

Study on psychiatric morbidities in patients with newly (recently) detected type 2 diabetes mellitus

Abstract

Aims and objectives: Psychiatric co-morbidity in patients with diabetes mellitus (DM) is associated with higher level of functional impairment and poor self-care. This study was carried out with the aim to find out existing psychiatric morbidity in newly detected diabetic patients who were not yet started on anti-diabetic medication so that proper evaluation of mental health and comprehensive management of both the conditions can be planned. **Methodology:** Hundred newly detected and diagnosed type 2 DM patients attending endocrinology and psychiatry outpatient departments of Sir Sunder Lal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi were screened and selected for the study. Psychiatric evaluation was done on the basis of structured proforma containing socio-demographic details, physical and mental status examination, and relevant investigations pertaining to diagnosis of DM. Psychiatric diagnosis was made on the basis of the text revision of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) criteria. Relevant rating scales (Hamilton Anxiety Rating Scale for anxiety disorder, Hamilton Depression Rating Scale for depression, Yale-Brown Obsessive Compulsive Scale [Y-BOCS] for obsessive compulsive disorder, and Brief Psychiatric Rating Scale [BPRS] for psychosis) were used for assessing severity of the conditions. **Result:** Majority of the patients were males (65%). Psychiatric morbidity was detected in 34% of patients – most common was major depressive disorder (21%) followed by anxiety disorder (eight per cent), dysthymic disorder (four per cent), and substance abuse (one per cent). In major depressive disorder group, moderate (ten per cent) to severe (four per cent) level of depression was detected and in anxiety disorder group, five per cent patients had moderate level of anxiety. **Conclusion:** Evaluation of psychiatric status at the very beginning when DM is detected; may help in proper management of both the conditions resulting in better outcome, self-care, and maintenance therapy in follow-up.

Keywords: Depression. Anxiety Disorders. Dysthymic Disorder. Substance Abuse.

**Adya Shanker Srivastava¹,
Ashish Nair², SK Singh³,
Maheshwar Nath Tripathi⁴,
Balram Pandit⁵, Jai Singh Yadav⁶**

¹Associate Professor, Department of Psychiatry, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India, ²Consultant Psychiatrist, EMS Memorial Cooperative Hospital and Research Centre, Perrinthalmanna, Kerala, India, ³Professor, Department of Endocrinology Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India, ⁴Consultant Psychiatrist, Mahadeva Neuropsychiatry Centre, Kashi Vidyapeeth, Varanasi, Uttar Pradesh, India, ⁵Assistant Professor in Psychiatry, Department of Medical Sciences, College of Medicine, Nursing & Health Sciences, Fiji National University, Fiji, ⁶Assistant Professor, Department of Psychiatry, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India

Correspondence:

Dr. Maheshwar Nath Tripathi, Consultant Psychiatrist, Mahadeva, Neuropsychiatry Centre, Kashi Vidyapeeth, Varanasi - 221002, Uttar Pradesh, India. dr.maheshwar@gmail.com

Received: 26 November 2015

Revised: 12 March 2016

Accepted: 13 March 2016

Epub: 23 March 2016

DOI: 10.5958/2394-2061.2016.00021.5

Introduction

Psychiatric evaluation of patients with diabetes mellitus (DM) is an important issue in comprehensive management of DM. Psychiatric issues involve potential role of stress in emergence of DM,[1] its impact on management and self-care. The present study was planned to evaluate the presence of psychiatric morbidity and its severity in newly detected DM patients for a better understanding of its nature and appropriate planning for management of both the co-morbid conditions.

Review of literature

DM is one of the most common chronic diseases worldwide and is characterised by hyperglycaemia. The prevalence

of detected DM is around three to four per cent in general population and type 2 DM is the predominant form of DM worldwide.[2,3] DM has become one of the world's most important public health problems.[4] The International Diabetes Federation (IDF) estimates the total number of diabetic subjects to be around 40.9 million in India and this is further set to rise to 69.9 million by the year 2025.[5]

