Available online at: http://www.iajps.com   *Research Article*

A STUDY TO EVALUATE THE PREVALENCE OF DEPRESSION AND ASSOCIATED FACTORS IN TYPE2 DIABETES MELLITUS PATIENTS

Dr. Eema Tabassum Saeed, Dr. Hania Aamir, Dr. Irsa Babar

Lahore Medical and Dental College, Lahore

Abstract:

*Aim of Study: We carried out this study to evaluate the occurrence rate of depression and its associated factors in patients of diabetes mellitus type 2.**Study Design:** A descriptive cross-sectional study.*

*Time and Duration: This study was conducted in Ghurki Trust and Teaching Hospital, Lahore for the duration of one year starting from March, 2018 and ended in March, 2019.**Methodology:** We selected a total number of 110 patients who were suffering from diabetes mellitus type 2 with the help of WHO's statistical calculator. Required confidence level was retained at 95% with 8% of absolute precision and 22.5% estimated patients with disability due to diabetes. Due approval was taken from the ethical committee of the hospital. All selected patients were informed about the study contents briefly and a verbal consent was taken from all of them. All patients were provided into predesigned proforma by the help of which all concerned data was collected. Screening of depression was carried out through Beck's Depression Inventory (BDI) scale. SPSS 20 was used to analyze the collected data. Quantitative variables like age etc. were calculated in mean and standard deviation. Qualitative variables like occupation, socioeconomic status, depression and gender were calculated in percentages and frequencies. Association was evaluated via applying chi square test and observed statistically significant association among qualitative variables. Considered the P value of less than 0.05 as statistically significant.**Results:** Total participants of our study were 110 patients of diabetes among which number of male patients was 20 (18.2%) whereas of female patients was 90 (81.8%). Mood disturbance was observed higher in female patients as compared to the male patients but with the P value of more than 0.769 found no statistically significant difference among the patients. Depression types like mild mood disturbances, borderline clinical depression, moderate depression, severe depression and extreme depression among the patients were as 28.2%, 23.6%, 20.9%, 9.1% and 1.2% respectively. In this study overall depression was observed in 55.5% patients. Ischemic heart disease was there in 26.4% patients and there were 62.7% patients of hypertension whereas, observed obesity in 60% patients of diabetes. We found that depression and hypertension were significantly linked with each other with the P value of more than 0.002.**Conclusion:** We found a high prevalence rate of depression as 55.5% in our study. Factors observed as in association with depression were hypertension, gender and working status whereas, education was not so much associated with depression in patients of type 2 diabetes mellitus. Factors which cause the depression in patients of diabetes are very necessary to be sorted out so that they can be eliminated.*

Keywords: Beck's Depression Inventory, Depression, Hypertension, Co-morbid Depression, Type 2 Diabetes Mellitus.

Corresponding author:

Dr. Eema Tabassum Saeed,
Lahore Medical and Dental College, Lahore

QR code

INTRODUCTION:

Although diabetes is a non-contagious infection but still it is continuously increasing in the population of whole world. World health organization (WHO) says that its prevalence is increasing globally [1]. According to several studies carried out on the prevalence of diabetes, approximately there are 285 million patients of diabetes in the whole world which in 2030 may reach up to 483 million more than the double figure to the current ratio [2,3,4]. When we talk about its prevalence in developing countries about 70% of diabetic patients are found in such countries [5,6].

Likewise, prevalence of anxiety and depression in the developing countries is about two third of the total patients of anxiety and depression in the whole world. A common issue regarding health is depression that influences all attributes of any one's life. It was found in a research that depression is a significant comorbid condition during diabetes and complications associated with diabetes [7]. It has been also observed in another study that generally diabetic patients are about twice as likely to undergo any form of anxiety and depression as compared with the normal public [8]. Usually, this factor is not considered during treatment and hence it remains untreated [9].

