

Prevalence of eating disorders and psychiatric comorbidity in a clinical sample of type 2 diabetes mellitus patients

Prevalência de transtornos alimentares e comorbidade psiquiátrica em uma amostra clínica de pacientes com diabetes mellitus do tipo 2

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Abstract

Background: A few studies have shown high rates of eating disorders and psychiatric morbidity in patients with type 2 diabetes mellitus. **Objective:** disturbed eating behavior and psychiatric comorbidity in a sample of T2DM patients. **Methods:** Seventy type 2 diabetes mellitus patients between 40 and 65 years of age (mean, 52.9 ± 6.8) from a diabetes outpatient clinic were sequentially evaluated. The Structured Clinical Interview for DSM-IV, Binge Eating Scale and Beck Depression Inventory were used to assess eating disorders and other psychiatric comorbidity. In addition to the descriptive analysis of the data, we compared groups divided based on the presence of obesity (evaluated by the body mass index) or an eating disorder. **Results:** Twenty percent of the sample displayed an eating disorder. Binge eating disorder was the predominant eating disorder diagnosis (10%). Overall, the group of obese patients with type 2 diabetes mellitus presented rates of psychiatric comorbidity comparable to those seen in their nonobese counterparts. However, the presence of an eating disorder was associated with a significant increase in the frequency of anxiety disorders ($57.1\% \times 28.6\%$; $p = 0.044$). **Conclusions:** In our study sample, the occurrence of eating disorders was increased compared to rates observed in the general population, with the predominance of binge eating disorder. The presence of an eating disorder in type 2 diabetes mellitus patients was associated with higher rates of anxiety disorders.

Keywords: Eating disorders; Bulimia; Diabetes Mellitus; Obesity; Diagnosis, Dual (Psychiatry); Prevalence

Resumo

Introdução: Alguns estudos têm demonstrado uma frequência elevada de transtornos alimentares (TA) e morbidade psiquiátrica em pacientes com diabetes mellitus do tipo 2 (DM2). **Objetivos:** Investigar a presença de alterações do comportamento alimentar e comorbidade psiquiátrica em uma amostra de pacientes com diabetes mellitus do tipo 2. **Métodos:** Setenta pacientes com diabetes mellitus do tipo 2, com idade entre 40 e 65 anos (média de $52,9 \pm 6,8$), em tratamento regular em um serviço de diabetes, foram sequencialmente avaliados. Para avaliação da morbidade psiquiátrica foi utilizado o Structured Clinical Interview for DSM-IV, além da Escala de Compulsão Alimentar Periódica e o Inventário Beck de Depressão. Além da análise descritiva dos dados, foi realizada uma avaliação comparativa da amostra dividida em grupos, com base na presença de obesidade (avaliada através do índice de massa corporal) e de transtornos do comportamento alimentar. **Resultados:** Foi encontrada uma prevalência geral de 20% de transtornos alimentares, sendo o transtorno da compulsão alimentar periódica (TCAP) o de maior ocorrência na nossa amostra (10%). O grupo de obesos com diabetes mellitus do tipo 2 não apresentou aumento de comorbidade psiquiátrica quando comparado com os pacientes diabéticos não-obesos. Entretanto, quando comparamos o grupo de pacientes com alterações do comportamento alimentar com aqueles sem transtornos alimentares, a presença de um transtorno alimentar esteve associada a um aumento na frequência de transtornos de ansiedade ($57,1\%$ vs. $28,6\%$; $p = 0,044$). **Conclusões:** Em nosso estudo, a ocorrência de transtornos alimentares esteve aumentada em relação às taxas observadas na população geral, com o predomínio do transtorno da compulsão alimentar periódica. A presença de um transtorno alimentar em pacientes com diabetes mellitus do tipo 2 esteve associada a uma maior ocorrência de transtornos de ansiedade.

Descritores: Transtornos da alimentação; Bulimia; Diabetes mellitus; Obesidade; Diagnóstico duplo (Psiquiatria); Prevalência

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Introduction

Several studies have shown a high prevalence of psychiatric disorders among individuals with diabetes.¹ However, few have specifically evaluated the prevalence of eating disorders (ED) among patients with type 2 diabetes mellitus (T2DM).² Most of the authors who have studied ED in individuals with T2DM have reported high rates of these disorders.³⁻⁷ Nevertheless, there is no consensus regarding prevalence rates of ED in this patient population.

The objective of this study was to investigate the presence of eating behavior disorders and psychiatric comorbidity in a sample of T2DM patients.

Methods

1. Participants

Seventy T2DM patients from the diabetes outpatient clinic of the *Instituto Estadual de Diabetes e Endocrinologia do Rio de Janeiro* (IEDE/RJ, Rio de Janeiro State Institute of Diabetes and Endocrinology) were evaluated sequentially. The study included both male and female subjects, and ages ranged from 40 to 65. A diagnosis of diabetes was assumed for all patients under regular treatment. Illiterate patients, patients with type 1 diabetes mellitus and patients with gestational diabetes were excluded from the study. The study was approved by the Ethics in Research Committee of the IEDE/RJ. All participants gave written informed consent prior to their inclusion in the study.

