

A Comparative Study on Depression among Type 2 Diabetic Patients in Tertiary Care Hospitals in Tumkur

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Abstract

Introduction: Diabetes is one of the most common chronic conditions in the world. The worldwide prevalence of diabetes mellitus (DM) has risen dramatically over the past two decades from 4.7% (1980) to 8.5% (2014). India has the largest number of diabetic population in the world (69.2 million). The prevalence of clinical depression and presence of elevated depressive symptoms are higher among persons with diabetes compared to the general population. This association may be bidirectional. Depressed patients are also reluctant, non-compliant and fail to adhere to anti diabetic drugs and show poorer self-management when compared with those without depression. Hence there is a need to study the importance of evaluation of depression in diabetes and how socio demographic characteristics contribute towards depression. This will help in better management of this infirmity. *Objective:* 1.To compare the proportion of depression among chronic type 2 diabetes patients of Government and Private tertiary care hospitals. 2. To assess the association between socio-demographic variables, disease duration and diabetic complications with the depression among chronic type 2 diabetes patients. *Methodology:* A comparative study done in Government and private tertiary care hospitals. Diabetes patients utilizing the healthcare facility (100 each from Government and private hospitals) were the study subjects. Data was collected through pretested semi-structured questionnaire. Depression was assessed using "Hamilton Depression scale". *Results and conclusion:* About half of the diabetic patients had depression. There was a significant association between depression and complications like cardiovascular symptoms, neuropathy and retinopathy and glycaemic control of study subjects.

Keywords: Depression; Diabetes Complications; Diabetes; Glycaemic Control.

Introduction

Diabetes is one of the most common chronic conditions in the world. The worldwide prevalence of diabetes mellitus (DM) has risen dramatically over the past two decades because of increasing obesity and reduced activity levels. India has the

largest number of diabetic population in the world, and it is expected that there will be 69.9 million diabetic populations in India by 2025 [1]. Type 2 DM (T2DM) and major depressive disorder (MDD) are both chronic diseases that may progress for years before diagnosis. Studies have found that presence of diabetes increases the risk of developing depression [2]. Also, the presence of depression enhances the chance of developing T2DM [3].

Diabetes and depression are major public health problems associated with significant burden. It is estimated that 12.5% of all patients in primary care have experienced major depressive disorder in the past year of these, only half are recognized clinically, of which only another half receive treatment, of those who do receive treatment, only 40% are

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treated adequately, and of these two-thirds achieve remission. Finally, only six in 100 persons with depression achieve optimal therapeutic targets [4].

More than 300 years ago Dr. Thomas Willis, a British physician made the observation that there was a relationship between diabetes and depression when he suggested that diabetes was the result of "sadness or long sorrow" [5]. Anderson et al. conducted a meta-analysis of 42 published studies that included 21,351 adults and found that the prevalence of major depression in people with diabetes was 11% and the prevalence of clinically relevant depression was 31% [2]. However, worldwide estimates of depression prevalence among individuals with diabetes appear to vary by diabetes type and among developed and developing nations.

A study conducted by World Health Organization across 60 countries found health decrement to be greater with co-morbid depression and diabetes in comparison to either of them present alone [6]. Individuals with diabetes and depression had a 2-fold increase in health care costs compared with those who did not have depression [7].

With this background, the present study was taken up to compare the proportion of depression among type 2 diabetes patients of Government and Private tertiary care hospitals and to assess the association between socio-demographic variables and diabetic complications with the depression among type 2 diabetes patients.

Materials and methods

A comparative study done in Government and private tertiary care hospitals. Type 2 Diabetes patients utilizing the healthcare facility (100 each from Government and private hospitals) were the study subjects. Data on age, sex, and other related parameters was collected through pretested semi-structured questionnaire. Depression was assessed using "Hamilton Depression scale". The relationship with socio-demographic profile & complication of diabetes was analysed.

Sample size calculation: $N=4pq/d$ [2]

$P=12.4\%$ prevalence of Diabetes in Bangalore [8]

$Q=100-12.4=87.6$

$d=5\%$ absolute precision

$N=4*12.4*87.6/5$ [2] = 173 rounded off to 200

Hence, 100 subjects from Government hospital and 100 subjects from Private hospital fitting into inclusion and exclusion criteria were selected for the study.

