

# Incidence of Psychiatric Morbidities among Patients with Diabetes at a Tertiary Healthcare Centre: An Observational Study

Nikunj Gokani<sup>1</sup>, Prince<sup>2</sup>

<sup>1</sup>Consultant Psychiatrist and Sexologist at Allo Health, Mysore

<sup>2</sup>Consultant Psychiatrist at Seva Hospital and De-addiction Centre, Kurukshetra, Haryana, India

**Abstract:** ***Introduction:** Over the years, several scholars have expressed a strong interest in the relationship between psychiatric and diabetes. Mental health, a significant aspect of this concern, has gained prominence in recent years, particularly in the context of chronic mental illnesses. Effective sugar control plays a crucial role, as poor management may contribute to or worsen psychiatric morbidities. The increased prevalence of psychiatric illnesses in diabetic patients underscores the importance of assessing the impact of comorbid conditions in individuals with diabetes, yielding meaningful clinical insights. **Materials and methods:** A single centric cross-sectional observational study conducted on 375 patients with Diabetes Mellitus with HbA1C value range 6.5% to 8% only, who presented to the Inpatient and Outpatient department of a tertiary hospital in Maharashtra between October 2018 to September 2020 and who were aged above 18 years were included in this cross-sectional study. **Results:** The mean age of the participants was 55.04 years ( $\pm 12.894$ ). Majority (77.9%) of participants did not have any psychiatric morbidity. Major depressive disorder was present in 37 (9.90%) participants according to MINI interview. Out of which 32 patients had severity to be mild and only 5 patients to be of moderate severity Major depressive disorder. **Conclusion:** The identified prevalence of psychiatric morbidities highlights the diverse spectrum of mental health challenges faced by individuals with diabetes. The study's demographic insights provide a nuanced understanding of the sociodemographic factors associated with it.*

**Keywords:** Diabetes Mellitus, Psychiatric Morbidities, Major Depressive Disorder.

## 1. Introduction

Over the years, several scholars have expressed a strong interest in the relationship between psychiatric and diabetes. Thomas Willis assumed in the 17th century that "long sorrow and other depressions" were the cause of diabetes<sup>1</sup>. In The Pathology of Mind, published in 1879, Sir Henry Maudsley said, "Diabetes is a disease which often occurs itself in the families in which insanity prevails." Since diabetes needs meticulous daily treatment control by the patient, it is considered one of the most mentally taxing illnesses<sup>2</sup>. The heightened risk of complications, comorbidities, and diverse social and economic consequences is a notable concern associated with diabetes<sup>3,4</sup>.

Mental health, a significant aspect of this concern, has gained prominence in recent years, particularly in the context of chronic mental illnesses<sup>5</sup>. Effective sugar control plays a crucial role, as poor management may contribute to or worsen psychiatric morbidities. This impact can occur directly through effects on brain function or indirectly through complications, functional limitations, and reduced quality of life<sup>6</sup>. Existing studies indicate that the presence of minor psychological morbidity is linked to nonadherence to diabetes treatment<sup>7,8</sup>. The increased prevalence of psychiatric illnesses in diabetic patients underscores the importance of assessing the impact of comorbid conditions in individuals with diabetes, yielding meaningful clinical insights.

## 2. Material and Methods

Three-hundred and seventy-five patients with Diabetes Mellitus with HbA1C value range 6.5% to 8% only, who presented to the Inpatient and Outpatient department of a tertiary hospital in Maharashtra between October 2018 to September 2020 and who were aged above 18 years were included in this cross-sectional study. The written informed consent was obtained from the patients as well as their family members. We excluded those patients with any comorbidities of Diabetes Mellitus and existing psychiatric illness, comorbid substance uses other than tobacco. The study was initiated after obtaining approval from institutional ethics committee in October 2018 and was done in accordance with Declaration of Helsinki revised in 2013.

