Detection the Level of Anxiety and Depression among Diabetic Foot Patients at Al-Najaf Al-Ashraf Teching Hospitals

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Abstract

Objective: The study was done to assess the level of anxiety and depression among diabetic foot patients at Al-Najaf Al-Ashraf Teaching Hospitals. Also to find out relationships between anxiety and depression of diabetic foot patients and their demographic characteristics. **Methodology:** a descriptive correlational design, the study established for a period from 10th October, 2020 to 1st June, 2021. The study was conducted on a probability (accidental) sample of 120 patients who have a diabetic foot which was selected from Al-Sadder teaching hospital and Al-Furat teaching hospital in Al-Najaf Al-Ashraf Governorate. The researcher is using the Hospital Anxiety and Depression Scale to assess the level of anxiety and depression. **Results**: The result of the study showed (37.5%) of the study sample had moderate anxiety. Furthermore, the study shows (36.6%) of the study participant have moderate depression. Contingency correlation analysis showed that anxiety and depression is a significant correlation with the number of hospital admission, duration of current admission, and previous amputation. In addition, anxiety was significantly correlated with gender, educational level, duration of the diabetic foot. Besides, depression was significantly correlated with age, economic status, having other chronic diseases.

Keywords: *Anxiety, Depression, Diabetic foot*

Introduction

Diabetes Mellitus (DM) is one of the most important chronic diseases worldwide, with regards to the impact on health and the fifth leading cause of death worldwide [1], DM is a chronic genetic disorder that has been recognized as one of the main causes of life with disabilities [2].

Diabetes mellitus is a multi-system disorder characterized by impaired glycemic control and is associated with a range of medical complications. Adverse events may occur due to medication dosing and complications of the disorder may slow progress, these factors make individuals with diabetes predisposed to have psychological disturbance such as depression and anxiety [3].

Diabetes mellitus has become a worldwide problem as its prevalence rises. In 1980, 108 million people were diagnosed with diabetes, rising to 422 million in 2017. By 2035, it is expected that 592 million people will have the disease (Sari et al., 2018). All types of diabetes mellitus can lead to complications in many parts of the body and increase the risk of dying prematurely, diabetes was the direct cause of 1.5 million deaths globally (World Health Organization[WHO], 2020). Iraq is living with a DM epidemic, with a prevalence of about 20 percent, this prevalence has risen fourfold in the last four decades, and it is predicted to continue increasing in the future. Long-term DM complications are more frequent in Iraqi patients than in other parts of the world, approaching 80 percent for certain microvascular complications [retinopathy and neuropathy], and 25 to 48 percent for macrovascular complications [cardiovascular diseases and stroke, respectively] .

Diabetic Foot (DF) is a severe diabetic complication characterized by deep tissue lesions in the lower limbs, as well as neurological problems and peripheral vascular disease. The diabetic foot has become more common as the global prevalence of diabetes mellitus has increased [4].

Diabetic Foot Ulceration (DFU) is a serious and potentially limb-threatening complication of diabetes that can lead to pain, tissue necrosis and amputation, and may significantly affect an individual's well-being and mobility [15]. Around 25 percent of people with diabetes will be suffering from DFU during their lifetime. In addition, every 20 seconds a lower limb is amputated due to diabetic complications. In fact, every year 5 percent of all the patients with diabetes develop foot ulcers, and 1percent require amputation [5].

Foot complications can be the most common cause for hospitalization in people with diabetes, and the duration of stay may be up to 59 percent longer than in people with diabetes hospitalized for a non-foot-related reason. Diabetes complications are associated with amputation rates and life-threatening problems. A foot ulcer affects about 15 percent of diabetic patients, and 14-24 percent of those with foot ulcers need amputation [6].

Diabetic patients suffer from a variety of health problems, including mental and psychological challenges that have an effect on their overall health (Yavati et al., 2011). On the other hand, diabetic foot patients are more likely to experience depression and anxiety than diabetics without foot problems, and depression and anxiety levels increased with hospitalization [6].

