

## Original Research Article

# Assessment of depression, anxiety and stress among patients with type II diabetes mellitus attending a tertiary care centre

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### ABSTRACT

**Background:** India is home to 17% diabetic (~80 million) population of world and is expected to increase to 135 million by 2045. Chronic illnesses association with psychiatric morbidity. Positive relationship exists between diabetes and psychiatric disorders and have definite negative impact on self-care practices, worsening physical and mental health, diminishing quality of life (QoL) and poor resulting in greater economic burden both to family and society.

**Method:** A cross-sectional study was conducted in a diabetes clinic of a tertiary care facility in North India. Hindi version of DASS 21 was used to ascertain the psychological health of patients which determine the presence of depression, anxiety and stress. Data were analysed using SPSS 20.0

**Results:** We found a high prevalence of depression (49.7%), anxiety (69.7%) and stress (68.3%) among patients belonging to lower socioeconomic status, rural residence and lower literacy rates/illiteracy. The prevalence of depression was higher among females.

**Conclusions:** There is a high prevalence of psychiatric morbidity among the North Indian diabetic population which shows some variability with changing demographic profile.

**Keywords:** Depression, Anxiety, Stress, DASS, Diabetes mellitus

### INTRODUCTION

Mental and physical health are mutually related.<sup>1</sup> A positive relationship exists between diabetes and psychiatric disorders like depression and schizophrenia.<sup>2-6</sup> They have a definite negative impact on self-care practices, worsening physical and mental health, diminishing QoL and poor outcomes resulting in greater economic burden both to the family and society. There is a lack of sufficient data among north Indian diabetic subjects in this sphere. Therefore, we conducted this study to find out the prevalence of depression, anxiety and stress among type II diabetic subjects attending diabetes clinic.

### METHODS

This cross-sectional study was conducted in LLR hospital GSVM medical college Kanpur Uttar Pradesh between

January '16 and January '17. Hindi version of DASS 21 was used to ascertain the psychological health of 170 patients over the age of 20 years with at least a 2-year history of type 2 diabetes mellitus.<sup>7</sup> Only the patients not consenting for the study were excluded. Items of the DASS-21 present in the past week were noted. 145 responses were finally included for analysis. The institutional ethics committee clearance was duly sought before the conduction of the study.

### Statistical analysis

Analysis of data was performed using SPSS version 20.0. Categorical variables were expressed as percentages. Comparison between variables was done by using chi square test. Association between variables was considered statistically significant if the p value was the less than 0.05.

**RESULTS**

We found that 72 (49.7%) of study subjects were suffering from depression. Moderate depression was the most prevalent 43 (29.7%) form of depression. 101 patients (69.7%) experienced anxiety of which severe anxiety 36 (24.8%) was most prevalent. And 40 (27.6%) out of 99 (68.3%) stressed patients exhibited severe some amount of stress which was the most form (Table 1).

Various socio-demographic variables were compared for presence of depression, anxiety and stress. A statistically significant difference in presence of depression was found when comparing males (41%) versus females (63%), illiterates (85%) versus graduates (25.5%), rural (78.8%)

versus urban (41.2%) dwellers and in people below (82.8%) versus above (41.4%) the poverty line. When comparing anxiety among these demographic profiles a statistically significant difference was found between illiterates (95%) and graduates (52.9%), rural (97%) and urban (61.6%) dwellers and people below (93.1%) versus above (63.8%) the poverty line. Differing from depression, the difference in anxiety among males (63.7%) and females (79.6%) was not statistically significant. When comparing stress levels, statistically significant difference observed between illiterates (100%) and graduates (49%), rural (93.9%) and urban (60.7%) dwellers and in people below (93.1%) versus above (62.1%) poverty line. Similar to anxiety, difference in stress levels among males (62.6%) and females (77.8%) not statistically significant (Table 2).

**Table 1: Prevalence and grading of depression anxiety and stress in study population.**

Variables	Mild		Moderate		Severe		Very severe		Total	
	N	%	N	%	N	%	N	%	N	%
<b>Depression</b>	18	12.4	43	29.7	5	3.4	6	4.2	72	49.7
<b>Anxiety</b>	6	4.1	34	23.4	36	24.8	25	17.2	101	69.7
<b>Stress</b>	16	11	27	18.6	40	27.6	16	11.0	99	68.3

**Table 2: Comparing depression, anxiety and stress among various socio-demographic profiles.**

Variables		Males, n=91	Females, n=54	Urban, n=112	Rural, n=33	Illiterates, n=20	Graduates, n=51	BPL, n=29	APL, n=116
		<b>Depression</b>	N	38	34	46	26	17	13
	%	41.8	63	41.2	78.8	85	25.5	82.8	41.4
<b>Anxiety</b>	N	58	43	69	32	19	27	27	74
	%	63.7	79.6	61.6	97	95	52.9	93.1	63.8
<b>Stress</b>	N	57	42	68	31	20	25	27	72
	%	62.6	77.8	60.7	93.9	100	49	93.1	62.1

