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RESEARCH ARTICLE

Psychiatric Disorders in Newly Diagnosed Diabetics in Outpatient Diabetes Clinics in Damietta in Egypt

Mohamed Metwally Abo Alabbas[1], Ali Abdelfattah Al Nabawy[1], Ahmed Salama Al-Adl[2], Inas Abd El Rahim[3]

1 Department of Psychiatry, Faculty of Medicine, Al-Azhar University
2 Department of Internal Medicine, Faculty of Medicine, Al-Azhar University
3 Department of Family & Community medicine, Faculty of Medicine, Misr University for Science & Technology

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Corresponding Author

Inas Abd El Rahim

Abstract

Background: Previous studies indicated a high prevalence of psychiatric disorders in adults with diabetes mellitus. The aim of the study was to determine if newly diagnosed adults with diabetes had already an elevated rate of psychiatric disorders at the beginning of their physical illness.

Method: Two hundred adult outpatients with diabetes were consecutively recruited from diabetes clinic in Al Azhar University hospital in Damietta. A representative population sample of 100 persons of a similar age range served as the reference group. Psychiatric disorders were measured in both groups using structured interviews that provided diagnoses according to DSM-IV.

Results: There was a point prevalence of 12.5% for psychiatric disorders in the sample. The most frequent conditions were anxiety and affective disorders. Subjects with diabetes demonstrated a rate of major depressive episodes twice that of the reference group (5.8% vs 2.7%, $p < 0.003$; corrected for confounders). Apart from this finding, there was no significantly increased prevalence of psychiatric disorders in the diabetes sample.

Conclusion: The rate of major depressive episodes in the new onset cohort of diabetes patients was double that of the population as a whole. However, the hypothesis, that newly diagnosed diabetes patients have more psychiatric disorders than the general population, was not confirmed.

Introduction

Diabetes Mellitus (DM) is one of the most common chronic diseases, with prevalence of about 2% (Mather and Keen, 1985). Psychiatric disorder is common among patients with diabetes rather the prevalence of overall (Rubin et al., 2004; Das-Munshi et al., 2007) and particular mental disorders, e.g. depression are reported higher among people with diabetes than the general population (Ashgar et al., 2007). Psychiatric disorders are at least twice more common in patients with diabetes compared to the general population. However, many of them are under recognized and under treated. People with mental disorders have several risk factors that are likely to influence diabetes outcomes. The data about the prevalence and the impact of mental illness among patients with diabetes will raise the concern for mental illness and overall health of these patients (Katon et al., 2004; Jacobson, 1996). Psychological factors indirectly related to diabetes may mediate the occurrence of psychiatric disorders. The diabetes can be seen as a critical life event that requires multiple coping efforts. In particular, the psychosocial burdens in the wake of the physical disease may promote psychopathology (Jacobson, 1996; Rubin and Peyrot, 2001).

Methodology

The study analyzed 200 consecutive diabetes mellitus clinic patients in Al Azhar university hospital in Damietta from Jan 2012 to July 2012 response to "General health questionnaire (GHQ-12)" (Rubin and Peyrot, 2001) collected after obtaining written informed consent. The number of subjects required i.e. sample size was calculated by using the formula:

$N = (1.96)2 \text{ X } P \text{ X } (100 - P) / [P \text{ X } \beta] 2$

Where, N = number of subjects

P = Estimated Prevalence

β = Beta error

With the estimated prevalence of psychiatric co-morbidities as 35%, the calculated sample size was 178.36 and additional 10% subjects were taken for better representation. Hence, the sample size was taken to be 200. "Diabetes mellitus" diagnosis was made based on the "American Diabetic Association" (ADA) guidelines, 2009.

