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Research Article

## “PREVALENCE AND RISK FACTORS FOR DEPRESSION IN TYPE 2 DIABETES MELLITUS PATIENTS IN DISTRICT LAHORE”

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**Abstract:**

**Introduction:** Depression is a mood disorder characterized by inadequacies, decreased activity and pessimism. Anhedonia and grief, when these symptoms seriously injure and negatively impact a person's life, sometimes so Degree of suicide or attempting to seek a broader understanding of the causes of depression, the development of additional effective treatments is of great importance. Clinical and preclinical studies suggest that stress is the key Mediator in the pathophysiology of depression.

**Methodology: Setting:** This study is conducted at Diabetic clinic of Jinnah Hospital, Lahore.

**Sample size:** the total sample size estimated using 95% diabetic patients 250, 5% margin of error with an expected percentage of depression 14.7%. **Sample Selection:** Consecutive non-probability sampling. **Study Design:** Descriptive cross-sectional study

**Data Collection:** 250 patients visiting Diabetic clinic for their diabetic follow up will be included per criteria in study after taking informed consent.

**Results:** Total 250 patients attending diabetic clinic at Jinnah Hospital Lahore Patients with age ranging 18 years to 60 years with mean of 42.82 and standard deviation of 11.65. Among these 114 (54.4%) were female and 136 (45.6%) were male. Mean HbA1C was 8.46 with standard deviation of 1.54. Depression was diagnosed in 54% of the diabetics. Among the 250 patients mild clinical depression was seen in 20.4%, moderate depression was seen in 22%, severe depression was seen in 5.2% and extreme depression was seen in 6.4% patients. 54% of the married people were depressed. Among the singles this prevalence was 45% where was divorcees had this prevalence of 68%. (P-value = 0.01).

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**INTRODUCTION:**

Depression is a mood disorder characterized by inadequacies, decreased activity and pessimism. Anhedonia and grief, when these symptoms seriously injure and negatively impact a person's life, sometimes so Degree of suicide or attempting to seek a broader understanding of the causes of depression, the development of additional effective treatments is of great importance. Clinical and preclinical studies suggest that stress is the key Mediator in the pathophysiology of depression.

As estimated by WHO, depression shall become the second largest illness in terms of morbidity by another decade in the world, every fifth woman and twelve men are already suffering from depression. Not only adults, but also two percent of schoolchildren and five percent of adolescents suffer from depression and are largely unknown. Depression was the most common reason people go to a psychiatrist, although an ordinary person thinks that all mental health problems are depression. In most patients, you see the myth of depression. People still believe that this is due to a personality weakness or that you can cure it yourself or that drugs act for life and are only sedatives. All these are myths created mainly by faith healers or unskilled consultants and non-medical experts for their own legitimate interests, and to a large extent by an unconscious society. Raising awareness and counseling for psychiatrists was the main reason for the increase in the number of patients and not necessarily the increase in prevalence. With the advent of new drugs and improved conditions, treatment for depression has become easier and most people respond very well and will soon return to their optimal functioning. The relationship between depression and diabetes was tracked, starting in 1684, with the British physician Thomas Willis [15]. Willis was not only the first physician to identify glycosuria as a sign of diabetes [16], but also suggested that the disease was often caused by "sadness or prolonged grief and other depressions and disorders" [15]. A series of experiments conducted at the end of the 19th century showed the appearance of glucose in the urine after exposure to stress stimuli in cats and humans [17], who were given the term "emotional glucosuria". Between 1900 and 1950, many observations have been made in the literature about the sudden or spontaneous onset of diabetes associated with traumatic events [18, 19]. In 1935, Menninger published a study of 22 Cases of Mental Illness Associated with Diabetes [20], in a 1946 article in the New England Medical Journal of Handel and Benjamin entitled "Psychogenic Facts in "Etiology of diabetes" [17]. In 1948, George Daniels published an article in Psychosomatic Medicine, describing the role of emotions in the onset and development of diabetes [21], as well as a number of articles, other works on psychosomatic approaches to diabetes treatment

[22,23].But only in the 1990s this topic become more important, and the study of the emotional causes and consequences of diabetes began in earnest.

