SHORT REPORT

Co-morbid depression in individuals with type 2 diabetes mellitus

Ume Sughra,[1] Muhammad Imran[2]

Abstract

It was a descriptive cross-sectional study conducted to determine the frequency of depression and association with factors in type 2 diabetics in diabetic clinic of Fauji Foundation Hospital Rawalpindi from 1st January - 30th June 2014.

In all 110 diabetic patients were selected using convenient Sampling. Data was collected by using a pre-tested structured proforma. Beck's Depression Inventory (BDI) scale was used to screen depression.

There were 20 males (18.2%) and 90 females (81.8%) in this study. Females had more mood disturbances and depression as compared to males, however difference was not statistically significant (p<0.769). 28.2% individuals had mild mood disturbances, while borderline clinical depression was present in 23.6% of study group, 20.9% were having moderate depression and 9.1% were having severe depression, rest 1.2% had extreme depression. Overall 55.5% respondents had depression in this study. Obesity was present in 60% of diabetics, 62.7% were hypertensives and 26.4% had ischaemic heart disease. Depression was statistically significantly associated with hypertension (p< 0.002).

Keywords: Type 2 diabetes mellitus, co-morbid depression, complications, Beck's depression inventory.

Introduction

Diabetes is a non communicable disease and its global prevalence is continuously rising. It's a worldwide epidemic according to WHO.[1] Almost 285 million people are suffering from diabetes worldwide and this will rise to 438 million by the year 2030;[2-4] 70% of these individuals live in developing countries.[5,6] Similarly two-third of the worldwide population suffering from depression and anxiety live in developing countries. Depression is a common public health issue which affects all aspect of a person's life and has been recognized as an important comorbid condition in diabetes and diabetes related complications.[7] People with diabetes are almost twice as likely to suffer from depression and anxiety as the general population.[8] But this factor remains unrecognized and thus un-treated.[9] Depressed and anxious individuals are less likely to comply with diabetes self care recommendations and more likely to follow sedentary life style and eventually end up with poor diabetes control and clinical outcomes. Comorbid depression in diabetic patients can be responsible for premature morbidity, mortality, developing complications, increased pain and suffering and escalated cost.[10,11] Some literature says that etiology about relationship between depression and diabetes is unknown but it appears too complex and many factors seem to play together like biologic, genetic, life style and psychological factors are the major contributors for the existing relationship.[12-14]

The purpose of this study was to explore the burden of depression in outpatients with diabetes mellitus and various factors related to it. As management of depression can assist in alleviating patient suffering and contribute to improve clinical outcome while reducing the cost of patient management and associated resource utilization especially in developing countries. It is a disease that is influenced by many factors like age, sex, socioeconomic status, education, and marital status. There are many comorbid conditions like obesity, hypertension, and cardiovascular diseases that also aggravate diabetes.

Methods

It was a descriptive cross-sectional study conducted in the Diabetes Clinic, Medical Unit-III Fauji Foundation Hospital (FFH), Rawalpindi from 1st January 2014 - 30th June 2014. Sample size was calculated by using statistical calculator of WHO by keeping desired confidence level at 95%, absolute precision 8% and anticipated population of 22.5%with disability by diabetes mellitus according to World Diabetes Foundation November 2008 summit for South-East Asia and Diabetic Association of Pakistan. Sampling units were selected by consecutive non probability sampling technique. So, all type 2 diabetic patients visiting the diabetes clinic fulfilling the inclusion criteria and willing to participate were included in the study through non-random sampling method. Patients with type I diabetes mellitus, with history of severe Hypertension (HTN $\geq$ 160mm of Hg), on Interferon therapy, Bipolar disorders, Schizophrenia, Dementia,

--[1]Al-Shifa School of Public Health, Pakistan Institute of Ophthalmology, Rawalpindi, [2]Fauji Foundation Hospital, Rawalpindi, Pakistan.
Correspondence: Ume Sughra. Email: dr_sughra@yahoo.com

Mental retardation, Drug or Alcohol addicts were excluded. Exclusions are made to avoid confounding due to severe co morbidities, concurrent changes in health status and effects of ongoing psychiatric treatment. Since FFH serves families of ex-army personnel by providing medical facilities free of cost, there was a large majority of females. Male patients seek health care services from military hospitals. Informed consent was taken from the study group and data on socio-demographic variables was collected. Data on duration of illness, treatment regimes and various comorbid factors like obesity, hypertension and cardiovascular conditions were noted by using a pre- tested structured proforma. A validated Urdu (local language) version of the Beck Depression Inventory (BDI) scale was used to screen depression among study participants. It was a self administered tool with 21 items. Each question had options and numbers were assigned to each option. The psychiatric assessment was done by a psychiatrist.[15]

Data was analyzed by using SPSS version 17. Means and standard deviations are calculated for quantitative variables like age. Frequency and percentages are calculated for qualitative variables like gender, depression, income level, occupation and other factors. After obtaining individual percentages, the association was seen between the qualitative variables by applying chi square test of statistical significance. Significance level was set at 0.05. P-value < 0.05 was considered as statistically significant.

