

# Prevalence of Diabetes Distress in Diabetic Patients of Rural Area in Azamgarh.

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## ABSTRACT

**Background:** Diabetes mellitus is one of the most common metabolic disorders affecting physical as well as psychological aspects of patients. Diabetes distress is one of such psychological aspect of diabetes mellitus. Diabetes distress is an emotional response associated with diabetes mellitus. This is associated with adverse health outcomes, and can lead to serious complications as major depressive disorders if not managed timely. **Aims & Objectives:** This study was designed to see the occurrence of diabetes distress in patients of suffering from T2DM in rural areas. **Methods:** The present study was conducted over a period of six months, on 180 volunteer subjects from rural areas having T2DM out of which 112 were male and 68 were female patients. Various variables and different parameters were included to observe the association with diabetes distress e.g. Age, gender, level of education, SBP, DBP and BMI, HBA1C. **Results:** Diabetes distress showed association with various factors but significant changes were seen in younger, females, uneducated patients having high BMI. **Conclusion:** Diabetes distress is a preventable disorder associated with diabetes. Though pharmacotherapy is not useful, mental or behavioral support from friends and family members play a very important role in coping up with this disorder. So early screening and proper management may reduce its occurrence.

**Keywords:** Diabetes distress, diabetes mellitus, psychological association.

## INTRODUCTION

Diabetes mellitus is a group of metabolic disorder of various aetiologies characterized by elevated blood glucose level together with disturbances of carbohydrate, fat and protein metabolism. It is resulted from defects in insulin secretion, insulin action or both.<sup>[1]</sup>

As per International Federation of Diabetes (IDF) and WHO, Diabetes is one of the most important health problems, causing lots of health and economic burden. In 2015, IDF estimated that 415 million people had diabetes, which is 9% of total adult population of the world. About 642 million people are expected to have diabetes by 2040 i.e. an increase of about 55%.<sup>[2]</sup> An estimated 77 % of people with diabetes are living in developing nations which would adversely impact their economy. India is also experiencing a shift in diabetes prevalence from urban to rural areas, the affluent to the less privileged and older to younger people. The Chennai Urban population study (CUPS), published in 2008, highlighted the intra urban differences in prevalence of diabetes and the effect of urbanization.<sup>[3]</sup> DM not only affect the physical or economic status of people it also affect the mental or emotional aspects.

One of such aspects is diabetes distress (DD) which is defined as an emotional response to diabetes. It is characterised by extreme apprehension, discomfort or dejection due to perceived inability in coping with the challenge and demands of living with diabetes. Due to distress, develops a sense of being overwhelmed, fatigue, stressed and experience "burnout". Although various types of Diabetes has been classified but the most common is Type 2 DM, which is also associated with depression and distress causing more morbidity, mortality and healthcare costs.<sup>[4]</sup> So in this study diabetes distress was observed in patients of rural areas having T2DM.

It is necessary to distinguish DD from other psychological conditions eg Major Diabetes Distress (MDD).

It is estimated that up to 45 % of people in community setting with T2DM may suffer from DD.<sup>[5]</sup> In some studies it is observed that diabetes and Major Depressive Disease frequently coexist.<sup>[6]</sup> If DD is not managed timely it may lead to MDD. Poor glycaemic control and lesser self-management behaviours are associated with Diabetes distress.<sup>[7]</sup>

### Some characteristics of DD are as following:

- Feeling overwhelmed and defeated by diabetes.
- Feeling angry about diabetes.
- Feeling that diabetes is controlling one's life.
- Worrying about not taking care of diabetes well enough.
- Avoiding diabetes related tasks that might give feedback about consequences of poor control.
- Feeling caregivers as unable to truly understand.

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• Feeling alone and isolated due to diabetes. According to CUPS, published in 2008 the rural areas are now increasingly affected with DM. So in this study, we observed the occurrence of DD in patents of T2DM in rural areas of UP east.

3. Physician related distress (worried about weather doctor is taking care, quality of life)
4. Social burden distress or interpersonal distress (people blame themselves for their disease and feel it as social stigma).<sup>[11]</sup>

**MATERIALS AND METHODS**

This study was conducted in Government medical college chakrapanpur, Azamgarh which is situated in the rural area of east Uttar Pradesh. Total 180 volunteer subjects were selected which were suffering from T2DM out of which 112 were male and 68 were female patients.

