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Review

Food and Dietary Pattern-Based Recommendations: An Emerging Approach to Clinical Practice Guidelines for Nutrition Therapy in Diabetes

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ABSTRACT

Clinical practice guidelines (CPGs) for the nutritional management of diabetes mellitus have evolved considerably over the last 25 years. As major diabetes associations have focussed on the individualization of nutrition therapy, there has been a move toward a broader more flexible macronutrient distribution that emphasizes macronutrient quality over quantity. There is now a call for the integration of food- and dietary pattern-based approaches into diabetes association CPGs. The main argument has been that an approach that focuses on nutrients alone misses important nutrient interactions oversimplifying the complexity of foods and dietary patterns, both of which have been shown to have a stronger influence on disease risk than nutrients alone. Although cancer and heart associations have begun to integrate this approach into their dietary guidelines, diabetes associations have not yet adopted this approach. We provide a rationale for the adoption of this approach for The Canadian Diabetes Association (CDA) 2013 CPGs for nutrition therapy. The systematic review for the development of these guidelines revealed emerging evidence to support the use of vegetarian, Mediterranean, and Dietary Approaches to Stop Hypertension (DASH) dietary patterns as well as specific foods such as dietary pulses and nuts in people with diabetes. Popular and conventional weight loss diets were also found to have similar advantages in people with diabetes, although poor dietary adherence remains an issue with these diets. The CDA 2013 CPGs will support an even greater individualization of nutrition therapy for people with diabetes and appeal to a broader range of practice styles of health professionals.

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R É S U M É

Les lignes directrices de pratique clinique (LDPC) pour la prise en charge nutritionnelle du diabète sucré ont considérablement évolué au cours des 25 dernières années. Alors que les principales associations de diabète ont mis l'accent sur l'individualisation de la thérapie nutritionnelle, on a assisté à une tendance vers une plus grande et plus souple distribution des macronutriments qui met en évidence la qualité macronutritionnelle par rapport à la quantité. Un appel à l'intégration des approches fondées sur les types d'alimentation et les régimes alimentaires aux LDPC de l'association de diabète est maintenant lancé. Le principal argument a été qu'une approche qui met l'accent sur les nutriments seuls omet les importantes interactions nutritionnelles en simplifiant trop la complexité des types d'alimentation et des régimes alimentaires, qui ont tous deux démontré une plus forte influence sur le risque de maladie que les nutriments seuls. Bien que les associations du cancer et des maladies du cœur aient commencé à intégrer cette approche à leurs lignes directrices sur l'alimentation, les associations de diabète n'ont pas encore adopté cette approche. Nous justifions l'adoption de cette approche sur la thérapie nutritionnelle lors de la mise à jour des LDPC 2013 de l'Association canadienne de diabète (ACD). La revue systématique de l'élaboration de ces lignes directrices a révélé des données scientifiques émergentes en mesure d'appuyer l'utilisation des régimes alimentaires végétarien, méditerranéen et DASH aussi bien que des aliments spécifiques comme les légumineuses et les noix chez les personnes ayant le diabète. Les régimes amaigrissants populaires et courants ont également présenté des avantages similaires chez les personnes

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ayant le diabète, bien que la mauvaise observance de ces diètes demeure un problème. Les LDPC 2013 de l'ACD appuieront une individualisation encore plus grande de la thérapie nutritionnelle chez les personnes ayant le diabète et feront appel à un éventail plus large de styles de pratique des professionnels de la santé.

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Introduction

Clinical practice guidelines (CPGs) for the nutritional management of diabetes mellitus have evolved considerably over the last 25 years. As no one macronutrient profile has been shown to be optimal in the nutritional management of diabetes, major diabetes associations have moved away from recommending a narrow macronutrient (carbohydrate, fat and protein) distribution to a broader more flexible macronutrient distribution that allows for greater individualization of nutrition therapy based on the values, preferences, abilities and treatment goals of the patient. For example, the Canadian Diabetes Association (CDA) recommended, as a percentage of total energy, a macronutrient distribution of 55% carbohydrate and 30% fat in 1998 (1) progressing to 50%–55% carbohydrate, ≤30% fat and 15%–20% protein in 2003 (2) and 45%–65% carbohydrate, <35% fat and 15%–20% protein in 2008 (3). A similar evolution has been seen in the CPGs of the other major diabetes associations including those of the American Diabetes Association (ADA) from 1986 to 2008 (4–7) and the European Association for the study of diabetes (EASD) from 1995 to 2004 (8–10). The increasing flexibility in the recommendations has largely been facilitated by an increasing emphasis on macronutrient quality over quantity: glycemic index and soluble fibre content for carbohydrate, degree of unsaturation and chain length for fat, and plant versus animal sources for protein. There is now a push to integrate food and dietary pattern-based approaches into diabetes association CPGs. This review will provide a background and rationale for making this shift for the CDA 2013 update of the CPGs for nutrition therapy (11). It will also provide a brief summary of the systematic reviews of food and dietary pattern-based approaches used in the development of the CDA 2013 update of the CPGs for nutrition therapy (11).