Results

A total of 110 Type 2 diabetics were included in the study. Table-1 shows the Psychiatric evaluation of all participants for their BDI score. Participants with a BDI score between 01-16 were considered as depression free while those having a score of 17->40 were labeled as having depression. Table-2 shows 61 (55.5%) participants to have depression among study group. Table-3 shows the demographic profile of respondents. Table-4 shows the frequency distribution of co-morbid clinical factors among the diabetic population included in the study. Table-5 shows the factors associated with depression among Type 2 diabetics. A chi-square test of statistical significance was applied to see the association between depression and associated factors. Depression was not associated with age (p< 0.174) although 47 (77%) individuals >50 years of age had depression. Females were seen to have more mood disturbances and depression, 51(83.6 %) as compared to males10 (16.4%), however the difference was not statistically significant (p< 0.769). Surprisingly depression was more prevalent

Table-1: Beck's Depression Inventory Score of study group (n=110).

Beck's Depression Inventory Score	Frequency	Percent (%)
1-10 normal	18	16.4
11-16 mild mood Disturbance	31	28.2
17-20 borderline clinical Depression	26	23.6
21-30 moderate depression	23	20.9
31-40 severe Depression	10	9.1
Over 40 extreme Depression	2	1.8
Total	110	100.0

Table-2: Comorbid depression among Type II Diabetics (n=110).

Beck's Depression Inventory (BDI) Score	N (%)
Yes (17->40)	61(55.5)
No (01-16)	49(44.5)
Total	110(100)

Table-3: Demographic Profile and its association with depression among study participants (n= 110).

		Characteristics n (%)	Depression n*(%)	p-value
Sex	male	20(18.2)	10(16.4)	0.769
	female	90(82)	51(83.6)	
Age	< 50 years	31(28.2)	14(23)	0.174
	> 50 years	79(71.8)	47(77)	
Marital status	living with spouse	88(80)	43(70.4)	0.005
	not living with spouse	22(20)	18(29.7)	
Occupation	working	31(28.2)	12(20)	0.863
	not working	79(71.8)	49(80)	
Monthly income (PKR)	5000-10000	23(20.9)	15(24.5)	0.356
	10000-15000	30(27.3)	18(30)	
	> 15000	57(51.8)	28(46)	
Education	< 5 years of schooling	77(70)	48(78.6)	0.02
	> 5 years of schooling	33(30)	13(21.3)	

n* (total individuals with depression=61). PKR: Pakistani Rupees.

Table-4: Co-morbid Factors and their association with depression among type II Diabetics (n=110).

		Clinical factors n (%)	Depression n*(%)	p-value
Diabetes duration	< 5 years	31(28)	14(23)	0.174
	> 5 years	79(72)	47(77)	
Treatment	Single drug	46(41.8)	28(46)	0.333
	Drug combination	64(58.2)	33(54)	
Obesity (BMI)	< 25	44(40)	27(44.3)	0.309
	> 25	66(60)	34(55.7)	
Hypertension	Present	69(62.7)	46(75.4)	0.002
	Absent	41(37.3)	15(24.5)	
Ischaemic heart disease	Present	29(26.4)	20(33)	0.13
	Absent	81(73.6)	41(67)	

n* (total individuals with depression=61).

among diabetic individuals living with spouse 43(70%) than those not living with spouse 18(29.7%) with a statistically significant result (p<0.005). Statistically significant association was found between depression and hypertension (p< 0.002). Depression was noted to be less in diabetics who were educated 13(21.3%) as compared to uneducated 48(78.6%) and the association was also found to be statistically significant (p<0.02). Although depression was quite high as per BDI score among those who were not working 49(80%), but no significant association was found between depression and occupation (p<0.863).

Conclusion

Depression had a high prevalence in this study (55.5%). Among the factors associated with depression were gender, working status and hypertension. Education was less associated with depression among Type 2 diabetics.

It is essential to look for factors leading to depression in people with type-2 diabetes so that they can be ameliorated.

Disclaimer: This is Short Report based on my Dissertation, approved by RTMC, submitted as part of the requirement for a fellowship examination of the College of Physicians and Surgeons Pakistan. Neither presented nor submitted somewhere else for publication.

Conflict of Interest: None.

Funding Sources: None.

References

1. WHO | Pakistan. [Online] [Cited 2014 Nov 23].Available from: URL: http://www.who.int/countries/pak/en/.
2. 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.
3. 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.
4. Abate N, Chandalia M. Ethnicity and type 2 diabetes: focus on Asian Indians. J Diabetes Complications. 15: 320-7.
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, PeraltaJimenez 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. Vijan S. In the clinic. Type 2 diabetes. Ann Intern Med. 2010; 152: 31-15.
13. 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.
14. Björntorp P. Do stress reactions cause abdominal obesity and comorbidities? Obes Rev. 2001; 2: 73-86.
15. Beck AT, Alford BA. Depression: Causes and Treatment. Philadelphia: University of Pennsylvania Press, 1972.