). For example, age, employment status, family income and regular religious practice. There was no significant association between social characteristics and depression among the participants. Some clinical characteristics, personality traits, and quality of life components have been associated with depression. Variables that have been associated with depression include diabetes management self-esteem, anxiety, general perception of quality of life, general perception of health, physical quality of life, psychological quality of life, social quality of life, environmental quality of life, extroversion, complaisance, conscientiousness and neuroticism, as well as the interaction between perceived social support and neuroticism.

Participants who were depressed with higher rates of neuroticism had a higher chance of anxiety. In contrast, lower chances of anxiety were associated with higher psychological scores on the quality of life questionnaire and higher conscientiousness scores. Other demographic characteristics, personality characteristics, and quality of life components were not significant predictors of anxiety among participants. The logistic regression model reported that Cox and Snell's R^2 was 0.29 ($p < 0.001$), the Hosmer-Lemeshow agreement criterion was not significant ($p = 0.843$) and the area under the ROC curve (AUC) was 0.949 (95%). $CI = 0.912-0.986$, $p < 0.001$, which indicates an acceptable fit of the model to distinguish participants by the presence and absence of anxiety.

The only clinical factor associated with higher odds. depression was anxiety, which increased the frequency of depression by almost 20 times. On the contrary, older age, higher indicators of quality of life in terms of physical health, and higher indicators of social quality of life were associated with lower chances of depression. The presumed management of diabetes, other demographic characteristics, personality traits, and quality of life components did not reliably predict depression among participants. The logistic regression model reported that Cox and Snell's R^2 indicated an acceptable fit of the model to distinguish participants with and without depression.

The ADAPT-DM study was aimed at determining the prevalence of depression and anxiety and related factors among diabetic patients. Our results show that neuroticism and depression increase the likelihood of developing anxiety by almost 12 and 10 times, respectively. Better psychological quality of life and higher conscientiousness protected from anxiety, which reduced it by half (0.47 and 0.45 times, respectively). In our study, the occurrence of depression significantly increased the likelihood of anxiety. The positive correlation between depression and anxiety is well documented in chronic diseases, and the occurrence of depression may increase the risk of anxiety symptoms in patients with chronic diseases [8,9]. This connection is expected, since some theories suggest that anxiety and depression have the same neurobiological mechanism in which they represent different phenotypic manifestations that occur in a continuum. Higher quality of life associated with physical health and higher quality of life associated with social relationships reduced the occurrence of depression by 0.69 and 0.84 times, respectively. Firstly, this study was conducted in a specialized medical center. Consequently, the results cannot be extended to the entire diabetic population of the country. Secondly, the cross-sectional design of the study does not allow us to determine the causal relationship between the associated factors, depression and anxiety. Thirdly, the symptoms of depression and anxiety were measured

using self-assessment tools rather than diagnostic interviews, which may affect the reliability of the classification of participants into depressive and anxious groups. Fourth, chronic pain is a common symptom among diabetic patients, and it often co-exists and interacts with anxiety and depression in these people.

Conclusions

Comorbid depression and high neuroticism increased the likelihood of developing anxiety. Higher psychological quality of life and higher consciousness prevented the occurrence of anxiety. Concomitant anxiety increased the likelihood of developing depression, while older age, higher quality of life associated with physical health, and higher quality of life associated with social relationships protected against depression. Our results show that screening for personality traits and quality of life is essential for managing anxiety and depression for a holistic approach to diabetes treatment.

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