**Inclusion criteria**

- Patients of age group between 45-65 and willing to participate
- Patients suffering from T2DM at least for 5 years
- Patients who can read and write

**Exclusion criteria**

- Patients less than 45 years of age
- Not willing to participate
- Patients with T1DM and gestational diabetes
- Patients having any cardiac, respiratory or thyroid disorders
- Patients having Diabetes less than 5 years of duration
- Illiterate patients
- Patients taking any antipsychotic medicines

The Diabetes Distress Scale-17 (DDS 17) was administered to screen the DD.<sup>[9]</sup> Patients were provided DDS 17 questionnaire. Questionnaire was translated in Hindi. The DDS 17 questionnaire assesses difficulties related to diabetes experienced during the past months. Each of 17 items of DDS 17 contains six points from 1-6. Total score was calculated by summing up all the 17 items score and dividing it by 17. Scored from 1 (not a problem) to 6 (very serious problem). DDS 17 yields a final score with four sub scores. An average score of less than 2 indicates little to no DD, from 2 to 2.9 indicates moderate DD and more than 3 indicates a high level of DD.<sup>[10]</sup>

**DDS assess four basic parameters**

1. Regimen related distress (distress related to manage diet, medication, exercise etc.)
2. Emotional burdens (worried about complications and living with diabetes)

This study was conducted for six months in which first reading was taken at the beginning and second recording was noted at sixth month. Patients were classified as DD +ve who were having DDS score < 3.0 at first recording and >3.0 at second recording. Other group was DD -ve who had DDS score < 2.0 at both the recordings. There were included biological variables (e.g. Systolic blood pressure, diastolic blood pressure, HBA1C, BMI, diet, exercise) and physical variables (as Age, Weight, Height, Sex).

Out of 180 patients, 42 patients did not complete the two recordings and 138 volunteers completed the study, out of which 80 were males and 58 were female subjects. A complete history of diabetes (about its duration and complications), their work habits, medications, any episodes of depression or any visit to psychiatrist and education level were taken. Physical variables were recorded at first setting. Systolic and diastolic pressure was taken by mercury sphygmomanometer in lying position making patient comfortable. HBA1C was measured by taking venous blood in EDTA vial using Biorod D10 automatic analyser.

Informed consent was taken by all the volunteers. This study was ethically approved.

**Data analysis**

Initially bivariate correlation was performed on all variables used in logistic regression model. Comparison between DD +ve verses DD-ve patients were undertaken using  $\chi^2$  and Student’s T tests.

**RESULTS**

Over six months study and out of 138 volunteer patients we found 22 patients showed changes of diabetes distress i.e. about 16 % patients were affected emotionally by diabetes. Significant changes were seen in those patients who are younger, females, less educated, had more HBA1C having high BMI and doing less physical activities. More significant changes were observed in patients with longer duration of diabetes.

**Table 1: Logistic regression model**

	Variables OR CI=95%	Trimmed model OR CI=95%	p value
Age (years)	0.95 (0.91 -- 0.99 )	0.96 (0.93 - 0.99)	<0.05
Sex F/M	3.70 (1.70 -- 7.90)	3.78 (1.74 - 7.26)	<0.05
Education (duration in years)	0.90( 0.80 -- 0.99)	0.91 (0.79 - 1.0)	<0.05
Duration since diagnosis of diabetes	0.98 ( 0.91-- 1.02)	0.99 (0.90 - 1.05)	< 0.05
HBA1C	1.09 ( 0.91 -- 1.40)	1.10 (0.90 - 1.46)	< 0.05
BMI (Kg/m2)	1.03 ( 0.94 -- 1.10)	1.05 (0.91 - 1.14)	< 0.05
SBP (mm of Hg)	1.04 (.097 -- 1.12)	--	> 0.05
DBP (mm of Hg)	0.98 ( 0.91 -- 1.06)	--	> 0.05

Exercise (Days/wk)	0.85 ( 0.75-- 0.94)	0.83 (0.71 - 0.98)	< 0.05
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OR –Odd ratio  
CI—confidence interval

