Depression in Diabetic Patients

* Shamsaei F. MSc, ** Cheraghi F. MSc, *** Allahverdipour H. PhD

*Faculty of Nursing & Midwifery Hamedan University of Medical Sciences, Iran ** Dept. of Nursing, Shahid Behshti University of Medical Sciences, Iran *** Dept. of Public Health, Hamedan University of Medical Sciences, Iran

(Received 19 Jan 2006; accepted in revised form 14 Dec 2006)

Abstract

Background: Diabetes mellitus has a strong association with the presence of depression. Psychiatric morbidity and especially depression are believed to be important aspects of diabetes influencing upon treatment course and prognosis. To determine the prevalence of depression in adult diabetic populations and compare nondiabetic population, we performed the current study.

Methods: Three hundred eighty four diabetic patients from a diabetic research center in Hamedan, Iran and 384 nondiabetic participants involved in this cross-sectional study. The Beck Depression Inventory (BDI) was used to evaluate depression.

Results: The diabetic patients group had a significant higher mean BDI score than that of the nondiabetic group. In addition, patients with diabetes type I had a significant higher mean BDI score than that of the diabetic patients type II. Outcome showed the prevalence of mean BDI score was 29/4% in females compared with 21.8% in males.

Conclusion: This study highlights the importance of this point for healthcare workers to understand how diabetic patients experience depression, which is a prerequisite for communication based on a shared understanding. This awareness would enhance nurses' opportunities to alleviate suffering.

Keywords: Diabetes, Depression, Beck Depression Inventory, Iran

Introduction

Diabetes mellitus is an increasingly prevalent condition, currently affecting up to 8% of the population in western countries (1, 2). According to recent studies, there are nearly 1.5 million diabetics in Iran (3).

Depression occurs at high rates among individuals with diabetes mellitus and several studies suggest that diabetes doubles the risk of depression (4- 6). Grey, et al. suggested that base rates of depression are twofold higher among children and threefold higher among adolescents with diabetes, compared with the corresponding age groups in the general popu-

Correspondence: Farshid Shamsaei, P.O.Box: 65175 Iran, E-mail: shamsaei68@yahoo.com lation (7). Gavard and Andersom reported that 9% to 27% of diabetic patients suffer from major depressive disorder (MDD) at any single point in time (8, 9). Gavard, according to a critical review of eight controlled studies, reported that 14% (range, 8.5% to 27%) of adults with either type 1 or type 2 diabetes mellitus have a major depressive disorder (9). During the first 10 yr after the diagnosis of diabetes and by the average age of 20 yr, 48% of youths monitored prospectively had developed a psychiatric disorder and 28% had experienced at least 1 episode of depression due to diabetes mellitus (5, 10). Depression may develop because of stress but also may result from the metabolic effects of diabetes

on the brain (11). Depression may directly worsen glycemic control and accelerate the development of diabetic complications that are at the root of the morbidity and mortality associated with diabetes. In addition, depression significantly decreases adherence to medication and dietary regimens prescribed for glycemic control (6, 12).

Aside from the negative effects on the quality of life of these patients, depression affects the management and complications of the disease. It has also been suggested that depression may be dismissed or undertreated by healthcare workers because it is unquantifiable or misunderstood (13). A research shows that depression leads to poorer physical and mental functioning, so a person is less likely to follow a required diet or medication plan (4). This is an important public health issue because depressive disorders have generally been associated with the outcomes of chronic diseases like diabetes (14).

Today, diabetes has found increasing prevalence, partly due to improved health care modalities and quality of life, and hence increased survival of the patients. It was estimated that in 1997, about 124 million were affected by diabetes in the world (15). WHO estimates that the figure will raise to 300 million in 2025 (16). Distributive pattern of diabetes shows higher rates among people in developing countries, and in lower socioeconomic groups of more developed countries (17). It is estimated that in year 2025, more than 75% of diabetic patients will be inhabitants of developing countries (18). According to WHO forecast, prevalence of diabetes mellitus in year 2025 in Iran will be 6.8% of population (19), or 5.1 million diabetics' people (20). In accordance with the abovementioned background, the purpose of the present study was to assess the prevalence of diabetic depression among Iranian diabetic patients as a different context with its own special psychosocial and ethnical dimensions.

