Psychiatric Comorbidity among Type 2 Diabetes Mellitus Patients

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Citation

Acharya M, Ghimire RH, Karki D, Poudel S. Psychiatric Comorbidity among Type 2 Diabetes Mellitus Patients. *Kathmandu Univ Med J.* 2024;86(2):171-4.

ABSTRACT

Background

The co-occurrence of psychiatric conditions and diabetes mellitus is frequently observed. This coexistence manifests in various ways, leading to a diminished quality of life, heightened healthcare expenses, reduced treatment compliance, suboptimal blood sugar control, and an upsurge in visits to the emergency room.

Objective

To evaluate the prevalence of psychiatric comorbidity in patients with type 2 diabetes at a specialized medical center.

Method

We conducted a cross-sectional study, enrolling eligible type 2 diabetes patients who sought outpatient services. To evaluate the cognitive and emotional aspects of their illness, we employed the Mini International Neuropsychiatric Interview and ICD-10 guidelines. Convenience sampling method was used and 200 patients were included in the study. Their socio-demographic profile, presence of depression, and other psychiatric illnesses were studied.

Result

Among the total screened type 2 diabetes patients, 200 eligible individuals were included in the study. Depression emerged as the most prevalent psychiatric comorbid condition, affecting 30.5% of the patients. Notably, depression rates were slightly higher in female patients and those over 50 years of age. Furthermore, individuals with longer diabetes durations displayed a greater prevalence of depressive episodes, followed by other psychiatric illnesses.

Conclusion

A noteworthy proportion of diabetic patients exhibited comorbid psychiatric conditions. Depression was the most common among diabetics followed by other psychiatric illnesses. The presence of neuropsychiatric illness was commonly seen in diabetics at a later age of life, peaking after 6th decade.

KEY WORDS

Comorbidity, Diabetes mellitus type II, Psychiatry

INTRODUCTION

Diabetes mellitus (DM) is a collection of frequently occurring metabolic disorders characterized by elevated blood sugar levels, which cause physical and psychological disturbances.[1] According to the International Diabetic Federation's 2013 report approximately 9.1% of the adult population could be affected by diabetes.[2] Individuals with diabetes have a twofold increased risk of experiencing depression compared to the general population, and this risk is higher among women.[3] Diabetics with depression and anxiety have increased suicidal thoughts.[4]

Initial denial during the diagnosis of diabetes can contribute to the occurrence of psychiatric symptoms.[5] The knowledge about the disease progression leads to a negative quality of mental health in such a population.[6] The comorbidity between diabetes and psychiatric disorders can present in various patterns ranging from psychological distress to disorders such as depression and schizophrenia, sometimes developing as panic attacks during ketoacidosis.[7] Diabetic control in psychiatric disorders has increased the frequency of high healthcare costs, non-compliance, poor glycemic control, and higher rates of hospital visits.[8]

The management of coexisting diabetes and psychiatric illnesses is unsatisfactory due to the fragmented therapeutic processes involved in managing the two conditions. The care provided is a modifiable risk factor affecting both disease processes. There are few evidence-based protocols in the literature for managing such coexisting conditions.[9-11] Considering these factors, the current study was conducted to evaluate the presence of psychiatric comorbidity in patients with type 2 diabetes mellitus (T2DM). This study aims to explore the prevalence of psychiatric comorbidity among individuals with type 2 diabetes mellitus (T2DM), while the objective is to analyze the correlation between psychiatric comorbidity and sociodemographic as well as clinical factors in diagnosed T2DM patients.

METHODS

This was a cross-sectional descriptive study done from May 17, 2022, to May 17, 2023, at Nobel Medical College Teaching Hospital, Biratnagar, Nepal, where all individuals with a diagnosis of type 2 diabetes mellitus (T2DM) that visited the outpatient department (OPD) were screened for the coexistence of psychiatric illness and were included in the study. Ethical approval was taken from the hospital's Institutional Review Committee (IRC) with reference number (627/2022).

