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# One size does not fit all:

## Nutrition strategies for people with diabetes

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**Abstract:** Several nutrition strategies and eating patterns can help support self-management among persons with diabetes. This article details the effectiveness of popular eating patterns and nutrition strategies, as well as the role of nurses in facilitating informed patient choices and decisions.

**Keywords:** A1C, diabetes, eating patterns, glucose control, nutrition strategies, type 1 diabetes, type 2 diabetes

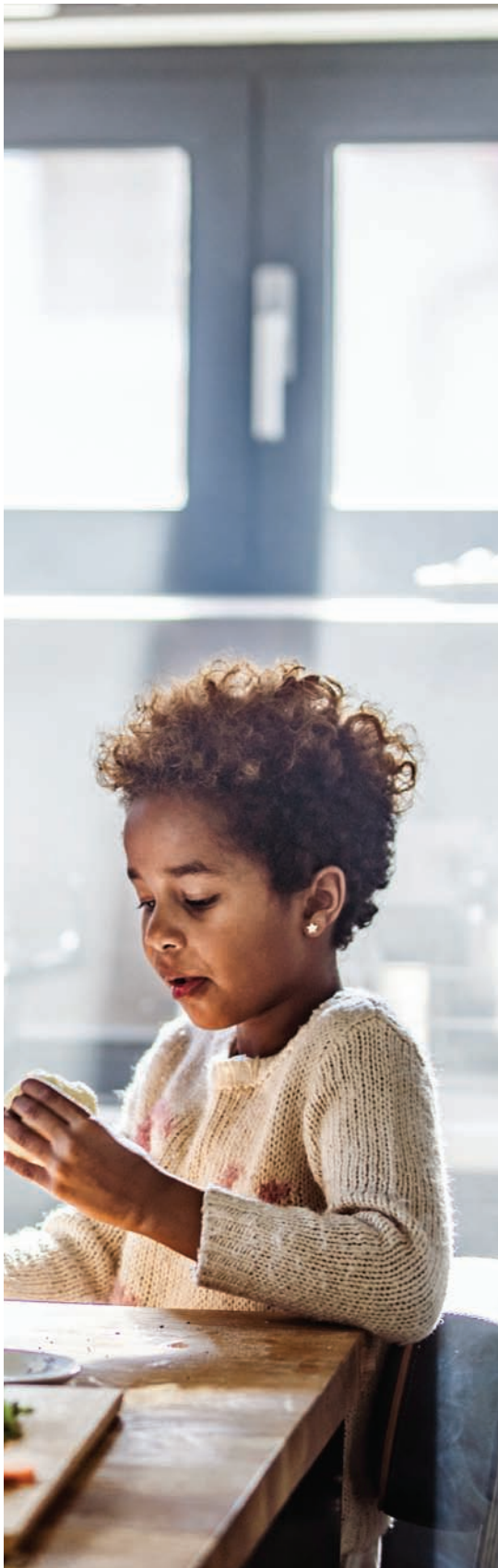
THE ABUNDANCE of trendy diets promoted through magazines, websites, and TV can easily confuse people living with diabetes and prediabetes. Hearing about diets seemingly available to solve every ailment, many of these individuals ask their nurses and healthcare providers about their best options. Although healthcare professionals were once taught “diabetes diets,” such as the exchange diet (where foods are clustered into groups based on their carbohydrate content), as a gold standard, no diabetes-specific diet is currently recommended.<sup>1-3</sup> Instead, nurses and other healthcare professionals can provide education about a variety of effective meal patterns and nutrition strategies based on guidelines from the American

Diabetes Association (ADA). This article details the efficacy and implementation of several popular nutrition strategies and eating patterns adults may choose to manage their diabetes.

### Background

A diabetes diagnosis does not change a person’s food preferences or nutrient needs. Like everyone else, people with diabetes still require carbohydrates, proteins, fats, vitamins, and minerals. However, they need to learn and understand how different foods affect their blood glucose levels and how to balance their diabetes medications and other factors with their meal patterns and food choices.