The association between depression and DM was first described in seventeenth century by Thomas Willis, an English physician and anatomist who stated "Diabetes is caused by sadness or long sorrow." Inter-relationship of DM and psychiatric disorder has long been noted by careful observers like Sir Henry Maudsley who commented "Diabetes is a disease which often shows itself in families in

which insanity prevails”.[6] A recent study by the Australian Institute of Health and Welfare has reported significantly higher prevalence of psychological distress in diabetic patients (43.4%) as compared to non-diabetic (32.2%); substance abuse, dementia/Alzheimer’s disease, and depression were the most common health problems.[7] In another large New York study, serious psychological distress (depression, anxiety, and other disorders) was reported by 10.4% persons of DM.[8,9]

People with DM are more likely to suffer from common mental disorders; a finding which is highly relevant, given that psychiatric co-morbidity in people with DM is also associated with higher level of functional impairment, impaired quality of life, and difficulties with diabetic self-care.[10] Patients with DM and co-existing depression face substantially elevated morbidity risks beyond cardiovascular deaths.[11]

There is little published data from the Indian subcontinent on the co-existence of DM and psychiatric illness. Begum *et al.*[12] from Dhaka have reported 27.88% subjects with recently detected DM had depressive illness. In another study at Karachi, Pakistan by Perveen *et al.*,[13] depression was significantly associated with newly detected type 2 DM. Prasad *et al.*[14] have reported 18% psychiatric morbidity in diabetic patients.

A study by Anderson *et al.*[15] have demonstrated that patients with DM have a two to three fold increased prevalence of depressive disorders. The analysis from the natural population in the Great Britain suggests that people with DM are 50% more likely to suffer from common mental disorders than people without DM.[10] The association between depression and DM is bi-directional with DM increasing the risk of depression and depression increasing the risk of DM.[16]

Methodology

This study was conducted in the Department of Psychiatry in collaboration with the Department of Endocrinology of Sir Sunder Lal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi. The patients were collected from outpatient departments of Endocrinology and Psychiatry, and screened for inclusion in the study. A written informed consent was taken from all the patients explaining the nature of the study. This study was approved by ethics committee of the Institute of Medical Sciences.

A total of 100 cases fulfilling the inclusion criteria were selected. Male and female patients of age range 31-60 years, recently detected and diagnosed as a case of DM as per the World Health Organization guidelines,[17] without having started medication for treatment of DM, without history of any other physical illness and drug intake, and also without any past history of psychiatric illness were included in the study. Psychiatric evaluation was done on the basis of structured proforma containing socio-demographic details, and details of physical and mental status examination. Psychiatric diagnosis was based on the text revision of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) criteria.[18] The severity of psychiatric morbidity was assessed on the basis of relevant rating scales- the Hamilton Anxiety Rating Scale (HARS),[19]

the Hamilton Depression Rating Scale (HDRS),[20] the Yale-Brown Obsessive Compulsive Scale (Y-BOCS),[21] and the Brief Psychiatric Rating Scale (BPRS).[22]

Analysis of data was based on statistical methods using chi-square test, t-test, p-value for significance, and correlation co-efficient for correlation between different variables.

Results

Majority of the patients (36%) belonged to age group 51-60 years followed by 35% patients in age group 41-50 years. Mean age was 46.93 ± 7.87 years. Sixty five per cent patients were male, females being 35%. Fifty nine per cent patients belonged to rural, and 41% patients belonged to semi-urban and urban areas. Most of the patients (84%) had middle class socioeconomic status. Thirty per cent had education up to graduation and 71% patients were employed, engaged in semiskilled to highly skilled jobs (Table 1).

Table 2 describes the physical and metabolic parameters.

Psychiatric morbidity was observed in 34% patients (male 23%, female 11%). Twenty one per cent patients (male 15%, female six per cent) fulfilled the criteria for major depressive disorder and four per cent patients (male three per cent, female one per cent) were detected as dysthymic

Table 1: The socio-demographic profile

Variable	% (N=100)
Age (years)	
31-40	29
41-50	35
51-60	36
Sex	
Male	65
Female	35
Residence	
Rural	59
Semi-urban/urban	41
Education	
Illiterate	20
Primary	9
Middle	8
High school	10
Intermediate	17
Graduation	30
Post-graduation	6
Occupation	
Unemployed/housewife	29
Employed	71
Socioeconomic status	
Upper	8
Middle	84
Lower	8

disorder. Anxiety disorder was observed in eight per cent (male three per cent, female five per cent) and one (one per cent) patient had substance abuse disorder (Table 3). In this group of patients with psychiatric morbidity, majority of the patients belonged to middle socioeconomic group (28%), had education from higher secondary to graduation level (eight per cent each), and engaged in semiskilled to skilled (15%) nature of job.