In a study done by Kanwar et al., published in 2019, it was found that around 58.4% of diabetics had a coexistence of psychiatric illness.[12] Accordingly, the minimum sample size was calculated using the formula, $n=z^2pq/d^2$, where n = minimum required sample size, z = 1.96 at 95% confidence interval (CI), p = prevalence, q=1-p, and d = 10% margin error. The minimum sample size calculated was 94 where the prevalence of psychiatric disorder in diabetics was 58.4%.[12] However, during our study 200 patients were eligible for inclusion according to our criteria and were studied. A convenience sampling method was used to include the 200 cases.

All the patients above eighteen years who gave informed consent were included in the study and their data was recorded. The patients with loss of insight, previously diagnosed neuropsychiatric illness, uncooperative patients for data recording and further follow-up, and those who didn't give consent for the study were excluded from the study. Those patients who met the inclusion and exclusion criteria and provided written informed consent were enrolled in the study.

Multiple assessment tools were employed in the study. A thorough demographic profile, disease history taking, and clinical examination of the patients were done along with diagnostic tools such as Mini International Neuropsychiatric Interview 6.0 (MINI 6.0).[13] Patients meeting the criteria of neuropsychiatric illnesses in such clinical examinations and assessment tools were further diagnosed as having neuropsychiatric illnesses with the help of the International Classification of Diseases, Clinical Description and Diagnostic Guidelines, 10th Edition (ICD-10).[14] A single psychiatrist evaluated all the cases and diagnosed the cases as having a psychiatric illness. The presence of a single psychiatrist evaluating all the cases reduced the interpersonal errors among different observers. The collected data was recorded in Microsoft Excel, and further data analysis was done using SPSS version 16.0.

RESULTS

Over a year, patients with T2DM were screened for the study with a required minimum sample size of 93. Among them, 200 eligible patients were included in the study, to increase the study's accuracy. The age range varied from 18 years and above. The majority of patients (45%) fell within the age group of 41 to 50 years. In terms of gender distribution, males accounted for 57.5% of the study population, while females comprised 42.5%. The majority of patients (96%) were married. Regarding education level, 75% of patients had completed at least a matriculation level of education. The majority of the patients were from nuclear families 87.50.

Out of the 200 patients, 132 patients (66%) had psychiatric comorbidity, with psychiatric episodes being single or multiple. The most prevalent psychiatric comorbid illness among these patients was depression in 76 (45.5%) patients. A single episode or recurrent depressive disorder was collectively categorized as a depressive episode. According to Chaudhary et al. major psychiatric illnesses are more common among the population over 50 years of age, so a further analysis was done by stratifying our

sample data into 2 groups of above 50 years and below 50 years to find the accuracy of the findings.[8]

Table 1. Socio-demographic data of the sample

		Male	Female	Total	%
Ages in Years	18 - 30	4	0	4	2.00
	31 – 40	20	10	30	15.00
	41 – 50	51	39	90	45.00
	51 – 60	40	36	76	38.00
Gender		115	85	200	
Marital Status	Single	4	4	8	4.00
	Married	111	81	192	96.00
Education Status	Illiterate	2	3	5	2.50
	School level	86	64	150	75.00
	Bachelor's Degree	20	15	35	17.50
	Master's degree	7	3	10	5.00
Family type	Nuclear	95	80	175	87.50
	Joint	20	5	25	12.5

Table 2. Relationship between Psychiatric Comorbidity and age (n=132)

Psychiatric Comorbidity	Patients Ages > 50 years	%	Patients Ages < 50 years	%
Depressive episode	44	22.00	32	16.00
Other psychiatric illnesses				
Dysthymia	10	5.00	5	2.50
Generalized anxiety disorder	7	3.50	8	4.00
Panic disorder	6	3.00	7	3.50
Social Phobia	4	2.00	4	2.00
Agoraphobia	3	1.50	2	1.00

When stratified into the age group of over and under 50 years of age. The prevalence of psychiatric comorbidities especially depression was higher in the older population at 22% compared to the younger ones where it is at 16%. Dysthymia was also higher at 5% in the older age group while only 2.5% in the younger age group. This shows that the prevalence of psychiatric illness is higher in elderly diabetics than the younger diabetics.