Results

Among the study subjects, majority were males, were educated till high school, unskilled workers by occupation in both Government & Private hospital. They belonged to lower middle and middle socioeconomic status in Government & Private hospital respectively. (Table 1)

Table 1: The Socio-demographic characteristics of subjects

Socio-demographic profile		Government Hospital	Private Hospital
Age		56.14±11.32years	56.53±13.52years
Sex	Male	56 (56.0)	53 (53.0)
	Female	44 (44.0)	47 (47.0)
Education	Graduate	3 (3.0)	6 (6.0)
	High school	43 (43.0)	34 (34.0)
	Illiterate	15 (15.0)	4 (4.0)
	Middle school	21 (21.0)	20 (20.0)
	Postgraduate	-	1 (1.0)
	Pre-university/Diploma	3 (3.0)	9 (9.0)
Occupation	Primary school	15 (15.0)	26 (26.0)
	Clerical/shop owner	5 (5.0)	3 (3.0)
	Profession	5 (5.0)	5 (5.0)
	Semi-profession	2 (2.0)	6 (6.0)
	Semi-skilled	22 (22.0)	20 (20.0)
	Skilled worker	6 (6.0)	10 (10.0)
	Unemployed	14 (14.0)	28 (28.0)
	Unskilled	46 (46.0)	28 (28.0)
SES (BG Prasad)	Lower middle	79 (79.0)	45 (45.0)
	Lower	14 (14.0)	1 (1.0)
	Middle	7 (7.0)	48 (48.0)
	Upper middle	-	3 (3.0)
	Upper	-	3 (3.0)

The study subjects were on oral drugs and neuropathy was the common complication in both Government & Private hospital. (Table 2)

Depression was more among subjects Government hospital (62%) compared to Private hospital (50%). This association was not statistically significant. (Table 3)

Depression was common in males in Government hospital whereas it was common in females in Private hospital. These associations were statistically significant ($p < 0.05$). Depression was common in subjects educated till primary school and among unskilled workers. Association between occupation & depression was significant in Government hospital. Depression was more in study subjects from rural area in Government

hospital & more in study subjects from urban area in Private hospital and these associations were not statistically significant. (Table 4)

There was a statistically significant association between Depression and Complications like cardiovascular symptoms, neuropathy. Association between depression and Retinopathy was significant in private hospital. (Table 5)

There was no statistically significant association between depression and treatment status and type of treatment in both Government and Private hospital. Depression was more among study subjects with poor glycaemic control and this association was statistically significant in both Government & Private hospital.

Table 2: Type of treatment & complications of Diabetes Mellitus among study subjects

	Government Hospital	Private Hospital
Type of treatment		
Oral drugs	81 (81.0)	72 (72.0)
Insulin	13 (13.0)	18 (18.0)
Oral drugs & insulin	6 (6.0)	1 (1.0)
Complications		
Neuropathy	70 (70.0)	72 (72.0)
Nephropathy	5 (5.0)	7 (7.0)
Retinopathy	19 (19.0)	18 (18.0)
CNS complications	-	-
CVS complications	7(7.0)	6 (6.0)
Foot damage	5 (5.0)	15 (15.0)
Other infections	9 (9.0)	18 (18.0)

Figures in the parentheses indicates percentage

Table 3: Depression in study subjects in Government and private hospital

	Depressed	Not depressed	Chi square & p value
Government hospital	62 (62.0)	38 (38.0)	2.92
Private hospital	50 (50.0)	50 (50.0)	0.08

Figures in the parentheses indicates percentage

Table 4: Association between socio-demographic variables with the depression

Socio-demographic variables	Government hospital		Chi square P value	Private hospital		Chi square p value	
	Depressed	Not depressed		Depressed	Not depressed		
Sex	Male	28 (50.0)	28 (50.0)	<0.05	19 (35.8)	34 (64.1)	<0.05
	Female	10 (22.7)	34 (77.2)		31 (65.9)	16 (3.0)	
Education	Primary school	13 (86.6)	2 (13.3)	0.31	12 (46.1)	14 (53.8)	0.27
Occupation	Unskilled	13 (28.2)	33 (71.7)	<0.05	14 (50.0)	14 (50.0)	0.07
Area of residence	Urban	26 (46.4)	30 (53.6)	0.54	40 (66.6)	20 (33.4)	0.67
	Rural	24 (54.5)	20 (45.5)		25 (62.5)	15 (37.5)	

