International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

Original Research Article

Psychiatric Aspects of Diabetes Mellitus - A Hospital Based Study

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Received: 25/01//2013 *Revised: 27/02/2013* *Accepted: 04/04/2013*

ABSTRACT

Background: Diabetes mellitus (DM) is a chronic medical disease, which can cause a number of psychological, emotional, social and psychosexual problemsand is often associated with several psychiatric disorders. Psychiatric disorders can be a risk factor as well as complication of diabetes leading to interaction between two disorders, so if diabetes is managed in its initial phase, complication may be prevented at an early stage.
Objective: The aim of the study was to assess the pattern of psychiatric morbidity in Diabetic patients.
Methodology: We conducted a cross-sectional study for a period of Oneyear in Shri Maharaja Hari Singh Hospital (SMHS), one of the major associated hospitals of Government Medical College Srinagar. We selected every alternate diabetic patient by random sampling attending to theOut Patient department (OPD) of Endocrinology department. General description, demographic data and psychiatric history were recorded using the semi structured interview scale. Selected patients were subjected to Mini International Neuropsychiatric Interview –Plus (MINI - Plus) for evaluation of symptoms and diagnosis. A control group (n = 200) was selected amongst the non-diabetic patients and the same instruments were applied.
Results: Out of total 200 subjects 87 were males (43.5 %), and 113 females (56.5 %). Most of cases belong to 41 -50 year age group (33.5%) followed by age group 51 – 60 years (22.5%) and 71% were married and 11.5% were unmarried. 57 % of diabetic patients had significant psychiatric morbidity. Only 25.5 % of the control group had psychiatric problems (p = 0.0027) highly significant. Depressive disorder (13.5%) was the most common presentation, followed by Adjustment disorder (7.5 %), premenstrual Dysphoric disorder (6.5%), panic disorder (6%) generalized anxiety disorder (5.5), dysthymia (4.5%), and Suicidality (4%) mixed anxiety (1.5%), OCD, agoraphobia (1.5%) and other disorders.
Conclusion: The increased frequency of psychiatric morbidity among the diabetic patients raises the need for early diagnosis and prompt treatment.

Key words: Diabetes mellitus, Psychiatric disorders, OPD

INTRODUCTION

Diabetes Mellitus represents a major public health burden, both locally and globally. [1] An estimated 285 million people corresponding 6-8% adult population will live with diabetes mellitus in 2010. The number is expected to increases to 438 million by 2030.With an estimated 50.8 million people living with diabetes mellitus, India has the world's largest population followed by china with 43.2 million. [2] The prevalence of psychiatric morbidity among insulin-dependent patients is 18%, and consists of depression, anxiety, and attendant symptoms. [3] In contrast, the incidence of diabetes mellitus in psychiatric patients has been found to be 2 to 8 times higher than in the general population. [4-6] Diabetic patients are twice as likely as the general population to suffer from depression, with the risk higher in women than in men. During 5 year follow up to 80% of diabetic patients have recurrence of depressive episodes. [7, 8] Patients with Diabetes Mellitus suffering from depression have a higher incidence of suicidal ideations. [9] Depression and anxiety in particular, are more frequent in diabetic patients, compared to the general population. [10, 11] Psychological stress factors play an active role in both the aetiology and the metabolic control of DM. [12] Other contributing factors in Type 2 Diabetes Mellitus (T2DM) pathogenesis include environmental and lifestyle factors, [13-15] positive family history, [16] ethnicity, [17] and genetics. [13, 14, 18]

The adverse influence of depression on the course of diabetes mellitus has been discussed extensively. [19] Screening leads to high stress among those with a positive result, or false reassurance in those with a negative result, the subjects are less likely to take appropriate corrective action. [20] Psychological distress can occur when diabetes mellitus is first diagnosed: denial, anger, guilt, reactive depression and finally acceptance. Physicians must be aware of these reactions which are anticipated with chronic conditions. They must be trained to manage these, which may take months to resolve.