Psychiatric problems were screened with self-response questionnaire "GHQ-12", the GHQ being used similarly in other studies with diabetic subjects (Rubin and Peyrot, 1999). Using binary scoring method (with the two least symptomatic answers scoring 0 and the two most symptomatic answers scoring 1), the 12-item versions classify any score exceeding the threshold value of 2 as achieving "psychiatric caseness" according to the Manual of GHQ scoring. "Psychiatric caseness" is a probabilistic term which indicates that such respondents are likely to receive further attention if presented in general practice. If the GHQ score threshold is exceeded, the individual would be more likely than not (0.51) to be diagnosed with psychiatric disorder upon independent psychiatric assessment. Since, our subjects were the ones seeking help in a clinic setting; we also analyzed the prevalence with the cut-off score of 3, besides the usual cut-off of 2. By alternate method of scoring 0 to 3 to each response, the symptom grading was done as nil (0 score), mild (1-12), moderate (13-24) and severe (25-36). The clinical data relating to diabetes were collected (duration, personal medical history: dyslipidemia, cardiac and vascular disorders, obesity, and diabetic complications such as macroangiopathy, nephropathy, peripheral neuropathy, and erectile dysfunction) and therapeutic data (physical exercise, diet, regular follow up, treatment compliance). The balance of diabetes was assessed by the last rate of glycated hemoglobin (HbA1) and/or fasting glycaemia. Diabetes was considered as balanced if HbA1 <7% and/or fasting glycaemia ≤6mmol/L.

Assessment of psychiatric disorders: The prevalence of psychiatric disorders was measured in patient how scored ≥ 25 by GHQ using interview designed to provide diagnoses according to DSM-IV (First et al., 2002). An Axis I SCID assessment with a psychiatric patient usually takes between 1 and 2 hours, depending on the complexity of the subject's psychiatric history and their ability to clearly describe episodes of current and past symptoms. A SCID with a non-psychiatric patient takes 1/2 hour to 1-1/2 hours. The instrument was designed to be administered by a clinician or trained mental health professional, for example a psychologist or medical doctor. This must be someone who has relevant professional training and has had experience performing unstructured, open-ended question, diagnostic evaluations. However, for the purposes of some research studies, non-clinician research assistants, who have extensive experience with the study population in question, and who have demonstrated competence, have been trained to use the SCID. It allows for the diagnosis of anxiety disorders, affective disorders, substance-related disorders, somatoform disorders and eating disorders, and a screening of psychotic disorders.

Analysis of data was done using SPSS (statistical program for social science version 15) as follows

Statistical Analysis

- **Description** of quantitative variables as mean, SD and range
- **Description** of qualitative variables as number and percentage
- **Chi-square** test was used to compare qualitative variables between groups.

Results

Among a total of 200 diabetics enrolled from Jan 2012 to July 2012, 101 (50.50%) were male and 99 (49.50%) were female, with M: F ratio of 1.02: 1. Average age was 55.97 years (22 minimum, 92 maximum). Patients of age group (> 60 years) constituted the largest proportion i.e. 77 (38.5%) followed by 76 (38%) in 41-60 years age group (Figure 1). Except one female with gestational diabetes, all had type 2 DM. Majority of the cases had visited the clinic within 10 years of onset of DM. Average duration was 6.5 years (Figure 2). Among GHQ-12 items: "felt that you couldn't overcome your difficulties" was the most scored i.e. by 78 (39.0%) subjects, followed

by "felt constantly under strain" by 75 (37.5%) and "felt not capable of making decisions about things" was scored by 70 (35.0%) subjects (Table 1). One hundred and thirty six (68%) subjects had GHQ-12 score of 2 or more, i.e. "psychiatric caseness", indicating the likelihood of suffering from mental illness (Table 2). Most number of cases 105 (52.5%) had the scores of the moderate severity range (13-24) (Figure 3). Average GHQ-12 item score was 14.68 (with minimum score 0 and maximum 35). Majority had either moderate or severe symptoms. The only psychiatric disorder that showed increased rates in the diabetes group was the major depressive episode. This result was significant only for women (9.3% diabetes group, chi2: 10.85, p = 0.003) but not for men (3.6% diabetes group, not significant). In addition, there were two disorders with lower prevalence rates in the diabetes sample: substance abuse/dependency was significantly less common among men group (1.5% diabetes group chi2 : 7.0, p = 0.006; women 0% diabetes group, not significant). On the other hand, somatoform disorders were significantly lower only for women (1.7% diabetes group, chi2: 6.74, p = 0.006; for men, 2.1% diabetes group, not significant) (Table 3). This study was intended to calculate the overall prevalence of psychiatric disorders and distinguish the psychiatric diagnoses. It was initial but an essential step to categorize total number of subjects subsequently to compare various diabetes mellitus complications between DM patients with and without mental illness