METHODOLOGY:

We selected a total number on 110 patients who were suffering from diabetes mellitus type 2 with the help of WHO's statistical calculator. Required confidence level was retained at 95% with 8% of absolute precision and 22.5% estimated patients with disability due to diabetes consistent with summit by World Diabetes Foundation on November, 2008 for Diabetic Association of Pakistan and South-East Asia. Non probability sampling technique was used for the selection of sampling units. With the help of non-random sampling technique selected all those patients of diabetes who were meeting the inclusion criteria and ready to take part in our study. Excluded all those patients who were having drugs or alcohol addicted, mental retardation, dementia, schizophrenia, bipolar disorders, on interferon therapy, with history of severe Hypertension (HTN > 160mm/Hg), unwilling to participate in the study and with type1 diabetes mellitus. We made such an exclusion criterion so that any confusion because of the effects of ongoing psychiatric treatment, severe co morbidities and simultaneous variations in health status can be avoided. All selected patients were informed about the study contents briefly and a verbal consent was taken from all of them. Information regarding socio-demographic variables was noted via interview. All patients were provided a predesigned proforma by the help of which collected all concerned data like various comorbid factors as cardiovascular conditions, hypertension, obesity and treatment regimens with the duration of disease.
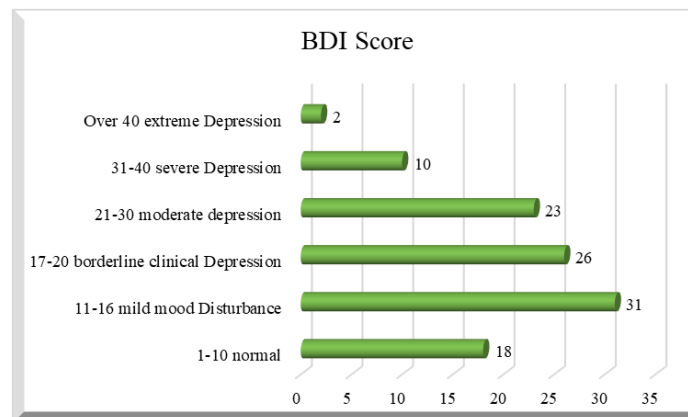
Screening of depression was carried out through Beck's Depression Inventory (BDI) scale which was translated into Urdu. BDI was a self-administered tool with 21 questions with numbered options. Psychiatric assessment was carried out by psychiatrist. SPSS 20 was used to analyze the collected data. Quantitative variables like age etc. were calculated in mean and standard deviation. qualitative variables like occupation, socioeconomic status, depression and gender were calculated in percentages and frequencies. Association was evaluated via applying chi square test and observed statistically significant association among qualitative variables. Considered the P value of less than 0.05 as statistically significant.

RESULTS:

We selected 110 patients of diabetes mellitus among which frequency of male patients was 20 (18.2%) and quantity of female patients was 90 (81.8%). Mood disturbance was observed higher in female patients as compared to the male patients. Patients with a BDI score from 01 to 16 were considered as depression free whereas, those having a score of more than 17 were labeled as having depression. Depression types like mild mood disturbances, borderline clinical depression, moderate depression, severe depression and extreme depression among the patients were as 28.2%, 23.6%, 20.9%, 9.1% and 1.2% respectively. The Psychiatric assessment of all selected patients for their BDI score is presented below in table number 01.

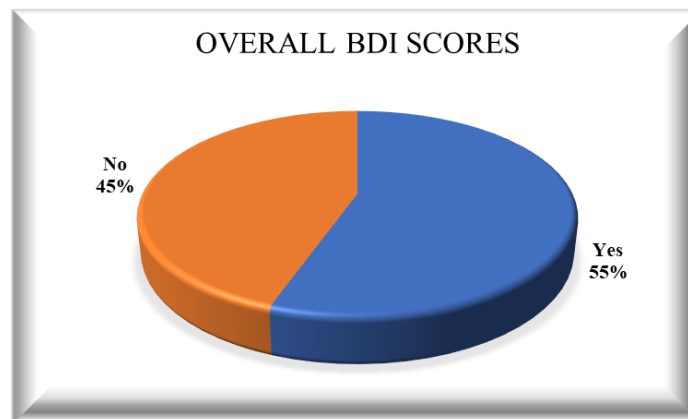**Table N0 01: Beck's Depression Inventory Score of Patients**

BDI Score	%age	Quantity
1-10 normal	16.4%	18
11-16 mild mood Disturbance	28.2%	31
17-20 borderline clinical Depression	23.6%	26
21-30 moderate depression	20.9%	23
31-40 severe Depression	9.1%	10
Over 40 extreme Depression	1.8%	02
Total	100%	110

Overall depression BDI scores are shown below in table number 02.

