

## Frequency of Depression among Patients with Type-II Diabetes Mellitus in Peshawar

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### ABSTRACT

**Objectives:** To determine the frequency of depression among patients with type-II diabetes mellitus in Peshawar..

**Patients & Methods:** The study was conducted during in Out Patient Department of General Medicine, Khyber Teaching Hospital Peshawar 140 subjects from either sex with definite diagnosis of type-II diabetes for at least one year were included and patients with diabetes with history of treatment for any psychiatric ailment, any other physical illnesses were excluded. Socio-demographic variables such as age, gender and marital status were recorded. Depression was assessed by using Beck Depressive Inventory-II. Data collected was analyzed by using SPSS version 13.

**Results:** Out of 140 patients with type 2 diabetes mellitus 85(61%) were women and 55(39%) were men. Mean Age was 45( $\pm$ 7.45) years. Out of study subjects 94(67.1%) were married, 3(2.1%) were unmarried and 43(30.8%) were widows. 84(60.0%) presented with severe depression, 10(7.2%) with moderate and 9(6.4%) with mild depression. Depression was higher in females than men and widows than married.

**Conclusions:** Depression co morbidity is high in diabetes mellitus type 2, especially in female and widows. Psychiatric attention is necessary to be incorporated in diabetes care both for prevention and treatment.

**KEYWORDS:** Depression, Diabetes mellitus type 2, Co morbidity, Peshawar

**Short Running title:** Depression among patients with type II Diabetes Mellitus

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### INTRODUCTION

Diabetes mellitus (DM) has emerged as a great socioeconomic burden for the developing world. Over the past two decades there has been a significant rise in the prevalence of this devastating illness and is presenting as an alarming issue<sup>1</sup>. Its prevalence for all age groups worldwide is estimated to be 4.4% in 2030<sup>2</sup>.

Currently DM affects 246 million people worldwide and this number is projected to increase substantially to 380 million by 2025, with 80% of the total adult diabetics are in developing countries<sup>3</sup>.

Diabetes is the fourth leading cause of death in most developed countries<sup>4</sup>. The prevalence of both type-1 and type-2 diabetes mellitus is increasing worldwide but the prevalence of type-2 is rising much more rapidly<sup>1</sup>. The type-II diabetes mellitus account for more than 90% of all cases of diabetes worldwide. The Centers for Disease Control report for at least 20 years, diabetes rates in

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North America have been increasing substantially. American Diabetes Association, National diabetes fact sheet 2011 reports, in the United States there are 25.8 million people (8.3% of the population) with diabetes with 18.8 million being diagnosed, 07 million undiagnosed and 79 million prediabetics. With prevalence rates doubling between 1990 and 2005, CDC has termed the change an epidemic. The National Diabetes Information Clearinghouse estimates that diabetes costs \$132 billion in the United States alone every year. Each year 7 million people develop diabetes. The annual direct healthcare costs of diabetes worldwide are estimated to be as much as 286 billion, for patients in the age groups 20–79 years<sup>3</sup>.

Diabetes mellitus and depression are public health concerns of the present and, as predicted, also the future. The observation that depression is seen more frequently in diabetic patients compared to the non-diabetic population has been proven by several recent studies. Patients with type 2 DM have a 24% increased risk of developing depression than individuals without diabetes<sup>5</sup>. The mechanisms underlying this relationship are still unclear. Mortality risks substantially elevated in patients with diabetes and coexisting depression<sup>6</sup>. Those with type 2 diabetes and coexisting major depression are more likely to experience life-threatening complications<sup>7</sup> and deteriorating quality of life<sup>8</sup>.

Pakistan belongs to high prevalence area, currently having 6.9 million people affected with diabetes mellitus, with projected estimates expected to double by 2025 and affect 11.5 million people unless measures are taken to control the disease<sup>9</sup>. Pakistan currently ranking at 7th position in the list of countries with major burden of DM. Pakistan is a developing country with poor health indicators. Most of the studies about depression among patients with diabetes have been carried out in western countries and a few studies in Pakistan. Present study aims to find out the frequency of depression among patients with type-II diabetes mellitus in Peshawar. This study will highlight the significance of liaison medicine for early detection and treatment of depression among patients with diabetes mellitus. It will also result in improved outcome and lead to reduction in the number of health care visits and health care cost.

## 2. MATERIAL AND METHODS

This descriptive study was conducted in Out Patient Department of General Medicine, Khyber Teaching Hospital Peshawar during the period March-September 2010 after receiving approval from the Hospital Ethical Committee.

Sample size calculation for the study was based upon World Health Organization software/formula for sample size determination. By using 95% confidence interval, 10% prevalence and 5% margin of error, the required number was 140 patients with type-II diabetes mellitus. Patients from either sex with definite diagnosis of type-II diabetes for at least one year and with ability to provide informed consent were included. To control bias and confounders in the study results, patient with diabetes having history of treatment for any psychiatric ailment or any other physical illnesses were excluded from the study.

Patients were diagnosed cases of diabetes irrespective of whether controlled or uncontrolled. They were on Oral hypoglycemic drugs.

Patients presenting to outpatient department of general medicine and meeting the selection criteria were included in this study using purposive (non-probability) sampling technique. The nature of study was explained to patients and a well-informed consent was taken. They were interviewed in a comfortable setting ensuring privacy and confidentiality. Socio-demographic variables such as age, gender and marital status were recorded on a semi-structured questionnaire. Depression was assessed by using Beck Depressive Inventory-II. The principal investigator of the study applied the scale to all the patients to avoid any bias of language or interpretation.

