ORIGINAL ARTICLE

FREQUENCY OF DEPRESSION AND ANXIETY IN PATIENTS ATTENDING A DIABETES CLINIC

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Background: Depression is very common among people with type-2 diabetes and is associated with poor treatment compliance and outcome. This study was done to see the frequency of depression in patients with established type-2 diabetes attending a diabetes clinic in a tertiary care hospital. **Methods:** One hundred and ten patients with chronic type-2 diabetes were included in this cross sectional study, excluding type-1 diabetics, patients with severe co-morbid illness with type-2 diabetes and patients with some psychiatric illness. Hospital Anxiety and Depression Scale was used to assess depression and anxiety in these patients. **Results:** Almost 50% of patients were found to have anxiety and depression in our study. Female gender, lack of education and housewives were found to be effected more while duration of diabetes, treatment and control of diabetes have little effect on anxiety and depression in patients with chronic type-2 diabetes patients. **Conclusion:** There is a high incidence of depression and anxiety in patients with chronic type-2 diabetes and clinicians must screen regularly for better care of these patients.

Keywords: Depression, anxiety, type-2 diabetes mellitus, diabetes clinic

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INTRODUCTION

Diabetes is a chronic systemic disease which affects virtually almost every organ in the human system. The World Health Organization estimates that about 300 million people will suffer from diabetes by year 2025.[1] In a study done in Pakistan the prevalence of diabetes mellitus in urban areas was found to be 6% in men and 3.5% in women while in rural areas 6.5% in men and 2.5% in women respectively.[2] Depression is a major risk factor for non-adherence to medical therapy in many chronic diseases and depressed patients carry 3 times greater risk of noncompliance to medication than non-depressed patients.[3] Depression is also very common among people having diabetes and mostly associated with poor adherence to diet, exercise, prescribed medication as well as poor glycemiccontrol.[4] The frequency of depression is even higher in patient having diabetes with long term complications.[5] In addition compared to patients with diabetes alone, patients with depression and diabetes carry poor records of self-monitoring of blood glucose (SMBG) and poor adherence to lipid-lowering and antihypertensive treatment also.[6] They are more likely to have higher cardiovascular risk factors, uncontrolled hyperglycaemia and higher risk of chronic diabetic complications.[7] Therefore depression can be an important barrier to effective diabetes management in many patients with type-2 diabetes mellitus.[8] So far the available data regarding the prevalence of depression in type-2 diabetic patients in subcontinent is limited. While depression leads to poor diabetes related outcomes, diabetes and its complications on the other hand may also result in poor depression outcomes.[9] Undetected or untreated depression can be assessed easily in outpatient department in patients with type-2 diabetes through use of a self-rating scale while patients are coming for routine visits.[10] We studied the frequency of depression in patients with type-2 Diabetes Mellitus attending a diabetes outpatient department in a tertiary care hospital of Rawalpindi and its relationship with blood sugar control, diabetic complications and socio-economic factors.

MATERIAL AND METHODS

This cross-sectional study was conducted in Diabetic Clinic of Fauji Foundation Hospital, Rawalpindi from March 2010 to September 2010. All consecutive patients with non-insulin dependent diabetes mellitus of more than five year duration were included in the study.

Patient with insulin dependent diabetes mellitus (IDDM), past history of psychiatric disorder, patients under 12 years of age, diabetes of less than five year duration and patients with severe other co-morbid conditions like chronic renal failure and thyrotoxicosis were excluded from the study. All the patients attending the diabetic clinic during the study period were asked to participate in the study. Those who gave consent were included in the study Demographic details were collected on a demographic *pro forma*, including age, gender, education, occupation, area of residence, monthly income, duration of diabetes, treatment options and duration of treatment. Comorbid illnesses were noted like hypertension, hyperlipidaemias, ischemic heart disease and smoking. Patients also gave information if they had used any alternate treatment modalities for diabetes. Control of diabetes was assessed using most

recent HbA1c levels. Patients were screened for depression and anxiety by using Urdu version of Hospital Anxiety and Depression Scale. It has 2 subscales: depression and anxiety, both with 7 items. Score of 9 was used as the cut-off point. Patients found to be the cases were then clinically evaluated by the Psychiatrist and treatment was initiated for moderate to severe cases. Data was analysed by using SPSS-13. Associations and characteristics of participants were tested with Chi-square and Kendall Tau's test. The level of significance was set at 5%.

RESULTS

One hundred and ten patients were enrolled for the study. Out of which 85.5% were females and 14.5% were males. (Fauji Foundation Hospital, Rawalpindi has entitlement of families of retired army personnel, retired army personnel themselves go to combined military hospital, and therefore a large number of patients were females). Mean age of the sample was 56.17 years, with a range of 34–77 years. Eighty three percent (91) of the patients were married, 15.5% were widow/widower, 77.3% were housewife by occupation, 7.3% were retired army personnel. Regarding education level, 47.3% of the participants were uneducated, 42.8% had studied between primary to matric and only 10% had studied beyond matric. Fifty percent of the population was residing in the cities, 42% belonged to villages and 8% lived in towns.

