PREVALENCE OF STRESS, ANXIETY, AND DEPRESSION AMONG OUTPATIENTS WITH TYPE 2 DIABETES MELLITUS AT THAI BINH UNIVERSITY HOSPITAL

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ABSTRACT

Objective: To determine the prevalence of stress, anxiety, and depression among outpatients with type 2 diabetes mellitus (T2DM) at Thai Binh Medical University Hospital.

Method: A cross-sectional study was conducted on 230 outpatients with T2DM at Thai Binh Medical University Hospital. Data were collected through direct interviews. Stress, anxiety, and depression were assessed using the Depression Anxiety Stress Scales-21 (DASS-21).

Results: Among the 230 patients with T2DM included in the study, females accounted for 57.8%, and the mean age was 66.6 years. The prevalence rates of stress, anxiety, and depression were 29.1%, 32.6%, and 19.1%, respectively.

Conclusion: Stress, anxiety, and depression are common among patients with T2DM. The results highlight the need for interventions to improve mental health in this population.

Keywords: depression, anxiety, stress, type 2 diabetes mellitus, DASS-21.

I. INTRODUCTION

Diabetes mellitus is a common metabolic disorder, characterized by chronic hyperglycemia, with an increasing prevalence in recent years [1]. Type 2 diabetes mellitus (T2DM) accounts for approximately 80–90% of all diabetes cases. T2DM can lead to various serious complications, including acute complications such as hypoglycemia and acute hyperglycemia, as well as chronic complications such as retinopathy, nephropathy, neuropathy, and atherosclerotic cardiovascular diseases,... These complications not only result in severe sequelae but may also lead to death and impose a substantial burden on patients' mental health [2][3].

Mental health in patients with T2DM is affected by multiple factors, including the chronic nature of the disease, long-term treatment, high risk of complications, and required lifestyle modifications. Previous studies have shown that up to 40–60% of patients with T2DM experience at least one form of mental disorder during the course of treatment [4][5]especially anxiety and depression, has proposed methodological changes to treatment and increased cost for treatment. Objective: 1. However, mental health disorders are often overlooked or misattributed to symptoms of physical illnesses or complications of T2DM itself [6][7]. Mental health disturbances may also lead to a significant decline in treatment adherence and glycemic control. Consequently, this accelerates the progression of severe complications, increases healthcare costs and socioeconomic burden, and seriously affects patients's quality of life.

In Hung Yen province, although the management system for T2DM has been widely implemented, current care activities mainly focus on controlling clinical targets such as blood glucose, blood pressure, lipid levels, and physical complications of the disease. The mental health status of patients with T2DM in this area has not been adequately studied or evaluated, and there is a lack of specific local epidemiological data. Data on the prevalence of mental health disorders among patients with T2DM are essential to provide a scientific basis for developing comprehensive and multidisciplinary care programs. This would not only improve clinical outcomes but also enhance quality of life and reduce the economic burden on the healthcare system. Therefore, this study was conducted with the objective: To determine the prevalence of stress, anxiety, and depression among patients with type 2 diabetes mellitus at Thai Binh Medical University Hospital.

II. SUBJECTS AND METHODS

2.1. Study population, study location, and study period

The study population consisted of outpatients with type 2 diabetes mellitus (T2DM) receiving treatment at the Endocrinology–Diabetes Clinic, Outpatient Department, Thai Binh Medical University Hospital, from July 2025 to December 2025, who met the following criteria.

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Received date: 31/3/2026
Revised date: 14/5/2026
Accepted date: 18/5/2026

Inclusion criteria:

- Outpatients diagnosed with T2DM with available outpatient medical records.
- Monthly follow-up visits.
- Willingness to participate in the study.

Exclusion criteria:

- Impaired communication ability.
- Presence of acute illnesses.
- Acute exacerbation or decompensation of chronic diseases requiring hospitalization.

2.2. Study methods

Study design: A cross-sectional descriptive study.

Sample size and sampling method

The sample size was calculated using the formula for estimating a population proportion. We referred to the prevalence of mental health disorders among patients with T2DM reported by Ali S et al. (17.6%) [8], with a confidence level of 95% and an absolute precision of 0.05. Based on these parameters, the required sample size was calculated to be 230 participants. In practice, a total of 230 patients with T2DM were recruited. A purposive convenience sampling method was applied. Eligible patients who met the inclusion criteria and had no exclusion criteria were consecutively recruited until the required sample size was reached.

Data collection procedures

Patients attending routine follow-up visits at the Endocrinology–Diabetes Clinic were invited to participate by the research team. Those who agreed were taken to a separate room for face-to-face interviews using a structured questionnaire to collect data on sociodemographic characteristics, medical history, and mental health status assessed by the DASS-21 scale.

Body weight and height were measured using an electronic scale and a wall-mounted stadiometer. Body mass index (BMI) was calculated and classified according to Asian-specific criteria. Clinical data, including blood glucose levels, were obtained from outpatient medical records at the current visit.

