Original Research

Depression, anxiety, and stress levels in patients with type 2 diabetes mellitus

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ABSTRACT

Introduction: Diabetes means a disease in which blood glucose levels are increased. Being diabetic is distressing and this intensifies diabetes. Consequently management of stress is of utmost significance in diabetic patients. Appropriate stress assessment and patients counselling are profoundly fundamental in the management of diabetes. On the off chance that the stress is not well overseen, it prompts to depression. Depression must be screened and managed appropriately. Else, it raises the tendency of suicides. **Aims and Objective:** To study the prevalence and predictors of depression and anxiety in patients of Type 2 diabetes mellitus in TS Misra Medical college & hospital Lucknow **Materials and Methods**: The study included 100 type 2 diabetic patients and 100 age and gender matched healthy individuals. Sociodemographic and relevant clinical variables were collected. They were evaluated for depression and anxiety using DASS 42 scale. **Results**: On comparison with healthy controls there were significantly increased scores of depression, anxiety and stress in the diabetics. **Conclusion:** The present study suggests that there are increased levels of depression, anxiety, and stress symptoms in diabetic population when compared with healthy controls.

Key words: Anxiety, Depression, Diabetes, Stress.

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INTRODUCTION

Diabetes is amongst most general and chronic conditions in the world. The worldwide occurrence of diabetes mellitus (DM) has risen radically over the past two decades due to increasing obesity and reduced activity levels.[1] India consists of largest number of diabetic population in the world, and it is expected that by 2025 there will be 69.9 million diabetic populations in India.[2] Type 2 DM and major depressive disorder are both perpetual maladies that may advance for a considerable length of time before analysis. Studies have discovered that nearness of diabetes expands the danger of creating depression.[3,4] In addition the existence of depression increases the chances of developing Type 2 DM.[5] Anxiety is normally related with depression and is common among diabetic population.[6,7] Co morbid depression, anxiety, and diabetes are related to worse diabetes outcomes.[8,9] Worldwide appraisals of the pervasiveness of depression and anxiety among diabetic patients seem to shift by countries; however information is less from developing nations, researches from Asia (counting India) report predominance rates of depression going from 17% to 44% and for anxiety it is from 4% to 58%.[1]

Due to fluctuating occurrence rate of diabetes just as depression and anxiety from different parts of India, the definite illness still stays indistinct. Therefore, the present study was carried out to find out the prevalence and risk factors of depression and anxiety, among patients of T2DM in TS Misra Medical college & hospital Lucknow.

MATERIALS AND METHODS

For the present study, the patients with type-2 diabetes mellitus (N=240) visiting TS Misra Medical college & hospital Lucknow from year 2016 to 2019 were taken.

Inclusion criteria
- Patients above 18 years of age
- Patients of either sex
- Patients having T2DM irrespective of their duration of illness or diabetic treatment.

Exclusion criteria
- Patients with chronic medical or surgical illness other than DM
- Patients on long term treatment for other medical illness
- Patients who were terminally ill
- Patients having renal, neurological, or cardiovascular dysfunction who require immediate hospitalization for serious illness and
- Patients who were on corticosteroids or any psychotropic drug.

The present study was based on cross sectional research design. The data on depression, anxiety and

stress were collected by means of Depression, Anxiety and Stress Scale (DASS) by Lovibond & Lovibond in1995.

Individual scores on Depression Scale were categorized into five groups:
- ➢ (0-9) Normal
- ➢ (10-13) Mild
- ➢ (14-20) Moderate
- ➢ (21-27) Severe and
- ➢ (28+) Extremely Severe.

Individual scores on Anxiety Scale were categorized into five groups:
- ➢ (0-7) Normal
- ➢ (8-9) Mild
- ➢ (10-14) Moderate
- ➢ (15-19) Severe and
- ➢ (20+) Extremely Severe.

Individual scores on the Stress Scale were categorized into five groups:
- ➢ (0-14) Normal
- ➢ (15-18) Mild
- ➢ (19-25) Moderate
- ➢ (26-33) Severe and
- ➢ (34+) Extremely Severe.[10]

Cronbach's alpha for the depression scale is 0.91, anxiety scale is 0.84 and stress scales is 0.90.[11,12] Depression, Anxiety and Stress Scale (DASS) and Hospital Anxiety and Depression Scale (HADS) are strongly correlated for both anxiety (r = 0.87) and depression (r = 0.68).[13]

Results:

Table 1: *mean age of Patients.*

Age(Years)	type 2 diabetic patients	Healthy individuals
Mean ±S.D	37.17±2.15	33.56±1.87

Table 2: Prevalence of Depression, Anxiety and Stress among Diabetes Patients on DASS Scale

	Level	N=100
Depression	Normal	49
	Mild	8
	Moderate	21
	Severe	22
Anxiety	Normal	33
	Mild	5
	Moderate	28
	Severe	34
Stress	Normal	40
	Mild	14
	Moderate	28
	Severe	18