**Table 2: Parameters associated with Diabetes distress**

Parameters	Total Patients (n1= 138)	DD -ve (n2=116 )	DD +ve (n3=22 )
Age	55.3 + 8.54	58.2 + 9.21	52.78 + 9.85 *
Education (duration in years)	15.5 + 4.54	15.89 + 4.28	14.45 + 4.1 *
Duration (since diagnosis of diabetes)	8.42+ 6.24	8.98 + 5.82	8.24 + 5.24 *
HBA1C	7.54 + 1.26	7.10+2.11	7.87 + 1.98 *
BMI (kg/m <sup>2</sup> )	33.45+ 5.88	30.89+ 6.5	35.54+ 5.68 *
SBP	138+ 20	136+ 18	135+ 19
DBP	82+ 10	81+ 8	82+ 9
Exercise (days/wk)	4.2+ 2.45	4.4+ 2.8	2.2+ 1.98 *

\*p < 0.05

[Table 1] shows logistic regression model for different variables. It also included trimmed model for only significant variables.

[Table 2] shows different parameters associated with Diabetes distress.

## DISCUSSION

Various risks factors have been identified responsible for DD including biomedical factors eg high BP, IGTT, psychological factors (eg anxiety, cognitive dysfunction, feeling of powerless) social factors (financial reasons, guilt, complex therapeutic schedule).

These findings suggest that Diabetes is somehow associated with depressive symptoms as lack of zeal, fatigue, feeling of loneliness, difficulties in concentration sleep abnormalities.<sup>[12]</sup>

Certain factors are directly associated with DD e.g. Age, level of education, gender, higher HBA1C level, longer duration of diabetes, more BMI and physical activity. Young patients were affected more. Younger patients suffering from diabetes may have another stress factors like family responsibility, working atmosphere and financial responsibility. So they face higher stress along with managing the diabetes. While older patients are less concerned about the management of diabetes having less responsibilities.<sup>[13]</sup>

Female gender was comparatively more affected compare to their counterpart. Various factors are associated with this difference as occurrence of T2DM is comparatively more in women, diet difficulty, carelessness about medication, requirement of interpreter and being unaware of monitoring of glucose level .Less physical exercise or more BMI are also associated with development of DD. Being overweight is related to psychological distress.<sup>[14]</sup> Though many healthcare workers are aware of effects of diabetes distress on self-management and its outcomes,<sup>[15]</sup> but very less importance has been given to other important stressors. HBA1C was also significantly associated with DD and showed a positive correlation. This finding was in line with other studies.<sup>[16]</sup> It has been studied that improvement in DD has reducing effect on HBA1C.<sup>[17]</sup> 5 I approach is an important aspect in

management of diabetes, i.e. Initiate discussion, Identify source and degree of DD, Inform means of minimizing diabetes distress, Incorporate healthy coping skills and Improve quality of diabetes care & support.<sup>[18]</sup>

In a study by Albright, et al,<sup>[19]</sup> it was observed that personal and family stress, were significantly associated with diabetes self-care activities. Thus early assessment of chronic life stressors is must in designing health care programmes for such patients. Studies show that this is the most successful when the conversation is initiated by clinicians.<sup>[20]</sup> It is very important to refer the patients to the services which can help the patients to reduce the negative effects of those stressors before they affect the management of diabetes.

DD is not likely to be benefitted with pharmacotherapy,<sup>[21]</sup> a watchful waiting approach may improve of patients having mild depressive symptoms. The American Diabetes Association emphasized the importance of early screening and diagnosis to manage this condition to have better outcomes.<sup>[22]</sup>

## CONCLUSION

In this study the importance of screening and addressing emotional and psychological health in people with type 2diabetes has been emphasized. Given the high prevalence of depression and DD, routine screening with type 2 diabetes should be encouraged to optimize mental health and improve quality of life. Health workers treating diabetic patients should be aware of diabetes distress or depressive conditions, and manage it with team approach having multidiscipline. These patients should be supported morally and psychologically by friends and family members. Moreover, Diabetes self-management education (DSME) is an effective method to cope up with DD.

## REFERENCES

1. World Health Organization. Consultation on the definition, diagnosis and classification of diabetes mellitus. Geneva: World Health Organization, 2011.
2. International Diabetes Federation. IDF Diabetes Atlas, 7th edition. Brussels, Belgium: International Diabetes Federation, 2015.