Mental health status was assessed using the Depression Anxiety Stress Scales-21 (DASS-21). This instrument consists of 21 items divided into three subscales (depression, anxiety, and stress), each containing 7 items. Participants rated the extent to which they experienced each symptom over the past week on a 4-point Likert scale (0–3). The scores for each subscale were summed and interpreted according to standard guidelines. The DASS-21 Scale was translated into Vietnamese by Tran Duc Thach, with internal reliability measured by Cronbach's Alpha coefficients of 0.72 for depression, 0.70 for stress, and 0.77 for anxiety [9].

Statistical analysis

Data were entered and analyzed using Stata version 13. Descriptive statistics were applied, including frequencies, means, and standard deviations. Continuous variables were presented as mean ± standard deviation, while categorical variables were expressed as %.

2.3. Ethical considerations

All participants were fully informed about the study objectives, procedures, and their roles before enrollment, and they had the right to accept or refuse participation at any time without any consequences. This study was purely observational in nature and did not involve any clinical or therapeutic intervention. All patient-related information was kept strictly confidential and used solely for research purposes, with personal identifiers removed to ensure participants' privacy and data protection

III. RESULTS

A total of 230 patients with type 2 diabetes mellitus (T2DM) were recruited. The mean age was 66.6 years, and females accounted for 57.8% of the study population.

Table 1. General characteristics of the study population

Characteristics	Frequency	Percentage (%)
Family condition		
High	61	26.5%
Average	156	67.8%
Poor	13	5.7%

Characteristics	Frequency	Percentage (%)
Marital status		
Single	4	1.7%
Married	192	83.5%
Separated / Divorced	1	0.4%
Widowed	33	14.4%
Duration of T2DM		
<5 years	58	25.2%
5-10 years	85	37.0%
>10 years	87	37.8%
Mean BMI (kg/m^2)	22.5 ± 2.7	
BMI ≥23 kg/m^2	102	44.3%
Comorbidities	199	86.5%
Diabetes complications	141	61.3%
Treatments		
Oral antidiabetic drugs	194	84.3%
Insulin	14	6.1%
Combination of oral drugs and insulin	19	8.3%
No medication	3	1.3%
Fasting blood glucose level < 7.0mmol/L	67	29.1%
Estimated glomerular filtration rate (mL/min/1.73m^2)		
≥90	62	27.0%
<90	168	73.0%
Exercise		
Regular	141	61.3%
Occasional	40	17.4%
Rare	35	15.2%
Never	14	6.1%
Smoke	68	29.6%
Drink alcohol	80	34.8%

Comment: Table 1 shows that the majority of patients had an average socioeconomic status (67.8%), while the proportion of poor individuals was low (5.7%). Most participants were married (83.5%), with very few being single or divorced.

The duration of T2DM was relatively evenly distributed, with the highest proportion in patients with a disease duration of more than 10 years (37.8%). The mean body mass index (BMI) was 22.5 ± 2.7 kg/m², and the prevalence of overweight and obesity was 44.3%.

Regarding treatment, most patients were treated with oral antidiabetic drugs (84.3%), while a small proportion used insulin alone (6.1%) or a combination of oral agents and insulin (8.3%).

The majority of participants had fasting blood glucose levels ≥ 7.0 mmol/L (70.9%), indicating suboptimal glycemic control. A total of 73% of participants had impaired renal function.

Regarding lifestyle factors, most participants reported regular physical activity (61.3%); however, a considerable proportion exercised infrequently or not at all. The prevalence of smoking (29.6%) and alcohol consumption (34.8%) was relatively high.

Table 2. Level of depression, anxiety, and stress among study participants

Level	Depression, n (%)	Anxiety, n (%)	Stress, n (%)
Normal	186 (80.9%)	155 (67.4%)	163 (70.9%)
Mild	27 (11.7%)	38 (16.5%)	38 (16.5%)
Moderate	13 (5.7%)	25 (10.9%)	23 (10.0%)
Severe	3 (1.3%)	7 (3.0%)	5 (2.2%)
Extremely severe	1 (0.4%)	5 (2.2%)	1 (0.4%)

Comment: Most participants had normal psychological status. Specifically, the proportions of participants without depression, anxiety, and stress were 80.9%, 67.4%, and 70.9%, respectively. However, a considerable proportion of participants experienced psychological symptoms at varying levels of severity. Depression was mainly observed at mild (11.7%) and moderate (5.7%) levels, while severe and extremely severe cases were rare (1.7%). Similarly, anxiety and stress were predominantly at mild and moderate levels, with mild anxiety and mild stress both accounting for 16.5%.

