



## Original Research Article

# PREVALENCE AND PATTERN OF PSYCHIATRIC MORBIDITIES, DIABETIC DISTRESS AND PSYCHOLOGICAL WELL-BEING AMONG PATIENTS TYPE 2 DIABETES MELLITUS – A CROSS-SECTIONAL STUDY

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## ABSTRACT

**Background:** Type 2 diabetes mellitus (T2DM) poses a significant public health challenge, as individuals living with the condition frequently experience psychiatric disorders that adversely influence their quality of life and ability to manage the disease effectively. **Aim:** To assess the prevalence and pattern of psychiatric morbidities, diabetic distress, and psychological well-being among patients with type 2 diabetes mellitus (T2DM).

**Materials and Methods:** A cross-sectional study was conducted at S. Nijalingappa Medical College, Bagalkot, Karnataka, among 90 patients aged 31–60 years diagnosed with T2DM. Patients with a previous history of psychiatric illness or severe comorbid physical illnesses were excluded. Participants underwent structured clinical interviews using validated assessment tools, including the Mini-International Neuropsychiatric Interview (MINI-Plus 7.0.2) for psychiatric morbidity, the Diabetes Distress Scale (DDS) for diabetic distress, and the WHO-5 Well-Being Index for assessment of psychological well-being. Data were analyzed using SPSS version 19.0. The chi-square test and independent-samples t-test were used for statistical analysis, with  $p < 0.05$  considered statistically significant.

**Results:** Psychiatric morbidity was identified in 36.7% of participants, with major depressive episode (21.1%) being the most frequently observed psychiatric morbidity, followed by alcohol use disorder (8.9%). Diabetic distress was present in 43.3% of participants, while 55.6% reported a positive sense of well-being. Duration of diabetes treatment was significantly associated with diabetic distress ( $p = 0.002$ ) and well-being ( $p < 0.05$ ). Participants with a longer duration of treatment reported greater diabetic distress, whereas those receiving treatment for less than five years reported better well-being.

**Conclusion:** Psychiatric morbidities and diabetic distress were common among patients with T2DM, with treatment duration showing a significant association with both diabetic distress and psychological well-being. Routine assessment of psychiatric symptoms, diabetes-related distress, and psychological well-being may facilitate comprehensive management of patients with T2DM.

**Keywords:** T2DM, Major Depressive Episode, Diabetic Distress, Treatment Duration, Well-being.

## INTRODUCTION

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disorder characterized by high blood glucose levels resulting from impaired insulin secretion or insulin resistance. It is a significant global health concern, affecting millions of individuals worldwide.<sup>[1]</sup> Recent estimates indicate that approximately 77 million adults in India are living with diabetes, a number projected to exceed 134 million by 2045.<sup>[2]</sup> Beyond its physical consequences, T2DM has been recognized as a complex condition associated with various psychiatric morbidities and psychological distress, which can significantly impact the overall well-being and management of the disease.<sup>[3]</sup>

Psychiatric morbidities refer to a range of mental health conditions that coexist with T2DM, including depression, anxiety disorders, bipolar disorder, and schizophrenia.<sup>[4]</sup> These conditions not only contribute to the burden of illness but also influence treatment adherence, self-care behaviours, and overall glycaemic control.<sup>[5]</sup> The presence of psychiatric comorbidities, particularly depression and anxiety, has been associated with poorer glycemic control and an increased risk of diabetes-related complications, underscoring the need for integrated mental health care in diabetes management in India.<sup>[6]</sup> It has also been associated with increased healthcare utilization and reduced quality of life.<sup>[7]</sup> In addition to psychiatric morbidities, diabetic distress is a psychological aspect that warrants attention in individuals with T2DM.<sup>[8]</sup> Diabetic distress encompasses emotional and psychological responses to living with diabetes, including feelings of frustration, fear, guilt, and distress related to self-management tasks, fear of complications, and the social stigma associated with the disease. Diabetic distress can significantly impact an individual's ability to cope with the demands of diabetes self-care and can lead to suboptimal treatment outcomes.<sup>[9]</sup>

