

Research Article

**A cross sectional study on depression in diabetics presenting at Lahore
General Hospital Lahore**

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ABSTRACT

Objective: To study the depression rate in diabetics presenting at Lahore General Hospital Lahore

Materials & Methods: This cross sectional study was conducted at Department of Medicine, Lahore General Hospital, and Lahore from March 2017 to September 2017. Total 196 patients with diabetes mellitus were selected and depression was assessed.

Results: Mean age of diabetics was 53.35 ± 6.71 years. Total 89 (45.41%) patients were male and 107 (54.59%) patients were females. Majority of patients 54.41% belonged to upper socioeconomic status. Depression was found in 47 (23.98%) patients, whereas there were 149 (76.02%) patients having no depression.

Conclusion: This study concluded that prevalence of depression in type 2 diabetic patients was very high. So, proper evaluation of the co-morbid depression in diabetics should be done.

Keywords: Hyperglycemia, depression, complications, socioeconomic status.

INTRODUCTION

The prevalence rate of depression in general population ranges from 6% to 17%.¹⁻³In literature results of many studies showed depression as main reason for morbidity and mortality.⁴Patients with diabetes mellitus (DM) have 2 fold increase risk of development of depression.⁵Hyperglycemia and insulin resistance may contribute to depression by two mechanisms: 1) through its effect on symptoms, like difficulty to concentrate, complication fear and fatigue and 2) by reduction in neurotrophic functions, inflammatory process, physiological pathways which may leads to reduction in plasticity of neuronal networks and subsequently

depression.⁶Moreover, Depression in diabetics may have negative effect on different aspects of diabetic care.

As co-existing depression in diabetic individuals is positively associated with decreased adherence to treatment, poor control of metabolism, higher rates of complication, decreased quality of life, increased healthcare use and cost, increased disability and lost productivity, and increased risk of death, therefore, recognition of depression is very important for improvement in diabetic care due to effective treatment is available and cost-effective.⁷ In literature, there was variability in depression rate in diabetic population. Results

of this study may guide the physician for the early management of depression in patients of diabetes mellitus which may be helpful for the improvement in quality of life of diabetics.

MATERIAL AND METHODS

This cross sectional study was conducted at Department of Medicine, Lahore General Hospital, and Lahore from March 2017 to September 2017. Total 196 patients of diabetes mellitus either male or female having age from 18-65 years were selected. Patients with past history of mood disorders, psychotic disorders, anxiety disorders and personality disorders, pregnant lady (assessed on history and confirmed by urine pregnancy test), Patients with history of co-morbidities like myocardial infarction, congestive heart failure, hypothyroidism, stroke and hypertension, Patients with history of drug addiction, Patients with history of depression prior to the onset of diabetes mellitus were excluded from the study.

Diabetes mellitus was defined as: patient of type two diabetes mellitus on oral hypoglycemic treatment for last 5 years with good control having HbA1c less than 8%.

We had used a semi structured Proforma, comprising of socio demographic profile and other relevant information of diabetic patients included in this study. All patients were assessed by using DSM-IV criteria for Depression. Patient in whom five or more signs and symptoms at least for 2 weeks, as described by DSM-IV, were labeled as having depression.

Data was entered and analyzed with SPSS version 18. Mean and standard deviation was calculated for numerical data like age and duration of diabetes. Frequencies and Percentages were calculated for categorical data like gender and frequency of depression (yes/no). To minimize the effect of confounders, stratification was done for age, gender, family income and duration of diabetes. Chi square test was applied to see the effect of these on primary outcome. P value ≤ 0.05 was taken as significant.

RESULTS

Total 196 patients were selected for this study. Age range in this study was from 18 to 65 years with mean age of 53.35 ± 6.71 years. Depression was found in 47 (23.98%) patients, whereas there were 149 (76.02%) patients having no depression as shown in Figure 1. Patients were divided into three age groups i.e. age group 18-35 years, age group 36-50 years and age group 51-65 years. Total 33 (16.84%) patients belonged to age group 18-35 years and depression was noted in 06 (18.18%) patients.

Sixty-six (33.67%) patients belonged to age group 36-50 years and 15 (22.73%) patients found with depression and 97 (49.49%) patients belonged to age group 51-65 years and depression was noted in 26 (26.80%) patients. Statistically insignificant association between age of the patients and depression was seen. It was found that there was no statistically significant ($P = 0.580$) difference of depression between different age groups. (Table 1)

Out of the 196 patients, 89 (45.41%) were male and 107 (54.59%) were females with male to female ratio of 1:1.2. Depression rate was 21 (23.60%) and 26 (24.30%) in male and female patients respectively. It was found that there was no statistically significant ($P = 0.909$) difference of depression between the both gender. (Table 2) Patients were divided into three monthly group i.e. Rs.<10000, Rs. 10000-20000 and Rs. >20000. Depression rate was 11 (25.0%), 16 (25.40%) and 20 (22.47%) in patients with monthly income Rs.<10000, Rs. 10000-20000 and Rs. >20000 respectively. But insignificant ($P = 0.902$) association of monthly income with depression rate was noted. (Table 3).