2. Clinical evaluation

Patients were weighed using digital scales, calibrated periodically, and patient height was measured using a stadiometer. Obesity was defined based on body mass index (BMI), which is obtained by dividing the weight in kilograms by the height in meters squared. Patients were classified into three groups: nonobese (BMI < 25 kg/m²), overweight (BMI between 25 and 29.9 kg/m²) and obese (BMI > 29.9 kg/m²).

3. Psychiatric evaluation

ED and others psychiatric comorbidities were diagnosed using the Structured Clinical Interview for DSM-IV, patient edition (SCID-P),⁸ which was administered by a trained psychiatrist. Previous family history of psychiatric disease was defined as one case of hospitalization or psychiatric treatment in the family. All patients completed the Binge Eating Scale (BES) and the Beck Depression Inventory (BDI).¹⁰

4. Procedures

Patients who met the inclusion criteria were consecutively selected. Then, they came to a consultation for the clinical and psychiatric assessment. Patients first completed the questionnaires and were subsequently submitted to psychiatric evaluation using the SCID-P. Sociodemographic and diabetes related data were then collected.

5. Statistical analysis

Continuous variables were expressed as mean and standard deviation, and categorical data were expressed as absolute and relative frequencies. Obese patients were compared to nonobese patients in terms of clinical and psychiatric characteristics. The same procedure was followed for the comparison between diabetic individuals with ED and those without. The Mann-Whitney test was used for the analysis of

continuous variables, and the chi-square test was used for the analysis of categorical ones. A significance level of 5% was adopted.

Results

Our study sample consisted mostly of females (77.1%), married individuals (70%) and individuals who had less than nine years of schooling (71.4%). Mean age was 52.9 ± 6.8 years, and the mean duration of diabetes was 13.4 ± 7.5 years. Mean BMI was 30.6 ± 5.2 kg/m². Half of the patients were obese (mean BMI = 34.8 ± 3.5 kg/m²), 22 were overweight (mean BMI = 27.9 ± 1.1 kg/m²) and 13 exhibited normal weight (mean BMI = 23.6 ± 1.2 kg/m²).

The prevalence of ED was 20%. The incidence of binge eating disorder (BED) was 10%, making it the predominant eating disorder. In addition, we found three cases (4.3%) of bulimia nervosa and four cases (5.7%) of ED not otherwise specified. Cases of BED were classified as a distinct category and were excluded from the total number of cases of eating disorders not otherwise specified. The prevalence of ED was 7.7% among patients with normal BMI, 18.2% among those who were overweight and 25.7% among those who were obese ($p = 0.37$).

Obesity was more common among females than among males (57.4% vs. 25.0%; $p = 0.023$). There were no statistically significant differences in the findings of the comparative analysis between obese and nonobese T2DM patients in terms of psychiatric variables.

When compared to individuals with no eating behavior disorder, diabetic patients with ED showed a tendency to be in the "unmarried" category (50% vs. 25%; $p = 0.068$) and to be white (71.4% vs. 44.6%; $p = 0.073$). Table 1 shows, in a comparative way, data regarding psychiatric comorbidity and general psychopathology among diabetic patients with ED and those without. Patients with T2DM and an eating disorder tended to present a higher mean BMI than did T2DM patients without ED (32.7 kg/m² vs. 30.0 kg/m²; $p = 0.063$).

Discussion

The prevalence of ED among the T2DM patients in our study sample was higher than that observed in the general population. One out of five T2DM patients presented some eating behavior disorder, and BED was the eating disorder most frequently observed. In addition, an eating disorder concomitant with T2DM was associated with an increase of anxiety disorders. The same type of association was not found in T2DM patients and psychiatric comorbidity. It is of note that the sociodemographic characteristics of our patients were comparable to those of a similar population sample used in another Brazilian study. This suggests that our sample is representative of the diabetic outpatient population in general.¹¹

The prevalence of ED found in the present study was considered high, especially when compared to the findings from population samples. In their study, Gotestam et al¹² observed that the prevalence of ED in a population sample of women ($n = 1846$) was 3.8%. In clinical samples of obese individuals, however, BED rates tend to be much higher.¹³

Other studies evaluating the incidence of ED concomitant with T2DM used semi-structured interviews for the diagnosis of eating disorders, as was done in our study, and also considered the diagnosis of BED as a category distinct from ED not otherwise specified. Kenardy et al³ found a BED prevalence of 20.9% in a sample of 215 patients with T2DM.