Understanding the prevalence of psychiatric morbidities and diabetic distress in patients with T2DM is crucial for effective management and holistic care. By identifying the extent of these psychological challenges, healthcare providers can develop targeted interventions to address mental health needs and improve overall patient well-being.<sup>[10]</sup> However, despite the recognized importance of psychiatric morbidities and diabetic distress in T2DM, there remains a need for comprehensive research to determine the prevalence rates and associated factors.<sup>[11]</sup>

Therefore, this study aimed to examine the prevalence of psychiatric morbidities and diabetic distress in patients with T2DM. Through a comprehensive literature review and data synthesis, this research aims to contribute to the existing body of knowledge by providing an updated understanding of the prevalence rates of psychiatric morbidities and diabetic distress in the T2DM population. The findings of this study aim to emphasize the

importance of integrating mental health care into diabetes management and support the development of targeted interventions to enhance patient well-being and improve diabetes outcomes.

### Aim and Objectives:

To assess the prevalence and pattern of psychiatric morbidities, diabetic distress, and psychological well-being among patients with type 2 diabetes mellitus (T2DM).

1. To assess the severity of diabetic distress and the level of psychological well-being among patients with T2DM.
2. To determine the association of psychiatric morbidities, diabetic distress, and psychological well-being with selected sociodemographic and clinical characteristics of patients with T2DM.
3. To examine the relationship between diabetic distress, psychological well-being, and psychiatric morbidities among patients with T2DM.

## MATERIALS AND METHODS

This hospital-based cross-sectional study was conducted at a tertiary care hospital in Bagalkot, Karnataka, from June 2023 to August 2023. Ethical approval was obtained from the Institutional Ethics Committee of S. Nijalingappa Medical College and H.S.K. Hospital, Bagalkot. Patients attending the Department of Endocrinology, either as outpatients or inpatients, as well as those referred to the Department of Psychiatry for mental health-related complaints, were screened for eligibility. Patients fulfilling the predefined inclusion and exclusion criteria were enrolled in the study. A hospital-based cross-sectional study, conducted in a tertiary care hospital situated in Bagalkot, Karnataka. The study was conducted during the period of June 2023 to August 2023. Ethical clearance was obtained from the Institutional Ethics Committee. Patients who presented to the Department of Endocrinology and those who were referred to the Department of Psychiatry for mental health-related complaints at S N Medical College and Hospital, Bagalkot, either on an outpatient or inpatient basis, who fulfilled the inclusion criteria, were included in the study.

**Sample Size:** Sample size estimation was done using Cochran's sample size formula with finite population correction. The estimated sample size is 90. The prevalence estimate used for sample size calculation was based on the study by Adya Shanker Srivastava et al. [Srivastava AS, Nair A, Singh SK, Tripathi MN, Pandit B, Yadav JS. Study on psychiatric morbidities in patients with newly (recently) detected type 2 diabetes mellitus. *Open J Psychiatry Allied Sci.* 2016;7(2):132-136. doi:10.5958/2394-2061.2016.00021.5.] Study on psychiatric morbidities in patients with newly(recently) detected type 2 diabetes mellitus.

### Inclusion Criteria

- Patients between the ages of 31 – 60 years, who are diagnosed with type 2 diabetes mellitus, according to World Health Organisation guidelines.
- Patients giving written informed consent.

### Exclusion Criteria

- Patients with a history of psychiatric illness.
- Patients with a history of any other physical illness (Hypertension, Thyroid disorder, Ischaemic heart disease, renal failure, liver failure, cerebrovascular accidents, and respiratory conditions assessed using a pre-designed questionnaire and review of medical reports).

