Comparison of depression in diabetic patients with and without foot wound

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Abstract

Introduction: Long-term complications of diabetes leads to physical and mental weakness and reduce their quality of life. One of the complications is the chronic wounds of extremities. Because of its outcome, patient's adaptation can be reduced. The aim of this study was to compare depression between diabetic patients with and without foot wounds.
Materials and methods: The comparative-descriptive study was performed on diabetic patients with and without foot wounds that admitted to the hospitals in Qom University of Medical Sciences in 2014. 100 patients with chronic wounds and 100 patients without the wounds was recruited by available sampling method for the study. We employed the "Demographic and clinical" and "Beck depression" questionnaires for gathering the data. The study data were analyzed by independent t and Chi-square tests using the SPSS (version 13) statistical software.
Results: Mean and standard deviation of age in patient with and without chronic wound was 52.1±3.9 and 51.5±4.1 years, respectively. Depressive score of patient with and without chronic wound was also 25.6±9.5 and 8.7±2.1, respectively. Depression score of patient with underlying disease was higher than patients without underlying disease. The depression score rises with age. The depression scores were similar in both male and female gender.
Conclusion: The depression in patient with chronic wounds was higher than patient without the wounds. Also, depression in patients with underlying disease and older age, rises.

Keywords: Chronic wound, Diabetes, Depression

Introduction

Diabetes mellitus is the most basic problems of medical and health systems in the world especially in Iran (1). Statistics show that there are worldwide more than 140 million patients with diabetes. As America Diabetes Association predicts that by 2025, this figure will reach 324 million patients (2). These patients are susceptible to serious complications leading to severe disability and even death (3). These symptoms are often silent and are manifested 15-20 years after increasing blood sugar from normal levels (4).
Diabetic foot is one of the most serious chronic conditions related to diabetes (5). Studies show that 60-70% of patients have neuropathy and loss of sensation in the legs with diabetic foot wound that account for 25% of the wounds (6). These wounds first erupt from the ends of toes (7). In case of lack of control and proper treatment, the wounds will result in the inability of diabetic patients and with the development of wounds of the extremities involved, leads to amputation (8). In total, more than half of patients with chronic leg wound are hospitalized because of infection and one fifth of them need to become amputated (9). Our studies show that the amputation because of diabetic foot wounds in patients with diabetes in our country is about 30% (10). Despite the

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repeated referring to the medical care centers and the high cost of treatment, the wounds are not controlled and the amputation of affected limbs is a great concern and stress that reduces the quality of life and increases the mortality in diabetic patients (11).

In fact, each person according to time and circumstances has certain tolerance against stress. If the stress is more than tolerate, inevitably leads to behavioral emotional disorders (12). Depression is one of the mood disorders that today presented as a common problem among diabetic patients. In a recent survey, the prevalence of depression among diabetic patients was twice the non-diabetic patients (13). Depression arise as depressed mood, feelings of hopelessness, feelings of sadness, worthlessness, sleep and appetite disturbance or loss of energy and libido, reduces quality of life for patients with diabetes and is associated with a high rate of morbidity, mortality and healthcare costs (14). In a study on 547 outpatients with diabetes, Peyrot et al. found that diabetes and depression is associated with increased risk of psychological disorders (15).

Epidemiology of depression caused by medical disorders such as diabetes is not known but the disease is a common cause and not diagnosed in a timely manner (16). We hypothesized that there is a relationship between diabetes and depression that should be further evaluated. We can check the role of psychosocial symptoms such as weak strength, duration of diabetes, its complications during illness and treatment as factors of stress and depression in patients with diabetes (17). In this study, chronic wounds in diabetic patients was studied as a depression factor between two groups of diabetic patients. In this regard, depression compared in both groups of diabetic patients with diabetic foot wounds and diabetic patients without the wounds.