Patients with mental health disorders receive even less intensive medical care for diabetes mellitus. [21, 22] Self-care behaviour in diabetes mellitus was adversely affected by the occurrence of natural calamities. [23] Lesser degree of psychological distress not amounting to psychiatric morbidity is more common. [24] The quality of life of the patient is adversely affected due to the knowledge about the course of illness, restriction of diet and activity, closely monitored management schedules and the continued risk of acute and chronic life threatening complications. [25] "Diabetes burnout" and "Diabetes overwhelmus" are the words used often to describe the distress experienced by diabetic patients. [26] From the above, it is clear that although a lot of studies report a positive correlation between DM and psychiatric disorders. The aim of the study was to assess the pattern of morbidity in Diabetic patients.

METHODOLOGY

We conducted a cross-sectional study for a period of 1 year in SMHS Government Medical College associated Hospital. The patients were selected using simple random sampling choosing every alternate patient attending to the OPD of Endocrinology department. A total of 200 patients were included in the study. Patients

were informed that the aim of the study is to determine the prevalence of psychiatric comorbidity in diabetic patients attending the OPD of Endocrinology department, and to assess their awareness of the illness from which they are suffering. After formal consent the purpose of study was explained to patients. Consent was taken from patients and available relatives were also informed in detail. General description, demographic data and psychiatric history were recorded using the semi structured interview scale. Selected patients were subjected to Mini International Neuropsychiatric Interview – Plus (MINI - Plus) for evaluation of symptoms and diagnosis. The MINI-Plus is a DSM_IV based diagnostic interview with high reliability and validity. [27] A control group (n = 200) was selected amongst the non-diabetic patients and the same instruments were applied.

Diabetes mellitus was classified based on drug treatment (insulin or oral hypoglycaemic agents) and/or criteria laid by the ADA in 2004 i.e. fasting plasma glucose (FPG) 126 mg/dl or 2 hr. post-glucose value 200 mg/dl. Impaired glucose tolerance (IGT) was diagnosed if FPG was <126 mg/dl and 2 hr. Post-glucose value (140 mg/dl and <200 mg/dl. [28] The diabetic patients included both insulin dependent and non-insulin dependent patients. Patients with past history or family history of diabetes mellitus in both the groups were not included in this study. Similarly, patients suffering from other physical disorders were also excluded, as were those who were unwilling to participate. Control population with the index group in terms of age, gender and social class, was chosen as psychiatric morbidity varies immensely with these variables.

RESULTS

Two hundred diabetic patients who attended OPD of Endocrinology department of SMHS Government Medical College associated hospital were taken up for study. They were evaluated in detail with regard to socio-demographic profile and the presence of psychiatric co-morbidity and the results have been presented below in the tabulated and graphical form. Out of total 200 subjects 87 were males (43.5 %), and 113 females (56.5 %). Most of cases belong to 41 -50 year age group (33.5%) followed by age group 51 – 60 years (22.5%) and 71% were married and 11.5% were unmarried. More than half (56.32 %) of the study subjects were from nuclear families and 109(58.5%) were illiterate and 53.5% were household worker and majority (63.5 %) belonging to middle class family.

Fifty seven percent diabetic patients were found to have psychiatric morbidity (table-1). In contrast to non-diabetic patient control group, twenty five percent people had some kind of psychiatric disorder (p) i.e., highly significant. Depressive disorder (13.5%) was the most common presentation, followed by Adjustment disorder (7.5 %), premenstrual Dysphoric disorder (6.5%), panic disorder (6%) generalized anxiety disorder (5.5), dysthymia (4.5%), Suicidality (4%), mixed anxiety (1.5%), OCD, agoraphobia (1.5%) and other disorders as tabulated. Among the control group, the most common diagnoses were depressive disorder and panic disorder (3.5%) and adjustment disorder (2.5).

Table-2 shows the psychiatric co-morbidity across the socio-demographic profile of the studied patients. There was significant difference in the number of the patients in whom the psychiatric co-morbidity was present and in those in whom it was absent across various age groups. The

p-value of the comparison is 0.043 which is significant.