### Materials:

1. **Pre-Designed Interview Questionnaire:** It includes details regarding socio-demographic profile, chief complaints, brief history of presenting illness, any significant past and family history, and general physical examination of the patients.
2. **Mini Plus 7.0.2-** The Mini International Neuropsychiatric Interview (M.I.N.I. Plus) is a structured diagnostic interview, developed to assess the diagnoses of psychiatric patients according to DSM-V and ICD-10 criteria. It assesses the 17 most common disorders in mental health. The disorders investigated are the most important to identify in clinical and research settings.<sup>[5]</sup> The assessment takes about 15 mins.<sup>12</sup>
3. **Diabetic Distress Screening Scale:** Living with diabetes can sometimes be tough. There may be many problems and hassles concerning diabetes. The DDS is a 17-item measure (DDS17) that uses a Likert scale, with each item scored from 1 (no distress) to 6 (serious distress), concerning distress experienced over the last month. Problems may range from minor hassles to major life difficulties.<sup>[6]</sup> This tool takes about 10 mins to be answered. It considers a mean item score of 3 or more as a level of distress worthy of clinical attention.<sup>[13]</sup>

4. **WHO-5 Well-Being Scale:** It is a short, self-administered measure of well-being over the last 2 weeks. It consists of 5 positively worded items that are rated on a 6-point Likert scale. The raw scores are transformed to a score from 0 to 100, with lower scores indicating worse well-being. A score of  $\leq 50$  indicates poor well-being and suggests further investigation into possible symptoms of depression. A score of 28 or below is indicative of depression.<sup>[14]</sup>

**Statistical analysis:** Statistical analysis was done using SPSS software 19.0. The data obtained were tabulated in Excel and analysed. Quantitative data were expressed as mean, and nonparametric data were expressed as median. Percentages were used to represent qualitative data and Chi-square test for proportions in qualitative data was used.  $p < 0.05$  was considered statistically significant.

## RESULTS

Table 1 summarizes the sociodemographic and clinical characteristics of the study participants. The mean age of the participants was  $49.08 \pm 9.42$  years, with the largest proportion belonging to the 41–50-year age group (31.1%), followed by the 51–60-year age group (28.9%). Males constituted 52.2% of the study population, while females accounted for 47.7%. Nearly half of the participants were from urban areas (51.1%), while 48.9% were from rural areas.

Regarding educational status, secondary education was the most common level of education (25.6%), followed by higher secondary education and graduation (23.3% each). Homemakers constituted the largest occupational group (35.6%), followed by farmers (21.1%). With respect to socioeconomic status, 62.2% of participants belonged to the middle socioeconomic class, while 37.8% belonged to the lower socioeconomic class. The mean duration of treatment for diabetes was  $5.72 \pm 4.34$  years, with 56.7% of participants receiving treatment for less than five years and 43.3% for more than five years.

**Table 1: Sociodemographic and clinical characteristics of the participants.**

| Variable         | N (%)             |
|------------------|-------------------|
| Age (years)      | 49.08 $\pm$ 9.42* |
| 31-40            | 23(25.6)          |
| 41-50            | 28(31.1)          |
| 51-60            | 26(28.9)          |
| >60              | 13(14.4)          |
| Sex              |                   |
| Male             | 47(52.2)          |
| Female           | 43(47.7)          |
| Domicile         | 46(51.1)          |
| Urban            | 44(48.9)          |
| Rural            |                   |
| Education        | 13(14.4)          |
| Illiterate       | 12(13.3)          |
| Primary          | 23(25.6)          |
| Secondary        | 21(23.3)          |
| Higher secondary | 21(23.3)          |
| Graduate         |                   |
| Occupation       | 14(15.6)          |

|                       |            |
|-----------------------|------------|
| Business              | 4(4.4)     |
| Clerical              | 19(21.1)   |
| Farmer                | 32(35.6)   |
| Homemaker             | 6(6.7)     |
| Skilled               | 1(1.1)     |
| Semiskilled           | 14(15.6)   |
| Unemployed            |            |
| Socioeconomic status  | 34(37.8)   |
| Lower class           | 56(62.2)   |
| Middle class          | 0(0)       |
| Upper class           |            |
| Duration of treatment | 5.72±4.34* |
| <5 years              | 51(56.7)   |
| >5 years              | 39(43.3)   |

\*Mean Value

Table 2 presents the prevalence and distribution of psychiatric morbidities among the study participants by sex. Overall, psychiatric morbidity was identified in 33 (36.7%) participants. Major depressive episode was the most frequently observed psychiatric morbidity, affecting 19 (21.1%) participants, followed by alcohol use disorder in 8 (8.9%), generalized anxiety disorder in 3 (3.3%), nicotine dependence syndrome in 2 (2.2%), and panic disorder in 1 (1.1%).