**METHODOLOGY:**

**Setting:** This study is conducted at Diabetic clinic of Jinnah Hospital, Lahore.

**Sample size:** the total sample size estimated using 95% diabetic patients 250, 5% margin of error with an expected percentage of depression 14.7%.8

**Sample Selection:** Consecutive non-probability sampling

**Inclusion Criteria:**

- Both Genders with ages 18 years - 60 years
- Both Genders taking Oral hypoglycemic or subcutaneous Insulin for at least 3 months or more determined by history.

**Exclusion Criteria:**

- Mental Retardation determined through history, physical examination along with previous medical records and consultant opinion in this regard.
- Malignancy determined by going through previous medical records.
- Chronic schizophrenia indicated by any positive history of psychotic episodes, hallucinations and through physical examination along with previous medical records and consultant opinion in this regard.
- Drug addiction determined through history.

**Study Design:** Descriptive cross-sectional study

**Data Collection:**

250 patients visiting Diabetic clinic for their diabetic follow up will be included per criteria in study after taking informed consent. After selection of patient study Performa will be filled by me. After inquiring all the questions from Beck's depression inventory II scale, final score will be allocated to each patient according to respective responses.

**DATA ANALYSIS**

Data will be analyzed in SPSS version 21. Frequency and percentage will be determined for qualitative variables i.e. gender and presence of depression and its severity. Mean and standard deviation will be calculated for quantitative variables i.e. age. Data will be stratified for the duration of diabetes, control of diabetes (HbA1c), economic status, Marital status, smoking status and history of exercise. Chi-square test will be applied post-stratification with p-values less than or equal 0.05 considered as significant.

**RESULTS:**

Total 250 patients attending diabetic clinic at Jinnah Hospital Lahore Patients with age ranging 18 years

to 60 years with mean of 42.82 and standard deviation of 11.65. Among these 114 (54.4%) were female and 136 (45.6%) were male. Mean HbA1C was 8.46 with standard deviation of 1.54. Depression was diagnosed in 54% of the diabetics. Among the 250 patient's mild clinical depression was seen in 20.4%, moderate depression was seen in 22%, severe depression was seen in 5.2% and extreme depression was seen in 6.4% patients. 54% of the married people were depressed. Among the singles this prevalence was 45% where as divorcees had this prevalence of 68%. (P-value = 0.01). Prevalence of depression steadily increased among diabetic patients as their age increased i.e. i.e. 12year – 19year was 1.5%, 20year – 29year was 11.1%, 30year – 39year was 21.5%, 40year to 49year was 27.4%, 50year – 60 year was 38.5%. (P-value of 0.381). It was found in 30.4% of less than 10,000/month group and 51.1% in 10,001 – 30,000 group. And then abruptly fell below 12.6% in 30,001 – 50,000 group and 5.9% in greater than 50,000 group. (P-value = 0.884). Majority of the patients who didn't exercise had no signs of depression i.e.

69.6% of the non-depressed patients did not exercise. (P-value of 0.335). Depression was more prevalent among the individuals who had a better glycemic control i.e. HbA1c Less than 6.5 mg/dl had 7.4%, HbA1c 6.5 mg/dl - 7.4 mg/dl had 23%, HbA1c 7.5 mg/dl - 8.4 mg/dl had 25.2%, HbA1c 8.5 mg/dl - 9.4 mg/dl had 16.3%, HbA1c 9.5 mg/dl - 10.4 mg/dl had 14.8% and HbA1c greater than 10.5 mg/dl 7.4% had 13.3% prevalence of depression among the study population (P-value = 0.948) 55.8% of the nonsmokers were depressed. Whereas among smokers this percentage was 52.2%. While 47% of Ex-smokers 47% were depressed (P-value = 0.903)

#### AGE DISTRIBUTION

Between June 2017 and December 2017, 250 patients visiting attending diabetic clinic at Jinnah Hospital Lahore Patients with age ranging 18 years to 60 years with mean of 42.82 and standard deviation of 11.65. Histogram below shows this pattern as majority of the patients were within 30 years to 60 years of age.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	250	18	60	42.82	11.653
Marital Status	250	0	2	.89	.671
Income/Month (Rs./month)	250	1	4	1.93	.808
Smoking Status	250	0	2	.45	.722

#### Frequency and Severity of Depression

According to the Table below 54% of the diabetics were diagnosed to have depression of some severity with majority of the population among the depressed lying between mild clinical depression and moderate depression i.e. 20.4% and 22% of the total 250 patients respectively.