**DISCUSSION**

In our study the prevalence of depression, anxiety and stress was 49.7%, 69.7% and 68.3% respectively compared to 11.5%, 30.5% and 12.5% among type ii diabetic outpatients in Klang valley, malaysia.<sup>8</sup> in a similar study done in Pulau Penang and melange of Malaysia the prevalence of das was 26.6%, 40% and 19.4%, respectively.<sup>9</sup> The rates of depression anxiety and stress were significantly higher than the studies conducted in other parts of Asia but were however comparable to a study done in northern India using PHQ (patient health questionnaire) where it was present in 41% of the individuals.<sup>10</sup>

In our study 12.4%, 29.7%, 3.4% and 4.2% had mild, moderate, severe and extremely severe depression respectively which was comparable to a similar study from northern India where severe depression was present in 4%, moderate in 10%, and mild depression was present in 27% subjects. The minimal difference could be due to the difference in the number of subjects (90 versus 145 in our study) and the difference in the study tool used (PHQ-9 versus DAAS-21)

The depressive symptom rates found in our study were higher than studies conducted in rural America, UAE (12.5%) and Germany (10.2%).<sup>11-13</sup> In our study prevalence of anxiety and stress among the patients was found to be significantly higher than depression which is in keeping with current literature in which anxiety rates are higher than depression.<sup>14-17</sup> A study in Qatar using the same instrument as ours, i.e., DASS 21 found more than half of the diabetics have depressive, anxiety and stress symptoms.<sup>18</sup> The rates of depression and anxiety were even higher when compared with studies done on other chronic ailments such as chronic obstructive pulmonary disease (COPD).<sup>19</sup>

The depression rates were higher in females (63%), illiterates (85%), those from rural areas (78.8%) and from below the poverty line (82.8%). This was comparable to another study done in northern India using a different tool where depression was significantly more prevalent in rural subjects as compared to urban ones. However, some studies, did not show any sex predilection of depression.<sup>20</sup> Higher prevalence and risk of depression in females compared to males can be attributed to various socio-cultural and biological factors, especially in a patriarchal society like ours.

Several studies revealed that sex, ethnicity, marital status, duration of diabetes, psychiatric illness in the family and alcohol consumption were predictors of depression.<sup>21-27</sup> In the study conducted in Qatar duration of diabetes was significantly associated with depression among diabetics. It could be theorized that the poorer illiterate people and those from rural areas may be exposed to psychosocial stressors such as enhanced socioeconomic constraints, poor education and perceived discrimination. Consequently, these issues might augment distress thereby increasing the levels of depression among them. In several studies including one community-based cross-sectional study in the United States, Taylor et al. Established that African Americans were more likely to have clinically significant depression and anxiety.<sup>28</sup> This was probably due to a greater array of stressors in the form of discrimination, socioeconomic adversities and enhanced caregiver burden for African Americans as compared to Caucasians.

In our study most of the patients turned out to be married considering the socio-cultural norms of the country, there were widowed persons, no divorcees, so the category of marital status was dropped out in the analysis for obvious reasons but globally, it is recognized that being married is associated with less psychiatric morbidity including depression.<sup>29-31</sup>

In our study stress was present in 77.8% of the females compared to 61.6% of males. Thus, the prevalence of depression was found to be having sex predilection though in anxiety and stress, it failed to show a statistical significance probably because of the unequal sample size. Women both housewives and workers are always at an increased predilection for depression anxiety and stress as already stated by several studies.<sup>32,33</sup>

Education plays a major role in alleviating stress as it puts the person at a better advantage in knowing about his ailments. Not surprisingly in our study, it was seen that 100% of the illiterate and 100% of the people educated up to high school suffered from stress be it mild, moderate or severe compared to 49% of the subjects who were graduates and above. Of those coming from rural areas 93.9% and 93.1% of those from below the poverty line suffer from stress. In the Malaysian study conducted by Kaur et al there was no association between other socio-demographic, lifestyle and clinical factors with stress symptoms. This was probably because of the better socioeconomic condition or varying socio-cultural differences between the areas.

### **Limitations**

The limitation of our present study was its small sample size. It was conducted at a single tertiary centre. Further multi-centric studies with larger sample size should be conducted to know about additional factors and probably a follow-up study could better establish the relation of glycaemic control and depression anxiety stress

### **CONCLUSION**

Our study depicted a high rate of prevalence of psychiatric morbidity among the diabetic study population. It showed significant sex predilection, especially for depression, and predilection towards the rural population, among the uneducated and the economically backward. This naturally calls for better education programmes and the general upliftment of society for better control of this chronic ailment, which has become an epidemic in our country.

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