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Original Article

Community Section

Depression and Anxiety among Adult Patients with Type II Diabetes Mellitus- A Descriptive Study in Urban North Karnataka

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ABSTRACT

Introduction: Diabetes Mellitus (DM) and its complications are the leading cardinal threats to public health. They are leading to a potential epidemic in India with more than 69 million diabetic individuals currently diagnosed with the disease. Depression is a common psychiatric syndrome leading to an increase in co-morbidities affecting over 300 million people worldwide. Anxiety is another form of psychiatric disorder chronically affecting the day-to-day life of over 264 million people worldwide. Very few studies have been conducted that report the prevalence of anxiety and depression among diabetic individuals in India.

Aim: To assess Type II DM patients for psychological problems like depression and anxiety.

Materials and Methods: This was a cross-sectional study which was conducted at Urban Health Centre (UHC) for a period of two months. One hundred and twenty six individual diagnosed with Type II DM for a year were recruited as study participants (18-60 years of age). All the study participants were interviewed personally by the investigator at the UHC or their residence and the purpose of the study was explained to the participants in detail before asking them to participate. The 'Hospital Anxiety Depression Scale' (HADS) was used to assess the levels of anxiety, depression and the factors associated with it by standard scoring system.

Results: Type II DM patients had 30.2% of depression and 31.8% had anxiety; depression was prevalent in illiterate (p=0.006), lower socio-economic class (p=0.034), sleep-deprived (p<0.001) and in those complaining of reduced appetite (p=0.001).

Conclusion: Among the sleep deprived and reduced appetite cases, anxiety levels were significantly high indicating several factors playing a role in development of psychological problems.

Keywords: Co-morbidities, Psychiatric disorders, Hospital Anxiety Depression Scale

INTRODUCTION

The DM and its complications are great threats to public health with depression being the leading psychiatric syndrome [1]. It is expected that the burden of depression will increase, making it the second leading cause of Disability Adjusted Life Years (DALY) next to ischemic heart disease. Anxiety is another form of psychiatric disorder chronically affecting the day-to-day life of over 264 million people worldwide [2,3]. These two psychiatric disorders are two sides of the same coin.

Various studies and surveys indicate that 60-70% of those suffering from depression also have clinically significant symptoms of anxiety [4]. It is estimated that half of those having anxiety also have depression. This coexistence increases the severity of the disorder and makes it more chronic; affecting work, lifestyle, relationships and the overall well-being of the individuals, with medical co-morbidities [4]. It has been documented that patients with chronic disorders like Type II DM undergoing lifelong therapy with medicines, are more prone to develop psychological problems. Individuals diagnosed with DM are required to be periodically assessed with psychological complications and treated with appropriate medical care.

Studies have been conducted in the western world, which has revealed that the prevalence of anxiety and depression among diabetic individuals is more, as compared to patients without diabetes [5-8]. Very few studies have been reported from India, that aimed to know the prevalence of anxiety and depression among diabetic individuals [9,10]. Hence, the present study was planned to know the prevalence of anxiety and depression in patients with Type II DM.

MATERIALS AND METHODS

A facility-based cross-sectional study was conducted at the urban field practice area of a tertiary care hospital and research centre, Belagavi, Karnataka, India, for two months (1st June to 31st July 2015). The ethical clearance was obtained from the Institutional Ethics Committee for Human Subjects' Research (vide Letter No.-MDC/DOME/355 dated 27/05/2015). Individuals attending as out-patients in Belagavi and diagnosed with Type II DM for a year were recruited as study participants.

Information of these diagnosed diabetic individuals was collected by field survey through the addresses available from records. The data was collected from the individuals attending Outpatient Department (OPD) in UHC and through house to house visits by the investigator. These residents diagnosed with Type II DM were 18-60 years of age. Total number of registered diabetic patients in Belagavi was 141 during the study period.

Gestational diabetics, patients with psychiatric illness and having chronic complications were excluded from study. Five patients were excluded as they had history of psychiatric illness. Also, other 10 patients could not be included-three of them had migrated away from the place, three of them had died, and three could not be traced due to wrong address and one was pregnant woman with gestational diabetes. So, the data was collected only from 126 study participants. All the study participants were interviewed personally by the investigator at the UHC or their residence and the purpose of the study was explained to the participants in detail before asking them to participate. Written informed consent was taken from all the study participants before the personal interview.