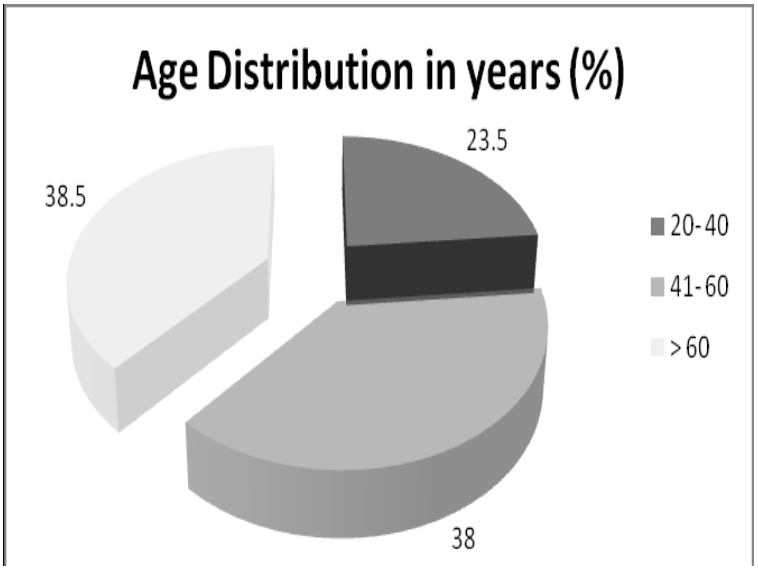

Figure (1): Age Distribution of Diabetes-clinic service attendees

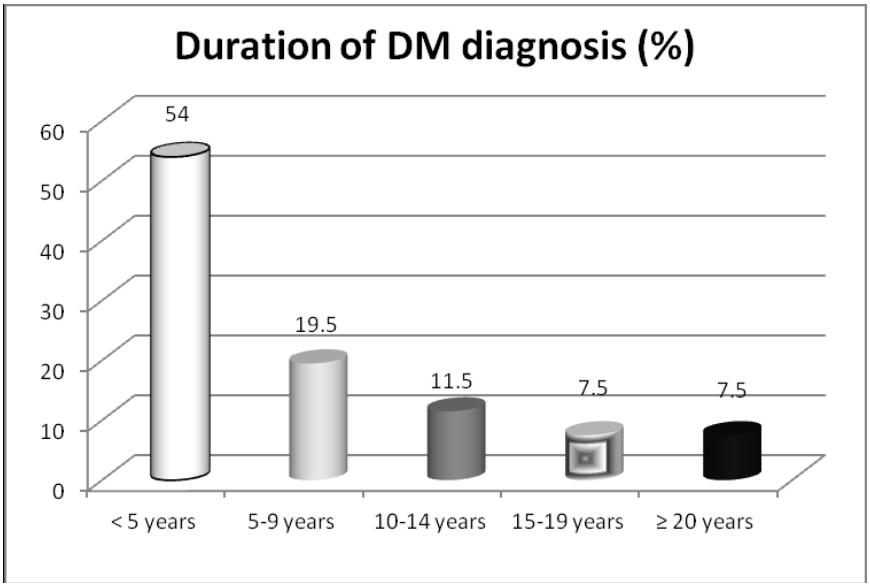

Figure (2): Duration of Diabetes mellitus among clinic service attendees

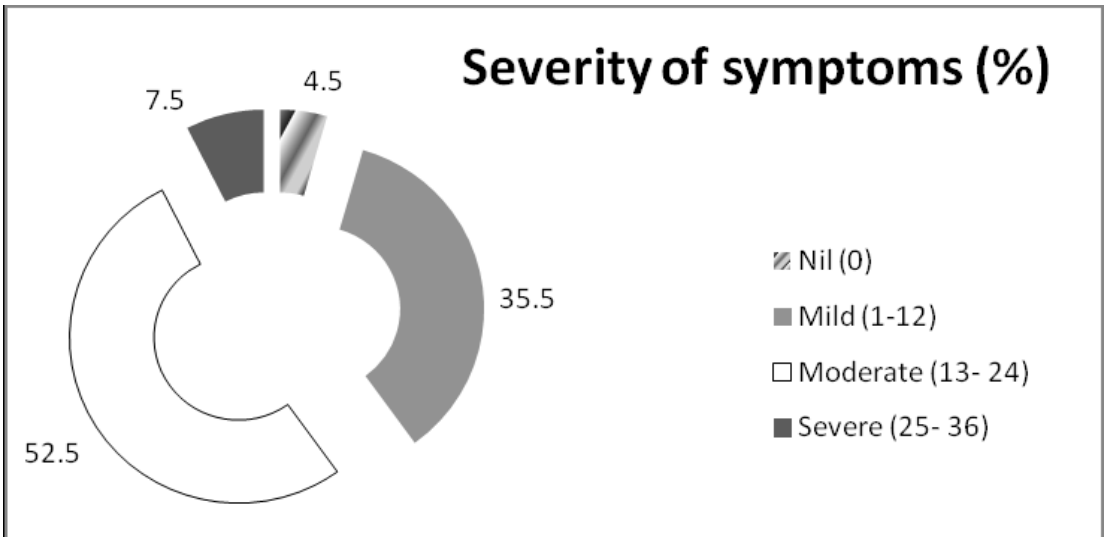

Figure (3): Symptom severity grading of GHQ-12 items

Table (1): Scored GHQ-12 symptom-item distribution among Diabetes-clinic patients

GHQ symptom-item related to	N (%)	GHQ symptom-item related to	N (%)
1.Concentrate	67 (33.5)	7. Enjoyment	59 (29.5)
2. Sleep	65 (32.5)	8. Facing problem	66 (33.0)
3. Useful activity	52 (26.0)	9. Depressed	67 (33.5)
4. Decision making	70 (35.0)	10. Self confidence	52 (26.0)
5. Strain	75 (37.5)	11.Worthlessness	57 (28.5)
6. Overcome difficulty	78 (39.0)	12. Happiness	42 (21.0)

Table (2): Clinical and therapeutic characteristics of the sample

Clinical and therapeutic characteristics	N (%)
Somatic comorbidity	
Hypertension	146 (73.0)
Dyslipidemia	100 (50.0)
Heart disease	49 (24.2)
Obesity	42 (21)
Dysthyroidism	26 (12.9)
Balanced diabetes Yes No	 136 (67.7) 64 (32.3)
Diabetes complications	
Macro angiopathy	81 (40.3)
Peripheral neuropathy	78 (38.7)
Retinopathy	71 (35.5)
Nephropathy	26 (12.9)
Erectile dysfunction	10 (18.7)
