Depression and Diabetes - population-based Cross-sectional Study

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ABSTRACT

Background: Patients with both diabetes and depression have poor adherence to self-care regimens. Depression is often unrecognized and untreated in diabetes patients. The reported prevalence of depression in patients with diabetes varies widely; a meta-analysis that included 39 studies demonstrated that 31% of patients with diabetes experienced depressive symptoms. **Objectives:** The objectives of the study were to assess the prevalence of depression among diabetes patients and to study the sociodemographic and clinical factors leading to depression. **Materials and Methods:** This population-based cross-sectional study was conducted among 600 known diabetic patients in two Urban Health Centers attached to Jawaharlal Nehru Medical College, KLE University Belagavi, India. A predesigned pre-tested questionnaire (Hamilton rating scale for depression) was used to assess depression in diabetics after taking a written informed consent. **Results:** A total of 48% were found to be under depression. Mild and moderate depression was accounted for 16% each, while severe and very severe depression was seen in 9% and 7% of the total participants, respectively. **Conclusions:** A positive correlation of depression among diabetics was found for age, marital status, duration of diabetes, and hypertension. Almost all the patients have not consulted a psychiatrist yet and were not on any medications for depression.

Key words: Depression, diabetes, Hamilton rating scale

INTRODUCTION

India is presently home to 62 million diabetics[1] an increase of nearly 2 million in just 1 year. India is second only to China which is home to 92.3 million diabetics.[2] Depression is one of the most common psychiatric disorders in the world.[3] Recently conducted world mental health surveys indicate that major depression is experienced by 10–15% people in their lifetime and about 5% suffer from major depression in any given year. Lifetime prevalence of all depressive disorders taken together is over 20%.[4] Depression is often unrecognized and untreated in diabetes patients. The reported prevalence of depression in patients with diabetes varies widely. In this, we particularly focused on the prevalence of depression among known cases diabetes patients and to study the sociodemographic and clinical factors leading to depression.

MATERIALS AND METHODS

This community based cross-sectional study was conducted among known diabetic patients in two Urban Health Centres located in the field practice area of JN Medical College, Belagavi. A predesigned pre-tested questionnaire (Hamilton rating scale for depression) was used to assess depression in diabetics after taking a written informed consent. The correlation of depression was found with gender, age, marital status, duration of diabetes, and a diagnosis of hypertension coupled with diabetes.

Inclusion criteria

The following criteria were included in this study:
1. Patients above the age of 20 years
2. Patients of both sexes were taken
3. Patients with established Type II diabetes
4. Patients with undiagnosed Depression.

Exclusion criteria

The following criteria were excluded from the study:
1. Associated drug and alcohol dependence
2. Type I diabetes patients
3. Presence of any psychiatric or organic illness
4. Any history of psychiatric illness.

On the basis of previous studies, the sample size was taken as 600. The study subjects were taken from Urban Heath Training Centre of KLE University's Jawaharlal Nehru Medical College, based at Ashok Nagar, Belagavi.

The Hamilton rating scale for depression constitutes of 21 questions, the scoring is done for the first 17 questions and accordingly the patients are labeled as normal (score 0–7), mild depression (score 8–13), moderate depression (score 14–18), severe depression (score 19–22), and very severe depression (score ≥23).

The data were analyzed with SPSS version 17 and $P \leq 0.05$ was considered statistically significant. The study was approved by the Institutional Ethics Committee.

RESULTS

Table 1 is the demographic profile of the study participants where it accesses the study sample according to gender, age, educational status, marital status, duration of diabetes, and positivity to hypertension.

Females are more than males, maximum participants (90%) are above the age group of 21–40, as it is an urban study most of the study subjects are literate. 70% of the total participants are married and 56% have diabetes for <3 years. 35% of the total study subjects have comorbid hypertension as well.

Table 2 categorizes the study participants on the Hamilton depression rating scale. 48% of the subjects were found to be under depression. Mild and moderate depression accounted for 16% each while severe and very severe depression was seen in 9% and 7% of the total participants. Females were having more depression (55.71%) than males (30%).

Table 3 gives the prevalence of distribution of symptoms based on HRDS, while maximum number of participants complained about depressed mood (74%), about half (52%) had anxiety as a positive symptom. More than half of the total participants had an insight about having diabetes (60%) and Suicidal thoughts were confessed the least (16%).

Table 4 indicates a significant association of sociodemographic factors (gender, age, and marital status) and comorbidities (duration of diabetes and positivity to hypertension) in the study participants with depression. $P <$

Table 1: Sociodemographic variables	
Sociodemographic variables	**Number of participants**
Gender	
Male	180
Female	420
Age	
21–40	60
41–60	300
>60	240
Educational status	
≤ Matric	183
> Matric	114
Graduation and above	120
Marital status	
Married	420
Unmarried and others	180
Diabetes duration	
≤ 3 years	336
>3 years	264
Hypertensives	
Yes	210
No	390

Table 2: HDRS			
Hamilton depression rating scale	**Male *n*=30**	**Female *n*=70**	**Total**
<8 no depression	126 (70)	186 (44.28)	312
8–13 mild depression	18 (10)	78 (18.57)	96
14–18 moderate depression	18 (10)	78 (18.57)	96
19–22 severe depression	18 (10)	36 (8.57)	54
23 and above - very severe depression	0	42 (10%)	42

Figures under brackets indicate percentages. HDRS: Hamilton depression rating scale

0.05 was taken as significant; all the factors were found to be positively associated.