Materials and methods

This descriptive (analytical-comparative) study was conducted on two groups of diabetic patients with and without chronic leg wound. The samples studied were selected from among diabetics' patient that during the 2014 had referred diabetic clinic in Hospitals in Qom University of Medical Sciences. The subjects was recruited by simple random sampling method. According to the results of a previous study, sample size of 100 patients in each group was estimated. Inclusion criteria for patients to study was married, literacy, lack of known mental illness, the ability to speak Persian, definitive diagnosis of diabetes by a physician in both groups (self-report), after 6 months of creation wound feet and lack of addiction. Exclusion criteria included severe struggles and conflicts of family, substance abuse, threats of divorce, and other diseases that affect the physical and mental depression such as cancer, autoimmune diseases and inability of the implementation of the study.

The data collection tools included demographics and clinical checklist (age, sex, education, occupation and background of the disease) and the Beck Depression Inventory. Beck Depression Inventory contains 21-item and to mark by numbers from zero to 3. It is the total score between zero and 63. In scoring questionnaire the 0-9 score showed no depression, the mild depression was 10-20, moderate depression 21-30 and severe depression score 30-63. This questionnaire is a global standard that was developed and sustained by Cronbach's alpha coefficient reported 0.88 (18). Also in this study, Cronbach's alpha coefficient was 89%.

After explaining the objectives of the study, Persons with inclusion criteria were enrolled with written consent. For the confidentiality of patients for whom was considered the code and if patients do not wish to continue could be excluded. Data analysis was performed with the help of

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spss13. Results was Calculated with the Kolmogorov Smirnov statistic, chi-square and independent t-test.

Results

The study involved 252 patients with diabetes that 52 of them have not Inclusion criteria. 100 patients with diabetic foot wounds and 100 patients without diabetic foot wounds entered the study and completed the questionnaires. In this study, according to Kolmogorov Smirnov test, quantitative data were normally distributed. In both groups, 52% people of participants were male. The mean and deviation of age of patients with and without diabetic wounds was 52.1 ± 3.9 and 51.5 ± 4.1, respectively. According to the chi-square test and independent t-test, two groups of diabetic patients with and without wounds in terms of individual characteristics and variables affecting the incidence of depression, including age, gender, education, economic status, showed no significant difference. According to independent t-test depression score between the two groups of diabetic patients with and without wounds, was respectively 25.6 ± 9.5 and 8.7 ± 2.1. So that all patients with diabetic foot wounds had some degree of depression but only 33% of patients without diabetic foot wounds had depression (Table 1). Also the depression scores breakdown of participants with and without other underlying disease were analyzed using independent t-test and found that depression scores in patients with underlying disease is more than people with no history of underlying disease (P=0.003). Depression were assessed a breakdown of patients aged less and higher than 50 years by using independent t-test and found that depression scores increased with age (P=0.02). According to Chi-square test results, depression scores in both genders were similar (Table 2).

Table 1. Absolute and relative frequency of patients with and without foot diabetic classification separately Depression score.

Categories / Statistical indicators		Patients with foot diabetic		Patients without foot diabetic	
		Relative frequency	Absolute frequency	Relative frequency	Absolute frequency
Classification of Beck Depression	No	0	0	67	67
	Mild	35	35	33	33
	Moderate	33	33	0	0
	Severe	32	32	0	0
Total		100	100	100	100

Table 2. Score of depression separation of variable in diabetic patients with and without foot diabetic.

	Variables	Statistical indicators / Categories	Frequency	Mean	Standard deviation	P value
Score of depression	A history of underlying disease	yes	111	25.12	2.3	0.003
		no	89	15.95	3.4	
	Age	<50	79	17.9	2.9	0.02
		>50	121	21.5	2.1	
	Gender	Male	104	17.21	1.1	0.06
		Female	96	17.1	2.1	
	Diabetic patients	With foot diabetic	100	25.6	9.5	0.001
		Without foot diabetic	100	8.7	1.2	

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Discussion

The results of the study showed that the mean score of depression in diabetic patients with chronic foot wound was 25.6±9.5. Detailed data show that all subjects had a degree of depression. However, the average depression score in diabetic patients without chronic wounds was 8.7±2.1 and only a small percentage of them had an overt depression. In line with this study, Zheng showed the prevalence of depression in patients with diabetes and its complications, especially foot wound, was higher than other groups (19). While the Gilden study of patients with type II diabetes, showed that 75% of them during their illness experience depression (20). According to studies in different populations, we can say that diabetes increases the risk of depression 2 times (17, 20, 21). Baghiani believes that treatment of the underlying cause is more important. As with symptoms of depression in diabetic patients simultaneously with the physical complications of diabetes, complications have arisen must be treated quickly and more seriously although the treatment of depression is a priority (22).

