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ORIGINAL RESEARCH

CO-RELATION OF DEPRESSION IN TYPE 2 DIABETES MELLITUS WITH RESPECT TO AGE, GENDER, LITERACY, MARITAL STATUS

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ABSTRACT

Background: Diabetes mellitus (DM) refers to a group of common metabolic disorders that share the phenotype of hyperglycaemia.

Objectives: To study the co-relation of Depression in Type 2 Diabetes Mellitus with respect to age, gender, literacy, marital status**.**

Materials and Methods: A hospital-based cross-sectional study was conducted at the Department of Medicine, at a tertiary care Hospital. The study included 543 known diabetes patients coming to our hospital during a period of 12 months. All the cases were then assessed using the Hamilton Depression Rating Scale (HAM-D) for the presence of depression.

Results: Mean age was 53.01 years and 51.56 years in diabetic cases with and without depression (p-0.18). Prevalence of depression was 19.6% among male diabetics while it was 18% in female diabetics (p-0.65). No association was observed between depression among diabetics with marital status (p-1.0). No association was observed between depression among diabetics with literacy rate (p-0.552).

Conclusion: No association was observed between depression among diabetics with age, gender, literacy, marital status.

Keywords: Depression, Type II Diabetes Mellitus, age, gender, literacy, marital status

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INTRODUCTION

Several distinct types of DM are caused by a complex interaction of genetic and environmental factors. Depending on the aetiology of the DM, factors contributing to

hyperglycaemia include reduced insulin secretion, decreased glucose utilization, and increased glucose production. The metabolic dysregulation associated with DM causes secondary pathophysiologic changes in multiple organ systems that impose a tremendous burden on the individual with diabetes and on the healthcare system. Chronic hyperglycaemia and attendant metabolic dysregulation may be associated with secondary damage in multiple organ systems, especially the kidneys, eyes, nerves, and blood vessels. [1] Diabetes is a major cause of mortality, but several studies indicate that diabetes is likely underreported as a cause of death. Diabetes is the fifth leading cause of death worldwide and is responsible for almost 3 million deaths annually (1.7–5.2% of deaths worldwide). [2] Currently, India is the diabetes capital of the world. The world prevalence of diabetes among adults (aged 20–79 years) was found to be 6.4%, affecting 285 million adults, in 2010, and it might increase to 7.7% and 439 million adults by 2030. Between 2010 and 2030, there might be a 69% increase in the number of adults with diabetes in developing countries and a 20% increase in developed countries. [3] It is estimated that over 40 million of those with diabetes are currently in India and that by 2025 that number will grow to 70 million. Another 30 million Indians have pre-diabetes and are at high risk of developing type II diabetes mellitus (T2DM). T2DM is an economically costly disease and a major cause of mortality and morbidity. [4] 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 and is often ignored or left untreated. In the present study, we thus investigated the prevalence of depression in patients with Type 2 diabetes attending a tertiary care hospital and its relationship with respect to age, gender, literacy, marital status.

MATERIALS & METHODS A cross-sectional study was conducted in known diabetes patients in Department of Medicine, at a tertiary care Hospital during a period of 12 months. The study was commenced after approval from the institutional ethical committee.

Sample Size Calculation:

The sample size was calculated using the following formula:

n= (Zα/2) 2 * (SD * 2) / E2

Where;

n- Sample size

Zα/2 – Z value at 5% error (1.96)

P- Prevalence of depression in T2DM (11.6%) [ref.] E – Allowable error (20% of P)

Putting values in the formulae: n - 543

Inclusion Criteria: 1**.** Type 2 Diabetes patients of aged 30-60 year, newly diagnosed or follow up cases presenting to this Hospital for their routine diabetes control and willing to provide valid and informed consent to participate.

1. Patients aged 30-60 years and with adequate cognitive functions to perform the interview.

Exclusion Criteria:

1. Those patients of Diabetes Mellitus with severe complications like: End stage renal disease and Limb amputation.
2. Patients on any Psychiatric treatment.

Methodology: A detailed demographic and medical history was taken in all cases followed by a general and systemic examination. This is followed by required investigations as per hospital protocol.

All the cases were then assessed using the Hamilton Depression Rating Scale (HAM-D) for presence of depression. HAM-D is a 17 questionnaire, multiple choice self-reporting inventories. It generally takes 15-20 minutes to complete the interview and score the results. Eight items are scored on a 5-point scale, ranging from 0 = not present to 4 = severe. Nine are scored from 0-2

Statistical Analysis: All the data was noted down in a pre-designed study proforma. Qualitative data was represented in the form of frequency and percentage. Association between qualitative variables was assessed by Fisher's exact test. Quantitative data was represented using Mean ± SD. Analysis of quantitative data between the two groups was done using an unpaired t-test if the data passed 'Normality Test" and by Mann-Whitney Test if data failed 'Normality test'. A p-value < 0.05 was taken as level of significance. Results were graphically represented where deemed necessary. SPSS Version 21.0 was used for most analysis and Microsoft Excel 2010 for graphical representation.

RESULTS

Mean age of the diabetics was 51.64 years with over half (50.1%) of the cases were over 50 years of age. Out of the total 543 cases, 59.1% were males while 40.9% were females. Among the study cohort, 20.4% cases were illiterate while 36.6% were studied only upto primary level.

Most of the cases (90.1%) were married while 7.4% were widow or widower and 2.6% were separated. Associated co-morbidities include hypertension (48.3%), CAD (13.8%) and thyroid dysfunction (4.8%).

