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ORIGINAL ARTICLE

Depression among Patients with Diabetes Mellitus: Associated Factors and its Prevalence

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ABSTRACT

Introduction: The depression and diabetes both are important community health concerns. Depression is a common comorbid disease in diabetic patients. The goal of this analysis was to assess the depression prevalence in diabetic patients and to recognise the numerous influences related with it.

Study Design: A cross-sectional study.

Place and Duration: In the Psychiatry and Medicine department of Behavioral Sciences, LGH Lahore, Pakistan and Psychiatry Alfalah diagnostic centre, Azhar Medical Plaza Timergara for the duration of six months from July 2021 to December 2021.

Methods: The patients with diabetes mellitus who visited the OPD Internal Medicine Department and Psychiatry department were referred for a psychiatric assessment. 140 total patients were studied for 6-month period. Face-to-face interviews were directed to collect the clinical profile and sociodemographic data of the subjects. To classify and describe depression; Patient Health Questionnaire-9 was applied. The percentage, frequency, multivariate regression and test were applied.

Results: The total depression prevalence was 30.2% and institute to be higher significantly in women ($p = 0.008$), subjects on insulin treatment ($p = 0.028$), diabetes mellitus >15 years ($p = 0.049$) and patients with uncontrolled blood glucose levels ($p = 0.018$) even after treatment. A regression analysis found that the type of treatment, blood glucose level, gender, and type of treatment were independent forecasters of depression in patients with DM. The subjects treated with insulin were 4 times additional probable to develop depression (CI: 2.129 - 8.865, OR = 4.344, $p <0.001$).

Conclusion: About a quarter of diabetic patients had depression. Influences such as long duration of diabetes mellitus, female gender, uncontrolled diabetes and therapy with insulin increase the danger of rising depression in patients with diabetes mellitus. Therefore, routinely assessment of depression in diabetic patients is essential.

Keywords: Prevalence, Diabetes and Depression.

INTRODUCTION

The available studies exhibited that approximately 8-10% of the adult people worldwide has type 2 Nepal diabetes (T2DM), a number which increases significantly over time[1-2]. One study found that there were 15 million patients of DM in Pakistan in 2015[3-4]. The predictable diabetes pervasiveness in the 20-79 years of age group was 4.7%, with over 15210 deaths per year. The communal mental disorder is depression that affects over 2.6 billion individuals globally[5]. The incidence of depression in Pakistan is around 12.8%. Although the depression etiology is unclear, it is believed to be the outcome of a complex interferences of psychological, social and biological factors. While depression and diabetes are separated diseases, they are both important health complications round the globe and there is a relationship between them[6-7]. There is evidence to suggest that the two diseases (diabetes and depression) may worsen each other and that each condition acts as a risk factor for developing the other. The incidence of depression is related with a 65% rise in the jeopardy of progressing towards type-II diabetes mellitus[8-9]. Correspondingly, the incidence of depression in type-II diabetic patients was higher significantly than in subjects not having diabetes (18.2% vs 9.9%). The depression related comorbidities in diabetic patients can result in number of problems, including poor diabetes control, poor treatment adherence, lower quality of life, higher complication rates, increased disability, higher healthcare costs and augmented ratio of mortality[10]. However, the International Diabetes Foundation (IDF) recommends regular screening for depression in diabetic patients. Depression in diabetic patients is undiagnosed and untreated. To our information, study about depression in diabetic patients is rare in Pakistan. In the Pahari DP et al study; The incidence of depression in individuals with diabetes mellitus was 35%, and in one Sunny AK et al study the incidence was 23.2%[11]. The goal of this analysis was to assess the depression prevalence in diabetic patients and to recognise the numerous influences related with it.

METHODS

This cross-sectional study was held at the Psychiatry and Medicine department of Behavioral Sciences, LGH Lahore, Pakistan and Psychiatry Alfalah diagnostic centre, Azhar Medical Plaza Timergara for the duration of six months from July 2021 to December 2021. All subsequent DM2 patients presenting to the psychiatric and Medicine OPD for depression assessment were included. The total number of patients were 130. The criteria of inclusion were all subjects of both sexes over eighteen years of age who were detected with DM2 minimum 1-year ago, who could answer the questions of questionnaire and were ready for participation in the study. Patients with history of mental illness, not given consent for the study, and had previously received psychiatric medications were omitted. The specialist psychiatrist assessed all the patients referred to OPD. The depressive symptoms severity was evaluated with Patient Health Questionnaire (PHQ-9). The scores and cases of PHQ-9 were classified as follows:

- (0-4) no depression
- (5-9) mild depression
- (10-14) moderate depression
- (15-19) moderately severe depression
- (20-27) severe depression

A ≥10 PHQ-9 score had a specificity and sensitivity of 87% for major depression. A designed proforma was used for the study to determine clinical and sociodemographic data. Data was analyzed with SPSS 22.0. The study was commenced after Ethical approval. Data privacy was ensured and used only for purpose of research solitary.