Major depressive episode was more frequently reported among males than females (27.6% vs. 13.95%), while alcohol use disorder and nicotine dependence syndrome were reported exclusively among male participants. Generalized anxiety disorder and panic disorder were observed only among female participants. Overall, psychiatric morbidity was absent in 57 (63.3%) participants, with a higher proportion among females than males (73.3% vs. 53.3%).

**Table 2: Prevalence and distribution of psychiatric morbidities among the study participants**

| Psychiatric morbidity        | Male (n=47) | Female (n=43) | Total (n=90) |
|------------------------------|-------------|---------------|--------------|
| Major depressive episode     | 13(27.6)    | 6(13.95)      | 19(21.1)     |
| Alcohol use disorder         | 8(17.8)     | 0(0)          | 8(8.9)       |
| Generalised anxiety disorder | 0(0)        | 3(6.7)        | 3(3.3)       |
| Panic disorder               | 0(0)        | 1(2.2)        | 1(1.1)       |
| Nicotine dependence syndrome | 2(4.4)      | 0(0)          | 2(2.2)       |
| No psychiatric morbidity     | 24(53.3)    | 33(73.3)      | 57(63.3)     |

Table 3 shows the prevalence of diabetic distress and psychological well-being among the study participants according to sex. Overall, diabetic distress was present in 39 (43.3%) participants, while 51 (56.7%) did not report diabetic distress. Diabetic

distress was observed in 46.8% of males and 39.5% of females. Regarding well-being, 50 (55.6%) participants reported a positive sense of well-being, whereas 40 (44.4%) did not. Well-being was reported by 48.9% of males and 62.8% of females.

**Table 3: Prevalence of diabetic distress and well-being**

| Variable          | Male (n=47), n(%) | Female (n=43), n(%) | Total (n=90), n(%) |
|-------------------|-------------------|---------------------|--------------------|
| Diabetic distress |                   |                     |                    |
| Present           | 22(46.8)          | 17(39.5)            | 39(43.3)           |
| Absent            | 25(53.2)          | 26(60.5)            | 51(56.7)           |
| Well-being        |                   |                     |                    |
| Present           | 23(48.9)          | 27(62.8)            | 50(55.6)           |
| Absent            | 24(51.1)          | 16(37.2)            | 40(44.4)           |

Table 4 presents the association between selected demographic and clinical variables and psychiatric morbidity among the study participants. Of the 90 participants, 33 (36.7%) had psychiatric morbidity, while 57 (63.3%) did not. The distribution of psychiatric morbidity across the different age groups did not differ significantly ( $p = 0.46$ ). Psychiatric morbidity was significantly more common among males than females (66.7% vs. 33.3%;  $p < 0.05$ ). No statistically significant association was observed between duration of diabetes treatment and psychiatric morbidity ( $p = 0.45$ ).

**Table 4: Association of demographic variables with psychiatric morbidities**

| Variable | Psychiatric morbidity    |                         | p-value |
|----------|--------------------------|-------------------------|---------|
|          | Present<br>n(%)=33(36.7) | Absent<br>n(%)=57(63.3) |         |
| Age      |                          |                         | .46     |
| 31-40    | 9(27.3)                  | 14(24.6)                |         |
| 41-50    | 7(21.2)                  | 21(36.8)                |         |
| 51-60    | 11(33.3)                 | 15(26.3)                |         |
| >60      | 6(18.2)                  | 7(12.3)                 |         |
| Gender   |                          |                         | <.05*   |
| Male     | 22(66.7)                 | 25(43.8)                |         |

|                       |          |          |     |
|-----------------------|----------|----------|-----|
| Female                | 11(33.3) | 32(56.2) |     |
| Duration of treatment |          |          |     |
| <5 years              | 17(51.5) | 34(59.6) | .45 |
| ≥5 years              | 16(48.5) | 23(40.4) |     |

\*p-value< .05: statistically significant; p-value has been estimated by chi-square test

Table 5 presents the association between selected demographic and clinical variables and diabetic distress among the study participants. Overall, diabetic distress was present in 39 (43.3%) participants and absent in 51 (56.7%). No statistically significant association was observed between age group and diabetic distress ( $p = 0.99$ ) or between sex and diabetic distress ( $p = 0.29$ ).

