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Prevalence of psychiatric co-morbidities among diabetes patients-a cross sectional study

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Abstract:

Introduction: Diabetes mellitus has been described as the most complex and demanding of any chronic disease to manage. Who estimates about 350 million people to be affected by diabetes mellitus world wide by the year 2030, which is more than double from year 2000. Among various co-morbidities associated with diabetes , psychiatric manifestation form a major subset. Evidence of depression and anxiety being common in patients with diabetes mellitus. Such co-morbidities being undetected or undertreated has shown impact on general well being as result of poor quality of life.

Aim: To estimate the prevalence of psychiatric comorbidities in patients with diabetes mellitus and to find the co-relation between the glycemic profile and the psychiatric co-morbidities.

Methodology: Patients attending diabetology out-patient department with a diagnosis of diabetes mellitus were evaluated for psychiatric disorders using Mini International neuropsychiatric interview (M.I.N.I)

Results: Out of the sample comprising of 50 diabetic individuals, 30%(n=15) were found to have major depressive episode , 26% (n=13) were found to have panic disorder and n=1 had alcohol dependence syndrome.

Conclusion: This study with the smaller sample size reveals the presence of psychiatric co-morbidities among individuals with long standing diabetes mellitus .However future researches on a larger sample might yield a better prevalence which would help to assess the burden of psychiatric comorbidity due to long standing diabetes mellitus.

Introduction:

Diabetes mellitus is a chronic and heterogenous metabolic disorder defined as “a metabolic abnormality characterized by hyperglycemia and disturbance of carbohydrate , fat and protein metabolism that are associated with absolute or relative deficiency in insulin secretion and /or

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insulin action ".Diabetes mellitus has also been described as the "most complex and demanding " of any chronic disease to manage.

The scourage of diabetes has always followed a rising trend resulting in an increased prevalence in all the six inhabited continents across the globe. Diabetes mellitus is projected to affect Asian Indians most among all others in the world by 2025. The World Health Organisation has estimated that around 350 million people to be affected by diabetes mellitus by the year 2030, which is more than double from 2000(1).

The chronic nature of diabetes increases the possibility for developing various co-morbidities. Among them psychiatric illness forms an important subset. Depression and anxiety are the two co-morbid conditions associated with diabetes mellitus. Previous studies on prevalence of psychiatric illness among diabetic patients showed that depression was significantly higher in diabetic women (28%) than in diabetic men (18%) (2)

Relationship between diabetes and psychiatric disorder are multifaceted. Shared risk factors such as genetic pre-disposition, lifestyle factor, and socio economic factors may increase the vulnerability to both the conditions. (3) The physiological consequence of diabetes, including fatigue, pain and complications can contribute to psychological distress and increase the risk of depression and anxiety.

The presence of psychiatric comorbidity can significantly impair diabetes self management. Depression can lead to anhedonia, fatiquability and difficulties with self care activities such as medication adherence and blood sugar monitoring . Anxiety can exacerbate hyperglycemia and increase the risk of acute complication (4).

The high prevalence of psychiatric comorbidity among individual with diabetes underscores the importance of a holistic approach to patient care. By addressing both physical and mental health needs, health care providers can improve glycemic control , reduce risk of complication and enhance the over all quality of life for individuals living with diabetes. Hence we objective is to find the socio economic profile and its corelates with the to the prevalence of various psychiatric comorbidities .

Materials and methods:

This cross-sectional study was conducted in the Medicine and Endocrinology Departments in a teritiary care centre, Peelamedu, Coimbatore, from January 2014 to June 2014.Ethical approval was obtained from the Institutional Ethics Committee (IEC approval number: 14/405)

Inclusion criteria: The study included patients with diagnosis of diabetes mellitus for 5 years, aged between 30 and 60 years, of all genders and who give written informed consent.

Exclusion criteria: Patients with juvenile onset diabetes mellitus, with intellectual disability, those with comorbid neurological conditions such as cerebrovascular accidents or neurodegenerative diseases, individuals experiencing acute exacerbations of chronic illnesses or terminal conditions like malignancy, patients currently on psychotropic medications, and those unwilling to participate in the study were excluded.

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This study involves convenient sampling method and have recruited fifty patients attending diabetology out patient department. Written informed consent was obtained from all participants following a detailed explanation of the study protocol. Participants who expressed their willingness to participate were screened based on the inclusion and exclusion criteria. Eligible participants subsequently underwent a comprehensive interview, which was structured to last approximately 45 minutes.