RESULTS

130 total patients were studied for 6-month period. The patients aged 40-59 (56.9%) were above fifty percent. The mean age of the respondents was 49.2 ±3.28 years. Most of the respondents were

women (53.9%), and most of the patients were married (92.3%). Around 42.3% of the respondents had education to the primary level, and 36.9% were housewives. About two-thirds (61.5%) of subjects had diabetes for 1-5 years and above 50% of the subjects (52.3%) received monotherapy (Table 1).

Table 1: Demographic Features Of the studied people

Age group (years)	Frequency (n)	Percentage (%)
20-39	15	11.5
40-59	74	56.9
>60	41	31.6
Mean age ± SD	49.2 ±3.28	
Sex		
Male	60	46.1
Female	70	53.9
Marital status		
Unmarried	10	7.7
Married	120	92.3
Education		
Primary	55	42.3
Secondary	14	10.7
Postgraduate	11	8.5
Undergraduate	5	3.9
Illiterate	45	34.6
Occupation		
Homemaker	48	36.9
Farmer	26	20
Business	7	5.4
Service	22	16.9
Other specific	27	20.8
Economic status		
Low	10	7.7
Middle	105	80.8
High	15	11.5

The vast majority (81.5%) of a total of 130 people were on oral hypoglycaemic drugs. Approximately 60.8% of the subjects had additional comorbidities besides diabetes. About two thirds (71.5%) of the respondents have uncontrolled diabetes. (Table 2)

Table 2: Clinical Features Of the studied people

Variable	Frequency	Percentage (%)
Duration Of DM (Years) 1-5 6-10 11-15 >15	 80 22 11 17	 61.5 16.9 8.5 13.1
Treatment for DM Single versus multiple One medication Numerous medication	 68 62	 52.3 47.7
Route of medicine Oral Hypoglycemic Remedies Insulin Injection	 106 24	 81.5 18.8
Co-morbid condition Yes No	 79 51	 60.8 39.2
Distribution of co morbid condition Chronic kidney disease Hypertension Thyroid Diabetic foot No any illness Others	(N=79) 4 49 9 6 51 11	 3.1 37.7 6.9 4.6 39.2 8.5
Blood sugar level Uncontrolled DM Controlled DM	 93 37	 71.5 28.5

The total depression pervasiveness was 30.2% and amongst them; mild depression was noticed in 52.5%, moderate depression in 40%, moderately severe and severe depression in 7.5%. (Table 3)

Table 3: Depression Among Diabetic Patients

Depression Prevalence	Frequency	Percentage
No depression (PHQ-9 Score 0-4)	90	69.2
Depression (PHQ-9 Score ≥5)	40	30.8
Depression Severity		
Mild depression (5-9)	21	52.5
Moderate depression (10-14)	16	40
Moderately Severe depression (14-19)	2	5
Severe Depression (20-27)	1	2.5

It was found that depression was higher significantly amongst patients (p = 0.008) and no relationship was found between depression and level of education, marital status, economic status and occupation. (Table 4).

Table 4: Relationship between Socio-demographic characteristics and Depression

Age group (years)	Depression N (%)	No depression N (%)	P-value
20-39	5(33.3%)	10(66.7%)	0.821
40-59	28(37.8%)	46(62.1%)	
>60	7(17.1%)	34(82.9%)	
Sex			
Male	12(20%)	48(80%)	0.008
Female	28(40%)	42(60%)	
Marital status			
Unmarried	3(30%)	7(70%)	0.498
Married	45(37.5%)	75(62.5%)	
Education			
Primary	11(20%)	44 (80%)	0.079
Secondary	4(28.6%)	10(71.4%)	
Postgraduate	3(27.3%)	8(72.7%)	
Undergraduate	2(40%)	3(60%)	
Illiterate	20(44.4%)	25(55.6%)	
Occupation			
Housewife	22(45.8%)	26(54.2%)	0.124
Farmer	6(23.1%)	20(76.9%)	
Business	1(14.3%)	6(85.7%)	
Service	5(22.7%)	17(77.3%)	
Other specific	6(22.2%)	21(77.8%)	
Economic status			
Low	5(50%)	5(50%)	0.549
Middle	32(30.5%)	73(69.5%)	
High	3(25%)	12(75%)	

A regression analysis found that the type of treatment, blood glucose level, gender, and type of treatment were independent predictors of depression in diabetic patients (Table 5).