In contrast, duration of diabetes treatment was significantly associated with diabetic distress ( $p = 0.002$ ). Among participants with diabetic distress, 61.5% had been receiving treatment for more than 5 years, compared with 29.4% among those without diabetic distress. Conversely, 38.5% of participants with diabetic distress had a treatment duration of less than 5 years, compared with 70.6% of those without diabetic distress.

**Table 5: Association between demographic variables and diabetic distress**

| Variable              | Diabetic distress        |                         | p-value |
|-----------------------|--------------------------|-------------------------|---------|
|                       | Present<br>n(%)=39(43.3) | Absent<br>n(%)=51(56.7) |         |
| Age                   |                          |                         |         |
| 31-40                 | 10(25.6)                 | 13(25.5)                | .99     |
| 41-50                 | 12(30.8)                 | 16(31.4)                |         |
| 51-60                 | 11(28.2)                 | 15(29.4)                |         |
| >60                   | 6(15.4)                  | 7(13.7)                 |         |
| Sex                   |                          |                         |         |
| Male                  | 23(59)                   | 24(47)                  | .29     |
| Female                | 16(41)                   | 27(53)                  |         |
| Duration of treatment |                          |                         |         |
| <5 years              | 15(38.5)                 | 36(70.6)                | .002*   |
| >5 years              | 24(61.5)                 | 15(29.4)                |         |

\*p-value< .05, statistically significant; p-value has been estimated by chi-square test

Table 6 presents the association between selected demographic and clinical variables and well-being among the study participants. Overall, 50 (55.6%) participants reported a positive sense of well-being, while 40 (44.4%) did not. No statistically significant association was observed between age group and well-being ( $p = 0.99$ ) or between sex and well-being ( $p = 0.89$ ).

However, duration of diabetes treatment was statistically significantly associated with well-being ( $p < 0.05$ ). Among participants reporting well-being, 72.0% had been receiving treatment for less than 5 years, compared with 30.0% among those without well-being. Conversely, 28.0% of participants with well-being had a treatment duration of more than 5 years, compared with 70.0% of those without well-being.

**Table 6: Association of demographic variables with well-being**

| Variable              | WELL-BEING            |                         | p-value |
|-----------------------|-----------------------|-------------------------|---------|
|                       | Present n(%)=50(55.6) | Absent<br>n(%)=40(44.4) |         |
| Age                   |                       |                         |         |
| 31-40                 | 13(26)                | 10(25)                  | .99     |
| 41-50                 | 15(30)                | 13(32.5)                |         |
| 51-60                 | 15(30)                | 11(27.5)                |         |
| >60                   | 7(14)                 | 6(15)                   |         |
| Sex                   |                       |                         |         |
| Male                  | 23(46)                | 24(60)                  | .89     |
| Female                | 27(54)                | 16(40)                  |         |
| Duration of treatment |                       |                         |         |
| <5 years              | 36(72)                | 15(30)                  | <.05    |
| >5 years              | 14(28)                | 25(70)                  |         |

\*p-value< .05: statistically significant; p-value has been estimated by chi-square test

## DISCUSSION

Psychiatric morbidities were found in 36.7% of the total participants in this study. Among them, the highest proportion was observed in the 51-65 age group (33.3%), followed by the 31-40 age group (27.3%). The association between sex and psychiatric

morbidities in T2DM patients was found to be statistically significant ( $p < 0.05$ ). A higher proportion was observed among males (66.7%) compared to females (33.3%). This result suggests that sex may play a significant role in the presence of psychiatric morbidities in T2DM patients, with males showing a higher vulnerability, as evidenced by studies done in the past.<sup>[15]</sup>

The study found that 21.1% of the total participants experienced a major depressive episode. Among the male participants, 24.5% reported such an episode, while 17.8% of the female participants reported the same. These findings suggest that there is a considerable burden of depression in patients with T2DM, and while the prevalence is slightly higher in males, it is not significantly different from females. Alcohol use disorder was observed in 8.9% of the participants. Interestingly, no female participant reported alcohol use disorder, in contrast to 17.8% of male participants who did. This significant gender difference is consistent with some previous studies that have consistently shown a higher prevalence of alcohol use disorder in males compared to females in the general population.<sup>[16]</sup>

Generalised anxiety disorder was found to be present in 3.3% of the participants, who were all females, and nicotine dependence syndrome was identified in 2.2% of the participants, with all cases found among male participants. Only one female participant experienced panic disorder, and it contributed to 1.1% of the total participants.