Treatment compliance Yes No	 184 (91.1) 16 (8.9)
Follow a balanced diet	

Yes No	120 (60.0) 80 (40.0)
Practice of physical activity Yes No	 54 (30.6) 146 (69.4)
Consultation mode Regular Irregular	 195 (97.5) 5 (205)

Table (3): Point prevalence of psychiatric disorders in adults with diabetes

Psychiatric disorders (DSM-IV, axis I)	Type 2 DM (%/N)	chi2	P value
Anxiety disorders	7.5/15	1.07	0.302
Agoraphobia with/without panic	2.0/4	0.21	0.644
Panic with/without agoraphobia	1.0/2	0.07	0.794
Social phobia	2.5/5	1.84	0.176
Simple phobia	3.0/6	3.44	0.064
Generalized anxiety disorder	1.0/2	0.28	0.594
Obsessive-compulsive disorder	0.5/1	0.04	0.848
Mood disorders	6.0/12	0.59	0.441
Major depressive episode	6.0/12	8.49	0.004
Manic episode	1.0/2	1.44	0.230
Dysthymic disorder	1.0/2	2.45	0.117
Somatoform disorders	2/4	8.37	0.004
Somatization disorder	0.5/1	2.10	0.147
Hypochondriasis	0.5/1	n.a	-
Pain disorder	1.0/2	8.03	0.005
Eating disorders	1.0/2	2.44	0.118
Anorexia nervosa	0.0/0	0.15	0.696
Bulimia nervosa	1.0/2	n.a	-
Substance abuse/dependence	1.0/2	7.57	0.006
Alcohol abuse/dependence	1.0/2	5.35	0.021
Substance abuse/dependence	0.0/0	-	-
Medication abuse/dependence	0.0/0	-	-
Possible psychotic disorder	0.0/0	4.65	0.031
All psychiatric disorders	12.5/25	6.65	0.010