Tools for Study

The study questionnaire consisted of two sections:

General Questionnaire

In this study, the present authors have used HADS questionnaire which is well formulated and validated [11]. This included question

related to demographic factors like age, gender, and socioeconomic status including educational status, occupation, and family income per month of study individuals. Questions about sleeping habits and appetite were also included. The socioeconomic status of individuals was analysed using modified Kuppuswamy's Socio-Economic Status Scale -A Revision of Income Parameter for 2014 [12].

Hospital Anxiety Depression Scale (HADS) Questionnaire

Prevalence of depression and anxiety was assessed among the study subjects by using the HADS Scale [11]. It is a structured oral questionnaire with sensitivity and specificity of 0.80 consisting of validated questions assessing the symptoms of anxiety and depression in the diagnosed diabetic individuals [13].

This questionnaire consisted of 14 questions out of which 7 questions were included in HADS-D Scale and the rest 7 questions were included in HADS-A Scale and each response was scored from 0 to 3. The patients were divided into three categories based on Geriatrics Depression Scale (GDS) and Generalised Anxiety Scale (GAS) separately; patients with scoring 0-7 were considered 'Normal', 8-10 as 'Borderline abnormal' and 11-21 as 'Abnormal' [6].

STATISTICAL ANALYSIS

The data collected was computed in MS Excel sheet and analysed using percentages. Chi-square test was used to know the association between diabetes and related factors with Depression and Anxiety. The p-value <0.05 was considered as significant.

RESULTS

Among 126 individuals who participated in study, 100 (79.4%) were from 50-60 years of age group, and 72 (57.2%) were females. All the study participants were married. Majority (80%) of them were literates. More than half of them (58.7%) belonged to Socioeconomic Class IV and V [Table/Fig-1].

Variables	Data
Age in years	**Number (%)**
<40	04 (3.2)
40-50	22 (17.4)
50-60	100 (79.4)
Gender	
Male	54 (42.8)
Female	72 (57.2)
Education status	
Illiterate	26 (20.6)
Primary	41 (32.5)
Secondary	22 (17.5)
Pre-University	20 (15.9)
Graduate and Post-graduate	17 (13.5)
Socioeconomic status	
Class I and Class II	19 (15.1)
Class III	33 (26.2)
Class IV and V	74 (58.7)
Total	**126 (100)**

[Table/Fig-1]: Socio-demographic variables of the participants (n=126).

Depression disorder was seen in 38 (30.2%) and anxiety disorder was seen in 40 (31.8%) patients with Type II DM. 29 (23.01%) of the diabetic individuals had both depression and anxiety.

Depression was more prevalent in individuals aged ≤50 years; 26 (34.6%) than those with age >50 years 100 (79%). It was observed that women 26 (36.1%) were more affected by depression than men 12 (22.2%), but the association was not found to be statistically significant. Depression was more prevalent in individuals who were illiterates, educated up to primary level (34.1%) and pre university than other groups. The higher the educational status, lower was the prevalence of depression and this association was found to be statistically significant (χ^2=21.605, p=0.006) [Table/Fig-2].

Education / HADS scores	0-7 (Normal) Number (%)	8-10 (Borderline case) Number (%)	11-21 (Abnormal case) Number (%)	Total
Illiterate	9 (34.6)	6 (23.1)	11 (42.3)	26
Primary (1st-5th)	11 (26.8)	16 (39)	14 (34.1)	41
Secondary (6th-10th)	15 (68.2)	4 (18.2)	3 (13.6)	22
Pre University (11th-12th)	10 (50)	3 (15)	7 (35)	20
Degree & Post Degree	13 (76.5)	1 (5.9)	3 (17.6)	17

[Table/Fig-2]: Association between depression and educational status of the study participants.
HADS: Hospital anxiety depression scale
χ^2: 21.605; p: 0.006; d.f: 8

Prevalence of depression was found more in upper lower (IV) and lower (V) class 27 (36.5%) study participants. Participants with lower class 21 (28.4%) were at highest risk of developing the same. The lower the socio-economic class, the higher was the prevalence of depression and was found to be statistically significant (χ^2_4=10.401, p=0.034, df=4). Twenty-two participants had sleep deprivation, among these 16 (72.7%) had high depression scores. The association between sleeping habits and depression was statistically significant (χ^2_6=50.096, p<0.001). In this study, it was observed that out of 14 participants with reduced appetite, 09 (64.3%) had high scores of depressions and this association was statistically significant (χ^2_6=21.535, p=0.001) [Table/Fig-3-5].