Materials and Methods

This was a cross- sectional study conducted among diabetic patients, the main goal was to assess prevalence of depression among patients suffering from diabetes.

Three hundred eighty four diabetic patients and 384 nondiabetic participants who had not any diseases and referred to hospital for visiting their relatives were selected as control group using random sampling. Both of groups were matched for age and sex. Using Beck Depression Inventory (BDI) (21), a self-report questionnaire measuring depression, data were collected. BDI is a 21-item test presented in multiple-choice format which purports to measure presence and degree of depression in adolescents and adults. Each of the 21-items of the BDI attempts to assess a specific symptom or attitude "which appears to be specific to depressed patients, and consistent with descriptions of the depression contained in the psychiatric literature". The presence of depression was determined using the National Institute of Mental Health Diagnostic Interview Schedule in accordance with the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-R) criteria (22).

Inclusion criteria were definite diagnosis of diabetes based on ADA criteria: type I or insulin-dependent diabetes and type II or noninsulin-dependent diabetes (23). Diabetic patients with other predisposing factors for depression such as underlying diseases (e.g. earl depression or other mental disorders, life threatening disorders, and having critical situation) were excluded from the study.

Statistical Analysis: Descriptive statistics provided information on all variables. Student ttest used compare between Mean BDI score in the two study populations. Statistical significance was assessed by using P < 0.05.

Results

The participant characterizes were: age between 15-68 yr, (mean= 38 yr); females 66.5%; most had completed elementary education (41.2%), 31% of patients had diabetes type I, and 69% diabetes type II .The mean duration of diabetes was 4.8 years.

The diabetic patients group had a significantly higher mean BDI score than those in the nondiabetic group (Table-1).

Sever depression was diagnosed in 21%; Moderate depression in 27%; and low depression in 25.5% of diabetic patients. (Table-2) Also, patients with diabetes type I had a significantly higher mean BDI score than that of the diabetic patients type II (Table 3). Outcome showed that the prevalence of mean BDI score was 29/4% in women compared with 21.8% in men.

Table1: Beck Depression Inventory (BDI) score among diabetic and nondiabetic patients

Group	Mean	Minimum	Maximum	SD
Diabetic	23.3	12	59	11.6
Nondiabetic	9.1	5	31	7.1
Nondiabetic	9.1	5	31	

(T: 20.5, *P*< 0.001)

 Table 2: Depression among diabetic patients and nondiabetic

Group	Diabetic		Non diabetic	
Depression	Ν	%	Ν	%
Normal	102	26.6	155	40.36
Low	98	25.5	185	48.18
Mild	103	27	36	9.37
Severe	81	21	8	2
Total	384	100	384	100

Table 3: BDI mean score for diabetes Type-I and II

Diabetes	Mean	Minimum	Maximum	SD
Type-I	26.7	17	61	10.6
Type-II	18.6	11	39	8.2

(*T*; 12/08, *P*< 0.001)

Discussion

A number of studies during the past decade have investigated the comorbidity of mental illness and diabetes (9). Depression in diabetic is a multifactorial disorder arising from biological and psychosocial factors and this association increases the risk of diabetes in healthy people (24).

The prevalence of depression among diabetics has been studied in different surveys (9, 25-28). Based on Wilkinson study on psychiatric morbidity and social problems in a consecutive series of out patients with insulin-dependent diabetes mellitus, the prevalence of psychiatric morbidity was found as 18% and consisted of depression, anxiety, and attendant symptoms (29).