Socio demographic data and clinical details of the patient were noted in semi structured proforma. Patients were administered MINI Screen Version 7.02 based on DSM V for screening of psychiatric diagnosis. All the patients with any one of the answer on screening marked as yes, were administered Standard MINI Version 7.02 based on DSM V for diagnosis of psychiatric diagnosis and further After establishing a diagnosis, diagnosis specific tools were administered in order to know the severity of illness: -

- 1) Hamilton Depression Rating Scale
- 2) Hamilton Anxiety Rating Scale
- 3) Severity of Alcohol Dependence Questionnaire
- 4) Spin Social Phobia Inventory
- 5) Yale Brown Obsessive Compulsive Scale
- 6) Young Mania Rating Scale
- 7) Clinician Administered Scale for PTSD

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The data was compiled in master chart and for analysis of this data; SPSS (Statistical package for social sciences) Version 20 was used. First, the descriptive statistics were computed. These included the range, mean and standard

deviation for quantitative variables. The class interval frequencies were obtained, wherever relevant.

3. Results

Table 1: Socio-Demographic characteristics of Diabetes Patients

S. No.	Variable	Frequency		Percentage
1.	Age Mean± Standard deviation 55.04±12.894	20*-40 years	54	14.4
		41-60 years	194	51.7
		61- 80 years	117	31.2
		Above 80 years	10	27
2.	Sex	Male	126	33.6
		Female	249	66.4
3.	Marital status	Married	359	95.7
		Single	8	2.1
		Widowed	8	2.1
		Separated	0	0
4.	Religion	Hindu	279	74.4
		Muslim	91	24.3
		Others	5	1.3
5.	Occupation	Unemployed	0	0
		Semi-professional	20	5.3
		Unskilled-worker	20	5.3
		Professional	26	6.9
		Skilled worker	50	13.3
		Semi-skilled worker	57	15.2
		Arithmetic Skill Jobs	87	23.2
6.	Socioeconomic status	Housewife	115	30.7
		Lower Middle Class	32	8.5
		Upper lower class	36	9.6
		Upper middle class	285	76.0
7.	Duration of treatment of DM	Upper class	22	5.9
		Upto1 year	42	11.2
		2-8 years	243	64.8
		9-20 years	68	18.1
	BMI	Above 20 years	22	5.9
		<18.5 (underweight)	11	2.9
		18.5-24.9 (healthy weight)	212	56.5
		25.0 – 29.9 (overweight)	132	35.2
		30.0 – 34.9 (obesity I)	16	4.3
		35.0 – 39.9 (obesity II)	3	0.8
		≥40 (extreme obesity)	1	0.3

Almost two third 246 (65.60%) of participants took daily 3-4 pills per day for DM treatment followed by 101 (26.90%) participants took 1-2 pills and very few participants 28 (7.5%) took more than 5 pills per day. Almost half 195 (52%) of the study participant had waist to hip ratio 0.951 to 0.97 followed by 135 (36%) being more than 0.971 and 45 (12%) less than 0.95. Majority 146 (38.9%) of participants had HbA1c of 6.5 to 7 percent. Nearly equal numbers were found 102 (27.2%) in 7.01- 7.49 and 127 (33.9%) in more than 7.5%. Mean HbA1c value found in study was 7.28.

Majority (77.9%) of participants did not have any psychiatric morbidity. Major depressive disorder was present in 37 (9.90%) participants according to MINI interview. Out of which 32 patients had severity to be mild and only 5 patients to be of moderate severity Major depressive disorder. It has been assessed using Hamilton Depression Rating Scale. Alcohol use disorder was present in 10 (2.7%) participants according to MINI interview. Out of which 7 patient had severity to be moderate and only 3 patients to be of mild severity alcohol use disorder. It has been assessed

using Severity of Alcohol Dependence Questionnaire (SADQ-C).

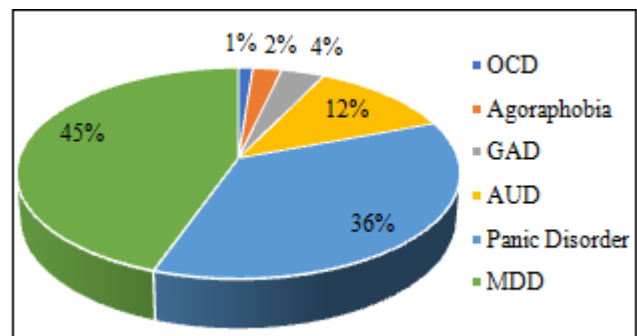


Figure 1: Distribution of participants based on prevalence of individual psychiatric morbidity

4. Discussion

In this study mean age of participants was 55.04 years with about half of the participants belonging to adult age group (41-60 years). In the few studies, in DM type II it was found

to be 47.8 years, 47.66 years in age group 36 to 50 years respectively<sup>9,10,11</sup>. Suggesting that during the age group as per our study treatment for diabetes mellitus is commonly taken.

