Original Article

Comorbid psychiatric illness and its association with glycemic control among adults with diabetes mellitus: a hospital based cross sectional study in Nepal.

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Abstract

Introduction: People diagnosed with diabetes are more likely than people without diabetes to have psychiatric illness, the management of which is important for the management of diabetes itself. The aim of the study was to estimate psychiatric illness among people with diabetes mellitus attending endocrinology outpatient department of Tribhuvan University Teaching Hospital.

Methods: Patients with diabetes mellitus attending endocrinology OPD of Tribhuvan University Teaching Hospital were selected `by simple random sampling technique. Patients were assessed using semi structured sociodemographic data form followed by General health questionnaire -12 (GHQ-12), which was used to screen psychiatric illness. Those with a score of three or more were considered as having psychiatric caseness which designated over all psychiatric illness.

Results: Among 158 patients,122 (77.2%) were cases of type 2 diabetes while 36 (22.8%) were type 1 diabetes and overall estimate of psychiatric illness among them was 48.7% (n=77). Significant relationship was found between psychiatric caseness and meal plan (p=0.007), psychiatric caseness and regular exercise (p=0.0310), psychiatric caseness and type of diabetes medication used (p<0.001), psychiatric caseness and diabetes medication doses missed per week(p<0.001), psychiatric caseness and glycemic control. (p<0.001)

Conclusion: This study showed that comorbid psychiatric illness is common in patients with diabetes which affects overall glycemic control. Hence,screening for psychiatric illness is an indispensable component of diabetes management plan.

Keywords: Diabetesmellitus,General Health Questionnaire-12,glycemic control, Psychiatric illness

Introduction

Diabetes mellitus is one of the most psychologically demanding of the chronic medical illnesses and is generally associated with comorbid psychiatric disorders.[1]People diagnosed with diabetes are about twice as likely as people without the condition to have depression, anxiety, and serious psychological distress and yet a considerable percentage of cases of mental disorder and severe psychological distress go undetected among patients being treated for diabetes.[2]Research done in last two decades have increasingly demonstrated a bi-directional relationship between mental health disorders and diabetes and the mechanisms behind these relationships are multifactorial. Most major guidelines for management of depression now recommend that individuals with diabetes should be regularly screened for subclinical psychological distress and psychiatric illness by interview or using a standardized questionnaire.[3]

In a study done in semi-urban region of Nepal the prevalence of type 2 diabetes mellitus (T2DM)

was found to be 9.5%.[4] Likewise in a hospital based study done in Nepal, psychiatric caseness among patients with diabetes mellitus was found to be 56.5%,[5] which demonstrates high comorbidity among the two conditions. In Nepalese setting, psychiatric illness among individuals with diabetes is usually overlooked, hence this study was devised to estimate psychiatric illness among patients with diabetes mellitus and to find out its relationship with glycemic control.

Methods

A hospital based cross- sectional study was conducted within a period of six months from January to July 2014, at endocrinology OPD,Tribhuvan University Teaching Hospital (TUTH) which is a tertiary level hospital based at the capital of the country. The study was initiated after the approval from Institutional Review Board, Institute of Medicine. The study included 158 patients aged 18-65 with diabetes mellitus attending endocrinology OPD and were selected by simple random sampling technique after taking consent from each individual patient. Exclusion criteria included newly diagnosed diabetes (duration since diagnosis less than 1 month), those with family history of psychiatric illness, and those with other co-morbid medical illness.

A semi structured sociodemographic data form was devised to obtain the socio- demographic characteristics and information related to diabetes mellitus. Each respondents were administered the Nepali version of General health questionnaire-12 (GHQ-12).[6] Scoring was done using 'binary scoring' method (with the two least symptomatic answers scoring 0 and the two most symptomatic answers scoring 1 i.e. 0-0-1-1). Those achieving the score of 3 or greater was considered 'psychiatric caseness'. Such respondents are more likely than not (0.51) to be diagnosed with psychiatric or mental problem, illness or disorder upon independent psychiatric assessment.[5]

Glycated hemoglobin (HbA1c) within three months from time of study was obtained from the subject's medical record and used as a marker for glycemic control.HbA1c < 7% was considered good glycemic control and ≥7 considered as poor glycemic control.[7]

Data were analyzed using SPSS version 16 (Chicago, Illinois, USA). Descriptive analysis was performed, and mean, median, range were calculated. The data were explained as mean± standard deviation (SD) wherever suitable. Chi- square tests were applied for categorical data. P- value of <0.05 was considered significant.

Results

Among 158 patients with diabetes mellitus, 36 patients (22.78%) had T1DM and 122 patients (77.21%) had T2DM. Male: Female ratio among respondents was 1.25 and 32.3% (n=51) were from the age group 51-50. Mean age of T1DM was 29.28 and T2DM was 53.77. More than half i.e. 55.7% (n=88) of respondents were from outside Kathmandu valley. 27.2% (n=43) had a positive family history of diabetes mellitus. On the basis of duration of diabetes mellitus, 38% (n=60) had duration less than 5 years followed by, 31% (n=49) where the duration was 5-9 years. Among the respondents 50% (n=79) followed diabetic meal plan, 41.1% (n=65) followed a regular exercise schedule. 32.3% (n=51) used alcohol and 48.1% (n=76) used tobacco at least once within last month. On the basis of type of diabetes medication used, 19.6% (n=31) used insulin, 60.1% (n=95) used oral hypoglycemic and 20.3% (n=32) used a combination of both. The mean number of diabetes medication missed per week were similar in both types of diabetes being 1.47 in T1DM and 2.07 in T2DM.