In major depressive disorder group, majority of the patients were male (male 15%, females six per cent) and belonged to age group 41-50 years (eight per cent) followed by 51-60 years (seven per cent). Mean HDRS score was 16.38 ± 4.489 . Five per cent patients had mild (11.00 ± 1.581), ten per cent had moderate (15.7 ± 1.337), four per cent had severe (20.5 ± 1.00), and two per cent had very severe depression (25.0 ± 2.828) (Table 4).

In anxiety disorder group, five patients (five per cent) were females and three patients (three per cent) were males; majority (six per cent) belonged to age group 41-50 (three per cent) and 51-60 (three per cent) years. Mean HARS score was 19.86 ± 2.734 . Two per cent patients had mild (16.00 ± 0.00), five per cent had moderate (19.60 ± 0.894), and one per cent had severe anxiety (25.00 ± 0.00) (Table 4).

Mean body mass index (BMI) score of patients with psychiatric morbidity was 24.75 ± 3.03 whereas mean BMI score of patients who did not have psychiatric morbidity was 24.46 ± 4.94 . Mean BMI score in group of patients with psychiatric morbidity was higher than group without psychiatric morbidity but there was no statistical difference ($p > 0.05$) in distribution of BMI with respect to presence or absence of psychiatric morbidity (Table 5). Mean fasting blood sugar (FBS) was higher in psychiatric morbidity group (169.85 ± 36.56 mg/dl) as compared to group without psychiatric morbidity (154.35 ± 31.65 mg/dl) and the difference was statistically significant ($p < 0.05$). However random blood sugar (RBS), though higher in psychiatric morbidity group (203.59 ± 47.34 mg/dl) as compared to without psychiatry morbidity group (202.89 ± 49.07 mg/dl), did not differ significantly ($p > 0.05$). Mean glycolated haemoglobin (HbA1c) of patients with psychiatric morbidity (8.912 ± 1.379) was higher than patients without psychiatric morbidity (8.370 ± 1.145) but the difference was not significant statistically (Table 5).

The comparison of biological parameters viz. FBS, RBS, and HbA1c with various groups of major depressive disorder and anxiety disorder did not reveal any significant difference between these biological parameters and different groups.

Discussion

The prevalence and course of psychiatric disorders, particularly affective and anxiety disorder in adults with DM is well-documented.[23] This study was planned to assess the prevalence of psychiatric morbidity in newly detected diabetic patients who were not yet started on anti-diabetic medication.

The male and female patients of age range 31-60 years were included in the study. The mean age was 46.93 ± 7.87 years.

Table 2: Physical and metabolic parameters

Parameter	Mean \pm SD
Height	163.61 \pm 8.02 cm
Weight	65.18 \pm 10.01 kg
BMI	24.56 \pm 4.12
FBS	159.62 \pm 34.03 mg/dl
RBS	202.98 \pm 48.24 mg/dl
HbA1c	8.56 \pm 1.23

SD=Standard deviation, BMI=Body mass index, FBS=Fasting blood sugar, RBS=Random blood sugar, HbA1c=Glycolated haemoglobin

Table 3: Prevalence and distribution of psychiatric morbidity

Psychiatric morbidity	% (N=100)	M:F
Major depressive disorder	21	15:6
Anxiety disorder	8	3:5
Dysthymic disorder	4	3:1
Substance abuse	1	1:0
No psychiatric morbidity	66	44:24

Table 4: Severity of psychiatric morbidity in major depressive disorder and anxiety disorder

Psychiatric morbidity	Severity	%	Mean score \pm SD
Major depressive disorder	Mild	5	11.00 \pm 1.581*
	Moderate	10	15.70 \pm 1.357*
	Severe	4	20.05 \pm 1.00*
	Very severe	2	25.6 \pm 2.82*
Anxiety disorder	Mild	2	16.00 \pm 0.00#
	Moderate	5	19.60 \pm 0.894#
	Severe	1	25.00 \pm 0.00#

SD=Standard deviation, *HDRS=Hamilton depression rating scale, #HARS=Hamilton anxiety rating scale