Majority 146 (38.9%) of participants had HbA1c of 6.5 to 7 percent. Multiple studies have used this as a primary parameter for diagnosis of DM and assess whether DM is controlled or not<sup>9,12,13,14</sup>.

Age of onset of diabetes mellitus was seen majorly (70.70%) in 41 to 60 years, in our study. DM is commonly diagnosed in age group same as the one we found in our study, i.e 10-15 years<sup>15,10</sup>.

Majority participants (64.30%) had been receiving treatment for DM since 2- 8 years. This could be as it requires time for pharmacological and non-pharmacological to control blood sugar levels. Thereby this helps in maintaining a good control of diabetes. Marriage could be motivational factor for considering treatment and better prognosis. This is supported in our study as majority of patients have DM well controlled as per their HbA1c value.

21.60% of participants were diagnosed with psychiatric morbidity with help of MINI in our study. A study conducted at tertiary centre in north India, crude prevalence of the psychiatric comorbidity in T2DM patients was around 58.4%<sup>16</sup>. In our study, major depressive disorder was present in 9.10% participants.

As per the findings in meta-analysis to study prevalence of depression in Type II diabetics, diabetes doubled the odds of depression.<sup>71</sup> As per study conducted in north India, 42% in Type II diabetics are depressed, much more than that in nondiabetic population<sup>17</sup>. These results vary compared to ours as they had included pre-existing depression/anxiety before the diagnosis of DM were considered for the study.

HAM-D a 42% with Type II diabetes had depression. On HAM-A, a total 34% with T2DM patients suffer from anxiety<sup>17</sup>. According to MINI interview panic disorder in 30 (8%), generalized anxiety disorder in 3 (0.8%), agoraphobia in 2 (0.5%) was observed in our study where as in compare in a 15-nation study of anxiety disorders in people with type 2 diabetes mellitus prevalence was 18%. Most prevalent anxiety disorders were generalized anxiety disorder (8.1%) and panic disorder (5.1%)<sup>18</sup>. In this study India had prevalence of 0.5% in anxiety spectrum which had GAD only. These results corroborate with our results.

A study conducted at tertiary centre in north India, depression was 41.9%, GAD was 6.8%, panic disorder in 6.0%, Social phobia in (2.6%) and agoraphobia (0.9%) was seen inpatient.<sup>39</sup> While in our study according to MINI interview followed by panic disorder 30 (8%), alcohol use disorder 11 (2.90%), generalized anxiety disorder in 3 (0.8%), agoraphobia in 2 (0.5%) and obsessive-compulsive disorder in 1 (0.3%). Similar results are observed in both studies. As per the California Health Interview Survey, 2011-12, 51.6% patients with diabetes had mental/emotional disorder or alcohol/drug abuse<sup>19</sup>.

In this study, age of the participants doesn't influence presence of psychiatric diagnosis. As it has been suggested that middle aged individuals with diabetes have more psychiatric morbidity. This is supported by some of the studies showing no association among age and psychiatric morbidity<sup>20, 21, 13</sup>. Previous researchers have reported a significant association of age with anxiety, depression and other psychological disorders<sup>22, 23</sup>. These findings are opposing to our study. However, in our study majority participant with psychiatric illness belonged to age group of 60 to 80 years during which mood and anxiety disorders are less common.

## 5. Conclusion

In conclusion, the findings underscore the intricate interplay between physical and mental health, emphasizing the need for integrated care approaches in the management of diabetes.

The identified prevalence of psychiatric morbidities highlights the diverse spectrum of mental health challenges faced by individuals with diabetes. The study's demographic insights provide a nuanced understanding of the sociodemographic factors associated with it. These results prompt a call for heightened awareness and comprehensive healthcare strategies that address both the physical and mental well-being of diabetic patients. The study's focus on psychiatric liaison consultations within a multispecialty setting further accentuates the importance of collaborative efforts across medical disciplines. As we navigate the complexities of diabetes management, recognizing and addressing the coexistence of psychiatric morbidities becomes paramount. This research contributes valuable insights to the existing body of knowledge, paving the way for future studies aimed at refining interventions, enhancing patient care, and advancing the holistic understanding of the intricate relationship between diabetes and mental health.

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