Diabetes mellitus and depression are two of the most serious public health problems in the United Kingdom (UK) and around the world [11]. Anxiety and diabetes-specific distress, such as not accepting diabetes, worries about complications, concerns about food, feelings of guilt or shame, and distressing social interactions, are often common causes of disability, occupational absenteeism, and lost productivity . [7]

Methodology

Design of the Study:

A Descriptive correlation design was conduct on diabetic foot patient in Al-Najaf Al-Ashraf teaching hospitals. The study was carried out to assess the level of anxiety and depression among diabetic foot patient and to find out the relationship between the anxiety and depression and their socio-demographic characteristic.

The Setting of the Study:

The study is conducted in Al-Najaf city/ Al-Najaf Al-Ashraf Health Directorate/ Al-Sadder teaching hospital and Al-Forat teaching hospital.

Sample and Sampling of the Study:

Anon-probability (accidental) sample including 120 diabetic foot patients which were selected from Al-Najaf Al-Ashraf teaching hospitals.

Instrument of the Study:

The research instrument which was consisting of two parts, part 1 list of common items for assessing demographic characteristics of patient with diabetic foot and information about their illness and part 2 Hospital Anxiety and Depression Scale (HADs) to assess the anxiety and depression among diabetic foot patients.

Part I: Socio-Demographic Characteristic

This section is dedicated to the collection of socio-demographic data including age, gender, residence, marital status, economic status, education level, occupational status, and information about their disease including duration of diabetes mellitus, duration of diabetic foot, if they have other chronic diseases, smoking history, alcohol history, number of admissions, duration of current hospitalization if they have a previous amputation and complications of diabetes mellitus

Part II: Hospital Anxiety and Deoression Scale

This scale assesses psychological morbidity (depression and anxiety) the scale consists of 14-item: seven items for anxiety (e.g. "I feel tense or wound up"; "Worrying thoughts go through my mind") and seven items for depression (e.g. "I enjoy the things I used to enjoy"; "I have lost interest in my appearance") [8]. The score for each scale ranges from 0 to 21 and each item has a choice of four response statements (scored 0–3). A Total score which divided into four levels: Scores represent: normal 0-7, Mild 8-10, Moderate 11-14, severe 15-21 for anxiety and depression [33].

Validity and Reliability of Scale:

Validity of Scale:

The instrument was introduced to a panel of (12) experts with more than ten years of experience in their field to make the instruments more valid using content and face validity methods.. The changes have been made in accordance with the recommendations of the experts.

Reliabilityof the Scale:

The scale was previously used and according to Terkawi et al (2017), the reliability had shown that for Time 1 and Time 2, Cronbach's alfa for the HADS anxiety subscale were 0.83 (95 percent confidence interval [CI]: 0.79–0.88) and 0.87 (95 percent confidence interval [CI]: 0.83–0.91), respectively. For Time 1 and Time 2, Cronbach's s for the HADS depression subscale were 0.77 (95 percent CI: 0.7–0.83) and 0.8 (95 percent CI: 0.75–0.86), respectively. Internal consistency was found to be adequate for both HADS subscales at both time points among patients.

Method of Data Collection:

After determining the validity and reliability, data was collected using an 'Arabic version' self-report questionnaire as a means of data collection, as well as an semi-structured interview with patients who do not read or write, unless they refused to participate in the research. The questionnaire takes about 15 to 20 minutes to complete. Where the data was collected from 10th January 2021 to 10th May 2021.

