

Effects of a Moderately-Restricted Carbohydrate Diet on Cardiovascular Risk Factors among Women with Metabolic Syndrome

Somayeh Rajaie¹, Leila Azadbakht PhD², Majid Khazaei PhD³, Ahmad Esmailzadeh PhD²

Abstract

Background: The growing epidemics of obesity and metabolic syndrome (MetS) have been accompanied with dietary fat restriction and carbohydrate elevation. We evaluated the efficacy of moderately-restricted carbohydrate diet on features of the MetS in women.

Methods: In a randomized cross-over clinical trial, 30 overweight or obese (Body mass index > 25 kg/m²) women with the MetS were enrolled. Subjects were randomly allocated to receive either a high-carbohydrate (HC) (60-65% carbohydrates, 20-25% fats) or a moderately-restricted carbohydrate (MRC) (43-47% carbohydrate, 36-40% fats) diet. Diets were continued for 6 weeks followed by a 2-week washout period. Anthropometrics, blood pressure and biochemical variables were measured before and after each intervention period.

Findings: Despite similar weight loss in both diets, the efficacy of MRC diet in reducing waist (-3.9 vs. -2.6 cm; P = 0.07) and hip circumferences (-2.7 vs. -1.5 cm; P = 0.07) was marginally greater compared with HC diet. In contrast to HC diet, MRC diet resulted in favorable changes in serum triglyceride (TG) concentrations (0.13 vs. -31.3 mg/dL; P = 0.07). This was also the case for TG to high density lipoprotein (HDL)-cholesterol ratio (-0.9 vs. -0.1; P = 0.06). The reductions in systolic blood pressure (-8.93 vs. -2.97 mmHg; P = 0.06) and diastolic blood pressure (-12.7 vs. -1.77 mmHg; P = 0.001) by MRC diet were higher than those by HC diet. The prevalence of MetS was significantly decreased only by MRC diet (P = 0.03).

Conclusion: Partial replacement of dietary carbohydrates by unsaturated fats might be recommended as an effective strategy for treatment of MetS.

Keywords: Moderate carbohydrate restriction, Macronutrient, Metabolic syndrome, Blood pressure, Obesity

* This paper is derived from a MSc thesis No. 189047 in Isfahan University of Medical Sciences.

¹ MSc Student, Department of Community Nutrition, School of Nutrition and Food Sciences and Food Security Research Center And Student Research Committee, Isfahan University of Medical Sciences, Isfahan, Iran

² Associate Professor, Food Sciences and Food Security Research Center and Department of Community Nutrition, School of Nutrition, Isfahan University of Medical Sciences, Isfahan, Iran

³ Associate Professor, Department of Physiology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

Corresponding Author: Ahmad Esmailzadeh PhD, Email: esmailzadeh@hlth.mui.ac.ir