Total 75 (38.27%) patients found with ≤ 3 years duration of disease and 121 (61.73%) patients found with >3 years duration of disease and depression was noted in 13 (17.33%) and 34 (28.10%) patients respectively in both groups. Insignificant ($P = 0.086$) association between duration of disease and depression was noted. (Table 4)

Figure 1: Frequency of depression.

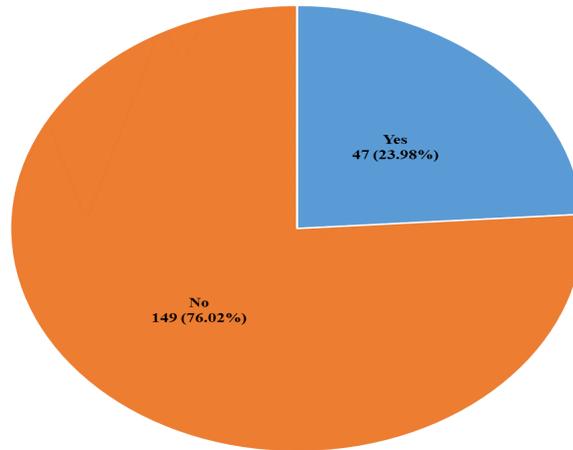


Table I: Association of age with depression

Age (years)	Depression			P-value
	Yes	No	Total	
18-35	06 (18.18%)	27 (81.82%)	33 (16.84%)	0.580
36-50	15 (22.73%)	51 (77.27%)	66 (33.67%)	
51-65	26 (26.80%)	71 (73.20%)	97 (49.49%)	
Total	47 (23.98)	149 (76.02)	196	

Table 2: Association of gender with depression

Gender	Depression			P-value
	Yes	No	Total	
Male	21 (23.60%)	68 (76.40%)	89 (45.41%)	0.909
Female	26 (24.30%)	81 (75.70%)	107 (54.59%)	
Total	47 (23.98)	149 (76.02)	196	

Table 3: Association of socioeconomic status with depression

Monthly income	Depression			P-value
	Yes	No	Total	
<10000	11 (25.0%)	33 (75.0%)	44 (22.45%)	0.902
10000-20000	16 (25.40%)	47 (74.60%)	63 (32.14%)	
>20000	20 (22.47%)	69 (77.53%)	89 (45.41%)	
Total	47 (23.98)	149 (76.02)	196	

Table 4: Association of duration of disease with depression

Duration of disease	Depression			P-value
	Yes	No	Total	
≤3 years	13 (17.33%)	62 (82.67%)	75 (38.27%)	0.086
>3 years	34 (28.10%)	87 (71.90%)	121 (61.73%)	
Total	47 (23.98)	149 (76.02)	196	

DISCUSSION

For the development of chronic diseases, depression plays a crucial role. Individual with depression feel hopeless that they abandon the

survival will. Diabetics with depression are less motivated to follow the healthy lifestyle, including maintenance of physical activities and healthy eating habits.⁸ As a result, diabetics with depression have poor glycemic control than

diabetics without depression.⁹We have conducted this study to determine the frequency of depression among patients of diabetes mellitus. Age range in our study was from 18 to 65 years with mean age of 53.35 ± 6.71 years with majority of the patients 49.49% were between 51 to 65 years of age. Balhara YPS et al¹⁰ and Mathew CS et al¹¹ in their studies had found mean age of 54 and 54 years respectively which is very much comparable to our study. On the other hand, Das R et al¹² and James BO et al¹³ reported much lower mean age i.e. 46 & 45 years respectively in their studies compared to our study. In this study we noted a female predominance (54.59%) as also observed in many previous studies.^{10,13}

In literature, rate of depression in diabetics ranges from 12-28%.¹⁴ In a study done by Mathew CS et al¹¹ had found depression in 38.8% diabetic patients. In our study, we have found depression in 47 (23.98%) patients with type 2 diabetes mellitus. In one study by Blahara Y et al¹⁵ found only 16% of type 2 diabetics with depression. While in another study by Raval A et al¹⁶ this prevalence was found to be much higher i.e. 41%, compared to our study. In one national study by Zahid et al¹⁷ depression was reported as 14.7% in diabetics while a higher (44%) depression rate was reported by Khawja AK et al.¹⁸ In another study, Das R et al¹² reported depression rate as 46.15% of type 2 diabetic diabetics and Khamseh et al²⁰ reported depression rate as 71.8%. In an international study, depression rate was 24% in diabetics and 17% in non-diabetics.²¹ James et al¹³ in their study has found prevalence of depression in 30% patients with Type 2 diabetes mellitus compared to only 9.2% of non-diabetic patients. Mohamed R et al²² had found this prevalence as 12.3%.