The ADA recommends a patient-centered, collaborative approach for



diabetes care and self-management, including the development of a personal meal plan. Patient-centered care is “care that is respectful and responsive to individual patient preferences, needs, and values and that ensures that patient values guide all clinical decisions.”<sup>4,5</sup>

The healthcare team should collaborate with patients on decisions related to diabetes treatment and self-management, including nutrition. As part of that team, nurses should use patient-centered strategies and empowering language, which refers to “a person-first, strengths-based approach” to communication, when providing care and education.<sup>6,7</sup> These ensure patient engagement, knowledge, and shared decision-making; support self-determined action plans; and provide ongoing support.<sup>7</sup>

The goal of medical nutrition therapy (MNT) for adults with diabetes is to promote and support healthful eating patterns to improve overall health, achieve and maintain weight goals and treatment targets, and delay or prevent complications. Healthcare professionals providing MNT should address their patients’ personal preferences, existing barriers, and willingness and ability to make different food decisions to maintain the pleasure of eating. When providing nutrition education, nurses should use patient-centered messages, provide practical tools to choose and implement eating patterns and plans, and only suggest limiting food choices when indicated by scientific evidence.<sup>8</sup>

### Nutrition recommendations

In 2019, a multidisciplinary expert group was convened by the ADA to review the latest evidence and publish a consensus that included nutrition recommendations for people with diabetes and prediabetes.<sup>1</sup> The report described factors to be considered when collaborating with



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patients to choose and develop eating patterns, or the total quantity of food and beverages consumed during a specific time period.<sup>9</sup> These included cultural and family preferences, cost and availability, and health concerns other than diabetes or prediabetes.

Because everyone is affected differently by these factors and there is no standard diet, adults with diabetes need to create personal meal plans that balance with medications and the other aspects of their self-management.<sup>1</sup> Although every person’s meal plan will be unique, basic nutrition recommendations are consistent for all adults with diabetes and prediabetes regardless of their treatment plans and targets.

Every 5 years, the US Department of Agriculture (USDA) releases updated Dietary Guidelines for Americans to guide nutritious meal choices

and sustain health. These are considered universally appropriate. Healthy eating patterns typically include fruits, vegetables, proteins, dairy, grains, and oils and limit saturated and trans fats, added sugars, and sodium.<sup>9</sup> These correlate to the ADA consensus, which recommends non-starchy vegetables and whole foods over processed foods, while limiting added sugars and refined grains.<sup>1,4</sup>

For people with diabetes and prediabetes, the ADA recommends meal patterns that include a variety of foods to meet micronutrient needs. With the exception of people with documented vitamin or mineral deficiencies, no specific nutritional supplements are recommended.<sup>1</sup>

The latest ADA guidelines emphasize patient-centered diabetes education and ongoing support, building on previous recommendations regarding the role of macronutrients such as proteins, fats, and carbohydrates in diabetes management. They describe nutrition strategies and eating patterns that align with eating preferences, improve cardiovascular risk factors, and help meet the weight and other personal goals of adults with diabetes and prediabetes.<sup>1</sup>

### Nutrition strategies and eating patterns

The strategies below are commonly used by adults with diabetes and are effective for reaching and sustaining personal goals and treatment targets. Each of these is an equally acceptable option for managing diabetes.<sup>8</sup> Unlike diets that focus on restrictions, these strategies support more flexible food choices:<sup>2</sup>

- **Healthful eating** incorporates fruits, vegetables, whole grains, lean protein, and low-fat dairy to create balanced meals and snacks.

- **Portion control** utilizes serving sizes, calories, and the nutrient content of different foods to manage the amount consumed.

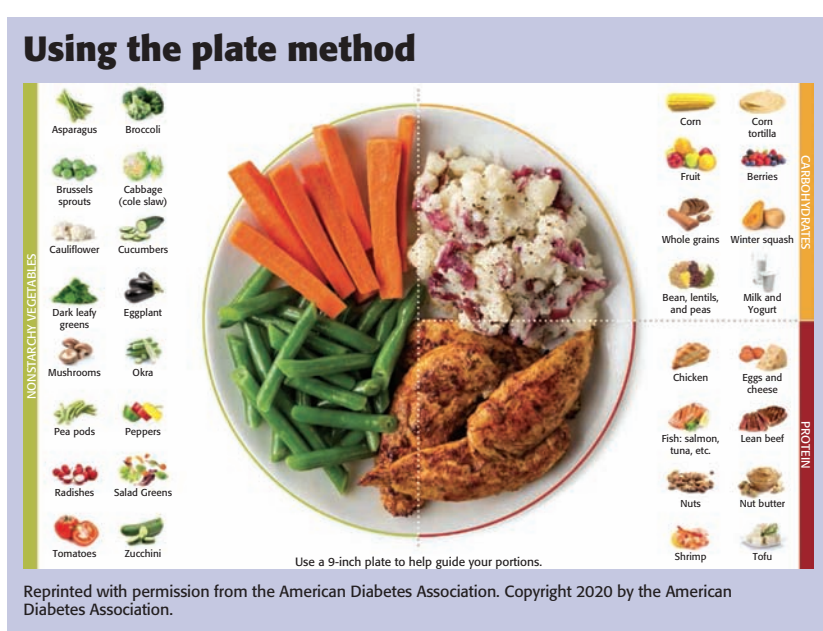
- The **plate method** is often used during lunch and dinner and is helpful in managing carbohydrate choices, portion sizes, and blood glucose levels. In this approach, the plate is divided into three sections. Half is filled with nonstarchy vegetables; one quarter is designated for starches or carbohydrates; and the other is for protein. A glass of water or milk and a piece of fruit may be added to complete the meal. (See *Using the plate method*.)