Hypertension was the most common (54.5%) co-morbid illness, 11% of the patients had both hypertension and ischemic heart disease. Majority (77%) of the population had sought allopathic treatment for diabetes, 20% people had also sought herbal, homeopathic or treatment from faith healers. Average duration of treatment for diabetes was almost 10 years. For treatment of diabetes, 47.3% of the sample was on diet control and oral hypoglycaemic drugs, 25% were on combination of diet control, oral hypoglycaemic drugs plus insulin and 24.5% were on diet control and insulin therapy. Regarding control of diabetes, glycosylated haemoglobin levels were used as the standard measure. 12.7% had good control of diabetes (HbA1c of around 6), 46.4% had average control (HbA1c 6–8), almost 41% had poor control of diabetes (HbA1c>8).

Hospital Anxiety and Depression Scale (HADS) was used for assessment of anxiety and depression in the diabetic patients. Out of 110 patients, 52.7% had scored more than 9 and were diagnosed as cases of depression (HADS-D score>9), 46.6% were non-cases. 49% of theses patient were diagnosed to be cases on anxiety scale (HADS-A>9) and 50% were non case on anxiety scale. Chi-square and Ken dell tau's tests were used to assess the association between quality of diabetes control with different variables and of depression and anxiety with different variables.

Regarding control of diabetes gender, area of residence, marital status and education of the patients, treatment options for diabetes, duration of diabetes and treatment duration were not significantly related to control of diabetes. Female gender was significantly associated with presence of depression (*p*-0.014). In females 58% were cases as compared to 28% of the males. Although higher portions of house wives had depression (60%) compared to other occupations, however the likelihood of depression was not significantly related to the occupation. Depression was statistically highly significant in uneducated (65% with *p*-value 0.001), when compared with educated ones (ranged between 25–33% depending on level of education). Duration of diabetes and treatment duration were not significantly related to depression. Similarly control of diabetes was not significantly associated with depression. Anxiety was also significantly associated with female gender (*p*-0.001), as 60% of females as compared to 12% of males were cases. Being married was also a risk factor (*p*-0.017) for depression. Presence of anxiety was not influenced by occupation, marital status, and duration of treatment and control of diabetes.

DISCUSSION

Relationship of diabetes with depression is very complex as individuals with diabetes frequently experience depressive symptoms which may be associated with poorer diabetes outcome through decreases in self-care and adherence[11] while on the other hand depressed adults have a 37% increased risk of developing type-2 diabetes mellitus.[12] In a study when comparison was done in diabetics with non-diabetic controls, people with type-2 diabetes had a 24% increased risk of developing depression although the mechanisms underlying this relationship were not clear.[13] Female type-2 diabetic patients with advanced age are suffering from depression and anxiety more as compared to male counterparts[14], as was also observed in our study although the data regarding the predilection of this gender difference is conflicting.[15] There are many other factors leading to higher prevalence of depression in women like adverse life experiences, social and cultural issues, psychological factors and biological factors including hormonal changes after menopause.[14] Our findings also suggest that females are more likely to experience depression and anxiety. This finding is consistent with previous local and other studies[16,17] but studies from India like in a meta-analysis[18] do not suggest overall preponderance of females with depression. In Pakistan however studies on general population suggest women having doubled the prevalence rate of depression as

compared to men both in rural and urban population. This general preponderance may also be reflected in our diabetic population. These findings need further exploration, although previous suggestions for this difference attribute it to tendency of women to seek psychological help easily and being more expressive.[14]

Table-1: Association of quality of control of diabetes with different variables HADS depression and anxiety scores and their association with different variables

Parameters	HADS Depression		Total	*p*-value	HADS Anxiety		Total	*p*-value
	Case (>9)	Non-case (<9)			Case (>9)	Non-case (<9)		
Gender of the patient								
Female	54	39	93	0.014*	52	41	93	0.001**
Male	4	12	16		2	14	16	
Area of residence								
Village	27	19	46	0.301	20	26	46	0.228
City	27	27	54		31	23	54	
Town	4	5	9		3	6	9	
Occupation of the patient								
Housewife	51	33	84	0.067	49	35	84	0.022*
Retired army personnel	1	7	8		2	6	8	
Unemployed	1	3	4		0	4	4	
Hospital employee	3	4	7		1	6	7	
Teacher	2	3	5		2	3	5	
Business	0	1	1		0	1	1	
Marital status of the patient								
Married	49	41	90	0.507	50	40	90	0.017*
Single	0	1	1		0	1	1	
Widow	8	9	17		3	14	17	
Divorced	1	0	1		1	0	1	
Education of the patient								
Uneducated	34	18	52	0.001**	29	23	52	0.072
Primary	13	7	20		12	8	20	
Middle	2	6	8		2	6	8	
Matric	6	12	18		8	10	18	
F.A	2	4	6		2	4	6	
B.A	0	2	2		0	2	2	
M.A	1	2	3		1	2	3	
Treatment for diabetes								
Diet	0	1	1	0.473	0	1	1	0.431
Diet + oral hypoglycemics	26	26	52		26	26	26	
Diet + oral hypoglycemics+ insulin	17	10	27		16	11	11	
Diet + insulin	14	13	27		11	16	16	
None	0	1	1		0	1	1	
Quality of diabetic control (HbA1c level)								
Good control (<6)	7	7	14	0.911	6	8	14	0.827
Average control (6-8)	26	24	50		26	24	50	
Poor control (>8)	25	20	45		22	23	45	
Duration of DM								
	58	51	109	0.457	54	55	109	0.126
Duration of treatment								
	56	46	102	0.575	51	51	102	0.142