In consistent with previous studies and international literature, the finding of our study showed that prevalence of depression among diabetic patients was significantly higher than that of the nondiabetic (4-7). Moreover, we found that the prevalence of depression was higher in diabetic women. Some studies have suggested that women with diabetes may be more likely to suffer from depression compared with their male counterparts (11, 30). In a recent Meta analysis of 42 studies, the prevalence of depression was 28% in women compared with 18% in men (23). However, not all studies reported this gender differential (31, 32). One study reported greater depression in men, but increased levels of anxiety in women (32). Mortazavi reported that there was not any relation between gender and depression in diabetic patients (33). In addition, our result showed a significant difference between depression and diabetes types II and I. Clinical depression in individuals with diabetes may recur more frequently, episodes may last longer, and the long-term recovery rate may also be much lower (9, 34). This increased risk for depression is thought to be similar in individuals with types I diabetes and II (25).

Whether psychological distress increases the risk of developing diabetes and/or its complications, diabetes and/or its complications increase the risk of depression, or these two are merely coincidental, they have important consequences for both the individual with diabetes and the health-care professional involved in their care (7).

Treating depression with psychotherapy, medication or a combination of these treatments can improve a patient's well being and ability to manage diabetes (35). Conclusively, there are more studies about diabetic depression but there are debates about role of diabetes mellitus on depression. Our results do suggest, however, that people with diabetes who have developed symptomatic comorbidities such as retinopathy, nephropathy, neuropathy and peripheral arterial disease may be at increased risk of depression. Greater attention to such patients is likely would be more successful for effective treatment of diabetes and consequently for reduction of mellitus diabetes complication.

Acknowledgements

This research was carried out by a grant from Hamadan University of Medical Sciences, Iran.

References

- 1. Bagust A, Hopkinson Pk, Mair w, Currie CJ. An economic model of the long term health care burden of type II diabetes. *Diabetologia*. 2001; **44**: 2140-55.
- Boyle JP, et al. Projection of diabetes burden through 2050. *Diabetes care*. 2001; 24: 1936-40.
- 3. Larijani B, Zahedi F. Epidemiologyof diabetes in Iran. *J diabetes & lipid*. 2001.
- 4. Anderson RJ, Lustman PJ, Clouse RE, et al. Prevalence of depression in adults with diabetes: a systematic review. *Diabetes*. 2000; **49(Suppl 1):** A64.
- 5. Stewart SM, Emslie GJ, Klein D, White PC. Depressive Symptoms Predict Hos-

pitalization for Adolescents With Type 1 Diabetes Mellitus, *Pediatrics*. 2005; **115(5)**: 1315-19.

- Rosenthal MH. The Challenge of Comorbid Disorders in Patients With Depression, *The Journal of Osteopathic Disorder*, 2003; 103(8)suppl: 10-15.
- 7. Gavard JA, Lustman PJ, Clouse RE. Prevalence of depression in adults with diabetes: an epidemiological evaluation. *Diabetes Care*. 1993; **16**: 1167-78.
- Grey M, Whittemore R, Tamborlane W. Depression in type 1 diabetes in children: natural history and correlates. J Psychosomat Res. 2002; 53: 907 -11.
- 9. Anderson RJ, Freedland DK, Clouse RE, Lustman PJ. The prevalence of comorbid depression in adults with diabetes. *Diabetes Care*, 2001; **24:** 1069-78.
- 10. Gavard JA, Lustman PJ, Clouse RE. Prevalence of depression in adults with diabetes: an epidemiological evaluation. *Diabetes Care*. 1993; **16**: 1167-78.
- Kovacs M, Mukerji P, Drash A, Iyengar S. Biomedical and psychiatric risk factors for retinopathy among children with IDDM. *Diabetes Care*. 1995; 18: 1592-99
- 12. Anonymous. National Institute of Mental Health (2002). Depression and Diabetes, C:\WINDOWS\Desktop\NewFolder\ Depression and Diabetes.htm.
- Ciechanowski PS, Katon WY, Russo JE. Depression and diabetes: Impact of depressive symptoms on adherence, function, and costs. *Arch Intern Med.* 2000; 160: 3278-85.
- Trendal J. Concept analysis: chronic fatigue. *Journal of advance nursing*, 1997; **32(5):** 1126-31.
- Finkelstein EA, Bray JW, Chen H, Larson MJ, Miller K, Tompkins C, Keme A, Mandersheid R: Prevalence and costs of major depression among elderly claimants with diabetes. *Diabetes Care*. 2003; 26: 415-20.