Table 1 shows socio-demographic variables between diabetes patients with and without psychiatric caseness. A statistically significant association was found between psychiatric caseness and age (p=0.049), psychiatric caseness and duration of diabetes (p=0.035), psychiatric caseness and meal plan (p=0.007) and psychiatric caseness and regular exercise schedule (p=0.0310).

Table 1. Socio-demographic variables between diabetes mellitus patients with and without psychiatric caseness

	Psychiatric caseness (n=77)	No psychiatric caseness (n=81)	P value
Age	50.35±13.52	46.14±13.13	0.049*
Sex			
Male	35(22.15%)	53(33.54%)	0.09
Female	42(26.58%)	28(17.72%)	
Family history of Diabetes			
Positive	16(10.12%)	27(17.08%)	0.055
Negative	61(38.60%)	54(34.17%)	
Duration of diabetes			
<5 years	22(13.92%)	38(24.05%)	0.035*
5-9 years	24(15.18%)	25(15.82%)	
10-14 years	21(13.29%)	16(10.12%)	
15-19 years	9(5.69%)	2(1.26%)	
>=20 years	1(0.63%)	0	
Type of Diabetes			
Type 1	14(8.86%)	22(31.92%)	0.179
Type 2	63(39.87%)	59(37.34%)	
Meal plan			
Present	30(18.98%)	49(31.01%)	0.007*
Absent	47(29.74%)	32(20.25%)	
Regular exercise			
Present	25(15.82%)	40(25.31%)	0.031*
Absent	52(32.91%)	41(25.94%)	
Alcohol use			
Present	26(16.45%)	25(15.82%)	0.697
Absent	51(32.27%)	56(35.44%)	
Tobacco use			
Present	33(20.88%)	43(27.21%)	0.198
Absent	44(27.84%)	38(24.05%)	
Medication use			
Insulin	12(7.59%)	19(12.02%)	0.033*
Oral hypoglycemic	43(27.21%)	52(32.91%)	
Combination	22(13.92%)	10(6.32%)	

Figure 1 shows relationship between type of diabetes medication used and presence or absence of psychiatric caseness. This relationship was found to be statistically significant at p<0.001.

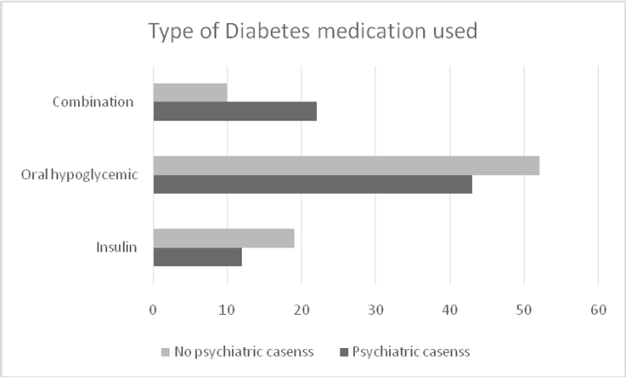

Fig. 1. Type of diabetes medication used among two groups

Figure 2 shows that those with psychiatric caseness missed more diabetes medication per week compared to those without psychiatric caseness and this association was found to be statistically significant at p<0.001.

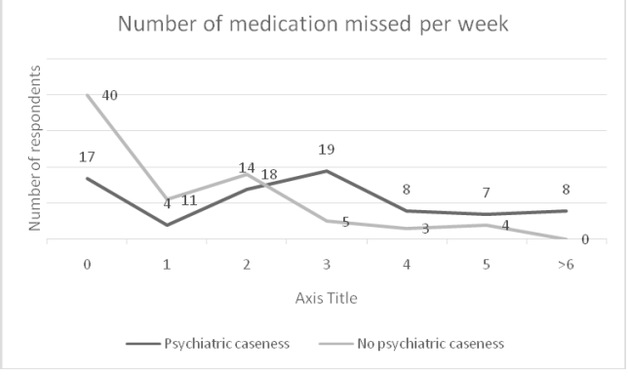

Fig 2. Diabetes medication missed per week among two groups

Estimate of psychiatric caseness in patients with diabetes mellitus

Among patients with diabetes mellitus, 48.7% (n=77) had presence of psychiatric caseness, whereas 51.3% (n=81) had no psychiatric caseness. Table 2 shows that 76.62% (n=59) among those with psychiatric caseness (n=77) had poor glycemic control, while 64.19% (n=52) among those with no psychiatric caseness (n=81) had good glycemic control. This relationship was found to be statistically significant at a p value <0.001. It was also observed that the mean GHQ-12 score in poor glycemic control group (n=88) was 4.30 ±2.825, whereas among respondents of good glycemic control was 2.04±1.419. This relationship was found to be statistically significant at a p value <0.001.

