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Original Research Article

Anxiety and Stressful Life Events Among Patients with Diabetes Mellitus: A Cross-Sectional Study from a Tertiary Care Centre in Rajasthan

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Abstract:

Background: Diabetes mellitus (DM) is a chronic metabolic disorder associated with substantial psychological burden. Anxiety and stressful life events may adversely affect self-care behaviors, glycemic control, and overall disease outcomes. The present study assessed anxiety and stressful life events among patients with diabetes mellitus and examined their relationship with demographic and clinical variables.

Objectives: To assess anxiety and stressful life events among patients with diabetes mellitus and determine their association with age, gender, comorbidity status, medication burden, and quality of life.

Materials and Methods: A hospital-based cross-sectional study was conducted among 90 patients with diabetes mellitus attending the Department of Medicine at a tertiary care teaching hospital in Rajasthan. Sociodemographic and clinical details were recorded. Anxiety was assessed using the Hamilton Anxiety Rating Scale (HAM-A), while stressful life events were evaluated using the Presumptive Stressful Life Events Scale (PSLES). Quality of life was measured using WHOQOL-BREF. Statistical analysis was performed using SPSS version 17.0. Mann–Whitney U test, Kruskal–Wallis test, and Spearman correlation analysis were applied. A p-value <0.05 was considered statistically significant.

Results: The mean age of participants was 54.73 years, with females constituting 55.56% of the sample. Type 2 diabetes mellitus was present in 95.56% of patients. Mild anxiety was observed in 88 (97.78%) participants, while moderate anxiety was present in only 2 (2.22%). No severe anxiety was detected.

No significant association was found between anxiety or stressful life event scores and gender, age group, or number of comorbidities ($p>0.05$). However, anxiety scores showed a significant positive correlation with the number of medicines ($r=0.291$, $p=0.005$) and tablets consumed per day ($r=0.441$, $p<0.0001$). Stressful life event scores also demonstrated significant positive correlations with tablet burden. Quality-of-life scores showed significant negative correlations with tablet burden, particularly in physical and environmental domains.

Conclusion: Anxiety symptoms and stressful life events are common among patients with diabetes mellitus. Increased medication burden is associated with higher anxiety and stress levels, while quality of life declines with increasing tablet burden. Routine psychological screening should be incorporated into diabetes care to improve holistic patient outcomes.

Keywords: Diabetes mellitus; Anxiety; Stressful life events; HAM-A; PSLES; Quality of life.

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Introduction

Diabetes mellitus (DM) is one of the most prevalent chronic non-communicable diseases worldwide and poses a major public health challenge. India has one of the largest populations of individuals living with diabetes, contributing substantially to the global disease burden. [1,2] Beyond its physical complications, diabetes is increasingly recognized as being associated with significant psychological morbidity, including anxiety, depression, and stress-related disorders. [3,4]

Living with diabetes requires lifelong adherence to medication, dietary modifications, regular physical activity, and continuous monitoring of blood glucose levels. These demands may contribute to emotional distress and anxiety, adversely affecting

treatment adherence and glycemic control. [5,6] Previous studies have reported a higher prevalence of anxiety symptoms among patients with diabetes compared to the general population. [7]

Stressful life events are also important determinants of psychological well-being in patients with chronic illnesses. Exposure to major life stressors may activate neuroendocrine pathways, increase cortisol secretion, worsen insulin resistance, and negatively influence metabolic control. [15,16] Furthermore, stressful life events have been associated with poor self-care behaviors, reduced quality of life, and increased psychiatric morbidity among patients with diabetes. [17]

Although several international studies have examined anxiety and stress in diabetes, limited data are available from Western Rajasthan. Understanding the psychosocial dimensions of diabetes is essential for providing holistic patient care. Therefore, the present study was undertaken to assess anxiety and stressful life events among patients with diabetes mellitus and evaluate their association with sociodemographic and clinical variables.

Materials and Methods

Methodology

Study Design and Setting: A hospital-based cross-sectional study was conducted in the Department of Medicine, Mathura Das Mathur Hospital, attached to Dr. S. N. Medical College, Jodhpur, Rajasthan, after obtaining approval from the Institutional Ethics Committee.

Study Population: Patients attending the Medicine Outpatient Department (OPD) with a diagnosis of Diabetes Mellitus were recruited consecutively until the required sample size was achieved.

Inclusion Criteria

1. Patients diagnosed with Diabetes Mellitus according to the American Diabetes Association (ADA) 2018 criteria.
2. Age ≥18 years.
3. Either gender.
4. Patients willing to provide informed consent.