Method of Statistical Analysis

The statistical package for social sciences (SPSS) version 24.0 application of statistical analysis framework was used to analyze the results. The resulting research was analyzed and evaluated using the subsequence statistical data analysis technique

Results

Table (1) Distribution of the sample according to demographic characteristics

Section	Divisions	Frequency *N= 120*	Percent *Total :100.0*
Age	30-39 years	7	5.8
	40-49 years	36	30.0
	50-59 years	45	37.5
	60 years and more	32	26.7
	Mean = 53.43		
	Std. Deviation = 9.652		

Cont... **Table (1) Distribution of the sample according to demographic characteristics**

Gender	Male	66	55.0
	Female	54	45.0
Residence	Urban	74	61.7
	Rural	46	38.3
Marital Status	Married	91	75.8
	Widowed	23	19.2
	Divorced	6	5.0
Economic status	Satisfied	10	8.3
	Satisfied to same extent	57	47.5
	Unsatisfied	53	44.2
Occupational status	Employee	20	16.7
	Retired	12	10.0
	Unable to work	25	20.8
	Unemployed	8	6.7
	Free job	8	6.7
	Housewife	47	39.2
Educational level	Don’t read and write	45	37.5
	Read and write	17	14.2
	Primary school	23	19.2
	Secondary school	5	4.2
	Preparatory school	4	3.3
	Diploma	9	7.5
	Bachelor	17	14.2
Do you have another chronic disease	Yes	55	45.8
	No	65	54.2
Type of chronic disease	Hypertension	27	49.1
	CVA	24	43.6
	Asthma	4	7.3

Table (1): Distribution of the sample according to demographic characteristics

Duration of DM	1-5 years	3	2.5
	6-10 years	31	25.8
	11-15 years	37	30.8
	16-20 years	27	22.5
	21 years and more	22	18.3
Duration of diabetic foot	1-10 Days	30	25.0
	11-20 Days	28	23.3
	21-30 Days	23	19.2
	31 Days and more	39	32.5
Do you smoker	Yes	38	31.7
	No	55	45.8
	Quit smoke	27	22.5
Do you drinking Alcohol	Yes	2	1.7
	No	118	98.3
Number of admission	1-2 times	64	53.3
	3-4 times	32	26.7
	5 times and more	24	20.0
duration of current hospitalization	1-2 days	54	45.0
	3-4 days	39	32.5
	5 days and more	27	22.5
Do you have previous amputation	Yes	61	50.8
	No	59	49.2
Complication of DM	CVA	14	11.7
	Retinopathy	40	33.3
	Neuropathy	10	8.3
	Nephropathy	24	20.0
	Other complication	32	26.7

Table (2) Assessment of anxiety status among diabetic foot patients:

Section	Divisions	Frequency	Percent
Anxiety	Normal	19	15.8
	Mild	32	26.7
	Moderate	45	37.5
	Severe	24	20.0
	Total	120	100.0
	Mean 11.29		
	St Deviasion 3.42		

Table (3) Assessment of depression status among diabetic foot patients:

Section	Divisions	Frequency	Percent
Depression	Normal	20	16.7
	Mild	29	24.2
	Moderate	44	36.7
	Severe	27	22.5
	Total	120	100.0
	Mean 11. 93		
	St Deviasion 3.68		

Table (4) Correlation between anxiety and depression with demographic characteristics among diabetic foot patients:

Section	Anxiety		Depression	
	CC	p-value	CC	p-value
Age	. 257	.483	.375	.020
Gender	.432	.000	.232	.078
Residence	.223	.098	.216	.119
Marital Status	.213	.458	.194	.583
Economic status	.291	.086	.398	.001
Occupational status	.376	.180	.404	.075

Cont... **Table (4) Correlation between anxiety and depression with demographic characteristics among diabetic foot patients:**

Educational level	.446	.040	.344	.584
Do you have another chronic disease	.144	.471	.265	.028
Type of chronic disease	.160	.957	.312	.167
Duration of DM	.323	.304	.277	.621
Duration of diabetic foot	.432	.001	.293	.260
Do you smoker	.232	.335	.163	.772
Do you drinking Alcohol	.166	.335	.110	.692
Number of admission	.434	.000	.413	.000
duration of current hospitalization	.434	.000	.404	.001
Do you have previous amputation	.495	.000	.426	.000
Complication of DM	.301	.452	.332	.250

Part I: Discussion of Socio-demographic Data of the Study Sample:

Table(1) shows that nearly thirds of the age of the study sample were between (50-59) years at an age mean of 53.43 ± 9.65 years, this result coincides with the result of previous studies, Chen et al. (2020) asserted that the mean age of DFU patients was 59.4±10.1 years. Polikandrioti et al. (2020) [26] reported that 32.8% of their study participant had ages from (51-60) years. Ahn et al. (2018) [9] reported that the median age of the study sample was 58 years. Saber & Daoud (2018) reported that the mean age of the patients was 53.7 ± 12.08 years. Mohammed et al. (2016) stated that most of the study sample was that at age mean 54.8 ± 11.05 years. Sehlo et al (2016) noted that 56.55 ± 3.32 mean of the age in their study. Neeru et al.(2015) [22] found that the mean age of the patients having diabetic foot ulcers was 52.36 ± 7.8 years. [13] indicate that the majority of the study sample was 59.1 ± 9.9 years the age mean.

Regarding gender, the results of the current study showed that males were more than females with diabetic foot, according to the findings of this study, which are consistent with earlier findings that show that the males were more than females [4,6,9,11,13,14,24,32].

Regarding residence, the study reported that less than two-thirds of the study sample living in the urban area, the result of this study congruent with other studies, Saber & Daoud, (2018) stated that more than two-thirds of diabetic foot patients who participate in their study dwelled in urban areas. The result also agree with [32] determining that there are just 21.3% DF patients living in the rural area and the other lives in the urban areas. Agree with [14] asserted that more than half of the study participants was lives in urban areas. While [29] noted that more than three-quarters of their study sample resided in urban areas.

Concerning the marital status, the study finding shows that three-quarters of DF patient participant in the study were married, this result is agree with previous studies reported that more than three-quarters

of DF patients were married [29].

As for the presence of other chronic diseases, the patients who didn't have another chronic disease are more than half of the study sample, the result of this study congruent with Mohammed et al. (2016) documented that the patients with other comorbid conditions were more than one quarter while the patients without other chronic diseases they were less than three quarters in their study sample, furthermore, the study by [24] noted that more than three-quarters of DF patients did not have other chronic diseases.

As for those who have chronic diseases, the current study showed that most of them had hypertension, this result agree with previous studies showed highly percentage of DF patients have hypertension [4,6,23,25,27,32].

Regarding the duration of diabetic foot, the study shows that the majority of the study sample have diabetic foot more than one month, this result agrees with Messenger et al. (2018) stated that less than three quarters have diabetic foot more than 1 month, Also documented [34] the mean of DF duration was 1.6 months. While noted [24] the median of DF duration was 11 weeks that also agree with our study .

With regard to previous amputations, the result found that half of DF patients had a previous amputation, and this result does not completely agree with previous studies that showed that the percentage of patients who did not have a previous amputation was more than those who had it [16, 18, 25 ,31].

Table (2) shows that more than one-third of patients with diabetic foot participants in the current study have moderate anxiety and a quarter of them have mild anxiety. The study by Chen et al. (2020) asserted that less than two-thirds of the study sample were had mild anxiety while nearly one-quarter of them suffering from moderate anxiety. Likewise, reported [26] that DF patients who had low anxiety were more than two-third while just (16.9%) had moderate anxiety. Besides that, indicated by [24] that the mean score of anxiety was 11.46 ± 5.14 (moderate anxiety) this result agrees with the current study that indicated the mean score of anxiety was 11.29 ± 3.42.

Table (3) indicates that more than one-third of the patients in the current study have moderate depression and about a quarter of them have mild depression. the study by Chen et al. (2020) stated that more than half of the study sample had mild depression while less than one-third of them had moderate depression. In addition, [26] found that more than two-thirds of the DF patients in their study experienced mild depression. According to Pearson et al. (2014), 28.3 percent of DF patients suffer from moderate to severe depression. Moreover, [24] that the mean score of depression was 9.39 +_ 5.90 moderate depression.

