



ORIGINAL ARTICLE

Associations between diet quality, health status and diabetic complications in patients with type 2 diabetes and comorbid obesity

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KEYWORDS

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Abstract

Objective: Patients with type 2 diabetes (T2DM) demonstrate low dietary adherence and this is further aggravated with comorbid obesity. The aim of the present study was to assess diet quality in patients with T2DM and comorbid obesity compared to patients with T2DM alone and to examine the associations between comorbidities and diet quality.

Methods: The sample consisted of 59 adult patients with diabesity (T2DM and comorbid obesity) and 94 patients with T2DM alone. All diabetes comorbidities and complications were recorded and diet quality was assessed with the Healthy Eating Index (HEI).

Results: Mean raw HEI of the diabese subjects was 81.9 ± 7.1 and the diabetic subjects was 80.2 ± 6.9 . When HEI was adjusted to the sex, age and weight status, the diabese demonstrated a higher HEI. Among comorbidities, only renal disease decreased HEI. According to the principal component analysis of the total sample, adequate diet quality was explained by cardiovascular disease, cigarette smoking, alcohol consumption, peptic ulcer, sex, diabesity and diabetic foot syndrome. In the diabese, adequate HEI was explained by diabetic foot syndrome, smoking, drinking alcohol and having a family history of diabetes.

Conclusions: Adult patients with T2DM demonstrate adequate diet quality. Different factors are associated with the adoption of a high quality diet between the diabese and the T2DM alone.

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PALABRAS CLAVE

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Índice de
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saludable;
MNA;
Morbilidad

Asociación entre la calidad de la dieta, el estado de salud y las complicaciones diabéticas en pacientes con diabetes tipo 2 y con obesidad comórbida

Resumen

Objetivos: Los pacientes con diabetes tipo 2 (DM2) muestran un bajo cumplimiento dietético y esto se agrava aún más con la obesidad comórbida. El objetivo de este estudio fue evaluar la calidad en la dieta de los pacientes con DM2 y obesidad comórbida en comparación con pacientes que solo padecen DM2, además de examinar la asociación entre las comorbilidades y la calidad de la dieta.

Métodos: La muestra consistió en 59 pacientes adultos con diabesidad (DM2 y obesidad comórbida) y 94 pacientes con solo DM2. Se registraron todas las comorbilidades y las complicaciones por diabetes, y se evaluó la calidad de la dieta con el Índice de Alimentación Saludable (IAS).

Resultados: La media bruta del IAS en las personas diabéticas y obesas fue del $81,9 \pm 7,1$ y en aquellas que presentaban solo diabetes $80,2 \pm 6,9$. Al ajustar por sexo, edad y peso, las personas con diabetes y obesidad simultánea presentaron un IAS más elevado. De las comorbilidades habituales, solo la nefropatía disminuyó el IAS. De acuerdo con el análisis de componentes principales de la muestra total, la calidad de una dieta adecuada viene explicada por las enfermedades cardiovasculares, el tabaquismo, el consumo de alcohol, la úlcera péptica, el sexo, la diabesidad y el síndrome del pie diabético. En las personas diabéticas obesas, un IAS adecuado venía explicado por el síndrome del pie diabético, el tabaquismo, consumo de alcohol y antecedentes familiares de diabetes.

Conclusiones: Los pacientes adultos con DM2 demostraron una calidad adecuada en su dieta. Existen diversos factores asociados con la adopción de una dieta de alta calidad entre las personas con diabetes y obesas, y aquellas con solo DM2.

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Introduction

Sedentary lifestyle and nutrition transition have increased the prevalence of overweight worldwide. Concurrently, excess in body weight is the premium cause for the development of insulin resistance and type 2 diabetes mellitus (T2DM).¹ The coexistence of both T2DM and obesity has been named "diabesity" and consists of the new health epidemic.²

Although obesity is the most prevalent comorbidity of T2DM, the disease is also associated with several diabetic and non-diabetic related comorbidities such as retinopathy, nephropathy, cardiovascular disease (CVD), atherosclerosis and hypertension, all of which confer an elevated morbidity and mortality among the patients.^{3,4} Aside pharmacotherapy, dietary treatment consists of a proved and costless therapeutic remedy in targeting diabetes, diabesity and their complications.^{5,6} Overall, studies have showed poor dietary compliance among patients with T2DM.^{7,8} In Spain, the majority of diabetic patients are obese, consume a low quality diet, high in fats and in particular monounsaturated fatty acids and exceed recommendations for saturated fats intake.^{8,9} In France, patients have reported difficulties in dietary advice adherence.¹⁰ Among the factors affecting diabetes treatment adherence, obesity appears to be the predisposing one.¹⁰ Although the assessment of diet quality consists of the only measure evaluating dietary therapy adherence, until now no study has assessed the impact of comorbid obesity on the diet quality of the diabetic subjects. Research has proved that diet has an effect on the progression of several diabetes comorbidities,¹¹ but researchers have never addressed the opposite hypothesis.

Thus, it is still unknown whether the duration of the disease or the prevalence of diabetes complications ameliorates the patients' diet quality. It is possible that the increased morbidity associated with diabetes complications might trigger individual adherence and improves nutritional intake, in an effort to achieve better diabetes control.

The aim of the present cross-sectional study was twofold: (1) to assess diet quality in patients with diabesity and T2DM alone, attending a primary health care clinic in Greece; (2) to delineate the existing associations between diabetes complications/comorbidities and diet quality in patients with T2DM compared with diabese patients.

Materials and methods**Sample recruitment**

The initial sample comprises 200 adult patients with T2DM, all having accepted the disease according to the Kübler-Ross scale.¹² Participants were outpatients of the 1st Department of Internal Medicine at the Hippokratia General Hospital in Thessaloniki, Greece. Sample collection took place during January–March 2010 at the Hippokratia Hospital and included all outpatients who visited the Diabetes clinic during these months who had accepted the diagnosis of T2DM. Forty-nine patients were low energy reporters and were removed from the study sample. Thus, the final sample comprises 151 patients with T2DM, 56 men and 95 women (age: 65 ± 11.6 years), all adequate energy reporters. All patients were receiving individualized instructions on the dietary management of diabetes and weight control by a

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