

# A Study of Prevalence of Depression in Type 2 Diabetic Patients in a Tertiary Care Centre

Tolstoy Rajangam<sup>1</sup>, Mritheika Priyashini R<sup>2</sup>, Santni Manickam<sup>3</sup>

## ABSTRACT

**Introduction:** Diabetes mellitus and depression are mutually aggravating conditions. Here we present a study on the prevalence of depression and their association with the control of the Type 2 diabetes patients above 40 years of age in a tertiary care center.

**Material and Methods:** It was a cross-sectional study involving 100 patients with Type 2 Diabetes mellitus above the age of 40 years with HbA1c of < 8% was taken as the controlled group and with HbA1c of ≥ 8% as the uncontrolled group. 'The Hamilton's Depression Scoring' questionnaire was used to assess their level of depression. Both the groups were correlated statistically.

**Results:** There was a statistically significant association between the depression and the control of the diabetes mellitus in patients aged above 40 years ( $p < 0.0016$ ). There was also a statistically significant correlation between the suicidal tendency with the control of the diabetes mellitus in those patients ( $p < 0.05$ ). However, there was no positive correlation between the control of diabetes and anxiety.

**Conclusion:** People with uncontrolled diabetes were more prone to depression and suicidal tendencies than the controlled diabetics.

**Keywords:** Diabetes Mellitus, Depression, Suicidal Tendency, Anxiety, Elderly Men

## INTRODUCTION

One of the greatest challenges of medicine in the 21st century is co morbidity, where two or more disease occurs together in the same individual.<sup>1</sup> Diabetes mellitus is a chronic disease which affects virtually every organ in the human system. The World Health Organization projected that 300 million people will suffer from diabetes by 2025.<sup>2</sup> Globally, an estimated 43 million diabetics have symptoms of depression.<sup>3</sup> People with diabetes who have depression often find it more difficult to follow diabetes treatment recommendations and have poor metabolic control. Thus depression can further aggravate the blood sugar levels and hence 'a vicious cycle' occurs. These patients also have higher complication rates, increased health care use and increased disability, lost productivity, lower quality of life and increased risk of death.<sup>4</sup> There are several international studies evaluating the prevalence of depression in the diabetic patient. A study on Diabetes and Depressive Symptoms in Korean Women was performed for 6,572 women obtained from the Fifth Korean National Health and Nutrition Examination Survey conducted in 2010 to 2011 which concluded saying that physicians should manage diabetes in consideration to depression, as depressive symptoms were observed in 22.6%

of subjects with diabetes.<sup>5</sup> The prevalence of Depression, anxiety and stress symptoms among diabetics was studied by a cross-sectional study in Malaysia which concluded that these symptoms were prevalent among Type 2 diabetics, with a third being classified as anxious.<sup>6</sup> A study on the bidirectional association between depression and Type 2 diabetes in Women available on Arch Intern Med suggests that the relative risk of developing depression is greater in diabetics when compared to non-diabetics.<sup>7</sup>

In patients with Diabetes and essential hypertension, the prevalence of depression and suicidal tendencies was studied and was found that depression and suicidal tendencies are found prominent in the diabetic patient as well as hypertensive, more being in the uneducated side.<sup>8</sup> Diabetes may be diagnosed and treated, but the depression in these patients goes unnoticed. Most of the time, depression is not considered an important factor, often ignored and left untreated.

The available data regarding the prevalence of depression in type 2 diabetes patients in India are limited. We investigated the prevalence of depression in patients with Type 2 Diabetes attending a tertiary care hospital in south India and its relationship with glycemic control was examined.

## MATERIAL AND METHODS:

It was a cross-sectional study of 2 months duration involving 100 patients with Type 2 Diabetes of more than 5 years duration above the age of 40 years who presented to the Department of General Medicine and Endocrinology. The controlled group was taken as the one with HbA1c of < 8% and the uncontrolled group was with HbA1c of ≥ 8%. Patients with gestational diabetes, cardiac failure, severe renal failure, stroke and other such complications may be excluded.

A standard questionnaire for depression, 'The Hamilton's Depression Scoring' questionnaire was given to each patient. The questionnaire was given to the patients to assess their

<sup>1</sup>Professor, Department of Medicine, <sup>2</sup>PG Student, Department of Medicine, <sup>3</sup>Assistant Professor, Department of Medicine, PSG Institute of Medical Sciences and Research, India

**Corresponding author:** Dr. Santni Manickam MD, Assistant Professor, Department of Medicine, PSG Institute of Medical Sciences and Research, India

**How to cite this article:** Tolstoy Rajangam, Mritheika Priyashini R, Santni Manickam. A study of prevalence of depression in type 2 diabetic patients in a tertiary care centre. International Journal of Contemporary Medical Research 2018;5(8):H3-H5.