Socio-economic status / HADS scores	0-7 (Normal)	8-10 (Borderline case)	11-21 (Abnormal case)	Total
I+II	14 (73.7)	2 (10.5)	3 (15.6)	19
III	18 (54.5)	7 (21.2)	8 (24.2)	33
IV+V	26 (35.1)	21 (28.4)	27 (36.5)	74
Total	58 (46)	30 (23.8)	38 (30.2)	126

[Table/Fig-3]: Association between depression and socio-economic status of the study participants.
χ^2_4: 10.401; DF: 4; p: 0.034

Sleep deprived / HADS scores	0-7 (Normal)	8-10 (Borderline case)	11-21 (Abnormal case)	Total
No, not at all	19 (86.4)	03 (13.6)	0	22
No, not much	33 (58.9)	13 (23.3)	10 (17.9)	56
Yes, sometimes	04 (15.9)	10 (38.5)	12 (46.2)	26
Yes, definitely	02 (9.1)	04 (18.2)	16 (72.7)	22
Total	58 (46)	30 (23.8)	38 (30.2)	126

[Table/Fig-4]: Association between depression and sleeping habits of the study participants.
χ^2=50.096; DF=6; p<0.001

Good appetite / HADS scores	0-7 (Normal)	8-10 (Borderline case)	11-21 (Abnormal case)	Total
Yes, definitely	28 (65.1)	06 (14)	09 (20.9)	43
Yes, sometimes	23 (46.9)	15 (30.6)	11 (22.4)	49
No, not much	04 (20)	07 (35)	09 (45)	20
No, not at all	03 (21.4)	02 (14.3)	09 (64.3)	14
Total	46 (58)	30 (23.8)	38 (30.2)	126

[Table/Fig-5]: Association between depression and appetite of the study participants.
χ^2: 21.535; DF: 6; p: 0.001

Anxiety was more prevalent in individuals aged ≤50 years 13 (50%) than those with more than 50 years of age 27 (27%) (χ^2=7.697, p=0.021) [Table/Fig-6]. Out of 40 individuals affected with anxiety, 28 (38.9%) were women and the rest 12 (22.2%) were men, but 15 (20.8%) women were at higher risk of developing the anxiety than men, 10 (18.5%), this association was not found to be statistically significant (χ^2_2=5.080, p=0.079).

Age / HADS scores	0-7 (Normal)	8-10 (Borderline case)	11-21 (Abnormal case)	Total
≤50	12 (46.2)	1 (3.8)	13 (50.0)	26
>50	49 (49.0)	24 (24.0)	27 (27.0)	100
Total	61 (48.4)	25 (19.8)	40 (31.8)	126

[Table/Fig-6]: Association between anxiety and age of the study participants.
χ^2=7.697; p=0.021

Anxiety was more prevalent in 9 (45%) individuals who had done their education till pre-university, followed by the 15 (36.6%) individuals who were educated till primary level. Nearly one-third of participants who were illiterate, 9 (34.6%) were affected with anxiety. However, illiterate 8 (30.8%) individuals were at higher risk of developing anxiety than 10 (24.4%) individuals holding primary level of education. This association was not found to be statistically significant (χ^2_8=14.849, p=0.062) [Table/Fig-7].

Education / HADS scores	0-7 (Normal) Number (%)	8-10 (Borderline case) Number (%)	11-21 (Abnormal case) Number (%)	Total
Illiterate	9 (34.6)	8 (30.8)	9 (34.6)	26
Primary (1st-5th)	16 (39.0)	10 (24.4)	15 (36.6)	41
Secondary (6th-10th)	15 (68.2)	2 (9.0)	5 (22.7)	22
Pre university (11th-12th)	8 (40.0)	3 (50.0)	9 (45)	20
Degree and Post degree	13 (76.8)	2 (11.8)	2 (11.8)	17

[Table/Fig-7]: Association between anxiety and educational status of the study participants.
χ^2: 14.849; p: 0.062; DF: 8

Twenty-eight (37.8%) of Upper-lower (IV) and lower (V) Socioeconomic class community were more affected with anxiety, followed by lower middle (III) class 10 (30.3%). Individuals with lower class 17 (23.0%) were at highest risk of developing the anxiety symptoms. The association was not significant (χ^2_4=08.534, p=0.074).