In the study relationship between psychiatric comorbidity and gender, depression prevalent in females was 18% while in males was only 12.50%. Similarly, dysthymia in females was at 6.5% while males at 5%, GAD in females at 5% while males at 4%, and panic disorder in females at 5% while males at 4%. This clearly shows that the prevalence of psychiatric illness was higher in female diabetics than the male diabetics.

Table 3. Relationship between Psychiatric Comorbidity and gender (n=132)

Psychiatric Comorbidity	Patients Male	%	Patients Female	%
Depressive episode	25	12.50	36	18.00
Other psychiatric illnesses				
Dysthymia	10	5.00	13	6.50
Generalized anxiety disorder	8	4.00	10	5.00
Panic disorder	7	3.50	9	4.50
Social Phobia	5	2.50	3	1.50
Agoraphobia	4	2.00	2	1.00

DISCUSSION

Out of all the diabetic patients assessed in the outpatient department, 200 diabetics were included, despite a required sample size of 51 to increase the study accuracy, with the convenience sampling method utilized for the choice of sampling for the study to be more time and cost-efficient. The age range, which spanned from 18 to 60 years, closely mirrored observations made in previous studies.[12,15] The predominance of patients falling within the 41-60 age group, both in our study and in various other studies, can be attributed to the high prevalence of type 2 diabetes mellitus in this particular age bracket. Consistent with prior research from neighboring regions, males (52.5%) and females (47.5%) were distributed nearly evenly.[14] A majority of the patients (75%) had attained a basic school level of education, with a small proportion of five patients (2.5%) being illiterate.

In our current study, it was found that 96% of the patients were married. This aligns with findings from studies conducted in the subcontinent, where marriage rates among patients ranged from 78% to 92%, reflecting a similar trend to our study.[15] The majority of patients (87.5%) in our study resided in nuclear families. The overall prevalence of psychiatric comorbidity in patients with type 2 diabetes mellitus was approximately 66%. The most prevalent psychiatric comorbid condition was depression, which affected 61 patients (30.5%). Dysthymia was diagnosed in 11.5% of the patients, with the majority experiencing mild depression. The second most common psychiatric comorbidity was generalized anxiety disorder, present in 9% of the patients, with most of them exhibiting a mild degree of anxiety. Panic disorder was present in almost 16 patients (8%), while social phobia was observed in 4% of the patients, and agoraphobia was seen in five patients (3%). In a study by Rajput et al., they found depression in 26.3% of their diabetic patients, and generalized anxiety disorder in 27.6%., de Groot et al. reported that 21.3-27%% of diabetic patients had co-morbid depression, with generalized anxiety disorder present in 20%.[16,17] In our study, the prevalence of depression was slightly higher in

female patients compared to male patients (18% vs. 12.5%), respectively. The prevalence of anxiety and panic disorders was almost similar between both sexes, and there was no significant difference in the prevalence of social phobia and agoraphobia. Patients aged above 50 years had a higher prevalence of depressive episodes (22%) compared to younger patients (16%). The meta-analysis by Anderson et al. concluded that the comorbid psychiatric illness such as depression among diabetics is higher in the female patients compared to male patients, which is similar to our finding.2 In contrast to our study, a study done by Paudel et al. from Pokhara, Nepal concluded that there is an increased prevalence of psychiatric illness among diabetics in male patients (56.9%) to female patients (43.1%).[18]

In our study, the prevalence of neuropsychiatric illnesses is greater among the population with diabetes was made evident. The health practices surrounding the care of diabetics should also include mental health education and counseling for the patients and their family members.

This study has limitations being based in only one health institution with a small sample size of only 200 cases. Large studies may provide more valid results to generalize the findings to the general population.

CONCLUSION

The study revealed that patients with type 2 diabetes mellitus (T2DM) had an increased prevalence of psychiatric conditions, with depression being the most prevalent, followed by other neuropsychiatric illnesses among which generalized anxiety disorder was the most prevalent. All these neuropsychiatric symptoms were more frequent in females at a later stage of life, with a peak after 6th decade of life, and with individuals with a long history of diabetes.

ACKNOWLEDGEMENTS

We would like to express our gratitude to our patients and their relatives, without whom, the study would not have been possible.

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