Table No 02: Overall depression BDI Scores of all Diabetic Patients

BDI SCORE	%AGE	QUANTITY
YES	55.50%	61
NO	44.50%	49
TOTAL	100%	110

We used chi square test to find out the association among depression and its associated factors. Even though, 47 patients with the age of more than 49 years were having depression but still than found no association of age with P value as less than 0.174. With the frequency of 51(83.61%) females were observed to have higher rate of depression and mood disturbances as compared to male patients 10(16.39%) but with the P value of less than 0.769 found no statistically significant difference. Astonishingly observed more prevalence of depression in married patients 43(70.49%) as compared to the unmarried patients 18(29.51%). With the P value of less than 0.005 results were found statistically significant. With the P value of less than 0.002 association among hypertension and depression was found to be statistically significant. Educated patients 13(21.31%) showed less depression as compared to uneducated patients 48(78.69%). With a P value of less than 0.02 association of education was observed statistically significant. Even though, according to the results of BDI score depression was very high among non-employee patients 49(80.33%) however, with P value of less than 0.863 association among occupation and depression was not significant. Demographic profile of all selected patients of our study is shown below in table number 03.

Table No 03: Demographic Profile and its Association with Depression

VARIABLES		CHARACTERISTICS		DEPRESSION		P-VALUE
		N=	%age	N=	%age	
TOTAL PATIENTS		110		61		
GENDER	Male	20	18.18%	10	16.39%	0.769
	Female	90	81.82%	51	83.61%	
AGE	< 49 years	31	28.18%	14	22.95%	0.174
	> 49 years	79	71.82%	47	77.05%	
MARITAL STATUS	Married	88	80%	43	70.49%	0.005
	Unmarried	22	20%	18	29.51%	
OCCUPATION	Employee	31	28.18%	12	19.67%	0.863
	Non-employee	79	71.82%	49	80.33%	
MONTHLY INCOME	≤ 10,000	23	20.91%	15	24.59%	0.356
	10,001-15,000	30	27.27%	18	29.51%	
	≥ 15,001	57	51.82%	28	45.90%	
EDUCATIONAL STATUS	≤ Primary	77	70%	48	78.69%	0.02
	> Primary	33	30%	13	21.31%	

The frequency distribution of co-morbid clinical factors and their association to depression among the total selected diabetic patients of our study is presented below in table number 04.

Table-4 shows the frequency distribution of co-morbid clinical factors among the diabetic population included in the study.

Table No 04: The frequency distribution of co-morbid clinical factors and their association to depression

Variables		Characteristics		Depression		P-value
		N=	%age	N=	%age	
Total Patients		110		61		
Diabetes duration	< 5 Years	31	28.18	14	22.95	0.174
	> 5 Years	79	71.82	47	77.05	
Treatment	Single drug	46	41.82	28	45.90	0.333
	Drug combination	64	58.18	33	54.10	
Obesity (BMI)	< 25	44	40	27	44.26	0.309
	> 25	66	60	34	55.74	
Hypertension	Yes	69	62.73	46	75.41	0.002
	No	41	37.27	15	24.59	
Ischemic heart disease	Yes	29	26.36	20	32.79	0.130
	No	81	73.64	41	67.21	

DISCUSSION:

The diabetic patients who are also suffering from anxiety and depression usually don't care about self-care recommended instructions as well as also adopt sedentary life style and hence at last end-up with poor diabetic control and medicines results. In the patients of diabetes comorbid depression can lead to complication induction, more pain, escalated cost, suffering, premature morbidity and mortality [10,11]. Many studies have proved the etiology about relationship of diabetes and depression but too much complexity was observed and involving many factors acting together like life style, biologic, psychological and genetics which pay a major role among this etiology of relationship [12,13,14].

