

## Original Research Article

# Pattern of stress and anxiety behaviour among people with type 2 diabetes in a tertiary care hospital of Delhi, India: an observational study

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### ABSTRACT

**Background:** The prevalence of stress and anxiety in diabetes is considerably higher than normal population and found to have a negative impact on diabetes. The aim of this study was to examine the relationships among perceived diabetes-related stress and anxiety behaviors in adults living with type 2 diabetes (T2DM).

**Methods:** In this descriptive and cross sectional study, systematic random sampling technique was used to select the sample of type 2 diabetic patients. Scheduled interview of 412 type 2 diabetic patient was conducted at outpatient department of a tertiary care hospital in New Delhi.

**Results:** Out of 412 diabetic patients, 58.7 percent feel diabetes-related stress and anxiety behaviors when they think about living with diabetes. Age of patients, educational status, occupation and average monthly family income of diabetic patients are statistically associated with perceived diabetes-related stress and anxiety behaviors of type 2 diabetes mellitus patients. Lifestyle behaviour like diet pattern (vegetarian or nonvegetarian diet) and moderate intensity activities like walking are also statistically associated with perceived diabetes-related stress and anxiety behaviors of type 2 diabetes mellitus patients.

**Conclusions:** This study found a high prevalence of diabetes-related stress and anxiety behavior in patients with Type 2 DM. Therefore, the care of individuals with type 2 Diabetes Mellitus (DM) should include the screening and possible management of stress and anxiety in order to achieve and sustain treatment goals.

**Keywords:** Lifestyle behaviour, Stress, Anxiety, Type 2 diabetes mellitus

### INTRODUCTION

Noncommunicable diseases (NCDs) are emerging as major research foci with their increasing global prevalence. In both developed and developing regions of the world, including South Asia, NCDs are now leading causes of morbidity and mortality.<sup>1</sup> With their complicated etiologies, long durations and frequent comorbidities NCDs possess unique challenges for global health. NCDs can have far-reaching personal and interpersonal effects that are difficult to capture in epidemiological and biomedical studies, yet are crucial to the trajectory of these

illnesses. It is therefore necessary to adopt an analytic perspective that embraces the complex natural histories of chronic diseases as well as their potential comorbidities. A particularly well-studied instance of comorbidity is the overlap between type 2 diabetes and depression. This comorbidity has been estimated to affect anywhere from 11% to 71% of individuals with diabetes, depending on the population studied and the diagnostic method used, and it is strongly associated with physical and mental morbidity and even mortality.<sup>2-6</sup> Clinical and epidemiological studies have demonstrated the cyclical nature of diabetes-depression comorbidity, and medical social scientists have

identified some of the social determinants linking the two conditions, including socioeconomic status (SES), the social significance of foods and activity patterns.<sup>7-10</sup> The similarity between depression and anxiety symptoms, etiologies, and methods of diagnosis, as well as their common comorbidity, suggests that anxiety should be as great a concern in NCD comorbidity as depression. Indeed, according to findings from the World Mental Health Survey, diabetes is roughly equally associated with depression and anxiety around the world.<sup>11,12</sup> Yet, with very few exceptions, the potential impact of anxiety disorders on diabetes has received much less attention than diabetes-depression comorbidity.<sup>13</sup> Here we detail the findings of an exploratory mixed-method study of type 2 diabetes (hereafter diabetes) and stress and anxiety symptoms among diabetic patients in a tertiary care hospital of New Delhi, India.

India is home to the second-largest population of individuals with type 2 diabetes in the world.<sup>14</sup> The limited existing evidence suggests that depression and anxiety are also common, although prevalence studies are few.<sup>15</sup> Little is known about how diabetes and poor mental health co-occur in this setting or about what social determinants might shape their comorbidity. On the basis of the observation that high levels of stress and anxiety symptoms were significantly more prevalent in our study, we believe that it is important to consider the causes and correlates of stress and anxiety comorbid with diabetes. Anxiety is an excessive amount of fear in anticipation of something bad happening.<sup>16</sup> Usually, this is a healthy response to a real threat. For example, certain situations, such as public speaking or having a 'hypo' (hypoglycaemia or low blood glucose), can trigger anxious feelings. Anxiety becomes a serious problem (a mental health condition, known as an 'anxiety disorder') when these feelings last for a long time (i.e., at least two weeks) and affect daily life adversely. What is clear is that stress and anxiety can affect the way people manage their diabetes and, in turn, their physical health. Some examples include checking blood glucose levels continuously due to intense fears of hypos or developing complications avoiding injecting in public or not injecting at all, due to worry about what others might think leads to stress and anxiety.