Exclusion Criteria

1. History of psychiatric illness prior to the onset of Diabetes Mellitus.
2. Patients unwilling to participate in the study.

Sample Size: The sample size was calculated using the prevalence of anxiety among diabetic patients as 79%, reported by Jayashree KM et al. Considering an absolute allowable error of 10%, the minimum calculated sample size was 64. To improve the reliability of the study findings, the sample size was increased to 90 participants.

Sampling Technique: Consecutive sampling was employed, wherein all eligible patients attending the Medicine OPD during the study period were recruited until the desired sample size was reached.

Study Instruments

Data were collected using the following tools:

1. **Predesigned Proforma**
    - Sociodemographic details
    - Clinical history
    - Family history
    - Duration of diabetes
    - Physical examination findings
    - Relevant biochemical investigations
2. **Modified Kuppuswamy Socioeconomic Status Scale (2024 update)**
    - Assessed socioeconomic status based on education, occupation, and family income.
3. **Hamilton Anxiety Rating Scale (HAM-A)**
    - Consists of 14 items.
    - Total score range: 0–56.
    - Severity classification:
        - <17: Mild anxiety
        - 18–24: Mild to moderate anxiety
        - 25–30: Moderate to severe anxiety
4. **Presumptive Stressful Life Events Scale (PSLES)**
    - Measures stressful life events experienced during the past year and lifetime.
    - Consists of 51 culturally relevant life events for the Indian population.

Data Collection Procedure: Eligible participants were identified according to the inclusion and exclusion criteria. After obtaining written informed consent, demographic and clinical details were recorded. All participants were assessed using HAM-A, PSLES, and the Modified Kuppuswamy Scale.

Statistical Analysis: Data were entered and analyzed using SPSS version 17.0. Continuous variables were expressed as mean ± standard deviation, while categorical variables were presented as frequencies and percentages.

The following statistical tests were used:

- Chi-square test for categorical variables.
- Student's t-test for comparison of numerical variables.
- Mann–Whitney U test for non-parametric comparison between two groups.
- Kruskal–Wallis test for comparison among more than two groups.
- Spearman's correlation coefficient to assess associations between variables.

A p-value <0.05 was considered statistically significant.

Ethical Considerations: Ethical clearance was obtained from the Institutional Ethics Committee, Dr. S. N. Medical College, Jodhpur. Written informed consent was obtained from all participants. Confidentiality of participant information was maintained throughout the study. Participants were informed of their right to withdraw from the study at any time without affecting their treatment.

Results

Sociodemographic and Clinical Characteristics: A total of 90 patients with Diabetes Mellitus were included in the study. The mean age of the participants was 54.73 years. Most of the participants were married (76.67%) and belonged to nuclear families (67%). With respect to socioeconomic status, the majority of patients belonged to the upper-lower socioeconomic class (71.11%), followed by the lower-middle class (15.56%). Type 2 Diabetes Mellitus was the predominant form of diabetes, accounting for 95.56% of the study population. Comorbid illnesses were present in 46 (51.11%) patients. Among these, hypertension was the most common comorbidity, observed in 29 (63.04%) patients, followed by ischemic heart disease in 13 (28.26%) patients. These findings indicate that the study population primarily consisted of middle-aged individuals with Type 2 Diabetes Mellitus, belonging to lower socioeconomic strata and frequently affected by cardiovascular comorbidities.

Anxiety among Patients with Diabetes Mellitus: Assessment using the Hamilton Anxiety Rating Scale (HAM-A) revealed:

Anxiety Severity	Frequency (%)
Mild Anxiety	88 (97.78%)
Moderate Anxiety	2 (2.22%)
Severe Anxiety	0 (0%)

Thus, the majority of diabetic patients exhibited mild anxiety symptoms, while severe anxiety was not observed in any participant.

Association of Anxiety and Stressful Life Events with Gender: Female patients demonstrated slightly higher mean HAM-A and PSLES scores than male patients. However, the differences were not statistically significant.

Variable	Male (Mean ± SD)	Female (Mean ± SD)	P value
HAM-A Score	4.55 ± 3.97	4.90 ± 4.77	0.870
PSLE Events	2.57 ± 1.31	2.68 ± 1.85	0.570
PSLE Stress Score	126.32 ± 67.26	138.02 ± 93.95	0.980

Association of Anxiety and Stressful Life Events with Age: No statistically significant association was observed between age groups and HAM-A or PSLES scores.

