

Nutrition in Diabetes



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KEYWORDS

• Medical nutrition therapy • Nutrition • Diet • Glycemic index • Diabetes

KEY POINTS

- Medical nutrition therapy is effective in improving glycemic control, promoting weight loss, and modifying cardiovascular risk factors in patients with diabetes.
- Reduction of carbohydrate load, selection of low glycemic index food, and balancing macronutrients improve postprandial blood glucose levels.
- Selection of healthful dietary patterns, such as the Mediterranean diet or DASH diet, are beneficial in managing diabetes.

INTRODUCTION

Nutrition therapy is keystone of diabetes prevention and management and its importance has long been recognized before the era of modern scientific medicine.¹ Before insulin discovery, a starvation diet of very low caloric content (400–500 calories/day), known as the Allen diet, was commonly used to treat diabetes.² Another diet with extreme carbohydrate restriction to approximately 2% and very high fat to approximately 70% was used by Elliot P. Joslin for managing diabetes in the 1920s.³ Although there was no clear distinction between what is known now as type 1 and type 2 diabetes (T2D), those eccentric diets were remarkably successful in managing diabetes and for even keeping patients with type 1 diabetes alive for a few years.^{2,4} At that time, diabetes was commonly defined as carbohydrate-intolerance disease.⁵ After insulin discovery, the amount of carbohydrates in the diabetes diet was increased to a maximum of 35% to 40% of the total daily caloric intake. By the late 1970s, a strong claim to reduce total fat and dietary saturated fat (SFAs) intake was made due to increased incidence of cardiovascular death, particularly in patients with diabetes.⁶ Reduction of fat intake by approximately 10% required a compensatory increase in

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other nutrients, and in this case it was dietary carbohydrates, which went up to approximately 55% to 60% (Fig. 1).⁷

Although a high carbohydrate diet has been frequently questioned as a major contributing factor to poor diabetes control and weight gain, little has changed for the past 3 decades.⁸ Recently, the importance of specific foods and overall dietary patterns rather than a single isolated nutrient for managing diabetes and cardiovascular diseases (CVD) has emerged.^{9,10} This review article discusses the current evidence around the role of nutrition in diabetes management.

MEDICAL NUTRITION THERAPY FOR DIABETES MANAGEMENT

In 1994, the American Dietetic Association used the term “medical nutrition therapy” (MNT) to better articulate appropriate nutrition care and process in diabetes management.¹¹ MNT can be described as intensive, focused, and structured nutrition therapy that helps in changing the eating behavior of patients with diabetes. Despite recent progress in pharmacologic management of diabetes, MNT remains a crucial tool for achieving optimal glycemic control.¹²

Although MNT is widely recognized by major diabetes organizations across the world, their dietary recommendations are slightly different (Table 1). In principle, the prime goal of MNT is to attain and maintain optimal glycemic control and metabolic improvement through healthy food choices while considering patients’ personal needs, preferences, and lifestyle patterns.¹³ Proper MNT was shown to reduce A1C by 0.5% to 2% in patients with T2D and by 0.3% to 1% in patients with type 1 diabetes.¹⁴ MNT was also shown to be particularly beneficial after initial diabetes diagnosis and in patients with poor glycemic control. Nevertheless, its effectiveness is evident at any A1C level across the entire course of the disease.¹³

Practically, MNT remains the most challenging component of diabetes self-management by most patients. To enhance dietary adherence, an individualized MNT should be provided by registered dietitians or by health care providers who are well versed in nutrition. Comprehensive evaluation of the individual eating pattern, needs, nutrition status, weight history, and history of previous nutrition education are required before recommending an MNT plan.¹²

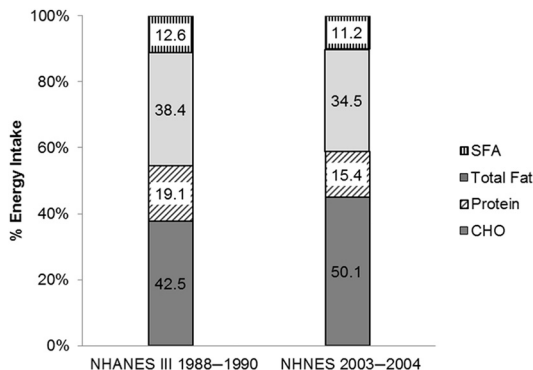


Fig. 1. Trend in macronutrient intake among adults with diabetes in the United States between 1988 and 2004. (Data from Oza-Frank R, Cheng YJ, Narayan KMV, et al. Trends in nutrient intake among adults with diabetes in the United States: 1988-2004. *J Am Diet Assoc* 2009;109(7):1173-8.)

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