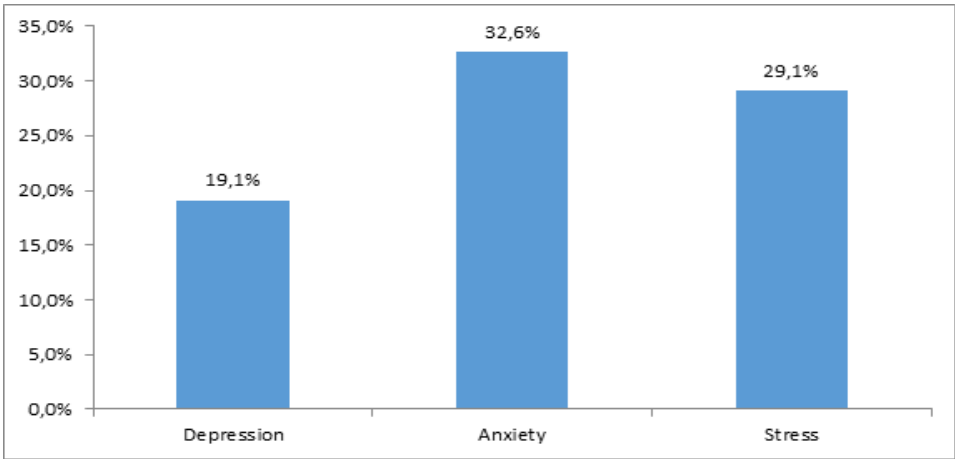

Figure 1. Prevalence of anxiety, depression, and stress among study participants

Comment: Anxiety was the most prevalent psychological symptom (32.6%), followed by stress and depression at 29.1% and 19.1%, respectively.

Table 3. Distribution of participants by number of co-occurring mental health symptoms (depression, anxiety, and stress).

Number of symptoms	n	Percentage (%)
None	130	56.5%
One symptom	41	17.8%
Two symptoms	32	13.9%
Three symptoms	27	11.8%

Comment: Overall, more than half of the patients had no mental health symptoms (56.5%). A total of 43.5% had at least one symptom, of whom 17.8% had one symptom, 13.9% had two symptoms, and 11.8% had all three symptoms.

IV. DISCUSSION

Our study found that 43.5% of participants had at least one mental health symptom (anxiety, depression, or stress). Among these, anxiety was the most prevalent (32.6%), followed by stress (29.1%) and depression (19.1%). Notably, 11.8% of patients experienced all three conditions simultaneously, indicating a substantial mental health burden among patients with T2DM that warrants attention.

Regarding depression, 80.9% of participants had no depressive symptoms, while 19.1% exhibited symptoms ranging from mild to extremely severe. Most cases were classified as mild, whereas severe and extremely severe depression were relatively uncommon. These findings are consistent with previous studies. For example, Nguyen Tran Kien et al. reported a depression prevalence of 45.2% among patients with T2DM in Vietnam [10]. Compared with international studies, such as the meta-analysis by Ali S et al., which reported a prevalence of 17.6% [8], our finding (19.1%) was slightly higher.

For anxiety, the prevalence in our study was 32.6%, the highest among the three symptoms assessed. Most cases were mild to moderate, while severe and extremely severe anxiety were less common. This prevalence was somewhat lower than that reported by Do Dinh Tung et al., who found anxiety and depression rates of 56.6% and 42%, respectively, among patients with T2DM [5].

Regarding stress, 29.1% of participants experienced stress, making it the second most common condition after anxiety. Similar to depression and anxiety, most cases were mild to moderate. This result is comparable to findings from domestic studies, such as Nguyen Dang Dung et al., who reported a stress prevalence of 32.7% [11].

The differences in prevalence across studies may be attributed to variations in assessment tools. In our study, the DASS-21 scale was used to simultaneously evaluate depression, anxiety, and stress, whereas other studies may have employed instruments such as the Patient Health Questionnaire-9 (PHQ-9) or the Hospital Anxiety and Depression Scale (HADS), or different versions of the DASS. Additionally, differences in study populations—including sample size, age, sex distribution, and disease characteristics—may contribute to variability in results. Socioeconomic conditions and access to mental health services may also play a role.

Our findings suggest that stress, anxiety, and depression are relatively common among patients with T2DM. Mental health should therefore be considered an essential component of comprehensive diabetes management rather than a secondary concern. The high proportion of patients with at least one mental health symptom (43.5%) and those with all three conditions (11.8%) highlights the dual burden of chronic disease and mental health symptoms. This underscores the need to integrate mental health screening and care into routine clinical practice.

Furthermore, these findings provide important local evidence in Vietnam to support the development of integrated care models, including early detection and intervention strategies, with the aim of improving treatment outcomes, enhancing quality of life, and reducing the burden on the healthcare system.

Strengths of the study

This study utilized the standardized DASS-21 instrument to assess multiple dimensions of mental health simultaneously, rather than focusing solely on depression. The sample size was adequate and reflective of real-world clinical practice. In addition, the analysis of comorbid mental health conditions provided a more comprehensive understanding of mental health status among patients with T2DM.

Limitations of the study

The cross-sectional design does not allow for the establishment of causal relationships between associated factors and mental health outcomes. In addition, the use of self-reported measures may introduce information bias due to participants' subjective perceptions. As the study was conducted at a single healthcare facility, the generalizability of the findings to the broader population of patients with T2DM may be limited. It is important to emphasize that the DASS-21 measures the severity of psychological symptom burden rather than providing confirmed psychiatric diagnoses.

V. CONCLUSION

The prevalence of anxiety, depression, and stress among the 230 patients with T2DM was 32.6%, 19.1%, and 29.1%, respectively. These findings highlight the importance of early screening and intervention for mental health symptoms in the comprehensive management of T2DM.

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