**DOI:** <http://dx.doi.org/10.21276/ijcmr.2018.5.8.22>

level of depression. The glycemic control of each patient was verified by their HbA1c results. Statistical analysis was performed using SPSS version 20. Prevalence of depression in both populations of controlled and uncontrolled diabetic patients was presented in percentage. Major determining factors like suicidal thoughts and anxiety are elaborated in addition to the depression score.

Ethical clearance was obtained from the institutional Human Ethics Committee and Informed consent was obtained from the respondents before administering the questionnaire.

### STATISTICAL ANALYSIS

Descriptive statistics like mean and percentages were used for the analysis for the interpretation of results. Comparison of groups was done by chi square test.

### RESULTS

The study was conducted to find out the prevalence of depression in Type 2 Diabetic people who are over 40 years of age and the relation with controlled vs. uncontrolled diabetic status. A total of around 100 people were involved in this study and the results are tabulated below based on Hamilton's scoring.

Table-1 shows that when compared to the controlled diabetic patients, the uncontrolled patients have more prevalence of depression in each of the mild, moderate and severe segment. On doing a statistical analysis comparing the controlled and the uncontrolled diabetic groups using Chi-square, the p-value was found to be  $p < 0.0016$  which is statistically significant. The Odds ratio obtained was 2.79 which imply that the uncontrolled diabetics have twice the

	Frequency (Percentage)	
	Controlled diabetes	Uncontrolled diabetes
Normal (0-5)	17 (38%)	9 (18%)
Mild (6-8)	8 (16%)	11 (22%)
Moderate (8-11)	11 (22%)	16 (32%)
Severe (>12)	12 (24%)	14 (28%)

Table-1: Depression

	Frequency (Percentage)	
	Controlled diabetes	Uncontrolled diabetes
Normal (0-5)	47 (94%)	34 (68%)
Mild (6-8)	3 (6%)	6 (12%)
Moderate (8-11)	0 (0%)	6 (12%)
Severe (>12)	0 (0%)	4 (8%)

Table-2: Suicidal tendencies

	Frequency (Percentage)	
	Controlled diabetes	Uncontrolled diabetes
Normal (0-5)	11 (22%)	9 (18%)
Mild (6-8)	22 (44%)	25 (50%)
Moderate (8-11)	15 (30%)	14 (28%)
Severe (>12)	2 (4%)	2 (4%)

Table-3: Anxiety

risk of confronting with depression when compared to the patients with good glycemic control.

Table 2 also shows the similar pattern that the uncontrolled diabetic patients exhibit more suicidal tendencies than the controlled group in all segments – mild, moderate and severe. Comparing the two groups by the Chi-square test, it was found to be statistically significant ( $P < 0.05$ ). Suicidal tendencies, like the depression score, are associated with the uncontrolled diabetic status.

Table 3 shows that in both the controlled as well as the uncontrolled diabetic group, the anxiety is variable in its severity and there is no statistical correlation between either of the two groups with anxiety ( $P$ -value - 0.935).

### DISCUSSION

Our study confirms that people with uncontrolled diabetes have increased chances of depression when compared with the controlled diabetics. The uncontrolled diabetics have twice the risk of confronting with depression when compared to the patients with good glycemic control. Our results were similar to many other studies. Anderson et al summarised 20 cross-sectional reports and that the odds of depression in the diabetic group were twice that of the non-diabetic comparison group.<sup>9</sup>

A study by Rajesh Rajput et al showed that depression and anxiety symptoms were two-fold higher in diabetic patients as compared to healthy controls.<sup>10</sup> In a population-based study in Chennai, it was found that the prevalence of depression was 23.4%.<sup>11</sup> Raval *et al.* found a very high prevalence (41%) of depression in 300 patients with type 2 diabetes in a tertiary care hospital in Northern India.<sup>2</sup> Another study conducted at a tertiary care center found the prevalence of depression in T2DM patients to be 16.9%.<sup>12</sup> A multi-center study done in Pakistan found prevalence at 43.5%.<sup>13</sup>

In the present study, 94% of the patients with controlled diabetes do not exhibit suicidal tendencies and 6% of them exhibit mild symptoms. Whereas in uncontrolled group, the suicidal tendencies are nil in 68% of the patients while 12% has mild and moderate symptoms. There is a severe tendency of suicidal tendencies in 8% of uncontrolled group. According to Subramani et al the percentage of subjects with suicidal thoughts is 12.4%.<sup>14</sup> It was 3.1 % in study by Kessler et al.<sup>15</sup> It was 9.2% according to Nock M K et al.<sup>16</sup> According to study by Siddharth Sarkar et al suicidal ideas and attempts are more frequent in patients with diabetes mellitus than healthy or medically ill controls, Psychological morbidity, including depression, precedes suicidal ideas and attempts.<sup>17</sup> Thus a detailed psychiatric analysis to rule out depression is mandatory for all diabetic patients as each influences the other significantly.