If we see the presence of the psychiatric co-morbidity across the gender distribution of the patients (Table-2) the psychiatric co-morbidity was present in 43.5 % of the males and in 67.25 % of the female patients. The p-value of the comparison is 0.0097 which is significant. The psychiatric co-morbidity was present in 66.2% of the rural population and 55.12 % of the urban population. The p-value of the comparison is 0.005 which is significant.

The psychiatric co-morbidity was present in 63.3 % of the unmarried patients, 47.8% of the married patients and 37.5% of the widowed patients. The p-value of the comparison is 1.257 which is non-significant. There was no significant difference in the number of the patients in whom the psychiatric co-morbidity was present and in those in whom it was absent across different family types (p-value 0.005). There was no significant difference in the number of the patients in whom the psychiatric co-morbidity was present and in those in whom it was absent in the literate and illiterate patients (p-value 0.0016) which is non-significant.

There was no significant difference in the number of the patients in whom the psychiatric co-morbidity was present and in those in whom it was absent in the different family income groups (p-value is 2.572). If we see the presence of the psychiatric co-morbidity across socio-economic status of the patients as per Kuppuswamy socio economic status scale (2007) (Table-2) there was no significant difference in the number of the patients in whom the psychiatric co-morbidity was present and in those in whom it was absent in the different socio-economic status of patients. (The p-value 0.0025 which is –significant).

In total 47% i.e., 94 patients out of 200 had a psychiatric co-morbidity out of which 65.9% i.e., 62 were aware of their condition and 34% i.e., 32 patients were unaware of their condition. The p-value of the comparison between the aware and the unaware patients is 0.005 which is significant**.** Major Depressive Disorder was the most common psychiatric disorder present in 13.5 % i.e., 27 out of 200 patients. The p-value of the comparison between the index and control patients is 0.0036 which is significant. Adjustment disorder was the next most common diagnosis present in 7.5% i.e., the p-value of the comparison between the index and control patients is 0.789 which is non-significant. Panic Disorder was present in 6% i.e. the p-value of comparison was 0.0256 which is non - significant. Generalized Anxiety Disorder was present in 5.5% i.e. the p-value of the comparison between the index and control patient is 0.859 which is non-significant. Suicidality was present in 4% i.e., the p-value of the comparison between the index and control patient is 0.0185 which is non-significant. Dysthymia was present in 4.5% i.e., the p-value of the comparison between the index and control patient is 0.0489 which is non-significant. Premenstrual Dysphoric disoders was present in 6.5% i.e., the p-value of the comparison between the index and control patient is 0.789 which is non- significant.

Table 1: Demographic Characteristics of the Studied Patients			
Characteristic		N	%
Age (yr.)	≤ 25	15	7.5
	25 to 40	32	16
	41 to 50	61	30.5
	51 to 60	45	22.5
	61 to 70	31	15.5
	> 70	16	8
	mean ± SD		
Gender	Male	87	43.5
	Female	113	56.5
Dwelling	Rural	122	61
	Urban	78	39
Marital status	Unmarried	23	11.5
	Married	142	71
	Widowed	35	17.5
Occupation	Household	107	53.5
	Unskilled	31	15.5
	Semiskilled	33	16.5
	Skilled	25	12.5
	Professional	4	2
Family type	Nuclear	87	43.5
	Joint	48	25
	Extended	65	32.5
Literacy status	Illiterate	117	58.5
	Primary	13	6.5
	Secondary	22	11
	Matric	27	13.6
	Graduate	17	8.5
	Postgraduate/Professional	4	2
Family Income(Rs)	< 5000	37	18.5
	5000 to 10000	134	67
	≥ 10000	29	14.5
	mean ± SD		
Socioeconomic status (Kuppuswamy Scale)	Lower	21	10.5
	Upper lower	19	9.5
	Middle	127	63.5
	Upper middle	24	12
	Upper	9	4.5