- **Carbohydrate counting** tracks the total quantity of carbohydrates in a meal or snack by measuring or estimating the portion size using nutrition labels or carbohydrate resources, such as websites, books, handouts, and menus.

Many people who are not taking diabetes medications find healthful eating, portion control, and the plate method to be useful. Similarly, those taking oral antidiabetes medications and/or incretin mimetics such as glucagon-like peptide-1 analogues exenatide and liraglutide, which increase the secretion of glucose-dependent insulin and inhibit glucagon secretion, may use the plate method as well.<sup>10</sup> People who take fixed daily insulin and/or premixed insulin may find consistency in insulin administration, mealtimes, and carbohydrate intake to be effective. Those using flexible insulin therapies, including premeal rapid, or fast-acting insulin, often count carbohydrates to determine the appropriate dose for each meal.<sup>2</sup>

Based on personal experiences and preferences, some may prefer more specific eating patterns. The ADA consensus outlined several popular eating trends, as well as the corresponding research and evidence related to health outcomes among persons with diabetes or prediabetes. The role of nurses and healthcare professionals is to support patients in choosing or creating a plan they can use daily.

The well-researched **Mediterranean style** eating pattern emphasizes



plant-based foods such as vegetables, fruits, beans, nuts, and seeds; whole grains such as rice, oatmeal, wheat, rye, and bulgur; seafood; olive oil; and may include wine in moderate amounts (one drink per day or less for adult women and two drinks or less per day for adult men).<sup>1</sup>

Additionally, red meat, eggs, yogurt, and cheese may all be eaten in small amounts. Added sugars are rarely used in this eating pattern.<sup>1</sup> The benefits of the Mediterranean style eating pattern may include improved A1C and triglyceride levels and a reduced risk of major cardiovascular events.<sup>11,12</sup>

One 2018 study described the role of the Mediterranean style eating pattern in the primary prevention of prediabetes and the secondary prevention of long-term complications related to diabetes.<sup>13</sup> Another recent study demonstrated that four additional daily tablespoons of extra-virgin olive oil in combination with this eating pattern may delay the initiation of medications for glucose management for adults with type 2 diabetes.<sup>14</sup>

**Vegetarian** and **vegan** eating patterns are both plant-based diets.

Vegetarian patterns can include eggs or milk; vegan patterns do not. The health benefits may include a reduced risk of diabetes, weight loss, and decreased A1C and low-density lipoprotein cholesterol levels.<sup>1,15</sup>

Fiber-rich foods represent a major component of both eating patterns. Although fiber recommendations for people with diabetes or prediabetes are the same as those for the general population (14 g per 1,000 kcal), increased soluble fiber intake through foods (preferable) or supplements has been associated with lower fasting glucose and A1C levels.<sup>1,9,16</sup>

**Low- and very low-fat** eating patterns may also be plant-based and include lean proteins such as beans, fish, nonfat dairy, and egg whites. These eating patterns emphasize reducing fat consumption from nuts, seeds, dairy, meat, poultry, egg yolks, and oils. Low-fat eating patterns reduce fat intake to less than 30% of a person's total daily calories; very low-fat eating patterns further reduce this figure to less than 10%. The health benefits include a reduced risk of developing prediabetes or type 2 diabetes, decreased BP, and weight loss.<sup>1,17</sup>