The aim of this study is to examine the relationships among perceived diabetes-related stress and anxiety behaviors in adults living with type 2 diabetes (T2DM). Based on this we propose a socially grounded interpretation of the patterns emerging from our preliminary data and offer suggestions for future research designed to assess the broader applicability of this interpretation for NCD - stress and anxiety comorbidity in other contexts.

## METHODS

The study is descriptive and cross sectional in nature which aimed to examine the relationships among perceived

diabetes-related stress and anxiety behaviors in adults living with type 2 diabetes. Systematic random sampling technique was used to select the sample of type 2 diabetic patients. The sample for the present study was selected taking into consideration the inclusion Criteria which are patients with confirmed type 2 diabetes mellitus and aged 18 years or older, patients attending outpatient department of a tertiary care hospital in New Delhi and who give consent to be a part of the study and exclusion criteria included those patients who are seriously ill or have been advised admission in the hospital.

The study variables include dependent variable which is perceived diabetes-related stress and anxiety behaviors and independent variables which are sociodemographic characteristics such as gender, age, marital status, religion, educational status, occupation, average monthly family income, and lifestyle behaviour which includes physical activities and diet pattern of the patients with type 2 diabetes.

For collection of data a self-developed validated semi structured questionnaire was prepared based on WHO STEPS Instrument for NCD Risk Factors (Core and Expanded Version 1.4). Scheduled interview of 412 type 2 diabetic patient was conducted between September 2018 to December 2018 at outpatient department of a tertiary care hospital in New Delhi. All data collected from filled up questionnaire were entered into Microsoft Excel 2007 worksheet in the form of a master chart. These data were classified and analyzed using Statistical Package for the Social Sciences (SPSS version 20) as per the aims and objectives of the study. The data on sample characteristics were described in the form of tables. Inferential statistics such as Chi-square test was used to find out the association of sociodemographic characteristics and lifestyle behaviour with perceived diabetes-related stress and anxiety behaviors of type 2 diabetes mellitus patients.

## RESULTS

The sociodemographic characteristics of the study population showed that out of 412 diabetic patients, 52.7 percent were males while 47.3 percent were females, maximum 35.7 percent were of 41-50 age group (Figure 1), mostly (95 percent) were married and 90 percent were Hindus. About 16 percent of the study subjects were illiterate and 45.1 percent were educated only up to high school level (Figure 2), about 38.3 percent of the subjects were unemployed (Figure 3) and majorities of them (81.6 percent) were women engaged as housewives, 74.8 percent diabetic patients had average monthly family income fall below Rs. 20,000.

The lifestyle behaviour showed that out of 412 diabetic patients, 32.7 percent were vegetarian, 51.9 percent had regular walking behaviour and 58.7 percent feel diabetes-related stress and anxiety behaviors when they think about living with diabetes (Figure 4).

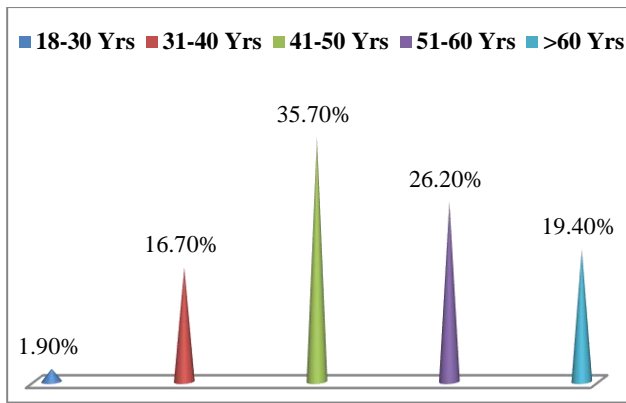


Figure 1: Distribution of age of the patient.

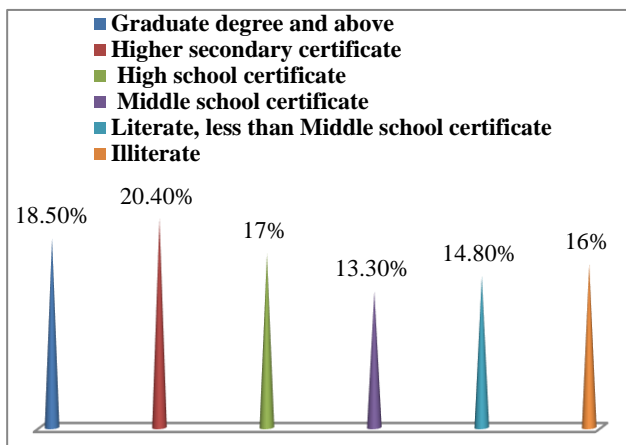


Figure 2: Distribution of Educational status of the patient.