Concerning the result related to the correlation between anxiety and socio-demographic data in table (4) the existing study exposes that there is no significant correlation between anxiety and demographic data of the study sample related to (age, residence, marital status, economic status, occupational status, if they have another chronic disease, type of other chronic diseases, duration of DM, smoking history, alcohol history, and complication of DM.

Regarding the result related to the correlation between depression and socio-demographic data in table (4) the existing study exposes that there is no significant correlation between depression and demographic data of the study sample related to (gender, residence, marital status, occupational status, educational level, type of other chronic diseases, duration of DM, duration of DF, smoking history, alcohol history, and complication of DM.

Conclusion

The researcher concluded that the level of anxiety and depression among diabetic foot patients was moderate and was associated with the number of times patients were admitted to hospitals and the length of stay of patients in the hospital, and was also significant associated with patients who had a

previous amputation.

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Conflict of Interest: None to declare.

Ethical Clearance: "All experimental protocols were approved under the Department of Psychatric and Mental Health Nursing and carried out in accordance with approved guidelines".

References

1. Chen H, Cai, C, Xie, J. The effect of an intensive patients' education program on anxiety, depression and patient global assessment in diabetic foot ulcer patients with Wagner grade 1/2: A randomized, controlled study. Medicine. 2020; 99(6).
2. Kennedy N, Faye, K, Chukwuemeka, S. Psychiatric comorbidity and quality of life in persons with diabetes mellitus and people living with HIV (PLWHIV) in Port Harcourt, Nigeria. Am J Psychiat Neurosci. 2015; 3(6): 154-164.
3. Siva T, Maithreyi, P, Siddharth, S. Predictors of psychological distress and depression among patients with type 2 diabetes mellitus. Int J Cur Res Rev. 2017; 9(3): 48.
4. Zhang P, Lu, J, Jing, Y, Tang, S. Global epidemiology of diabetic foot ulceration: a systematic review and meta-analysis. Annals of medicine. 2017; 49(2): 106-116.
5. Marzoq A, Shiaa, N, Zaboon, R. Assessment of the outcome of diabetic foot ulcers in Basrah, Southern Iraq: A cohort study. International Journal of Diabetes and Metabolism. 2019; 25(1-2): 33-38
6. Ahmad A, Abujbara, M, Jaddou, H. Anxiety and depression among adult patients with diabetic foot: prevalence and associated factors. Journal of clinical medicine research. 2018; 10(5): 411.
7. Yavari A, Abbasi, N, Vahidi, R. Effect of Exercise on Psychological Well-being in T2DM. Journal of stress physiology & biochemistry. 2011; 7(3): 132-142.
8. Zigmond, A, Snaith, R. The hospital anxiety and depression scale. Acta psychiatrica scandinavica. 1983; 67(6): 361-370.
9. Ahn J, Del Core, M, Wukich, D. Scoring mental health quality of life with the SF-36 in patients with and without diabetes foot complications. The international journal of lower extremity wounds. 2018; 17(1): 30-35..
10. Bener, A, OAA Al-Hamaq, A, E Dafeeah, E. High prevalence of depression, anxiety and stress symptoms among diabetes mellitus patients. The Open Psychiatry Journal. 2011; 5(1).
11. Chapman, Z, Shuttleworth, C, Huber, J. High levels of anxiety and depression in diabetic patients with Charcot foot. Journal of foot and ankle research. 2014; 7(1): 1-8.
12. de Jesus P, M, Magela. Feelings of powerlessness in patients with diabetic foot ulcers. Wounds. 2014; 26(6): 172-7.
13. Fejfarová, V, Jirkovská, A, Dragomirecká, E, Game, F, Bém, R. Comment on "Impact of Diabetic Foot on Selected Psychological or Social Characteristics". Journal of diabetes research, 2014.
14. Hoban, C, Sareen, J, Henriksen, C, Kuzyk, L. Mental health issues associated with foot complications of diabetes mellitus. Foot and ankle surgery. 2015; 21(1): 49-55.
15. Howarth, D. Preventing foot complications in people with diabetes mellitus. Nurs Stand, 2019; 34(7): 69-74.
16. Jarl, G, Lundqvist, L. Beyond dichotomous thinking: a process perspective on diabetic foot disease. Diabetic foot & ankle. 2017; 8(1): 1380477.
17. Limongi F, Noale, M. Prevalence of diabetes and depressive symptomatology and their effect on mortality risk in elderly Italians: The Italian Longitudinal Study on Aging. Diabetes & metabolism. 2014; 40(5): 373-378.
18. Messenger, G, Masoetsa, R, Hussain, I. Diabetic foot ulcer outcomes from a podiatry led tertiary service in Kuwait. Diabetic foot & ankle. 2018; 9(1): 1471927.
19. Mikhael, E, Hassali, M, Hussain, S. Need of Self-Management Education for Iraqi Diabetic