There are many factors associated with depression like hypertension, marital status, gender education and socioeconomic status and comorbid conditions associated with depression in patients of type 2 diabetes mellitus are cardiovascular diseases, obesity and hypertension [15]. The aim of our study was to find out the prevalence of depression in diabetic patients and to evaluate the concerning factors. With the help of our study results depression control can be done easily and so as it will not only reduce the patient disease but also will enhance medicinal results, reduce the treatment cost and related resources consumption particularly in poor countries.

CONCLUSION:

We found a high prevalence rate of depression as 55.5% in our study. Factors observed as in association with depression were hypertension, gender and working status whereas, education was not so much associated with depression in patients of type 2 diabetes mellitus. Factors which cause the depression in patients of diabetes are very necessary to be sorted out so that they can be eliminated.

REFERENCES:

1. WHO | Pakistan. [Online] [Cited 2014 Nov 23]. Available from: URL: http://www.who.int/countries/pak/en/.
2. Greenspan´s Basic & Clinical Endocrinology / David G. Gardner, Dolores M. Shoback / buchspektrum.de. [Online] [Cited 2014 Nov 23]. Available from URL: http://www.buchspektrum.de/ neuerscheinungen11/ISBN.0-07-162243-8. (0071622438).htm.
3. Abate N, Chandalia M. Ethnicity and type 2 diabetes: focus on Asian Indians. J Diabetes Complications. 15: 320-7.
4. Melmed S, Polonsky K, Larsen PR, Kronenberg H. Williams Textbook of Endocrinology. Available from URL: https://www.elsevier.com/books/williams-textbook-of- endocrinology/melmed/978-1-4377-0324-5.
5. Khuwaja AK, Lalani S, Dhanani R, Azam IS, Rafique G, White F. Anxiety and depression among outpatients with type 2 diabetes: A multi-centre study of prevalence and associated factors. Diabetol Metab Syndr. 2010; 2: 72.
6. World diabetes foundation. [Online] [Cited 2014 Nov 23]. Available from: URL: http://www.worlddiabetesfoundation.org/

7. Shera AS, Jawad F, Basit A. Diabetes related knowledge attitude and practices of family physicians in Pakistan. J Pak Med Assoc. 2002; 51: 465-70

8. Tovilla-Zárate C, Juárez-Rojop I, Peralta Jimenez Y, Jiménez MA, Vázquez S, Bermúdez-Ocaña D, et al. Prevalence of anxiety and depression among outpatients with type 2 diabetes in the Mexican population. PLoS One. 2012; 7: e36887.

9. Lloyd CE, Pouwer F, Hermanns N. Screening for Depression and Other Psychological Problems in Diabetes. In: Lloyd CE, Pouwer F, Hermanns. A Practical Guide. London: Springer, 2012; pp-238.

10. Lin EH, Rutter CM, Katon W, Heckbert SR, Ciechanowski P, Oliver MM, et al. Depression and advanced complications of diabetes: a prospective cohort study. Diabetes Care. 2010; 33: 264-9.

11. Balhara YPS, Sagar R. Correlates of anxiety and depression among patients with type 2 diabetes mellitus. Indian J Endocrinol Metab. 2011; 15: S50-4.

12. Carulli L, Rondinella S, Lombardini S, Canedi I, Loria P, Carulli N. Review article: diabetes, genetics and ethnicity. Aliment Pharmacol Ther. 2005; 22: 16-9.

13. Björntorp P. Do stress reactions cause abdominal obesity and comorbidities? Obes Rev. 2001; 2: 73-86.

14. Vijan S. In the clinic. Type 2 diabetes. Ann Intern Med. 2010; 152: 31-15.

15. Beck AT, Alford BA. Depression: Causes and Treatment. Philadelphia: University of Pennsylvania Press, 1972.