Also, the findings of the present study are in line with Jones et al. in which they showed more than 50% of patients experience depression and anxiety and the prognosis in patients with depression was much lower than non-depressed people (23).

Studies show that, especially in elderly patients with wound, stress is accompanied with delayed healing (24). In addition, Glaser through the biopsy of chronic wound of patients, revealed that there is a positive relationship between the depression and the resulting inflammatory substances (25).

The Yong Suk study also revealed that symptoms of depression correlated with the percentage of burn scar and the emergence of depression symptoms increases with chronic wounds arising from burns (26). In connection with this issue, it should be noted that in the case of chronic wounds, healing process is longer and also the costs increases and patients for longer periods of time are in contact with debilitating factors (27).

Also, the findings show that people with underlying disease, show higher levels of depression. To interpret these findings we can say that a separate factor of the underlying diseases can cause dementia in their physical and emotional (28). While Mosaku show that in patients with amputation the wounds are unrelated to underlying factors, all of the studies show a degree of depression (29). These differences can be traced to this factor that diabetes is a systemic disorder that in the long term the number of people get in trouble of different types of disabilities (30) and each of these disorders, such as cardiovascular disease, eye, kidney and chronic wounds, especially in the lower extremities may also become socially isolated individuals (31). But amputation is sudden and acute as for all the people involved are surprising and quickly activates its defensive mechanisms (32).

This study shows that depression score increased with age. Mahmoudi study is in line with the study (18). The relationship between age and the occurrence of depression are not well known but because it can be subject to physical isolation, loss and poor health facilities attributed which occurs in old age (33).

Conclusion

Depression is more common among diabetic patients with chronic wounds than those without chronic wounds. As well, in aged patients with a history of chronic disease, the depression is more common.

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References

1. Zafar A. Mangment of diabetic Foot; AyubMed Coll. Abbotabad, 2001, 13(1):14-6.
2. Kahn R. Diabetes technology-now and in the future. Lancet 2009; 373(9677): 1741-50.
3. Alvin C. Diabetes Mellitus. In: Harrison, Tinsley, Wilson. Harrison'sPrinciples of Internal Medicine, 15th edition; Newyork; McGrawhill; 2000: 2109-2120.
4. Mayfeild JA, Vela SA, Lavery LA. Preventive foot care in people with Diabets;Review article. Diabetic Care. 1988, 21(12):2161-77.
5. Dyck PJ, Davies JL, Wilson DM, Service FJ, MeltonL J, O'Brien PC. Risk factors for severity ofdiabetic polyneuropathy: intensive longitudinal assessment of the Rochester Diabetic NeuropathyStudy cohort. Diabetes Care. 1999; 22(9): 1479-86.
6. Singh N, Armstrong DG, Lipsky BA. Preventing foot ulcers in patients with diabetes. JAMA 2005;293(2): 217-28.
7. Schwarts S. Foot problemsin patients with diabetes mellitus; In: Schwarts, Seymour; Principle of surgery;7th edition; Philadelphia; W.B. Saunders; 2000: 58.
8. Shojaiefard A, Khorgami Z, Larijani B. Independent risk factors for amputation in diabetic foot. Int J Diabetes Dev Ctries. 2008; 28(2): 32-7.
9. Armstrong DG, Wrobel J, Robbins JM. Are diabetes-related wounds and amputations worse than cancer? Int Wound J. 2007; 4(4): 286-7.
10. Javadi MK, Lavasani M, Haqiqhatgo M, Zebardast O. Relationship among depression, anxiety, stress and personality in veterans' children. Iran J War Pub Health. 2010; 3(9): 9-16.
11. Turner JB, Turner RJ. Physical disability, unemployment and mental health. Rehabil Psychol. 2004; 49(3): 241-9.
12. Anderson RJ, Freedland KE, Clouse RE and Lustman PJ: prevalence of comorbid depression in adults with diabetes: a Meta analysis. Diabetes Care. 2001; 24:1069-78.
13. Goldeney RD, Pillips PJ, Fisher LJ. Diabetes depression and quality of life. Diabetes Care. 2004; 27(2):1066-70.
14. Peyrot MR. Levels and risk of depression and anxiety symptoms among diabetic adults. Diabetes Care. 1997;6(7):127-31.
15. Lustman PJ, Anderson RJ, Freedland KE, Groot M, Carney RM, Clouse RE. Depression and poor glysemic control: a meta- analytic review of the literature. Diabetes Care. 2000; 23: 934-42.
16. Campayo A, Carlos H, Antonio L. Diabetes and depression. Curr Psychiatr Report. 2011; 13 (1): 26-30.
17. Mahmoodi A, Sharifi A. Comparison of the prevalence and factors associated with depression in diabetics and non-diabetics. J Nurs Midwif. 2008;6(2):87-93.
18. Egede LE, Zheng D, Simpson K. Co morbid depression is associated with increased healthcare use and expenditures in individuals with diabetes. Diabetes Care, 2002; 25(1):464-70.
19. Gilden G. Diabetes support groups improve health care of diabetic patients. JAGS, 2003;40(20): 145-50.
20. Ronny A, Bell-Smith SL, Arcury T, Snively B, Stafford JM. Prevalence and correlates of depressive symptoms among rural older African Americans native Americans, and whites with diabetes. Diabetes Care, 2005; 28(3):823-9.