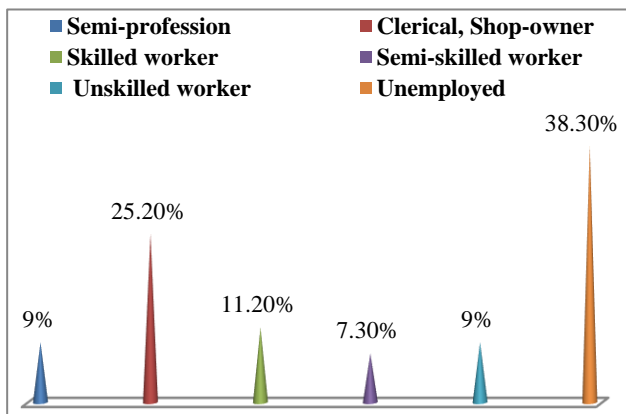


Figure 3: Distribution of Occupation of the patient

After assessing, observing and analyzing all the relevant data, the study results show that age of patients, educational status, occupation and average monthly family income of diabetic patients are statistically associated with perceived diabetes-related stress and anxiety behaviors of type 2 diabetes mellitus patients. Lifestyle behaviour like diet pattern (vegetarian or nonvegetarian diet) and moderate intensity activities like walking are also statistically associated with perceived diabetes-related

stress and anxiety behaviors of type 2 diabetes mellitus patients (Table 1).

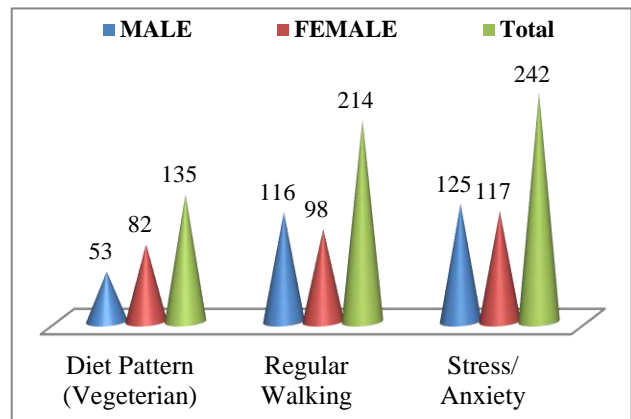


Figure 4: Prevalence of lifestyle behavior by gender.

### DISCUSSION

Diabetes mellitus is a major public health problem worldwide. Its prevalence is on the rise in many parts of the developing countries including India. Individuals with Type 2 diabetes mellitus are considered as high priority as they are potential candidates for rapid evaluation to prevent and halt the progression of the complications. This study presents observational data from large number of subjects with type 2 diabetes mellitus attending outdoor department of tertiary care hospital of New Delhi. Diabetes-related stress, including feeling overwhelmed by diabetes and its care, feeling discouraged with the treatment plan and feeling fearful of the future, may contribute to the symptoms of anxiety. The stress of dealing with diabetes may impact patient’s psychosocial functioning and quality of life, which may also increase the risk for developing anxiety symptoms. Our study highlights the confluence of increased stress and anxiety will likely become a problem as diabetes incidence increases among lower-income patients which are in consistent with study by Tuncay et al, who found significant correlation between level of anxiety and age of patient, duration of diabetes, educational status and monthly income.<sup>17</sup> Diabetes patients may experience short-term, episodic stress related to self-care activities or more long-term, chronic stress related to living with a chronic illness, which may eventually develop into anxiety symptoms or a chronic anxiety disorder.

The present study finding shows that duration of diabetes is significantly associated with feeling of stress and anxiety among diabetic patients which is in consistent with a study by Mikaliūkštienė A. et al, who showed that study duration of diabetes as a risk factor significantly associated with higher scores of anxiety among the patients with T2DM. Kanwar et al, in their study found greater prevalence of depressive episodes was there in people with longer duration of diabetes which is in consistent with finding of our study.<sup>18,19</sup>

**Table 1: Association of sociodemographic characteristics and lifestyle behaviour with perceived diabetes-related stress and anxiety behaviors of type 2 diabetes mellitus patients.**