Mean duration of diabetes was 8.9 years with 46.6% cases being known diabetics for over 10 years. Microvascular complications were seen in 42% diabetic cases. Out of total 543 diabetic cases, poor glycemic control was observed in 30% cases.

The prevalence of depression among diabetics was 19% with mild depression seen in 18.1% cases while moderate depression was seen in 0.91% cases. Table 1

Table 1. Distribution of study groups as per prevalence of depression

HAM- D Rating	N	%
No Depression	440	81.0%
Mild Depression	98	18.1%
Moderate Depression	5	0.9%
Total	543	100.0%

Mean age was 53.01 years and 51.56 years in diabetic cases with and without depression (p-0.18). Table 2

Table 2. Association of depression among diabetics with age

Variables	Depression	N	Mean	SD	p- value
Age (yrs)	No	440	51.56	7.70	0.18
	Yes	103	53.01	6.73	

Prevalence of depression was 19.6% among male diabetics while it was 18% in female diabetics (p-0.65).

Table 3. Association of depression among diabetics with gender

Gender	Depression		Total
	No	Yes	
Female	182	40	222
	82.0%	18.0%	100.0%
Male	258	63	321
	80.4%	19.6%	100.0%
Total	440	103	543
	81.0%	19.0%	100.0%
p- value - 0.65			

No association was observed between depression among diabetics with marital status (p-1.0). Table 4

Table 4. Association of depression among diabetics with marital status

Marital Status	Depression		Total
	No	Yes	
Married	396	93	489
	81.0%	19.0%	100.0%
Widow/ Seperated	44	10	54
	81.5%	18.5%	100.0%
Total	440	103	543
	81.0%	19.0%	100.0%
p- value - 1.0			

No association was observed between depression among diabetics with literacy rate (p-0.552). Table 5

Table 5. Association of depression among diabetics with literacy levels

Literacy	Depression		Total
	No	Yes	
Illiterate	158	41	199
	79.4%	20.6%	100.0%
Primary	95	16	111
	85.6%	14.4%	100.0%
Higher secondary	139	36	175
	79.4%	20.6%	100.0%
Graduation	48	10	58
	82.8%.	17.2%	100.0%
Total	440	103	543
	81.0%	19.0%	100.0%
p- value - 0.552			

DISCUSSION

Engidaw N et al[5] observed the mean age of respondents as 56.4 (SD = 13.3) years. About 52.4% of the participants were males, and a higher percentage (72.7%) of the participants were orthodox in religion. Sixty-two percent of the respondents were married, and 21.3% of the participants attended secondary school. Alajmani DS et al[6] in their study observed 65% of cases above the age of 50 years, with 57% of females and 43% of males. 90% were married and 44% were illiterate. Tran NM et al. [7] studied 216 patients with type 2 diabetes

mellitus, with a mean age of 64.73 (SD 13.68), 114 women (52.80%) and 102 men (47.20%). Three-fourths fourth of the cases were educated less than secondary level.

The prevalence of depression among diabetics was 19%, with mild depression seen in 18.1% of cases, while moderate depression was seen in 0.91% of cases.

Ranjan Das et al. [8] showed that in West Bengal, the prevalence of depression was 46.2% and reported that the presence of depression in type 2 diabetes. In other studies, around the world, Studies by de Groot et al. [9] in their review showed that the overall prevalence of depression in diabetes was reported to vary from 8.5% to 27.3%. A Trinidad study reported a prevalence of 17.9% among subjects with type 2 diabetes. [10]

In one study, durations of diabetes >30 years were associated with increased odds of depression. The increase in depression with longer durations of diabetes was shown to be mediated by increased frailty scores. [11]. Alajmani DS et al[6]. also observed that the duration of diabetes > 10 years had the highest prevalence of depression in the participants (50% vs 22.9%). This may be explained by the increased risk of complications with a longer duration of disease, which in turn increases the risk of depression.

there is evidence to suggest that the long-term complications of diabetes are associated with depressive symptoms. [12]. In the present study, depression was seen in 26.8% of diabetic cases with complications as compared to 13.3% among cases without diabetic complications ($p<0.01$). Alhunayni NM et al[13] in their study found that the presence of complications (retinopathy, nephropathy, neuropathy) was also found to be significantly related to the risk of depression. A study conducted by Sachdeva et al[14] also concluded a higher prevalence of depression in type 2 diabetic patients with retinopathy, neuropathy, and nephropathy compared to those without these complications.

Diabetic control and depression Worsening glycemic control could be an indication that a person is depressed. In the present study, poor glycemic control was seen in over a third of cases (35.9%) with depression as compared to 28.6% among cases without depression (p-0.07). Studies have shown that the presence of depression in patients with diabetes mellitus worsens the prognosis of diabetes, increases noncompliance to the medical treatment, decreases quality of life, prolongs the recovery from diabetes and disrupts glycemic control. Alajmani DS et al[6] in their study also observed that the majority of the cases with depression had poor glycemic control (48%). They concluded that diabetic individuals are less likely to comply with diabetes self-care recommendations and are more likely to follow a sedentary lifestyle with a probability of poor diabetes control and clinical outcomes. Anderson RJ et al[15] in their meta-analysis observed that the prevalence of comorbid depression was significantly higher in the uncontrolled (30%) than in the controlled diabetics (21%).

CONCLUSION

It was concluded that no association was observed between depression among diabetics with age, gender, literacy, marital status.

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