Table-2 Psychiatric Co-morbidity across Socio-demography of the Patients						
		Present		Absent		p value
		N	%	N	%	
Age (yr)	≤25	8	53.3	7	46.66	0.0043
	25 to 40	23	71.8	9	28.12	
	41 to 50	38	62.2	23	37.7	
	51 to 60	23	51.1	22	48.8	
	61 to 70	14	45.16	17	58.8	
	> 70	8	50	8	50	
Gender	Male	38	43.67	49	56.32	0.0097
	Female	76	67.25	37	32.74	
Dwelling	Rural	71	62.2	51	44.73	0.0013
	Urban	43	55.12	35	44.87	
Marital status	Unmarried	11	47.8	12	52.17	1.257
	Married	90	63.3	52	36.61	
	Widowed	13	37.14	22	62.85	
Occupation	Household	68	63.55	39	36.44	0.0058
	Unskilled	19	61.2	12	38.70	
	Semiskilled	17	51.51	16	48.48	
	Skilled	9	36	16	64	
	Professional	1	25	3	75	
Family type	Nuclear	49	56.32	38	43.67	0.035
	Joint	21	43.75	27	56.25	
	Extended	44	67.69	21	32.30	

Literacy status	Illiterate	68	58.11	49	41.88	0.0016
	Literate	46	55.42	37	44.57	
Family Income(Rs)	< 5000	19	51.35	18	48.64	2.572
	5000 to 10000	82	71.92	52	38.8	
	≥ 10000	13	44.82	16	55.17	
Socioeconomic status	Lower	11	52.38	10	47.6	0.0025
	Upper lower	7	36.84	12	63.15	
	Middle	81	63.77	53	41.73	
	Upper middle	10	41.66	14	58.33	
	Upper	5	55.55	4	44.44	

Table 3: Age and Gender Distribution of the Studied Patients

Age (yr.)	Male		Female		Total		P value
	N	%	N	%	N	%	
≤ 25	6	3	9	4.5	15	7.5	0.012
26 to 40	14	7	18	9	32	16	0.025
41 to 50	19	9.5	42	21	61	30.5	0.035
51 to 60	22	11	23	11.5	45	22.5	0.045
61 to 70	19	9.5	12	6	31	15.5	0.048
> 70	7	3.5	9	4.5	16	8	0.055
Total	87		113		200		
mean ± SD	24+8		23+19		45+15		

Table-4. Psychiatric Disorders in the Studied Patients

Psychiatric disorders	Index group	Percentage	Control group	Percentage	Odds Ratio (95%CI)	P value
Major Depressive Disorder	27	13.5	7	3.5	0.28(0.18-2.2)	0.0036
Dysthymia	9	4.5	4	2	0.35(0.19-0.45)	0.0489
Suicidality	8	4	3	1.5	5.14(4.24-5.56)	0.0185
Panic Disorder	12	6	7	3.5	0.65(0.29-4.3)	0.0256
Alcohol Abuse and Dependence Disorder	3	1.5	2	1	2.34(1.46-3.8)	0.448
Generalised Anxiety Disorder	11	5.5	6	3	0.18(0.25-4.3)	0.859
PTSD	1	0.5	1	0.5	0.39(2.08-4.5)	0.0013
Social anxiety disorder	2	1	1	0.5	0.45(0.26-0.55)	0.035
Mixed Anxiety-Depressive Disorder	3	1.5	1	0.5	6.14(535-6.45)	0.0285
Premenstrual Dysphoric Disorder	13	6.5	6	3	0.36(0.24-0.45)	0.0789
Psychotic disorder	1	0.5	0	-	6.47(2.08-7.45)	1.256
OCD	3	1.5	2	1.5	0.45(0.23-1.89)	0.0111
Agoraphobia	3	1.5	2	2	0.33(0.31-0.54)	0.458
Specific Phobia	3	1.5	4	2	0.45(0.12-0.45)	0.586
Adjustment Disorder	15	7.5	5	2.5	0.34(0.12-0.56)	0.789
Total Psychiatric Co-morbidity	114	57	51	25.5	6.45(2.08-7.05)	0.025