3. Mohan v, Deepa M, Anajna RM, et al. Incidence of diabetes and prediabetes in a selected urban south indian population (CUPS -19). *J Assoc Physicians India*. 2008;56:152-7.
4. Egede LE, Walker RJ, Bishu K, Dismuke CE. Trends in Costs of Depression in Adults with Diabetes in the United States: Medical Expenditure Panel Survey, 2004-2011. *Journal of general internal medicine*. 2016;31:615-622. doi: 10.1007/s11606-016-3650-1.
5. Fisher L, Hessler DM, Polonsky WH, Mullan JT. When is diabetes distress clinically meaningful? Establishing cut points for the Diabetes Distress Scale. *Diabetes Care*. 2012;35:259-264. doi: 10.2337/dc11-1572.
6. Roy T, Lloyd CE. Epidemiology of depression and diabetes: a systematic review. *J Affect Disord*. 2012;142:S8-S21. doi: 10.1016/S0165-0327(12)70004-6.
7. Fisher L, Glasgow RE, Strycker LA. The relationship between diabetes distress and clinical depression with glycemic control among patients with type 2 diabetes. *Diabetes Care*. 2010;33(5):1034-1036. doi: 10.2337/dc09-2175..
8. Polonsky WH, et al. Assessing psychosocial distress in diabetes: development of the diabetes distress scale. *Diabetes care*. 2005;28:626-631. doi: 10.2337/diacare.28.3.626.
9. Li C, et al. Prevalence and correlates of undiagnosed depression among U.S. adults with diabetes: the Behavioral Risk Factor Surveillance System, 2006. *Diabetes research and clinical practice*. 2009;83:268-279. doi: 10.1016/j.diabres.2008.11.006.
10. Kalra S, Unnikrishnan AG, Baruah MP. Diabetes Therapy by ear: Abidirectional process. *Indian J endocrinol Metab*. 2013;17:S596-8
11. National Institute of Mental Health (NIMH) Depression. 2011
12. *Diabetes Care*. 2010; 33(1):22-28.
13. B.-H. Chew, R. Vos, S. Mohd-Sidik, and G. E. H. M. Rutten, "Diabetes-related distress, depression and distress-depression among adults with type 2 diabetes mellitus in Malaysia," *PLoS One*, vol. 11, no. 3, article e0152095, 2016.
14. Wott CB, Carels RA. Overt weight stigma, psychological distress and weight loss treatment outcomes. *Journal of Health Psychology*. 2010;15(4):608-614.
15. B.-H. Chew, R. Vos, S. Mohd-Sidik, and G. E. H. M. Rutten, "Diabetes-related distress, depression and distress-depression among adults with type 2 diabetes mellitus in Malaysia," *PLoS One*, vol. 11, no. 3, article e0152095, 2016.
16. Polonsky WH, Fisher L, Earles J, et al. Assessing psychosocial stress in diabetes. *Diabetes Care*. 2005;28:626-631
17. L. E. Egede, "Effects of depression on work loss and disability bed days in individuals with diabetes," *Diabetes Care*, vol. 27, no. 7, pp. 1751-1753, 2004.
18. Kalra S, Verma K, Balhar Y, et al. Thyro-stress. *Indian J Endocr Metab*. 2017;21(4):632-3
19. Albright TL, Parchman M, Burge SK. Predictors of self-care behavior in adults with type 2 diabetes: An RRNeST study. *Family Med*. 2001; 33:354-360.
20. Farm BAS, et al. Translation, Revision, and Validation of the Diabetes Distress Scale for Indonesian Type 2 Diabetic Outpatients with Various Types of Complications. *Value in health regional issues*. 2017;12:63-73. doi: 10.1016/j.vhri.2017.03.010.
21. Fournier JC, DeRubeis RJ, Hollon SD, et al. Antidepressant drug effects and depression severity: a patient-level meta-analysis. *JAMA*. 2010;303 (1):47-53. doi: 10.1001/jama.2009.1943.
22. American Diabetes Association Standards of medical care in diabetes—2017. *Diabetes Care*. 2017; 40 (Supplement 1):S39-S40.

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