Patients. Journal of Social Health and Diabetes. 2020.

20. Mohammed, S, Mikhael, E. Risk factors for occurrence and recurrence of diabetic foot ulcers among Iraqi diabetic patients. Diabetic foot & ankle. 2016; 7(1): 29605.
21. Nash, T, Ireland, V, Pearson, S. Assessment of depression in people with diabetes attending outpatient clinics for the treatment of foot ulceration. Journal of Foot and Ankle Research. 2013; 6(1): 1-1.
22. Neeru B, Gagandeep K, Pal, A. Psychosocial, psychiatric, and clinical implications of diabetic foot ulceration: A prospective analysis. Journal of Social Health and Diabetes. 2015; 3(2): 89-94.
23. Pearson S, Nash T, Ireland V. Depression symptoms in people with diabetes attending outpatient podiatry clinics for the treatment of foot ulcers. Journal of foot and ankle research. 2014; 7(1): 1-8.
24. Pedras S, Carvalho R, Pereira M. Predictors of quality of life in patients with diabetic foot ulcer: the role of anxiety, depression, and functionality. Journal of health psychology. 2018; 23(11): 1488-1498.
25. Pemayun T, Naibaho R, Novitasari D, Amin N, Minuljo T. Risk factors for lower extremity amputation in patients with diabetic foot ulcers: a hospital-based case–control study. Diabetic foot & ankle. 2015; 6(1): 29629.
26. Polikandrioti, M, Vasilopoulos, G. Depression in diabetic foot ulcer: Associated factors and the impact of perceived social support and anxiety on depression. International wound journal. 2020; 17(4): 900-909.
27. Rice J, Desai U, Cummings, A. Burden of diabetic foot ulcers for medicare and private insurers. Diabetes care. 2014; 37(3): 651-658.
28. Saber H, Daoud A. Knowledge and practice about the foot care and the prevalence of the neuropathy among a sample of type 2 diabetic patients in Erbil, Iraq. Journal of family medicine and primary care. 2018; 7(5): 967.
29. Salih N, Al-Asadi, J. Herbal remedies use among diabetic patients in Nassyria, Iraq. World Family Medicine Journal: Incorporating the Middle East Journal of Family Medicine. 2012; 99(316): 1-7.
30. Sari Y, Purnawan, I, Taufik, A. Quality of life and associated factors in Indonesian diabetic patients with foot ulcers. Nurse Media Journal of Nursing. 2018; 8(1): 13-24.
31. Sekhar, M, Unnikrishnan, M. Impact of patient-education on health related quality of life of diabetic foot ulcer patients: A randomized study. Clinical Epidemiology and Global Health. 2019; 7(3): 382-388.
32. Spanos K, Saleptsis, V, Athanasoulas, A. Factors associated with ulcer healing and quality of life in patients with diabetic foot ulcer. Angiology. 2017; 68(3): 242-250.
33. Stern, A. The hospital anxiety and depression scale. Occupational Medicine. 2014; 64(5): 393-394.
34. Winkley K, Sallis H, Kariyawasam, D. Five-year follow-up of a cohort of people with their first diabetic foot ulcer: the persistent effect of depression on mortality. Diabetologia. 2012; 55(2): 303-310.