Variables		Irritated /stressed when think about living with diabetes			Total	p Value
		Yes	No	Can't say		
Sex	Male	125	65	27	217	0.677
	Female	117	51	27	195	
Marital status	Married	227	111	53	391	0.730
	Unmarried	3	1	0	4	
	Widowed/ Divorced	12	4	1	17	
Age	18-30	3	5	0	8	<0.001*
	31-40	25	27	17	69	
	41-50	86	42	19	147	
	51-60	78	23	7	108	
	>60	50	19	11	80	
Religion	Hindu	217	105	47	369	
	Muslim	20	8	6	34	
	Christian	3	3	0	6	
	Sikh	2	0	1	3	
Educational status	Graduate degree	40	30	6	76	0.604
	Higher secondary certificate	52	13	19	84	
	High school certificate	54	8	8	70	
	Middle school certificate	30	16	9	55	
	Literate, less than Middle school certificate	30	27	4	61	
	Illiterate	36	22	8	66	
Occupation	Semi-profession	22	11	4	37	0.05*
	Clerical, Shop-owner	68	21	15	104	
	Skilled worker	26	15	5	46	
	Semi-skilled worker	12	13	5	30	
	Unskilled worker	14	14	9	37	
	Unemployed	100	42	16	158	
Family Income	0-10000	49	36	22	107	0.011*
	10000-20000	132	47	22	201	
	20000-30000	32	24	6	62	
	30000-40000	18	6	4	28	
	≥ 40000	11	3	0	14	
Moderate intensity activities	Yes	116	77	21	214	0.001*
	No	126	39	33	198	
Diet type	Vegetarian	90	26	19	135	0.019*
	Non-vegetarian	152	90	35	277	
Duration of Diabetes	≤ 2 years	43	40	19	102	<0.001*
	>2 years	199	76	35	310	

\*p value ≤ 0.05

Our study finding shows educational status, occupation and average monthly family income and lack of physical activity of diabetic patients are statistically associated with perceived diabetes-related stress and anxiety behaviors of type 2 diabetes mellitus patients which is in consistent with study by Kaur et al, who showed unemployment, housewives, monthly household income and lack of physical activity were independent risk factors for stress among diabetic patients.<sup>20</sup> A study by S. Naskara, R. Victor and K. Nath showed advancing age, low literacy rate, burden of being from a lower socioeconomic status, sedentary life without adequate physical activities and

duration of diabetes of more than 2 years are often the factors that precipitates depression in a type 2 diabetic patients.<sup>21</sup> The prevalence rate of anxiety in diabetic patients was found to be significantly high in age group of 41-60 years in a study by Rajput et al, which is in consistent with our study findings.<sup>22</sup> The present study finding shows feeling of stress and anxiety is more among diabetic patients involved in lesser moderate intensity physical activity which is in consistent with the findings by Balhara YP. and Sagar R. who showed in their study that physical exercise has a protective effect on anxiety in those with type 2 diabetes mellitus.<sup>23</sup> Joseph et al, also found a significant association of older age, low

socioeconomic status, unskilled and retired employment status.<sup>24</sup>

The present study findings show that feeling of stress and anxiety among diabetic patients having duration of diabetes for more than 2 years is 82 percent whereas in less than or equal to 2-year diabetes duration it is 18 percent. This is in consistent with the study of Bahety et al, who reported that stress was significantly more (2.66 times) in type 2 diabetic patients having disease duration for more than 5 years as compared to disease duration for less than 5 years.<sup>25</sup>

## CONCLUSION

Findings of the study shows that age of patients, educational status, occupation and average monthly family income of diabetic patients are statistically associated with perceived diabetes-related stress and anxiety behaviors of type 2 diabetes mellitus patients. Lifestyle behaviour like diet pattern (vegetarian or nonvegetarian diet) and moderate intensity activities like walking are also statistically associated with perceived diabetes-related stress and anxiety behaviors of type 2 diabetes mellitus patients. Shifting the lifestyle behaviour in the population could have an important impact on the perceived diabetes-related stress and anxiety behaviors and, as a consequence, complications of diabetes. More action is needed for improved diabetes self-management among those living with the disease with lower socioeconomic status, and those patients with lesser physical activity.

## Recommendations

Health care reform currently is underway in urban India and our data suggest that policy-makers need to recognize the importance of an integrated health-care system for mitigating the stress-diabetes interface. The care of individuals with type 2 Diabetes Mellitus (DM) should include the screening and possible treatment of stress and anxiety in order to achieve and sustain treatment goals. Psychological interventions focused on self-care, such as group education programs including coping skills, behavioral-cognitive skills, relaxation techniques, problem-solving skills, mindfulness-based stress management and family therapy, are to be considered. More qualitative and context-specific data is needed to understand what forms of stress affect the health and social well-being of Indians with diabetes due to the extraordinary diversity found within the Indian context. Interventions targeting the stress-diabetes interface will likely differ according to sociodemographic characteristics of the populations they serve, which will require population-centered programs that attend to the needs of their communities.

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