Data were collected using a semi-structured questionnaire, which included sociodemographic details, clinical history such as the presence of diabetes mellitus, its age of onset, duration, type of diabetes mellitus , type and duration of treatment for diabetes mellitus , adherence to medication, recent HbA1C Level and co-morbid dyslipedemia. The participants were initially categorised into three groups:Fasting, Post prandial and HbA1c levels.

Mini-International Neuropsychiatric Interview (M.I.N.I.) version 5.0 is a brief, structured diagnostic tool for identifying major psychiatric disorders according to DSM-IV and ICD-10 criteria. The M.I.N.I. demonstrates high validation and reliability scores comparable to the Structured Clinical Interviews for DSM Disorders (SCID) and the Composite International Diagnostic Interview (CIDI), while requiring significantly less administration time, with a mean duration of 18.7 ± 11.6 minutes [25]. It is capable of diagnosing a wide range of psychiatric conditions, including mood disorders, anxiety disorders, psychotic disorders, substance use disorders, eating disorders, and personality disorders.

Results:

A total of 50 participants were included in the study. Among them, 16.0% (n = 8) were in the age group of 30-40 years, 36.0% (n = 18) in the age group of 40-50 years, 40.0% (n = 20 in the age group of 50–60 years, and 8.0% (n = 4) were older than 60 years. Females constituted 74% (n = 37) of the sample. Regarding marital status, 94.0% (n = 47) were married, 6.0% (n =3) were unmarried, and 0% (n = 0) were separated. Socioeconomic classification based on the modified Kuppuswamy socioeconomic scale [28] revealed that 0% (n = 0) of participants were from the upper class, 76.0% (n = 38) belonged to the middle class, and 24.0% (n = 12) were from the lower class.(Table 1).

On anlysing the glycemic profile, participants were monitored fasting, Post-prandial and HbA1c level. Results showed that 36 (72%) have elevated fasting sugar levels, 32(64%) have elevated post-prandial sugar levels and while assessing the strict glycemic control, HbA1c was analysed which turned out to be elevated in 27(54%) .(Table 2)

On analysing the prevalence of psychiatric co-morbidities among diabetes patient, depressive disorders are the most common psychiatric comorbidity with a prevalence of 30.0%(n=15) followed by anxiety disorders(panic disorder 6% n=13) and substance use disorders. Only one had recurrent major depressive episode and 10 had dysthymia. (Table 3).

Co-relation of various socio-demographic variables with that of psychiatric co-morbidities was analysed. A positive co-relation between age and marital status with psychiatric co-morbidities was observed with the p value <0.02 and < 0.04.(Table 4). No co-relation was found between the glycemic profile and the psychiatric condition. (Table 5).

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Table 1. Summary of sample characteristics

S.No	Characteristics	Frequency n (%)
1	Age group in years 30-40 40-50 50-60 >60	 8 (16%) 18(36%) 20 (40.0%) 4(8.0%)
2	Gender Male Female	 13(26%) 37 (74%)
3	Socioeconomic class Upper middle lower	 0(0.0%) 38(76.0%) 12(24.0%)
4	Marital status Married Unmarried Separated Widowed	 47(94.0%) 3(6.0%) 0(0%) 0(0%)

Any : refers to presence of any one of the medical comorbidities

Table 2: Glycemic profile of the study population

Glycemic profile	**Levels**	**Frequency (N=50)**	**Percentage (%)**
Fasting blood sugar	**Elevated**	**36**	**72.0**
	Normal	**14**	**28.0**
Post prandial blood sugar	**Elevated**	**32**	**64.0**
	Normal	**18**	**36.0**

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HbA1C	**Elevated**	**27**	**54.0**
	Normal	**23**	**46.0**