Table 5: Relationship between clinical characteristics and Depression

Variable	Depression N (%)	No depression N (%)	P-Value
Duration Of DM (Years) 1-5 6-10 11-15 1. 15	 20(25%) 6(37.5%) 7(63.6%) 6(35.3%)	 60 (75%) 16(62.5%) 4(36.4%) 11(64.7%)	0.049
Treatment for DM Single versus multiple One medication Numerous medication	 15(22.1%) 22(35.5%)	 53 (77.9%) 40 (64.5%)	0.259
Route of medicine Oral Hypoglycemic Remedies Insulin Injection	 28(26.4%) 10(41.7%)	 78 (73.6%) 14 (58.3%)	0.028
Co-morbid condition Yes No	 16(20.3%) 20(39.2%)	 63 (79.7%) 31 (60.8%)	0.891
Blood sugar level Uncontrolled DM Controlled DM	 29(31.2%) 12(32.4%)	 64(68.8%) 25 (67.6%)	0.018

The subjects treated with insulin were 4 times additional probable to develop depression (CI: 2.129 - 8.865, OR = 4.344, p <0.001).

DISCUSSION

Depression is 2-3 times communal in diabetic patients. Though, most cases remain not detected. This research found that the incidence of depression in DM2 patients was 30.2% similar to primary care and inpatient endocrinology study in Majorca (Spain) as 27.2%, Similar results were somewhat greater in a cross-sectional study of patients with diabetes attending a diabetic center in South India (38.2%), Kathmandu, Nepal (34%), Saudi Arabia (49.6%) and North India (41%)[12-13]. These researches exhibited that the depression prevalence in people with diabetes is greater than non-diabetics. This can lead to a number of side effects in the natural history of DM2, counting poor therapeutic adherence, poor metabolic control and an amplified danger of vessels associated problems. There is not single stimulus that is related with depression in diabetic patients[14]. As found in most studies, the incidence of depression in women was comparable with our research. The explanations for these alterations are not clear and must be investigated further in the upcoming[15]. The duration of diabetes mellitus affects depressive symptoms for a number of reasons and contributes to the J-curve in T2DM over time. Symptoms of depression worsen soon after diagnosis and diminish with time. Though, symptoms of depression take lengthier to get worse[16-17]. The initial increase in depression symptoms soon after diabetes is diagnosed may be due to the stresses associated with the diagnosis and recent control regimens (e.g., blood sugar control, additional medications, exercise and diet). The worsening of depression afterwards an extended duration of diabetes mellitus may be because of additional long-lasting co-morbidities, resultant in greater weakness categorised by reduced physical function, weight loss and greater fatiguability[18-19]. In our study, supported by many other studies, chronic disease and uncontrolled diabetes in patients with diabetes were identified as contributing factors to depression. The study's finding of a relationship between treatment and depression is reinforced by former researches that have shown that oral therapy with hypoglycemic drugs is hypothetically harmless and has a less danger of depression compared to extensive treatment with regular doses[20-21].

This multivariate study found that patients receiving therapy of insulin were 4-times more probable to experience depression than those receiving treatment with oral hypoglycemic drugs. Likewise, women were almost twofold as probable to develop depression as men with diabetes, according to a community study in southern India[22-23]. As this is a hospital study, the outcomes might not be representative of the overall diabetic people in Pakistan. Therefore, it is problematic to simplify the research results. However, the main conclusions of this study can be informative and valuable in the inclusive treatment of patients with diabetes[24].

CONCLUSION

Depression is much communal amongst T2DM patients and is related with numerous important outcomes correlated to diabetes. More than a quarter of patients with diabetes were depressed. The women with diabetes had depression was more commonly and in those taking insulin, in long-term diabetics and in those with poor diabetes control. Comparable research can be done in the public to find out the exact depression prevalence. The health care professionals and patients with their families must be informed about the depression jeopardy in diabetic patients. All subjects identified with diabetes must be screened regularly for depression to reduce several complications in future.

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