HbA1c-glycosylated haemoglobin, DM-Diabetes Mellitus,*, *p*-value significant,***p*-value highly significant

Data regarding depression and anxiety in patients with diabetes is scarce in Pakistan. This study aimed to add data regarding patient's factors leading to depression and anxiety in diabetic patients. Frequency of depression in our diabetic patients turned out to be 52.7%. These findings are comparable to previous studies in Pakistan showing prevalence of 43%[19] and 50% for depression.[16] If we compare it with studies from some neigh boring countries like in Iran it is about 55%.[20] while the rates reported from UK and USA suggest prevalence of depression between 30-83%.[21,22] The life time prevalence is suggested to be 28.5%.[18] Presence of diabetes actually doubles the odds of depression. In Our study, we did not look at the prevalence of depression in healthy population. Similarly for frequency of anxiety, our findings suggest that 49% of our study population had scored high and were diagnosed as cases on HADS anxiety scale. Previous studies reveal similar results with 44% patients having anxiety.[17] Al though it had been suggested that patients screened through questionnaires showed high prevalence but later it has

been shown that there is no significant difference between screening through questionnaires or diagnostic interview. Our own clinical interview of patients scoring high on HADS scale, confirmed the diagnosis.

In our study of more than hundred patients we tried to see the effects of symptoms of depression and anxiety on control of diabetes in type-2 patients. In our study housewives and uneducated ladies were suffering from depression more than working women and educated class, therefore these factors are also playing role in depressive symptoms apart from diabetes itself. There are other studies which do not suggest relationship between educational status and depression.[12] There are different opinions and reports regarding the association between glycaemic control and depression as poor glycaemic control can result in depression and depression can result in poor glycaemic control on the other hand.[18] In our study we looked at different variables that may affect the control of diabetes. The demographic variables, various treatment modalities, duration of diabetes and treatment did not affect the glycaemic control. Earlier studies have indicated that depressed patients were more likely to have poor glycaemic control than non-depressed patients. Their mean HbA1c levels were significantly higher and they are more likely to not to take dose as advised, follow dietary restrictions and perform foot care However, in our study there was no difference in HbA1c level in patients having and not having both anxiety and depression. Similar to our findings, results from India do not suggest difference in HbA1c levels in patients with or without depression.[1]

In a study done by Papelbaumab and Lemosathe perception degree of the quality of life (QoL) related with diabetes was significantly associated with the severity of depressive symptoms but not with HbA1c levels.[23] In another study patients with diabetic peripheral neuropathy severity and symptoms of neuropathy were associated with increased symptoms of depression.[24] We did not look at the treatment adherence in our patients, but other studies have found that diabetic patients with depression, are more likely to have non adherence to diet, exercise and prescribed medication,[6,25–28] risk of non-adherence may be up to 3 times than non-depressed patients. It has been seen that every two out of three depressed patients are left untreated by general practitioners.[29] Depression has adverse effects on social and physical functioning and quality of life[30,31] and treatment of depression results in improvement of mood, functioning and quality of life.[32,33] In diabetic patients treatment of depression improves glycaemic contro.[l4] These findings clearly indicate need for early recognition and treatment of depression, in diabetic patients to avoid non-compliance and poor diabetic out comes.

This study has several strengths and weaknesses that need improvement with more extensive work in this field in the light of previous reports. First our study is a cross-sectional study, where causality cannot be established. Secondly due to smaller sample size, the results cannot be generalized to the population. We did not have a control group, so our results cannot be compared with non-diabetic population. Our study only included patients with type-2 diabetes and we did not look at patients with type-1 diabetes. We were not able to cater for diabetic complications and their association with depression and anxiety, which have been linked with depression in many studies. We analysed a small tertiary care sample to examine the relationship between depression and anxiety with various aspects of diabetes and its control. It is obvious that symptoms of depression in patients with diabetes lead to poor self-care and adherence to typical diabetes management guidelines. Self-care and adherence to regular treatment was measured via self-report and there is a chance of bias. In addition due to lack of education, family social issues and more number of females in our sample limits generalizability of these findings to overall diabetic population. Therefore our results must be interpreted in the context of the study design.

CONCLUSION

Our study showed high prevalence of depression and anxiety in patients with type-2 diabetes mellitus especially in females. There is little contribution of duration of diabetes, treatment taking and control of diabetes on depression and anxiety in our study and further research is needed to see the role of these factors. Because of the negative consequences of depression in patients with diabetes, such as poorly controlled diabetes, an increased risk of target organ damage and increased healthcare costs, it is essential to screen regularly for depression in these patients to ensure better management of patients with diabetes mellitus.

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