Discussion

The near total of included subjects (90.3%) had a somatic co morbidity associated with the diabetes. Hypertension was the most frequent co morbidity. More than 2/3 of the sample had poor glycemic control. The average fasting glycaemia was 9.4mmol/L (standard deviation = 4.4mmol/L) and average HbA1 was 9% (standard deviation = 2.1%). Fifty-seven subjects affirmed having a good compliance with treatment. Even statistically stronger relationship has been reported between diabetes and anxiety disorders than between diabetes and affective disorders after controlling for age, sex, marital status, and socioeconomic status (Groot et al., 2010). Alberta Diabetes Atlas 2007 reported DM patients with more affective disorders, anxiety disorders, organic and non-organic psychosis and substance abuse disorders compared to their non-diabetic counterparts (Goldberg and Williams, 1978). Similar study from UK: UK National Psychiatric Morbidity Survey 2007 also found elevated risk of the common mental disorders (CIS-R diagnoses) among patients with sDM even after controlling for age, gender, ethnicity and socioeconomic status (Groot et al., 2001). Hence, other mental illness also do deserve due attention among individuals with diabetes. Between 15-40% and that of overall psychiatric disorders is at least 2 times higher among people with DM (PWD) in comparison to general population (Groot et al., 2001; Rubin and Peyrot, 2001; Goldberg and Williams, 1978). The rates vary according to the settings and designs of the study: clinical settings

and self-response questionnaire based studies show apparently higher rates. Since this study was carried out in a clinic setting and it utilized the „GHQ-12", a self-response questionnaire, analysis was done both with usual (Goldberg and Williams, 1978) (2 or more) and higher cut off points (3 or more) for „psychiatric caseness" to facilitate a comprehensive understanding.

The GHQ has been utilized by other authors among patients with DM (Rubin and Peyrot, 1999). The GHQ-12 questionnaire was presented to the subjects after being translated into Arabic language (with due process of translation and back translation, and pretest). Out of the total, 99 were female patients; the proportion is comparatively less in reference to a study among cases referred to psychiatry out-patients in the same institute (Williams et al., 2006). Among the service seekers of the clinic, the age group of more than 60 years was the most common (38.5%) followed by 38% in 41-60 years age group. The average age of the patients was 55.97 years with minimum of 22 and maximum of 92 years. The age distribution is consistent with the population and hospital findings of higher DM prevalence among elder age groups (more than 40 years) (Rubin et al., 2004; Lustman et al., 2000). This representation is similar to findings of other studies from the same institute (Williams et al., 2006; Margraf et al., 1991). A great majority had type 2 DM, and there was no juvenile case because of the study design, excluding cases below 15 years. Majority of the cases had visited the clinic within 10 years duration of onset of DM. Average duration was 6.5 years (20.5% including 19% newly diagnosed came within 6 months of DM diagnosis). With the cutoff of 2 or more, „psychiatric caseness" was seen among 136 (68%) and with 3 or more, among 113 (56.5%) subjects. This figure is clearly in excess to the mental illness prevalence among general population in any country (Shneider et al., 1992; Margraf, 1991); including Nepal (De Nardo and Barlow, 2004). This is higher than similar one reported among IDDM by Wilkinson and his colleagues, using the GHQ-60 and CIS in 1987 (Rubin and Peyrot, 1999). It may possibly be because of the fact that we had a number of newly diagnosed cases, who have frequently been described as more distressed and psychologically disturbed by recent stressor. Effect of recent diagnosis, chronicity of illness, use of medications and complications, associated psychosocial determine the co-occurrence of mental illness among people with DM. Our result represents the overall prevalence and it does not analyze/ distinguish the cause and effect relationship between DM and mental illness and these factors. It deserves a further separate study. In severity grading, 15 (7.5%) had severe (25-36), 105 (52.5%) moderate (13-24), 71 (35.5%) mild (1-12) and the rest 9 (4.5%) had nil symptomatology. This is also consistent with the finding regarding „psychiatric caseness" prevalence. Among GHQ-12 items, „felt that you couldn't overcome your difficulties" by 39.0% and „felt constantly under strain" by 37.5% were the most scored ones.

Conclusion

A great majority of the patients with diabetes visiting diabetes clinic had type 2 DM. Majority of them had visited the clinic within 10 years of onset of DM. Psychiatric problems are common among patients with diabetes. Majority had reported moderate degree of severity of GHQ-12 symptoms. Hence, a diagnosis of diabetes mellitus should lead to a heightened level of diagnostic suspicion for psychiatric disorders. Appropriate diabetes treatment should involve early diagnosis and treatment of concomitant psychiatric disorders.

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