The Need for Food and Dietary Pattern-Based Guidelines

For more than a decade, there has been a call for greater integration of food and dietary pattern-based approaches in dietary guidelines for chronic disease (12–20). A number of rationales have been proposed (Table 1). Chief among them has been the inability of nutrient-based guidelines to address adequately nutrient interactions. Foods contain variable combinations of macronutrients and micronutrients (vitamins, minerals, trace elements, etc.), as well as non-nutrient components such as flavonoid antioxidants, phytochemicals, and antinutrients (e.g. components of food that reduce bioavailability of nutrients). There are also important interactions derived from the methods of production, processing and preparation; food structure; and the frequency, timing, dosing and duration of exposure. A reductionist approach to nutrition research that focuses on nutrients in isolation of these factors oversimplifies the complexity of foods and dietary patterns and is an important source of the heterogeneity in the evidence, precluding definitive recommendations. Evidence from controlled feeding trials and prospective cohort studies have demonstrated that the additive and synergistic effects of these multiple factors as derived from different foods and dietary patterns influence disease risk to a much greater extent and more consistently than single nutrients alone (12). For example, diets high in vegetables and fruits have been consistently, strongly

associated with lower chronic disease risk (18–20), whereas the same cannot be said for the antioxidants isolated from these foods (21). Healthy foods such as vegetables and fruits also have the ability to displace less healthy foods in the diet. Another advantage may be to avoid some of the pitfalls of interpretation that have occurred with nutrient-based approaches, including the replacement of fat with refined (high glycemic index) carbohydrate to achieve fat reduction targets (12). It is argued, therefore, that a focus on foods and dietary patterns increases the likelihood of consuming a healthier mix of nutrients, thereby decreasing chronic disease risk (12).

Historical Perspective

Historically, dietary guidelines have taken a nutrient-based approach, an approach which was aimed first at preventing nutrient deficiencies and later both nutrient deficiencies and chronic disease in the general population. This approach requires that scientific evidence is used to establish nutrient requirements and then these requirements are translated into food-based choices for the general population. Since 1942, Canada's Food Guide in its various iterations has taken this approach (22). The same has been true for chronic disease dietary guidelines, where the onus has been on the health professional to translate nutrient-based targets into food-based counseling recommendations. The concept of true "food-based" dietary guidelines, in which health outcomes are linked directly to food choices and consumption patterns in the context of food production, preparation, processing and development (novel and functional foods), as well as environmental, socio-economic and cultural factors, was first defined by a Food and Agricultural Organization (FAO) and World Health Organization (WHO) working group in a 1998 report (13). A framework was provided to establish the scientific basis and processes for the development and evaluation of food-based

Table 1
Proposed rationale for food and dietary pattern-based guidelines (12–20)

1. Foods and dietary patterns represent more than just a collection of nutrients.
2. Nutrients interact differently when presented as foods. Methods of production, processing and preparation; food structure; and the frequency, timing, dosing, and duration of exposure influence the nutritional value of foods.
3. Unlike nutrients, foods and dietary patterns have social, cultural, ethnic and family aspects.
4. Specific foods and dietary patterns are associated with a reduced risk of specific chronic diseases.
5. Science has not been able to identify completely the specific nutrient and nonnutrient components involved in the protective effects of foods in chronic disease. The mechanism may involve a single component, but it more likely involves a combination of components or the displacement of other foods and their components.
6. The potential biological functions and health outcomes of many components of food have not been identified.
7. A focus on individual nutrients oversimplifies the complexity of foods and dietary patterns leading to inconsistency in the interpretation of the scientific evidence and misperceptions among the public.
8. A focus on foods and dietary patterns increases the likelihood of consuming a healthier mix of nutrients.
9. A focus solely on nutrients may lead to an unhealthy dietary pattern.
10. Food and dietary pattern-based guidelines facilitate the translation of knowledge to health professionals, patients and the general public.

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