### CONCLUSION

In our study, we found that people with uncontrolled diabetes were more prone to depression and suicidal tendencies than the controlled diabetics. However, there is no statistical correlation between either of the two groups with anxiety. Interventional studies would bring out the effect of treating

diabetes as well the depression on each other. As the association between diabetes and depression is bidirectional, a proper approach towards both is required in order to prevent them from becoming worse.

## REFERENCES

- Graham CC, Sartorius N, Cimino LCGL Diabetes and depression in general practice: meeting the challenges of managing comorbidity. *Br J Gen Pract* 2014; 64: 386-387.
- Raval A, Dhanaraj E, Bhansali A, Tiwari P Prevalence & determinants of depression in type 2 diabetes patients in a tertiary care centre. *Indian J Med Res* 2010; 132: 195-200.
- Mental health and chronic physical illnesses. The need for continued and integrated care. Vancouver: World Federation for Mental Health; 2010.
- Kaveeshwar SAJC The current state of diabetes mellitus in India. *Australas Med J* 2014;7: 45-48.
- Han Na Sung, Hong Seok Chae, Eung Soo Kim, Jong Sung Kim Korean J Fam Med. Diabetes and Depressive Symptoms in Korean Women: The Fifth Korean National Health and Nutrition Examination Survey (2010-2011) 2014; 35: 127-135.
- Gurpreet Kaur, Guat Hiong Tee, Suthahar Ariaratnam, Ambigga S Krishnapillai, Karuthan China. 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.
- An Pan, Michel Lucas, Qi Sun, Rob M. van Dam, Oscar H. Franco, JoAnn E. Manson, Walter C. Willett, Alberto Ascherio, Frank B. Hu Bidirectional Association between Depression and Type 2 Diabetes in Women. . 2010; 170: 1884-1891.
- MN Igwe, R Uwakwe, CA Ahanotu, GM Onyeama, MO Bakare, AC Ndukuba Factors associated with depression and suicide among patients with diabetes mellitus and essential hypertension in a Nigerian teaching hospital *Afr Health Sci*. 2013; 13: 68-77.
- Anderson RJ, Freedland KE, Clouse RE, Lustman PJ. The prevalence of comorbid depression in adults with diabetes: a meta-analysis. *Diabetes Care*. 2001; 24:1069-1078.
- Rajesh Rajput, Pratibha Gehlawat, Deepak Gehlan, Rajiv Gupta, Meena Rajput Prevalence and predictors of depression and anxiety in patients of diabetes mellitus in a tertiary care center; *Indian journal of endocrinology and metabolism*:2016;20:746-751.
- Poongothai S, Anjana RM, Pradeepa R, Ganesan A, Unnikrishnan R, Rema M, et al. Association of depression with complications of type 2 diabetes – The Chennai Urban Rural Epidemiology Study (CURES-102). *J Assoc Physicians India* 2011;59:644-8.
- Balhara YP, Sagar R. Correlates of anxiety and depression among patients with type 2 diabetes mellitus. *Indian J Endocrinol Metab* 2011;15 Suppl 1:S50-4.
- 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.
- Poongothai S, Pradeepa R, Ganesan A, Mohan V

Prevalence of Depression in a Large Urban South Indian Population — The Chennai Urban Rural Epidemiology Study 2009 (Cures – 70). *PLoS ONE* 4(9): e7185.

- RC Kessler RC, Berglund P, Borges G, Nock M, Wang PS Trends in suicide ideation, plans, gestures, and attempts in the United States, 1990-1992 to 2001-2003. *JAMA* 2005;293: 2487-95.
- Nock MK, Borges G, Bromet EJ, Alonso J, Angermeyer M, et al Crossnational prevalence and risk factors for suicidal ideation, plans and attempts. *Br J Psychiatry*. 2008;192: 98-105.
- Sarkar S, Balhara YP. Diabetes mellitus and suicide. *Indian journal of endocrinology and metabolism*. 2014;18:468.

**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 16-07-2018; **Accepted:** 03-08-2018; **Published:** 31-08-2018