Table 2:Frequency distribution on Relationship between Psychiatric caseness and glycemic control.

Psychiatric caseness	Frequency (n)	Poor glycemic control	Good Glycemic control	P value
Present (GHQ-12 ≥3)	77	59(37.34%)	18(11.39%)	<0.001
Absent (GHQ-12 <3)	81	29(18.35%)	52(32.91%)	

Glycated hemoglobin (HbA1c) and it relationship with psychiatric caseness.

The mean HbA1c among those without psychiatric caseness was observed to be 6.76±0.66 while the mean HBA1c value among those with psychiatric caseness was 7.87±1.29 which was found to be statistically significant at s p value <0.001.

Discussion

Diabetes patients generally are more vulnerable to develop mental health disorders as it is considered to be one of the most psychologically and behaviorally demanding chronic medical conditions. It is also observed that diabetes is more prevalent in psychiatric ill patients than in general population.[8]In the present study most of the cases were T2DM (77.21%) which might be because the predominant age group of the participants was above 40 (72.9%) and T2DM develops mostly in people older than 40 years. The presence of psychiatric illness affected adherence to meal plan and regular exercise schedule which could also be one factor affecting glycemic control among patients with diabetes mellitus. Similar observation was made in a study where patients with major depression reported significantly fewer days of adherence to diet and exercise.[9]

In our study psychiatric illness was screened with validated Nepalese version of GHQ-12. Psychiatric caseness was found to be present in nearly half of the respondents. In a similar study done in a diabetes clinic at a tertiary care hospital in Eastern Nepal, psychiatric caseness with the cutoff of 3 or more, was found to be

56.5%, which is comparable to the current study.[5]This figure is higher than prevalence of mental illness in Nepal obtained from previous studies. In a study from rural community in Nepal the prevalence of psychiatric cases using GHQ-12 was found to be 37.5%.[10]Another nation wise cross sectional studies found higher prevalence of depression (11.7%) and anxiety (22.7%) among the research population.[11].This disparity between our finding and the community burden of psychiatric illness could be because our study was carried out at a tertiary level endocrinology OPD, which is the referral point of mostly complicated and demanding cases from all over the country, and these cases have frequently been described as more distressed and psychologically disturbed.

In our study HbA1c wasusedasa measure of glycemic controlover last 3 months. Nepal beinga developing country, the lack of accessibility and affordability for the large population makes it difficult to reach the target average of 7%. Glycemic control was observed to have a statistically significant association with psychiatric caseness at a p value <0.001. Among those with psychiatric caseness37.34% (n=59) had a poor glycemic control compared to 18.35% (n=29) among those with no psychiatric caseness. Previous studies have also shown co-occurring psychiatric disorders in patients with diabetes are associated with poor glycemic control which was evaluated with elevated HbA1c levels.[12]Similar relationships between presence of depression and glycemic control have been observed in previous studies.[13]

Figure 1 shows that those patients with psychiatric illness had more propensity to use combination of both oral hypoglycemic drugs and insulin. This could be explained by the fact that presence of psychiatric illness directly affected the glycemic control which led to use of more medications in an attempt to optimize glycemic control.Figure 2 shows the significant association between number of diabetic medication missed per week and presence of psychiatric illness. Among those with and without psychiatric caseness 72.72% (n=56) and 37.03% (n=30) missed ≥2 doses of regular diabetes medication respectively, which is similar to observations that have been made in previous studies.[9,12]The reason for this observation may be explained by the fact that presence of psychiatric illness may affect motivation to take medication regularly and also affect cognitive domains like memory leading to forgetfulness to take medications.

In the current study, glycemic control was found to be significantly associated with mean GHQ-12 score. (p<0.001). In the study among respondents with poor glycemic control mean GHQ-12 score was 4.30 ± 2.825 while among good glycemic control group mean score was 2 scores less, 2.04±1.419. The existing evidence is inconsistent with regard to the associations between glycemic control and GHQ-12 score.

The study proves the importance of screening of psychiatric illness which can be done with simple self-administered tool. This has an important implication in optimal management of Diabetes mellitus as presence of psychiatric illness affects glycemic control, adherence to diabetic medications, diabetic meal plan and regular physical exercise which was found in our study.

The major limitation of the study is the choice of site of the study, as endocrinology OPD of TUTH is a tertiary referral center. Mostly complicated are referred to a tertiary center which might be the reason for higher estimate of psychiatric illness compared to general population. A single hospital based cross sectional study focused on OPD the samplecannot be representative of the general population.

Conclusion

Psychiatric illness is a common comorbidity among patients with diabetes mellitus and its presence significantly affects adherence to diabetic meal and regular exercise schedule and significantly affects glycemic control. The study highlights thats creening for psychiatric comorbidity is an indispensable component of comprehensive diabetic management approach.

Conflict of interest: None declared

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