Variable	21–40 years	41–60 years	≥61 years	P value
HAM-A Score	4.25 ± 3.93	4.33 ± 3.71	5.60 ± 5.51	0.683
PSLE Events	2.66 ± 1.30	2.54 ± 1.70	2.76 ± 1.67	0.550
PSLE Stress Score	133.66 ± 69.48	126.33 ± 88.41	142.86 ± 80.17	0.338

Association of Anxiety and Stressful Life Events with Number of Comorbidities: Patients with multiple comorbidities demonstrated higher HAM-A and PSLES scores than those without comorbidities. However, the differences did not reach statistical significance.

Variable	No Comorbidity	One Comorbidity	≥2 Comorbidities	P value
HAM-A Score	3.54 ± 3.11	5.82 ± 5.55	6.00 ± 4.61	0.087
PSLE Events	2.36 ± 1.41	2.85 ± 1.95	2.94 ± 1.55	0.300
PSLE Stress Score	121.34 ± 74.85	140.17 ± 98.33	149.44 ± 75.81	0.369

Correlation of Anxiety and Stressful Life Events with Medication Burden: A significant positive correlation was observed between HAM-A scores and both the number of medications and tablets consumed per day.

Variable	Number of Medicines (r)	P value	Tablets per Day (r)	P value
HAM-A	0.291	0.005	0.441	<0.0001
PSLE Events	0.054	0.607	0.260	0.013
PSLE Stress Score	0.034	0.750	0.229	0.029

Higher medication burden was associated with increased anxiety levels. A weak but statistically significant positive correlation was also observed between PSLES scores and the number of tablets consumed per day.

Discussion

The present study assessed anxiety symptoms and stressful life events among patients with diabetes mellitus attending a tertiary care teaching hospital. The mean age of participants was 54.73 years, and females constituted 55.56% of the study population. These findings are comparable to those reported by Chaudhary et al. [21], Jayasree et al. [23], and Kanwar et al. [22], who observed that diabetes was more prevalent among middle-aged and elderly individuals.

In the present study, 97.78% of participants demonstrated mild anxiety and 2.22% had moderate anxiety, while no participant exhibited severe anxiety. Similar findings have been reported by Lloyd et al. [9] and Collins et al. [6], who highlighted the substantial burden of anxiety symptoms among patients with diabetes. Anxiety may adversely influence treatment adherence, self-monitoring practices, and glycemic outcomes, thereby increasing the risk of complications. [12,13]

Female participants showed slightly higher anxiety and stressful life event scores than male participants; however, the differences were not statistically significant. Similar observations have been reported in previous studies. [4,9] The lack of statistical significance may be attributable to the relatively small sample size and the influence of other psychosocial factors.

The present study also demonstrated that anxiety and stressful life event scores tended to increase with advancing age, with the highest scores observed among participants aged 61 years and above. Although the association did not reach statistical significance, this trend is clinically relevant and may reflect the cumulative burden of chronic disease, functional limitations, and increasing healthcare needs among older adults. [22,23]

Patients with multiple comorbidities exhibited higher anxiety and stress scores than those without comorbid illnesses. While these findings were not statistically significant, they suggest that increasing disease burden may contribute to greater psychological distress. Similar observations have been reported in previous studies evaluating psychiatric morbidity in diabetes mellitus. [11,13]

One of the most important findings of the present study was the significant positive correlation between anxiety scores and treatment burden. Hamilton Anxiety Rating Scale scores showed significant positive correlations with both the number of medications prescribed and the number of tablets consumed per day. These findings indicate that increasing treatment complexity may contribute to psychological distress among patients with diabetes. Similar associations have been reported by Gonzalez et al. [12] and Katon [13], who emphasized the adverse impact of psychiatric symptoms on diabetes self-management.

Stressful life event scores also demonstrated significant positive correlations with tablet burden. These findings support the hypothesis that psychosocial stress and disease-management complexity interact to influence mental health outcomes. [15,16] Chronic exposure to stressors may worsen psychological well-being and compromise adherence to treatment recommendations.

Overall, the findings of the present study highlight the importance of integrating mental health services into routine diabetes care. Early identification and management of anxiety symptoms and psychosocial stress may improve treatment adherence, quality of life, and long-term clinical outcomes. [8,10]

Conclusion

Anxiety symptoms and stressful life events are common among patients with diabetes mellitus. While demographic variables and comorbidity status did not significantly influence anxiety levels, medication burden was strongly associated with increased anxiety and stress. Integrating psychological assessment and counseling into routine diabetes care may improve patient outcomes and quality of life.

Conflict of Interest: None.

Funding: No funding received.

Ethical Approval: The study was approved by the Institutional Ethics Committee, and informed consent was obtained from all participants.

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