Table 1– Psychiatric comparison between type 2 diabetes mellitus patients with eating disorders and those without

	ED			Without ED			Total n = 70	p value
	Female n = 12	Male n = 2	Total n = 14	Female n = 42	Male n = 14	Total n = 56		
Family history of psychiatric disorder	4 (28.6)	1 (7.1)	5 (35.7)	7 (12.5)	1 (1.8)	8 (14.3)	13 (18.6)	.065*
Mood disorders								
Actual	4 (28.6)	0 (0)	4 (28.6)	6 (10.7)	3 (5.3)	9 (16.1)	13 (18.6)	.282*
Past	7 (50.0)	0 (0)	7 (50.0)	14 (25.0)	4 (7.1)	18 (32.1)	25 (35.8)	.212*
Bipolar Disorder	1 (7.1)	0 (0)	1 (7.1)	1 (1.8)	1 (1.8)	2 (3.6)	3 (4.3)	.555*
Anxiety disorder	7 (50.0)	1 (7.1)	8 (57.1)	12 (21.4)	4 (7.1)	16 (28.6)	24 (34.3)	.044*
GAD	5 (35.7)	1 (7.1)	6 (42.8)	7 (12.5)	1 (1.8)	8 (14.3)	14 (20)	
EDNOS	2 (14.3)	0 (0)	2 (14.3)	4 (7.1)	2 (3.6)	6 (10.7)	8 (11.4)	
OCD	1 (7.1)	0 (0)	1 (7.1)	1 (1.8)	0 (0)	1 (1.8)	2 (2.8)	
PD	0 (0)	0 (0)	0 (0)	1 (1.8)	0 (0)	1 (1.8)	1 (1.4)	
PTSD	0 (0)	0 (0)	0 (0)	2 (3.6)	0 (0)	2 (3.6)	3 (4.3)	
Alcohol dependence (prior)	0 (0)	0 (0)	0 (0)	0 (0)	4 (7.1)	4 (7.1)	4 (5.7)	.303*
BES	27.0 ± 8.0	17.5 ± 0.7	25.6 ± 8.1	10.2 ± 8.6	7.7 ± 6.4	9.5 ± 8.1	12.8 ± 10.3	.0001**
BDI	20.2 ± 9.5	10.5 ± 2.1	18.8 ± 9.4	14.1 ± 9.0	11.8 ± 10.2	13.5 ± 9.3	14.6 ± 9.5	.061**

ED – eating disorder; GAD – generalized anxiety disorder; EDNOS – eating disorder not otherwise specified; PTSD – post-traumatic stress disorder; OCD – obsessive-compulsive disorder; PD – panic disorder; BES – binge eating scale; BDI – Beck depression inventory. Data are expressed as n (%) or as mean ± standard deviation * chi-square test ** Mann-Whitney test. The p values presented are related to the comparisons of the total columns (with and without ED).

In another study, Crow et al⁴ found an eating disorder prevalence of 34.8% in 23 women with T2DM. Some studies⁶⁻⁷ compared the prevalence of ED among patients with and without T2DM. Those authors, however, failed to demonstrate that the rates of ED were higher among T2DM patients than among non-T2DM patients. As in our study, Herpertz et al⁵ also found BED to be predominant typed category.

In our study, the increased frequency of anxiety disorders among patients with ED is in accordance with previous findings showing higher rates of psychiatric morbidity in samples of nondiabetic patients with eating disorders.¹⁴ However, the only study investigating this correlation in samples of T2DM patients found no conclusive evidence.⁵

The lack of association between obesity and psychiatric disorders (including eating disorders) may be justified by the low BMI of the obese patients evaluated. The increase of obesity related psychopathology tend to be more frequently observed in groups with higher BMI, especially in individuals with severe obesity (BMI > 39.9 kg/m²).¹⁵ Similarly, patients who presented an eating disorder tended to have, on average, a higher BMI. This has also been observed by other authors.⁷

Factors related to diabetes could explain its association with eating disorders. The dietary restrictions and preoccupation with weight that are associated with T2DM treatment might predispose the occurrence of binge eating. This hypothesis is based on the premise that episodes of binge eating tend to occur in combination with dietary restrictions.¹⁶ In addition, ED concomitant with T2DM might represent the expression of an eating psychopathology associated with other psychiatric disorders such as depression and anxiety, which are more commonly found in individuals with diabetes mellitus.¹

Our study presents some limitations. The lack of a comparative clinical sample of individuals without T2DM may have affected the evaluation of the findings regarding the prevalence of ED and psychiatric comorbidity. In comparison to other studies evaluating ED in T2DM patients, the mean age of our sample

was high. Since the incidence of ED is higher in younger populations, the prevalence of ED observed in our study may have been underestimated.

Few studies have investigated the presence of ED concomitant with T2DM.³⁻⁷ In addition; this is, to the best of our knowledge, the first study investigating the occurrence of ED in a sample of T2DM patients in Brazil. The results of our study indicate that there is an association between T2DM and eating disorders. It is important that health professionals who monitor diabetic patients investigate eating disorders, especially in individuals whose metabolic control is unsatisfactory despite appropriate treatment. In conclusion, it is important to emphasize that, since the influence of ED and psychiatric comorbidity on T2DM clinical evolution has not been well elucidated, further research is needed in order to determine the true nature of this association.

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