Table 3: Depression, anxiety, and stress levels of cases and controls

Parameter	Cases	Controls	*P* value
Depression	19±1.1	7±1.9	*0.001*
Anxiety	17±2.2	6±1.1	*0.001*
Stress	20±1.9	15±2.2	*0.002*

DISCUSSION

Diabetes can be characterized as disruption of carbohydrate, fat, and protein metabolism which is because of an abatement in the release of insulin from the pancreas.[14,15] Diabetes is world's most pervasive metabolic issue and is driving reason for adult blindness.[16-19] The three classic signs of diabetes are as follows: Increased urinary output, increased thirst sensation, and increased hunger sensation.[20] Deficiency of insulin leads to the development of type 1 diabetes which is also called as juvenile diabetes. This type of diabetes can be managed by insulin injections. In type 2 diabetes, which is also called as maturity-onset diabetes, the insulin was produced from the pancreas in required amounts. However, the target cells will not respond to the insulin. The major problem in diabetes patients cannot be able to use the glucose levels though it is available. Hence, the body depends on the utilization of lipids. This will further lead to complications such as ketoacidosis. Depression is characterized by sadness, loss of interest, low self-esteem, decreased sleep quality, loss of appetite, feelings of tiredness, and impaired concentration.[21] Anxiety is feeling of worry, and nervousness and stress are mental strain due to excessive demands on the body.[22] The first purpose of this study was to assess the prevalence of depression, anxiety and stress in patients with type 2 diabetes mellitus. In this study it was observed that the 51 diabetes patients having the depression from mild to severe level. 67 diabetes patients have the anxiety from mild to severe level. 60 diabetes patients have the stress from mild to severe level. Bener A et al[23] conducted a study on diabetic patients observed that 13.6% of diabetes patients had severe depression, 35.3% had severe anxiety and 23.4% had severe stress. In female diabetes patients 63.3% had depression, 70.1% had anxiety and 73.3% had stress. Parildh H et al[24] observed the prevalence of depression in diabetes patients and concluded that 44.5% diabetes patients had no depression, 24.5% had mild depression, 25.5% had moderate depression and 5.5% had severe depression on the Beck Depression Inventory (BDI). Hermanns N et al[25] conducted a study on diabetes patients to estimate the prevalence of depression. It was estimated that 18.8% diabetes patients had depression and 19.3% had anxiety. Kaur G et al[26] found the prevalence of depressive symptoms in diabetes patients. The results of the study indicated that 11.5% diabetes patients had depression symptoms, 30.5% had anxiety symptoms and12.5% had stress symptoms. Several studies have been conducted on the prevalence of depression in India on ageing population, the rate of depression from 12.7% to 58% was observed among Indian ageing population.[27,28] Roy T et al[29] conducted a study on prevalence of depression which indicated that 34% on PHQ-9 and 36% on WHO-5 Bengali population revealed the depression. The meta-analysis of 39 studies of diabetes patients validated that 31% diabetes patients were suffering

with significant depressive symptoms.[30] there were extremely higher levels of depression, anxiety, and stress observed in the diabetic patients when compared with the healthy controls. Early screening for depression, anxiety and stress are required for the patients with type-2 diabetes mellitus. Patient training on self controlling of diabetes as well as depression, anxiety and stress are the need of time for avoiding the further complication of this disease. Psychiatric interventions are required to overcome the prevalence of co-morbidity of diabetes mellitus, in Pakistan.

CONCLUSION

The high prevalence of depression, anxiety and stress in patients with type-2 diabetes were observed in this study. It was also observed that anxiety was more rampant than depression and stress in patients with type-2 diabetes mellitus patients. It was concluded that depression, anxiety and stress were at high risk for patients with type-2 diabetes mellitus.