DISCUSSION

In our study, the overall prevalence of depression was found to be 48% which is slightly higher than the studies done by Raval et al.[5] (41%), Khuwaja et al.[6] (43.5%), Balhara and Sagar[7] (38.21%), and Li et al.[8] (45%), and it was significantly higher than Ali et al.[9] (27.05%), Nasser et al.[10] (33.3%), and Al-Ghamdi[11] (34%) while slightly lower than Mathew et al.[12] (49%) and Tovilla-Zarate et al.[13] (48.27%). This variation could be due to differences in sociodemographic and sociocultural factors, such as eating habits, ethnicity, and work culture.

A recent meta-analysis including around 50,000 people with Type 2 diabetes but with no depression at baseline has showed that the incidence of depression is also 24% higher in people with diabetes.[14]

In many studies, comorbid depression along with diabetes has been found to have negative implications such as poor glycemic control,[15] poor adherence to the line of treatment,[16] and even increased risk of microvascular complications.[17] Other studies suggest that depression in diabetics has been significantly associated with decreased quality of life,[18] increased health-care costs, and mortality risk.[19] Psychosocial stressors related to a chronic medical condition are being considered to explain the presence of depression in patients with Type 1 and Type 2 diabetes.[19]

Table 3: Distriution of symptoms based on HDRS

Symptoms	n=600 (%)
Depressed mood	74
Suicidal tendencies	16
Insomnia	37
Anxiety	52
GI symptoms	19
Somatic symptoms (general)	63
Loss of weight	41
Insight	60

HDRS: Hamilton depression rating scale

Table 4: Association of depression with gender, age, marital status, duration of diabetes, and hypertension

Sociodemographic variables & Co morbidities	Normal	Mild	Moderate	Severe	Very severe	Total
Sex						
Male	126 (70)	18 (10)	18 (10)	18 (10)	0	180
Female	186 (44.3)	78 (18.6)	78 (18.6)	36 (8.6)	42 (10)	420
Total	312	96	96	54	42	600
Fisher	Exact test	$P \leq 0.05$*				
Age						
21–40	18 (30)	18 (30)	24 (40)	0	0	60
41–60	162 (54)	60 (20)	18 (6)	18 (6)	42 (14)	300
>60 years	132 (55)	18 (7.5)	54 (22.5)	36 (15)	0	240
Fisher	Exact	Test	$P \leq 0.05$*			
Marital status						
Married	240 (57.1)	78 (18.6)	42 (10)	18 (4.3)	42 (10)	420
Unmarried/others	72 (40)	18 (10)	54 (30)	36 (20)	0	180
Fisher	Exact	Test	$P \leq 0.05$*			
DM duration						
≤3 years	162 (48.2)	96 (28.6)	42 (12.5)	36 (10.7)	0	336
>3 years	150 (56.8)	0	54 (20.5)	18 (6.6)	42 (15.9)	264
χ^2=23.221	Df=4	$P<0.05$*				
HTN						
No	252 (64.6)	42 (10.8)	36 (9.2)	36 (9.2)	24 (6.2)	390
Yes	60 (28.6)	54 (25.7)	60 (28.6)	18 (8.6)	18 (8.6)	210
χ^2=14.379	Df=4	$P \leq 0.05$*				

Figures under brackets indicate percentages, *indicates significant association. DM: Diabetes mellitus

The prevalence of severe depression, in the present study, was found out to be 9% which is lower than Raval *et al.*[5] (23%) and higher than Thour *et al.*[20] (4%).

Depression was not found to be significantly associated with sex which is similar to the study done by Balhara and Sagar[7] whereas in the present study depression was found to be significantly associated with increasing age and unmarried/widowed status. These results are similar to the studies done by Mosaku *et al.*[21] and Almawi *et al.*[22] This could be due to the fact that older patients are overburdened mentally, lead a physically restrictive life and thus are more vulnerable for depression. Similarly, duration of diabetes and harboring hypertension along with it was also significantly associated with depression, the same associations have also been reflected in the studies done by Almawi *et al.*[22] and Iype *et al.*[23]

CONCLUSION

Almost half of the total study subjects were found to be depressive, however severe and very severe depression was found in 16% of the participants. Almost all the participants were undiagnosed for depression, and no one had ever considered taking a psychiatric consultation. It is well inferred that existing comorbid depression in people with diabetes not only leads to increased disease severity, complications, work disability, and diminished quality of life but is also associated with increased dependency on medical services and practically higher health-care costs. Thus, screening of individuals with already established diabetes for depression and prompt psychiatric consultation can help patients a great deal in the management of their health-related issues and lead a socially productive life.

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