Table 3. Prevalence of Psychiatric disorders

Diagnosis	Frequency n(%)
Current Major Depressive Episode	15(30.0%)
Recurrent Major Depressive Episode	1(0.5%)
Current Major Depressive Episode with Melancholic features	0(0.0%)
Dysthymia (current)	10(4.0%)
Current Suicide Risk	0 (0.0%)
Manic/Hypo manic episode	0 (0.0%)
Panic Disorder (Lifetime)	13 (6%)
Limited symptoms (Lifetime)	0 (0.0%)
Panic disorder (current)	13(26.0%)
Panic disorder without agoraphobia	0 (0.0%)
Agoraphobia without panic disorder (current)	0 (0.0%)
Social Phobia	0 (0.0%)
OCD (current)	0 (0.0%)
PTSD	0 (0.0%)
Alcohol dependence	1 (2.0%)
Alcohol abuse	0(0.0%)
Substance dependence	0 (0.0%)
Mood disorder with psychotic features (lifetime and current)	0 (0.0%)
Psychotic disorder (lifetime and current)	0 (0.0%)
Generalised anxiety disorder (current)	0 (0.0%)
Antisocial personality disorder (lifetime)	0 (0.0%)

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Table 4: Association between socio-demographic profile and psychiatric conditions.

Marital status	None	Major depressive episode	Recurrent major depressive episode	Dysthymia	Panic disorder	Alcohol dependence	P value
Married	7(14.0%)	15(30.0%)	1(2.0%)	10(20.0%)	13(26.0%)	1(2.0%)	0.025
Unmarried	3 (6.0%)	0 (0%)	0(0%)	0(0%)	0(0%)	0(0%)	
Socio economic status Upper	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0.999
Middle	8 (16.0%)	13(26.0%)	1(2.0%)	8 (16%)	10 (20.0%)	1(2.0%)	
Lower	2(4.0%)	2 (4.0%)	0(0%)	2 (4.0%)	3(6.0%)	0(0%)	
Age							
30-40 years	1(2.0%)	2 (4.0%)	0 (0%)	0(0.0%)	4(8.0%)	1(2%)	0.043
40-50 years	0(0%)	7 (14%)	0(0%)	6(12.0%)	5(10.0%)	0 (0%)	
50-60 years	6(12.0%)	5 (10.0%)	1(2.0%)	4(8.0%)	4(8.0%)	0(0%)	
>60 years	3(6.0%)	1(2.0%)	0(0%)	0(0%)	0(0%)	0(0%)	

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Table 5: Association between glycemic profile and the psychiatric co-morbidity.

Glycemic profile		None	Major depressive episode	Recurrent major depressive episode	Dysthymia	Panic disorder	Alcohol dependence	P value
Fasting blood sugar	Elevated	10	10	1	8	7	0	0.090
	Normal	0	5		2	6	1	
Post prandial blood sugar	Elevated	8	9	1	7	7	0	0.507
	Normal	2	6		3	6	1	
HbA1C	Elevated	3	9	1	7	7	0	0.701
	Normal	8	6	0	3	6	1	

Discussion:

In this study we had recruited 50 participants, of whom 26% were males and 74% were females with the mean age of 49.46 years. Majority of the patients were in the age group of 40-60 years which is similar to that of the previous studies by Hritu singh et al (5). Participants had diabetes mellitus with the mean duration of 10.06 years (SD-5.101) and with the mean age of onset being 39.48 Years.

MINI scale used for assessing the prevalence of prevalence of psychiatric co-morbidities in our study has been used in previous studies done by Arthur et al. This study found that the prevalence of major depressive episode is 30% ,significantly higher than in the general population while anxiety disorders were noted in 26% of participants. This study align with the previous research by Anderson et al (6) and Andreoulakis et al indicating higher prevalence of depression 15-35%(7,8,9,10) .Second common co-morbid illness found was panic disorder which is contrast with the previous study by Neeraj et al were generalised anxiety disorder was common(11). This discrepancy may be attributed to the different methodologies used in these studies

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This study did not found any corelation between the glycemic control and the depressive disorder and other psychiatric disorders whereas study by Lustman et al showed to have association between depression and poor glycemic control(12). However, findings are not consistent across literature, since a significant amount of studies argue against such association.

Strength of our study is the tool used for assessment of psychiatric co-morbidities included various psychiatric disorders for evaluation. Limitations are small sample size to be generalized. Convenient sampling were done with cross sectional design which limits the ability to establish causaulity between psychiatric disorders and glycemic control.

Conclusion: Psychiatric comorbidity in particular depressive disorder is a great concern in diabetes mellitus. It is not only highly prevalent, but also highly persistent leading toa significant negative impact on both clinical outcome and quality of life. Future research should focus on longitudinal studies to explore the causal relationships between diabetes and psychiatric disorders as well as interventions aimed at improving mental health outcomes in this populations.

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