Data collected was analyzed by using SPSS version 13. Mean  $\pm$  SD were calculated for numerical/qualitative variables like age. Frequency and percentages were calculated for

qualitative/categorical variables like depression, gender and marital status. Results were presented as tables and graphs.

### 3. RESULTS

Age wise distribution of male and female study subjects is shown in table-1. Most (32.9%) of the female patients were in the age range of 41-45 years in contrast to 17.9% of the male in this age group.

Table-2 shows total BDI-II Score of the study subjects. Out of total, a great number (60.0%) of patients were presented with severe depression, while moderate and mild depression was noted only in 7.2% and 6.4% diabetic patients respectively.

Age wise Total BDI-II Score in male and female subjects is represented in table-3. Out of 46 diabetic women in the age group 41-45 years 39 were in the range of depression, of which 34(73%) female patients were severely depressed against 10(40%) male patient in the same age group. Overall it has been noted that severe depression is more (68.2%) common in diabetic female patients as compared to that in males (47.8%)

**Table-1: Age wise distribution of male and female study subjects.**

S.No.	Age (Years)	Male		Female	
		Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
1	35-40	01	0.7	02	1.4
2	41-45	25	17.9	46	32.9
3	46-50	15	10.7	17	12.1
4	51-55	06	4.3	10	7.1
5	56-60	08	5.7	09	6.4
6	>60	00	0.0	01	0.7

**Table-2: Total BDI-II Score of the study subjects.**

S.No	BD I-II	Frequency	Percentage
1	Normal	37	26.4
2	Mild	09	6.4
3	Moderate	10	7.2
4	Severe	84	60.0

**Table-3: Total BDI-II Score age and gender wise in the study subjects.**

S.No	Age (Years)	Male						Female					
		Frequency	Percentage (%)	Normal N(%)	Mild N (%)	Moderate (%)	Severe N (%)	Frequency	Percentage (%)	Normal N (%)	Mild N (%)	Moderate (%)	Severe N (%)
1	35-40	01	0.7	01 (100)	00	00	00	02	1.4	00	00	00	02
2	41-45	25	17.9	10	03	02	10	46	32.9	07	02	03	34

				(40)	(12)	(8)	(40)			(15)	(4)	(6)	(73)
<b>3</b>	46-50	15	10.7	05 (33.3)	01 (6.7)	01 (6.7)	08 (53.3)	17	12.1	05 (29.4)	01 (5.9)	00	11 (64.7)
<b>4</b>	51-55	06	4.3	02 (33.3)	00	01 (16.7)	03 (50)	10	7.1	04 (40)	01 (10)	02 (20)	03 (30)
<b>5</b>	56-60	08	5.7	02 (25)	01 (12.5)	00	05 (62.5)	09	6.4	01 (11.1)	00	01 (11.1)	07 (77.8)
<b>6</b>	>60	00	0.0	00	00	00	00	01	0.7	00	00	00	01 (100)
<b>Total</b>		55		20 (36.4)	5 (9.1)	4 (7.3)	26 (47.3)	85		17 (20)	4 (4.7)	6 (7.1)	58 (68.2)

#### 4. DISCUSSION

Depression disorders belong to the commonest psychiatric disorders worldwide and they usually occur to individuals who suffer from chronic diseases. Diabetes mellitus is one of a such disease spreading quickly throughout the world and often co-exists with anxiety and depression.<sup>10-11</sup>

In our study depression was present among 73.6% of the sample with type II diabetes. Severe depression was found very high as compared to mild and moderate. The results of this study are comparable to the findings of Mohammad E. Khamseh *et al.*<sup>12</sup> The pathophysiological relationship between co-morbid depression and diabetes is poorly understood. As with other severe chronic illnesses, psychological factors associated with the hardship of diabetes may trigger or enhance depressive symptoms.

The results of the present study showed that sex is strongly related to the occurrence of depression symptoms with women appearing to have high percentages of depression in comparison to men. The rates of depressive symptomatology were higher in female than those in men. This was also concluded in the studies of Zhang CX, *et al* and Skilton MR *et al.* and many more researchers.<sup>13-14</sup> A possible explanation for the above findings is that women play many roles, which expose them to increased responsibilities. It is also possible for a woman to seek more easily psychological support when she is depressed. As a consequence, this fact is more often recorded in the registers of the authorized health services. Another aspect of the interpretation of our findings, is the social role attributed to women (passivity, dependence and emotional expression), which possibly allows them to be more emotional and extroversive. Because of that, they externalize the difficulties they experience, in comparison to men. This could probably mean that difference between sexes is rather due to a disclosure of the problem to a greater extent on behalf of the women, and not to actual evaluation of depression problem.

The present study revealed that a diagnosis of depression in diabetes mellitus type II is higher at age < 45 years. This study is in consistent with the work done by Tracie L.S. Smith *et al.*<sup>15</sup> A study conducted in Pakistan by Farreha Faisal *et al*<sup>16</sup> revealed that the prevalence of depression was significantly higher in subjects with newly diagnosed diabetes. The possible cause could be the psychological stress of chronic medical illness, to which a patient is exposed to the rest of his life.

#### 5. Conclusion

The study results show higher level of depressive symptoms among type II diabetic individuals. Depression is associated with an increased risk for diabetic Complications. Due to potential negative health consequences associated with co morbid diabetes and depression, early

detection and treatment of depression may positively impact the economic burden of these disorders.

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