Sleep deprived / HADS scores	0-7 (Normal)	8-10 (Borderline case)	11-21 (Abnormal case)	Total
No, not at all	18 (81.8)	02 (9.1)	02 (9.1)	22
No, not much	35 (62.5)	09 (16.1)	12 (21.9)	56
Yes, sometimes	04 (15.4)	08 (30.8)	14 (53.8)	26
Yes, definitely	04 (18.2)	06 (27.3)	12 (54.5)	22
Total	61 (48.4)	25 (19.8)	40 (31.8)	126

[Table/Fig-8]: Association between anxiety and sleeping habits.
χ^2: 34.275; DF=06; p<0.001

The present study revealed that among the 22 participants who were sleep deprived, 12 (54.5%), had high scores of anxiety and were more likely to develop the same and this association was found to be statistically significant (χ^2=34.275, p<0.001) [Table/Fig-8]. Among the 14 participants who had reported reduced appetite, 11 (78.6%) had high scores of anxiety. The association was found to be statistically significant (χ^2=28.493, p<0.001) [Table/Fig-9]. Most of the study participant did not had history of any bad habits (consitence of tobacco and alcohol) [Table/Fig-10].

Good appetite / HADS scores	0-7 (Normal)	8-10 (Borderline case)	11-21 (Abnormal case)	Total
Yes, definitely	28 (65.1)	07 (16.3)	08 (18.6)	43
Yes, sometimes	28 (57.1)	10 (20.4)	11 (22.4)	49
No, not much	04 (20.0)	06 (30.0)	10 (50.0)	20
No, not at all	01 (07.1)	02 (14.3)	11 (78.6)	14
Total	61 (48.4)	25 (19.8)	40 (31.8)	126

[Table/Fig-9]: Association between anxiety and appetite.
χ^2=28.493; DF=06; p<0.001

Any bad habits	Number	Percentage
No bad habits	96	76.2%
Consumption of alcohol	07	5.6%
Tobacco	14	11%
Smoking habits	06	4.8%
Both alcohol and tobacco	03	2.4%
Total	126	100.0%

[Table/Fig-10]: Distribution of study participants according to history of any bad habits.

DISCUSSION

This study was aimed to know the prevalence of anxiety and depression among Type II diabetic individuals and factors associated with it. It was seen that the anxiety and age were correlated to each other. In a cross-sectional study conducted at an UHC of New Delhi concluded that only 16.9% of the participants had depression [6]. A multi-centric cross-sectional study conducted in Bangladesh by Roy T et al., using Public Health Questionnaire-9 (PHQ-9) showed the prevalence of depression to be 34% [8]. In a cross-sectional study among 169 diabetic patients conducted in 2013 in Malaysia, prevalence of depression was found to be 40.1% which is more as compared to the present study [9].

In the present study, the association of age with depression was not significant, which is similar to a study of Delhi, India [6]. In studies conducted in Malaysia and Bangladesh, age was found to be an important risk factor and its association with depression was statistically significant [8,9]. In the present study, association between depression and educational status of the study participants was found to be statistically significant and it was observed that illiterate group of individuals had higher levels of depression, while participants educated till primary level were more at borderline to develop the same. It was similar to a study by Roy T et al., [8]. It has been observed that level of depression does relate with socio-economic status of the study participants denoting that prevalence is more in upper lower and lower class of community and the same class was more prone to be affected with psychiatric co-morbidities as observed in some of the studies [8,9].

In this study, prevalence of anxiety among individuals with diabetes was found to be 31.8%, which is similar to the study conducted in Hong Kong (25.7%) and Malaysia (31.4%) [7,9]. A study conducted in New Delhi revealed that only 3.9% of diabetic individuals were suffering from the anxiety [6]. This difference could be due to different socio-economic and demographic variables of different regions. Anxiety was found to be more prevalent in individuals aged ≤50 years, while individuals >50 years of age were more prone to develop psychiatric disorders and were at borderline of developing the same. In this study, association of age with anxiety was found to be significant which was also supported by the study conducted in Malaysia [9]. In this study associations between anxiety with socio-economic status and education, variables were not found to be statistically significant.

Limitation(s)

Some limitations of the present study were that it was conducted for a period of two months with limited number of diabetics involved. Authors could not collect any medication history about anxiety and

depression among study participants. Another limitation was that the sample size was small which can give a biased result, therefore studies involving large sample size are needed for the psychological assessment of these individuals as early interventions could improve the quality of life among patients with chronic illness.

CONCLUSION(S)

Three out of ten type II DM patients had anxiety or depression. Lower the education and socio-ecenomic status, the higher was the depression and anxiety among type II DM patients. Anxiety was associated with advancing age, history of previous hospitalisation. Further studies involving larger community-based sample size are needed to generalise study conclusion.

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