- Amos AF, McCarty DJ, Zimmet P. The rising global burden of diabetes and its complications: estimates and projections to the year 2010. *Diabet Med* 1997; 14 (suppl.5): S1-S 85.
- 17. WHO. World Health Report 1997. Geneva: World Health Organization.
- Bennett PH. LeRoith D, Taylor SI, Olefky JM (eds). *Diabetes mellitus: a fundamental and clinical text*. Philadelphia: Lippincott Williams & Wilkins, 2000: pp. 544-48.
- 19. Azizi F. Epidemiology of diabetes In Iran. Proceedings of symposium of New Horizons in Education and Treatment of Diabetes. Tehran, Iran, 2001. pp: 7-9.
- Larijani B, Zahedi F. Epidemiology of diabetes in Iran. J diabetes & lipid, 2001.
- 21. King H, Aubert RE, Herman WH. Global burden of diabetes, 1995-2025. *Diabetes Care* 1998; **21(9):** 1414-31.
- 22. Beck AT, Brown G, Steer RA. *Beck Depression Inventory II manual*. San Antonio, TX: The Psychological Corporation.1996.
- Kaplan BJ, Kaplan VA. Kaplan and Sadock's Synopsis of Psychiatry: Behavioral Sciences/Clinical Psychiatry. 9th ed. Philadelphia, Pa: Lippincott Williams & Wilkins, 2003: pp. 913-17.
- 24. Alberti KG, Zimmet PZ. Definition, diagnosis and classification of diabetes mellitus and its complications. Part 1: diagnosis and classification of diabetes mellitus provisional report of a WHO consultation. *Diabet Med*, 1998: pp. 15539-553.
- 25. Larijani B, Khoaram Shahi M, Khalili Gorgani M, et al. Association between depression and diabetes. *German journal of psychiatry*. 2004; **7**; pp: 62-65.
- 26. Anderson RJ, Freedland KE, Clouse RE, Lustman PJ. The prevalence of co-

morbid depression in adults with diabetes: a meta-analysis. *Diabetes Care*. 2001; **24:** 1069 -78.

- Blazer Dg, et al. Depression in diabetes and obesity: racial/ethnic/gender issues in older adult. *J Psychosoma Res.* 2002; 53: 913-16.
- 28. Peyort M, Rubin R. Levels and risks of depression and anxiety symptomatology among diabetic adults. *Diabetes Care*. 1997; **20**:585-90.
- 29. Lustman PJ, Griggith LS, cryer PE. Psychiatric illness in diabetes mellitus. *J Nerv Ment Dis.* 1986; **174:** 736-742.
- Wilkinson G, Borsey DQ, Leslie P, Newton RW. Psychiatric morbidity and social problems in patients with insulin-dependent diabetes mellitus. *Br J Psychiatry*. 1988; **153**: 38-43.
- 31. Peyort M, Rubin RR. Level and risks of depression and anxiety sypmtomatology among diabetic adults. *Diabetes Care*. 1997; **20**: 585-90.
- 32. Lioyd CE, Barnet AH, Dyer PH. Effects of psychological symptomatology on diabetes management (abstract). *Diabet Med*, 2002.
- Mortazavi J. Psychiatric aspects of depression in diabetics, A thesis in Tehran University of Medical Sciences. 1997.
- Peyrot M, Rubbin RR. Persistence of depressive symptoms in diabetic adults, *Diabetes Care*. 1999; 22: 448-52.
- 35. Ciechonowski PS, Katon WJ, Russo JE. Depression and diabetes: Impact of depressive symptoms on adherence, function, and costs. *Archives of internal Medicine*. 2000; **160(21)**: 3278-85.