The study revealed that 43.3% of the total participants experienced diabetic distress. 59% of diabetic distress was seen in males, while 41% was seen in females. Although the prevalence of diabetic distress was slightly higher in males, the difference was not statistically significant. These results are in line with a previous study done in AIIMS Odisha, which showed a 42% prevalence of diabetic distress among T2DM. 17 Regarding well-being, 55.6% of the total participants reported having a sense of well-being and 44.4% reported the absence of well-being among the study population. This finding highlights the emotional challenges and psychosocial burden experienced by a substantial portion of individuals living with T2DM.

The association between the duration of treatment and psychiatric morbidities in T2DM patients did not reach statistical significance ( $p = 0.45$ ). Among the participants with psychiatric morbidities, 51.5% had a treatment duration of less than 5 years, and 48.5% had a treatment duration of more than 5 years. The analysis revealed a statistically significant association between the duration of treatment and diabetic distress ( $p < 0.05$ ). Among participants experiencing diabetic distress, 61.5% had a treatment duration of more than 5 years, while only 38.5% had a treatment duration of less than 5 years. These results suggest that longer treatment duration is associated with a higher prevalence of diabetic distress, in line with the previous study by Majed O et al.<sup>[18]</sup>

A statistically significant association was also revealed in the analysis between the duration of treatment and well-being ( $p < 0.05$ ). A higher prevalence of well-being was observed among patients with treatment durations of less than 5 years (72%) compared to those with treatment durations of more than 5 years (28%).

**Strengths of the study:** The study assessed multiple important psychological dimensions of type 2 diabetes mellitus, including psychiatric morbidity, diabetic distress, and psychological well-being, providing a broader understanding of the psychosocial burden associated with the disease. Psychiatric morbidities were assessed using the MINI-Plus 7.0.2, a structured and standardized diagnostic interview, thereby improving the systematic assessment of psychiatric disorders. Validated assessment tools, including the Diabetes Distress Scale and WHO-5 Well-Being Index, were used to evaluate diabetic distress and psychological well-being, respectively. The study examined the association of psychiatric morbidity, diabetic distress, and well-being with important demographic and clinical variables, including age, sex, and duration of diabetes treatment. The study identified a statistically significant association between duration of diabetes treatment and both diabetic distress and well-being, highlighting the importance of considering treatment duration when evaluating the psychological health of patients with type 2 diabetes mellitus. **Limitations:** Cross-sectional nature of the study design and relatively small sample size of the study can be considered as limitations of this research.

## CONCLUSION

Psychiatric morbidities were observed in approximately one third of the participants, with the highest prevalence found in the 51-65 age group. Major depressive episodes and alcohol use disorder were among the prominent psychiatric conditions identified, with notable gender differences in their prevalence. The study highlights the substantial burden of diabetic distress in the T2DM population. Furthermore, approximately half of the participants reported having a sense of well-being, underlining the emotional challenges and psychosocial burden faced by individuals living with T2DM. Notably, the duration of treatment showed significant associations with both diabetic distress and well-being. Future longitudinal studies with larger and more diverse cohorts are warranted to further investigate the complex relationships between psychiatric morbidities, diabetic distress, well-being, and the duration of treatment in the context of T2DM. Implementing comprehensive care approaches that address both physical and psychosocial aspects can contribute to improved patient outcomes and a better quality of life for individuals living with T2DM. Overall, the findings of this study provide valuable insights into the emotional and psychological aspects of T2DM management, highlighting the importance of integrating mental health considerations into diabetes care.

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