Figures in the parentheses indicates percentage

Table 5: Association between complications with the depression

Complications	Government hospital		Chi square p value	Private hospital		Chi square p value
	Depressed	Not depressed		Depressed	Not depressed	
CVS symptoms	7 (100.0)	-	<0.05	6 (100.0)	-	<0.05
Complications of Foot	5 (100.0)	-	0.15	8(53.33)	7(46.67)	1.00
Infections	8 (88.89)	1 (11.11)	0.14	13 (72.22)	5 (27.78)	0.06
Nephropathy	5 (100.0)	-	0.15	6 (85.71)	1 (14.29)	0.11
Neuropathy	55 (78.57)	15 (21.43)	<0.05	53 (59.72)	29 (40.28)	<0.05
Retinopathy	17 (89.47)	2 (10.53)	1.00	14 (77.78)	4 (22.22)	<0.05
Complications	59 (78.67)	16 (21.33)	<0.05	46 (58.23)	33 (41.77)	<0.05

Figures in the parentheses indicates percentage

Table 6: Association between types of treatment with the depression

Types of treatment		Government hospital		Chi square p value	Private hospital		Chi square p value
		Depressed	Not depressed		Depressed	Not depressed	
On Treatment	Yes	62(61.62)	38 (38.38)	1.00	50 (50.0)	50 (50.0)	<0.05
Type of Treatment	Oral hypoglycemics	49 (60.49)	32 (39.51)	0.53	35 (48.61)	37 (51.39)	0.16
	Insulin	8 (61.54)	5 (38.46)		12 (66.67)	6 (33.33)	
	Oral hypoglycemics + insulin	5 (83.33)	1 (16.67)		3 (30.0)	7 (70.0)	
Glycemic control	Yes	24 (43.64)	31 (56.36)	<0.05	24 (38.1)	39 (61.90)	<0.05
	No	27 (90.0)	3 (10.0)		11 (78.57)	3 (21.43)	
	Not checked	11(73.33)	4(26.67)		15 (65.22)	8 (34.78)	

Figures in the parentheses indicates percentage

Discussion

In the present study, majority of study subjects were males, educated till high school, unskilled workers and from lower middle and middle class of socioeconomic status. Other studies by Bajaj et al, showed that majority were females, from lower middle socioeconomic status [9]. Another study by Rajput et al. and Kalantari et al., also showed that majority of study subjects were females [10,11].

The proportion of depression among study subjects was 62% and 50% in Government & Private hospitals respectively. Similar studies on depression among diabetic patients were 43.34% [9], 26.3% [10] and 37.8% [11] respectively.

Depression was more among Diabetic men in Government hospital which was consistent with study by Kalantari et al. [11] There was no statistically significant association between education & area of residence which was consistent with studies by Kalantari et al, Bajal et al and Rajput et al. [9-11].

In the present study, there was a statistically significant association between depression and

complications like cardiovascular symptoms, neuropathy and retinopathy. Study by Rajput et al showed a statistically significant association between depression and IHD, nephropathy and retinopathy [10]. Study by Kalantari et al. showed only significant association between depression and retinopathy [11].

The present study showed a statistically significant association between depression and glycemic control which was inconsistent with studies by Kalantari et al and Bajaj et al which showed that there was no association between depression and glycaemic control [9,11].

Limitations of the study

Since the sample size was small, the results cannot be generalized. The study was a cross-sectional study, longitudinal studies will be required to further assess the effect of disease process on their mental status.

Conclusion

In the present study, about half of the diabetic

patients had depression. There was no association between depression and sociodemographic factors except for sex of study subjects. There was a significant association between depression and complications like cardiovascular symptoms, neuropathy and retinopathy. Also there was an association between depression and glycemic control of study subjects.

All diabetic patients needs to be screened for depression which can be done even in a busy clinic using a self-scored questionnaire. Once diagnosed, depression needs to be treated with psychotherapy, medication or both to improve patients' well-being thus, improving the quality of their lives.

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