Beck Depressive Inventory – II (BDI-II) Score	Frequency	Percent
Normal (BDI - II score Less Than 17)	115	46.0
Mild clinical depression (BDI- II score: 17 – 20)	51	20.4
Moderate depression (BDI- II score: 21 – 30)	55	22.0
Severe depression (BDI- II score: 31 – 40)	29	11.6
Total	250	100.0

**DISCUSSION:**

Many chronic medical conditions are associated with depression [54]. Especially diabetes that has been associated with depression for more than 300 years [55]. These range from many acute to sub-acute clinical conditions [56]. Chronic illness raises the risk of depression, with depressive disorders roughly 2-fold more prevalent among patients with diabetes, coronary artery disease, HIV infection, and stroke than among patients free of chronic illness [57]. DM increases the risk of depression in general, genetic sensitivity, psychophysical factors that include neuroimmunological and neuroendocrinological pathways, along with microvascular brain lesions that may occur in DM. Comorbid depression in elder patients with DM potentially the risk of death increases by 36% 38% over 2 year period [58]. This increased mortality may be because noncompliance to medications because of depression [59]. Also Depression itself leads to depressed autonomic tone, platelet aggregation, along with suppressed immune and inflammatory responses [60].

Depression is quite often masked with the symptomatology of the diabetes and makes it quite difficult to recognize, diagnose, and manage [61]. The criteria for diagnosis of depression as described above according to DSM – IV remain valid in DM, despite the possibility of overlap symptoms between depression and DM [62]. People suffering from fear should take into account the greater risk for this trend, especially when the patient is experiencing health or psychological stress [63].

Many ties are present even when the diagnosis is reached. Most diabetics see a primary care physician or a diabetic specialist but not a mental health specialist, and these physicians are not well trained to recognize signs of depression, particularly in presence of a comorbid conditions as diabetes and its complications. It is even more cumbersome to treat depression in the presence of diabetes and some physicians may hold depression treatment till the A1C is less than 7% or if the Blood pressure which is quite often concomitantly raised in diabetics to be less than 130/80 before physician tries to treat or increase the antidepressive dosage. Treatment is usually limited to diabetes education and emotional support, or other suboptimal therapies that are similar to placebo in their effectiveness. Proper depression management is deferred, and nearly 66% of depressed diabetic patients do not receive antidepressant treatment [64].

Moreover there may be an interaction with deadly consequences when a depressed Diabetic Patient on Aspirin is on Selective Serotonin Reuptake Inhibitors and Selective Norepinephrine Reuptake Inhibitors. This may lead to increased risk of bleeding [65].

However on the other end if these diagnosis is made in timely manner it may benefit a lot of patients as shown by this meta-analysis [66]. Especially those with Diabetic neuropathy as in that case the choice of antidepressants will shift to different options as tricyclic antidepressants, duloxetine, and venlafaxine which have demonstrated efficacy in treating diabetic neuropathy [67].

Since then, numerous high-quality epidemiological studies and meta-analyses have shown that depression in diabetics occurs about twice as often as expected. [24, 25], with estimates ranging from 11% to 47% in some studies [24, 26]. In order to investigate the possible causal and etiological connections between depression and diabetes, numerous longitudinal studies were also carried out. These studies show the bi-directional nature of this relationship [27, 28], most of which report stronger diabetes-predictive effects. as for feedback (for example, OR = 1.60 versus OR = 1.15 [28]).

**CONCLUSION:**

Depression is moderately associated with the onset of diabetes, and these effects become more serious as the disease progresses. In our study depression is seen 54.4% of the diabetics. Majority of diabetics suffered from mild to moderate depression. Based on this prevalence, we can recommend that every diabetic should be screened for depression at least once while being managed for diabetes mellitus.

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