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[DOI: 10.18869/acadpub.jbrms.3.4.22]

21. Baghiani MH. [Study of quality of life in type 2 diabetes patients]. J Yazd Uni Med Sci. 2007; 4:49-54. (Persian)
22. Jones J, Barr W, Robinson J, Carlisle C. Depression in patients with chronic venous ulceration. Br J Nurs. 2006; 15(11): 17-23.
23. Ebrecht M, Hextall J, Kirtley LG. Perceived stress and cortisol levels predict speed of wound healing in healthy male adults. Psych Neuroendocrinol. 2004; 29(2): 798-809.
24. Kiecolt-Glaser JK, Loving TJ, Stowell JR. Hostile marital interactions, pro inflammatory cytokine production and wound healing. Arch Gen Psychiatr.y 2005; 62(6): 1377-84.
25. Roh YS, Chung HS, Kwon B, Kim G. Association between depression, patient scar assessment and burnspecific health in hospitalized burn patients. Burns. 2012;38(4):506-12.
26. Adams N, Poole H, Richardson C. Psychological approaches to chronic pain management. J Clin Nurs. 2006; 15(9): 290-300.
27. Turner JB, Turner RJ. Physical disability, unemployment and mental health. Rehabilitation Psychology. 2004; 49(3): 241-9.
28. Mosaku KS, Akinyoola AL, Fatoye FO, Adegbehingbe OO. Psychological reactions to amputation in a sample of Nigerian amputees. General Hospital Psychiatr. 2009: 31(1); 20-4.
29. Wu SC, Driver VR, Wrobel JS, Armstrong DG. Foot ulcers in the diabetic patient, prevention and treatment. Vasc Health Risk Manag. 2007;3(1):65-76.
30. Thomas J, Jones G, Scarinci I. A descriptive and comparative study of the prevalence of depressive and anxiety disorders in low income adults with diabetes and other chronic illness. Diabetes Care, 2003; 26(2):2311-7.
31. Desmond DM, MacLachlan M. Coping strategies as predictors of psychosocial adaptation in a sample of elderly veterans with acquired lower limb amputations. Soc Sci Mede. 2006: 62(1); 208-16.
32. Swenson CJ. Depressive symptom in Hispanic and non- Hispanic white rural elderly. Am J Epidemiol, 2000; 152(5): 1055-84.

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