Table 5: Diabetic parameter and psychiatric morbidity

Variable	Psychiatric morbidity	Mean	p
BMI	Absent	24.46 \pm 4.94	>0.05
	Present	24.75 \pm 3.03	
FBS (mg/dl)	Absent	154.35 \pm 31.65	<0.05*
	Present	169.85 \pm 36.56	
RBS (mg/dl)	Absent	202.89 \pm 49.07	>0.05
	Present	203.59 \pm 47.34	
HbA1c	Absent	8.370 \pm 1.145	>0.05
	Present	8.912 \pm 1.379	

BMI=Body mass index, FBS=Fasting blood sugar, RBS=Random blood sugar, HbA1c=Glycolated haemoglobin, *significant difference

Majority of the patients belonged to age group 51-60 years (36%) followed by 41-50 years (35%); the total patients belonging to age group 41-60 years comprised of 71%. Similar observations have been reported by Coker et al.[24] where 69% patients belonged to 39-54 years of age.

In present study, majority of the patients were males (65%), from rural background (59%), educated up to graduation level (30%), and belonged to middle socioeconomic class.

Out of hundred (100), 34% were detected having psychiatric morbidity. This is in concordance with the study by Coker *et al.*[24] which has reported 31% patients with psychiatric symptoms. Our finding of psychiatric morbidity in 34% patients with newly detected DM is alarming and significant as overall prevalence of psychiatric illness in diabetic patients is reported to be 6.5 to ten per cent by some of the studies.[25,26]

Among patients with psychiatric morbidity, major depressive disorder was most common (21%) followed by anxiety disorder (eight per cent). A hospital-based study in Nigeria has reported six per cent generalised anxiety and four per cent mild depressive disorder.[24] Many other studies have reported increased incidence of psychiatric illness in diabetic patients though not specifically in recently detected DM.[27] Prasad and Srivastava[14] has reported 18% psychiatric morbidity and it consisted of depression, anxiety, and attendant symptoms in diabetic patients. Anxiety is common in diabetic population and is frequently associated with depression.[28] A review has found that around 14% of people with DM have generalised anxiety disorder but subclinical anxiety and depressive symptoms were more common, and affected 27% and 40% respectively.[29]

In major depressive disorder group, majority of the patients (ten per cent) had moderate depression; five per cent had mild, four per cent had severe, and two per cent had very severe depression. In anxiety disorder group, five per cent had moderate anxiety. This reflects that patients even with significant distress due to psychiatric illness had not consulted for psychiatric help. This throws light on inadequate awareness about psychiatric symptoms and draws attention for proper psychiatric intervention.

The mean BMI of patients in our study was 24.56 ± 4.12 . The mean BMI in group of patients with psychiatric morbidity was slightly higher (24.75 ± 3.03) as compared to non psychiatric morbidity (24.46 ± 4.94) but the difference was not significant and no relation could be found between BMI and psychiatric morbidity. Higher BMI related with psychiatric illness, particularly depression has been reported by Zuberi *et al.*[30] and Perveen *et al.*[13]

The mean FBS of patients was 159.62 ± 34.03 mg/dl. On comparison of mean FBS in psychiatric morbidity group (169.85 ± 36.56 mg/dl) with mean FBS in non psychiatric morbidity group (154.35 ± 31.65 mg/dl), a significant difference was observed ($p < 0.05$). Similar findings have been reported by Lin *et al.*[31] and Kruse *et al.*[32]

The comparison of other parameters, e.g. RBS and HbA1c between psychiatric morbidity group and non psychiatric morbidity group did not reveal significant difference between the two groups.

The present study has revealed that not only the chronicity of DM leads to psychiatric disturbance but a significant percentage of newly detected persons with DM have psychological distress, mainly in form of depression

and anxiety. This aspect is important because prevalence of psychiatric problem in newly detected diabetic patients is often missed.

Conclusion

Moderate to severe level of depression and moderate level of anxiety found out in this study necessitates the proper evaluation of patients recently detected with DM for comprehensive management of both the co-morbid conditions. A planned study to find out a correlation between improvements in psychiatric condition with improvement in diabetic status may reveal an association between psychological distress and DM.

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Source of support: Nil. **Declaration of interest:** None.