

Diet for the Management of Patients With Chronic Kidney Disease; It Is Not the Quantity, but the Quality That Matters



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YOU ARE WHAT you eat. The American nutritionist Victor Lindlahr made famous this expression in the 1930s during his radio series on food and health. Lindlahr was a strong believer in the idea that food controls both health and disease and that quality matters over quantity. Such is the premise that governs the Science of Nutrition and that many readers of this *Journal* surely also follow. The potential role of the food and nutrition is far more complex than delivering a combination of nutrients, and public health recommendations for primary prevention of chronic diseases have gradually moved from a single-nutrient focus to whole foods and dietary patterns, particularly recommending plant-based patterns.

On the other hand, traditional dietary management of chronic kidney disease (CKD) focuses predominantly on the quantity within the diet of energy, protein, and the restriction of single micronutrients, with little, if any mention of dietary quality. There is also a tendency to restrict the intake of fruits and vegetables to prevent diet-induced hyperkalemia. It should come as no surprise that the quality of the diet of CKD patients is suboptimal.¹⁻⁴ This may be explained by a myriad of factors, including financial and social barriers often linked to CKD, an emphasis on restriction of sodium, potassium, and phosphorus at the expense of compromising overall diet quality,⁵⁻⁷ and simply global dietary changes toward western diets, with convenience, fast, and ultra-processed foods. In the recent years, through observational studies, we are learning that dietary quality may also influence the fate of patients with CKD. Such studies explore the synergistic effects of food and how the nutrients within that pattern of eating relate to health outcomes. Results at times counter what can be thought of as the “renal diet,” pointing that dietary quality may not necessarily be aligned with the traditional approach.

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In this issue of the *Journal*, we are presented with a large, prospective cohort by Smyth et al.,⁸ exploring in over half a million community-dwelling US adults, the association between a range of dietary patterns and the composite outcome of renal-related death, and dialysis commencement over 14 years of follow-up. The authors studied diet quality through well-established dietary patterns, such as the Healthy Eating Index, Mediterranean Diet Score, and Dietary Approaches to Stop Hypertension scores. A consistent finding is that individuals adhering to any of these healthy dietary patterns experienced reduced hazards of the composite outcome. The reader will appreciate, however, that common features of these dietary patterns are the scoring of a higher intake of fruit, vegetables, legumes, and whole grains as a healthful dietary pattern and the scoring of increased intake of red meat, saturated fat, and processed foods (high in added sugars and/or sodium) as an undesirable pattern.

Through the example of the Mediterranean Diet (MeD), we explore some of the possible benefits of certain foods and nutrients that are currently not considered by our renal nutrition guidelines. MeD reflects a diet rich in high-quality fats (unsaturated), fruits, vegetables, and legumes, and a diet that promotes moderate wine consumption. MeD has shown to reduce the risk of cardiovascular events in community-dwelling individuals in the seminal PRE-DIMED randomized controlled trial.⁹ In observational studies, adherence to MeD has been associated with improved survival and slower end-stage kidney disease progression in individuals with CKD.^{10,11} MeD typically contains a high intake of long-chain omega 3 fatty acids from fish and monounsaturated fatty acids from vegetable oils, namely olive oil, both with well-established cardioprotective and vascular-protective properties.¹² Fish consumption has demonstrated, among other things, to preserve renal function, reduce inflammation, and improve lipid profile in CKD patients.¹³⁻¹⁶ Besides anti-inflammatory and antioxidant effects of extra virgin olive oil for CKD patients, it may give further benefits by helping to induce motility and reduce the rates of constipation.¹⁷ Finally, moderate wine intake is another feature of MeD that has been suggested in epidemiological studies to retard end-stage renal disease progression^{18,19} and via the provision of resveratrol, a potent phenolic compound, to exert anti-inflammatory effects in CKD patients.^{11,20} MeD is also rich in fruits, legumes, and vegetables. These are sources of dietary fiber, with likely numerous therapeutic benefits in CKD,

particularly its role in targeting the gut microbiota²¹ and reducing uremic toxin production as well as the risk of mortality and end-stage renal disease progression.^{19,22,23} Increasing fruit and vegetable intake also conveys vitamins and antioxidants, with its purported benefits and typically deficient in the CKD patient.²⁴ Finally, increasing fruit and vegetable intake presents provocative potential for prevention of metabolic acidosis, with parallel benefits for blood pressure and weight control compared with a prescription of sodium bicarbonate.²⁵ However, there is the concern for high intakes of potassium-containing foods and risk of hyperkalemia in individuals with reduced kidney function and often consuming inhibitors of the renin-angiotensin-aldosterone system.

The review article by St-Jules et al.²⁶ in this edition of the *Journal* debates precisely this dilemma and argues that a plant-based diet, rich in potassium, may still be a viable option in kidney disease. The authors provide a thought-provoking review of potassium homeostasis, relationship between intake and serum status, and important reflection on theoretical bioavailability of potassium. They argue that the evidence base for potassium restriction by targeting plant-based sources is surprisingly weak. Also, the presence of potassium-containing additives, with increased bioavailability presents ambiguity around not only the potassium content of the modern food supply but also its impact on serum potassium levels. Parallels can be drawn between the impact of advances in food production, shift to convenience options, and degree of high bioavailability inorganic phosphorous in the food supply.^{27,28}

These 2 studies make us rethink the notion of restricting fruits and vegetables in CKD patients, that restriction may compromise dietary quality and prompt other nutritional deficiencies. Although an exciting working hypothesis, there is however much to be understood before changing clinical practice. As St-Jules et al.²⁶ argue, we need to provide real evidence on the risks or benefits of this practice and not only assume old traditions. A personal reflection is that evidence on dietary patterns and CKD comes to date from large community-based registries such as that by Smyth et al.⁸ where glomerular filtration rate is estimated from serum creatinine. Prospective cohorts assessing dietary quality in referred CKD patients or in patients undergoing dialysis therapies are to date virtually nonexistent.^{29,30} We feel it is timely to prioritize a better understanding on dietary quality versus quantity for both primary and secondary prevention of CKD. As societies and dietary habits evolve, our evidence and recommendations should adapt and respond to such changes. We hope that these interesting articles nurture both discussions and actions.

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