REFERENCES

1. Rajput R, Gehlawat P, Gehlan D, Gupta R, Rajput M. Prevalence and predictors of depression and anxiety in patients of diabetes mellitus in a tertiary care center. Indian J Endocr Metab 2016;20:746-51.
2. King H, Aubert RE, Herman WH. Global burden of diabetes, 1995 2025: Prevalence, numerical estimates, and projections. Diabetes Care 1998;21:1414 31.
3. Anderson RJ, Freedland KE, Clouse RE, Lustman PJ. The prevalence of comorbid depression in adults with diabetes: A meta analysis. Diabetes Care 2001;24:1069 78.
4. Hellman R. The Patient Safety Exchange. AACE Patient Safety – Editorials. Depression and Diabetes and Patient Safety. Editorial dated 09-02;2008:16:42:38.
5. Rubin RR, Ma Y, Marrero DG, Peyrot M, Barrett Connor EL, Kahn SE, *et al.* Elevated depression symptoms, antidepressant medicine use, and risk of developing diabetes during the diabetes prevention program. Diabetes Care 2008;31:420 6.
6. Katon W, Lin EH, Kroenke K. The association of depression and anxiety with medical symptom burden in patients with chronic medical illness. Gen Hosp Psychiatry 2007;29:147 55.
7. Lloyd CE, Dyer PH, Barnett AH. Prevalence of symptoms of depression and anxiety in a diabetes clinic population. Diabet Med 2000;17:198 202.
8. Lustman PJ, Anderson RJ, Freedland KE, de Groot M, Carney RM, Clouse RE. Depression and poor glycemic control: A meta analytic review of the literature. Diabetes Care 2000;23:934 42.
9. de Groot M, Anderson R, Freedland KE, Clouse RE, Lustman PJ. Association of depression and diabetes complications: A meta analysis. Psychosom Med 2001;63:619 30.
10. Lovibond S, Lovibond P. Depression Anxiety and Stress Scale.1995;65:1–2.
11. Antony MM, Bieling P J, Cox BJ, Enns MW, Swinson RP. Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. Psychological Assessment 1998; 10: 176–181.
12. Brown TA, Chorpita BF, Korotitsch W, Barlow DH. Psychometric properties of the Depression Anxiety Stress Scales (DASS) in clinical samples. Behaviour Research and Therapy 1997; 35: 79–89.
13. Ramli M, Rosnani S, Fasrul AA. Psychometric Profile of Malaysian version of the Depressive , Anxiety and Stress Scale 42-item (DASS- 42). MJP Online Early. 2012;1:7.
14. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes: Estimates for the year 2000 and projections for 2030. Diabetes Care 2004;27:1047-53.
15. Institute of Public Health. National Health and Morbidity Survey 2011 (NHMS 2011). Noncommunicable Diseases. Kuala Lumpur: Institute for Public Health (IPH); 2011.
16. Ivbijaro GO. Mental Health and Chronic Physical Illnesses: The Need for Continued and Intergrated Care. Vancouver: World Federation for Mental Health; 2010.
17. Zhang X, Norris SL, Gregg EW, Cheng YJ, Beckles G, Kahn HS, *et al.* Depressive symptoms and mortality among persons with and without diabetes. Am J Epidemiol 2005;161:652-60.
18. IDF Clinical Guidelines Task Force. Global Guideline for Type 2 Diabetes. Brussels: International Diabetes Federation; 2005.
19. World Health Organization. Noncommunicable Diseases. Available from: http://www.euro.who.int/en/health-topicsnoncommunicable diseases/pages/news/news/2012/10/ depression-in-europe/depression-definition/Assessed.
20. Oxford Dictionary. London: Oxford University Press; 2015. Available from: http://www.oxforddictionaries.com/.
21. Kaur G, Tee GH, Ariaratnam S, Krishnapillai AS, China K. Depression, anxiety and stress symptoms among diabetics in Malaysia: A cross sectional study in an urban primary care setting. BMC Fam Pract 2013;14:69.
22. Abdulbari B, Abdulla OA, Elnour ED. High prevalence of depression, anxiety and stress symptoms among diabetes mellitus patients. Open Psychiatry J 2011;5:5-12.
23. Bener A, Al-Hamaq AOAA, Dafeeah EE. High prevalence of depression, anxiety and stress symptoms among diabetes mellitus patients.Open Psychiatry J 2011; 5:5-12.
24. Parildar H, Cigerli O, Demirag NG. Depression, coping strategies, glycemic control and patient compliance in type 2 diabetic patients in an endocrine outpatient clinic. Pak J Med Sci. 2015;31(31):19-24.
25. Hermanns N, Kulzer B, Krichbaum M, Kubiak T, Haak T. Affective and anxiety disorders in a German sample of diabetic patients: prevalence, comorbidity and risk factors. Diabetic Medicine 2005; 22(3): 293-300.
26. Kaur G, Tee GH, Ariaratnam S, Krishnapillai AS, China K. Depression, anxiety and stress symptoms among diabetics in Malaysia: a cross

sectional study in an urban primary care setting. BMC family practice 2013;14(1): 69.

27. Rajkumar AP, Thanqudurai P, Senthilkumar P, Gayathri K, Prince M, Jacob KS. Nature, prevalence and factors associated with depression among the elderly in a rural south Indian community. Int Psychogeriatr.2009;21:372–8.

28. Devi ES, Neenu A, Anu P, Rosemary J, Anju B, Dalphina S, et al. Elderly and depression. Nur J India.2007;98:221–3

29. Roy T, Lloyd C E, Parvin M, Mohiuddin KGB, Rahman M. Prevalence of co-morbid depression in out-patients with type 2 diabetes mellitus in Bangladesh. *BMC psychiatry* 2012; *12*(1), 123.

30. Anderson RJ, Freedland KE, Clouse RE, Lustman PJ. The prevalence of comorbid depression in adults with diabetes: a metaanalysis. Diabetes Care. 2001;24:1069–1078.