CONCLUSION

This study concluded that prevalence of depression in type 2 diabetic patients was very high. So, proper evaluation of the co-morbid

depression in diabetics should be done, so that proper counseling and psychotherapy of these particular patients could be done in order to improve their quality of life and reduce the morbidity. Findings of the study also revealed that there is no association of depression with age, gender, area of residence and duration of disease.

REFERENCES

1. Shoback, Gardner DG, Dolores. Greenspan's basic & clinical endocrinology. 9th ed. New York: McGraw-Hill Medical. 2011; pp.Chap 17.
2. Emerging Risk Factors Collaboration. "Diabetes mellitus, fasting blood glucose concentration, and risk of vascular disease: A collaborative meta-analysis of 102 prospective studies". The Lancet. 2010;375(9733):2215–22.
3. Mensah SA, Beavis JM, Thapar AK, Kerr MP. A community study of the presence of anxiety disorder in people with epilepsy. *Epilepsy Behav.* 2007;11(1):118-24.
4. Michaud CM, Murray CJ, Bloom BR. Burden of disease implications for future research. *JAMA.* 2010;285(5):535-39.
5. Schram TM, Baan AC, Pouwer F. Depression and quality of life in patients with diabetes. *Curr Diabetics Rev.* 2009 May;5(2):112 – 19.
6. Nouwen A, Nefs G, Caramlau I, Connock M, Winkley K, Lloyd EC, et al. Prevalence of Depression in individuals with impaired Glucose metabolism or undiagnosed Diabetes. *Diabetes care.* 2011 mar;34:752-62.
7. Pyne J, Rost K, Zhang M, Williams K. Cost-effectiveness of a Primary Care Depression Intervention. *J gen Intern Med.* 2003;18:432-41.

8. Ciechanowski PS, Katon WJ, Russo JE. Depression and diabetes: impact of depressive symptoms on adherence, function, and costs. *Arch Intern Med*. 2000;160(21):3278-85.
9. Ciechanowski PS, Katon WJ, Russo JE, Hirsch IB. The relationship of depressive symptoms to symptom reporting, self-care, and glucose control in diabetes. *Gen Hosp Psychiatry*. 2003;25(4):246-52.
10. Balhara YPS, Sagar R. Correlates of anxiety and depression among patients with type 2 diabetes mellitus. *Indian J Endocrinol Metab*. 2011;15(Suppl1):S50-S54.
11. Mathew CS, Dominic M, Isaac R, Jacob JJ. Prevalence of depression in consecutive patients with type 2 diabetes mellitus of 5-year duration and its impact on glycemic control. *Indian J Endocrinol Metab*. 2012;16(5):764-8.
12. Das R, Singh O, Thakurta RG, Khandakar MR, Ali SN, Mallick AK, et al. Prevalence of Depression in Patients with Type II Diabetes Mellitus and its Impact on Quality of Life. *Indian J Psychol Med*. 2013;35(3):284-9.
13. James BO, Omoaregba JO, Eze G, Morakinyo O. Depression among patients with diabetes mellitus in a Nigerian teaching hospital. *South Afr J Psychiatry*. 2010;16(2):61-4.
14. Shaban MC, Fosbury J, Kerr D, Cavan DA. The prevalence of depression and anxiety in adults with Type 1 diabetes. *Diabet Med*. 2006;23:1381-4.
15. Balhara Y, Sagar R. Correlates of anxiety and depression among patients with type 2 diabetes mellitus. *Indian J Endocr Metab*. 2011;15:50-4.
16. Raval A, Dhanaraj E, Bhansali A, Grover S, Tiwari P. Prevalence and determinants of depression in type 2 diabetes patients in a tertiary care centre. *Indian J Med Res*. 2010;132:195-200.
17. Zahid N, Asghar S, Claussen B, Hussain A. Depression and diabetes in a rural community in Pakistan. *Diabetes Res Clin Pract*. 2008;79(1):124-27.
18. Khuwaja AK, Lalani S, Dhanani R, Azam IS, Rafique G, White F. Anxiety and depression among outpatients with type 2 diabetes: A multi-centre study of prevalence and associated factors. *Diabetol Metab Syndr*. 2010;2:72.
19. Nasser J, Habib F, Hasan M, Khalil N. Prevalence of depression among people with diabetes attending diabetes clinics at primary health settings. *Behrain Med Bull*. 2009 Sep;31:3-8.
20. Khamseh ME, Baradaran HR, Rajabali H. Depression and diabetes in Iranian patients: a comparative study. *Int J Psychiatry Med*. 2007;37(1):81-86.
21. Robert D, Laura J, David H, Pat J. Diabetes, depression and quality of life, a population study. *Diabetes care*. 2009 May;27:66-77.
22. Mohamed R, Kadir AA, Yaacob LH. A Study on Depression among Patient with Type 2 Diabetes Mellitus in North-Eastcoast Malaysia. *Intl J Collab Res Intl Med Public Health*. 2012;4(8):1289-600.