Group	No Of Patients With Psychiatric Comorbidity	Percentage Of Psychiatric Comorbidity
Index Group N=200	114	57
Control Group N=200	57	25.5
X^2 =2.23, Odds Ratio (95%CI) (0.76-(0.28-2.25), P< 0.05		

DISCUSSION

The present study addresses the question of possible relationship between Psychiatric morbidity and Diabetic patients. The study findings suggest that depression and anxiety disorders are highly prevalent in the patients suffering from DM. In this cross-sectional study, we found that morbidity is significantly higher in diabetic patients with higher levels of depression and anxiety. The overall percentage of psychiatric morbidity in patients suffering from Diabetes Mellitus in our study population was 57%.In contrast to non-diabetic control group twenty five percent people had some kind of psychiatric disorder (p) i.e., highly significant. Diabetic patients thus have slightly more than twice the frequency of psychiatric disorders as compared to non-diabetic patients, the results were comparable to study done by Kovacs M et al [29] who found a prevalence of psychiatric disorders as 47.6 among diabetic patients. Another Study carried by Sushil and Vyas (1990), reported that 74% of the diabetic patients suffered from psychiatric comorbidity. (Studies carried out at PCJ). [30] Depressive disorder (13.5%) was the most common presentation, followed by Adjustment disorder (7.5 %), premenstrual Dysphoric disorder (6.5%), panic disorder (6%) generalized anxiety disorder (5.5), dysthymia (4.5%), and Suicidality (4%) mixed anxiety depression (1.5%), OCD, agoraphobia (1.5%). This is consistent with study done by Lloyd and Brown found that all psychiatric disorders especially depression was much more common in diabetic patients than in non-diabetics patients. [31] Our study also revealed that phobic disorder and panic disorder were also more likely in diabetic patients. All types of psychiatric disorders were more frequent among the diabetic patients; however adjustment disorder, depression and generalised anxiety disorder stood out in particular. [32] There is evidence of an unknown metabolic abnormality in the hypothalamic pituitary adrenal axis (HPA axis) [33] in diabetic patients and the same HPA axis is also implicated in aetiology of depression. Also when we study the age and the gender distribution of the patients (Table-3) it can be seen that majority of the female patients (67.5%) were in the age group of 41-50 with a mean age of mm years and the majority of the male patients (43.5%) were in the age group of 41-50 with a mean age of mm years. This is consistent with study as Diabetic patients of all ages are affected by psychiatric disorders, [34, 35] Treatment with hypoglycemic medicines may lead to severe anxiety [36]

The proportion of diabetes mellitus as the comorbid condition in our psychiatric population was higher than that expected in the general population. Although there is significant variation in the comorbid prevalence of diabetesmellitus in psychiatric patients, this prevalence is consistently higher than would be expected in the general population. Given that comorbidity of disorders adds to treatment complexity and is frequently associated with chronicity it is not surprising that diabetes mellitus negatively affects the course of psychiatric disorder .[37]

CONCLUSION

The present study showed that individuals with diabetes mellitus are more prone to comorbid disorders like depression and anxiety and Psychiatric misery is added upon an already devastating metabolic disease. Psychiatric interventions like education, counselling and treatment could be the missing link in the overall management of the patients suffering from diabetes mellitus. More community based studies are required to assess the magnitude

of the problem and to lay down principles to help such patients and thus can lead to beneficial results in supporting patients with DM by health professionals.

Declaration of Interest

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

Funding

This research did not receive any specific grant from any funding agency in the public, commercial, or not-for-profit sector. The study was approved by ethical committee.

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How to cite this article: Dar MM, Shoib S, Ahangar WH et. al. Psychiatric aspects of diabetes mellitus - a hospital based study. Int J Health Sci Res. 2013;3(4):70-79.

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