**Low-carbohydrate** eating patterns include nonstarchy vegetables such as spinach, carrots, cucumbers, and salad greens. These are consumed with fats, oils, poultry, fish, eggs, nuts, and cheese. Some individuals may choose to eat fruit, while others may not. All other sources of carbohydrates are limited, including grains, cereals, sugar, and sugar-sweetened beverages (SSBs) and desserts. Low-carbohydrate eating patterns provide approximately 130 g to 200 g of carbohydrates for a total of 26% to 45% of daily caloric intake. The health benefits may include improved A1C levels, triglyceride levels, high-density lipoprotein cholesterol levels, BP, and weight loss.<sup>1,11,18</sup>

**Very low-carbohydrate** eating patterns include the keto diet in which an individual restricts carbohydrate intake to achieve nutritional ketosis.<sup>1</sup> *Nutritional ketosis* occurs when available glucose is inadequate and the body breaks down protein and fat stores for energy.<sup>19</sup> This differs from *diabetic ketoacidosis*, which occurs when insulin

activity is insufficient due to illness or an inadequate insulin dose, resulting in elevated blood glucose levels and acidic pH levels.<sup>20</sup>

The very low-carbohydrate eating pattern limits daily carbohydrates to less than 26% of the total caloric intake, between 20 g and 50 g. Fat is consumed to make up the caloric deficit of very low-carbohydrate eating patterns.<sup>1</sup> The health benefits are the same as low-carbohydrate eating patterns, but more research is needed to determine any long-term cardiovascular adverse reactions.<sup>21</sup>

Kidney health is a common concern of high-protein diets such as very low-carbohydrate and keto eating patterns, but a recent meta-analysis on renal function related to high-protein diets demonstrated no significant effect on kidney function markers, including estimated glomerular filtration rate and urinary albumin.<sup>22</sup>

**Dietary approaches to stop hypertension (DASH)** is primarily a plant-based eating pattern that includes

oils, low-fat dairy, and lean proteins such as nuts, beans, poultry, and fish. This approach also includes the reduced intake of red meat, sweets, SSBs, and saturated fats such as butter. Similar to the ADA consensus, the DASH eating pattern recommends whole foods over processed foods. Additionally, the sodium intake target is less than 2,300 mg per day. The health benefits include reduced BP, decreased risk of type 2 diabetes, and weight loss.<sup>1,23</sup>

**Intermittent fasting** is a popular approach due to its weight-loss potential. Fasts are loosely defined, lasting up to 2 days with a heavily restricted intake of less than 600 calories. These are typically followed by 5 days of unrestricted intake, which consist of 6 to 8 hours of unrestricted eating followed by 16 to 18 hours of no food or beverage calories. Some may choose to fast every other day instead, with one day on followed by one day off.<sup>1,24</sup>

The fasting method may cause weight loss, but no significant difference in A1C levels has been documented with fasting compared with nonfasting eating schedules.<sup>1,24</sup> Reductions in A1C levels (if any), weight, and medication doses are comparable between the 2-day fast and sustained low-calorie eating patterns.<sup>25</sup> For people who practice intermittent fasting, nurses need to emphasize the importance of more frequent blood glucose monitoring to detect hypoglycemia. Subsequent adjustments in medication doses and timing may be needed, particularly for those taking insulin and insulin secretagogues.<sup>1</sup>

## Nursing considerations

Nurses and other healthcare professionals need to educate patients regarding common principles among all the different eating patterns to ensure patients have the necessary information to make informed decisions about their eating patterns (see *Nutrition recommendations*).<sup>1</sup> Although

## Nutrition recommendations<sup>1,9</sup>

Below are nutrition recommendations from the ADA and USDA for creating a meal pattern.

- Include nonstarchy, fiber-rich vegetables such as asparagus, broccoli, cauliflower, green beans, carrots, and eggplant.
- Limit foods with added sugar such as breakfast cereal, flavored yogurt, SSBs, cookies, juice, and ice cream.
- Replace SSBs with water because SSBs may increase the risk of type 2 diabetes, weight gain, cardiovascular disease, renal disease, nonalcoholic fatty liver disease, and tooth decay.
- Limit foods with refined grains found in cookies, cakes, breakfast cereals, white bread, crackers, and white rice.
- Incorporate whole grains such as barley, oats, quinoa, and wild rice, as well as food with “whole wheat” or “whole grain” on the nutrition facts label.
- Choose whole foods such as fruits, vegetables, legumes, and whole grains over highly processed foods such as nonperishable prepackaged meals and snacks whenever possible.
- Incorporate foods that are personally pleasurable and meaningful.
- Limit alcoholic beverages to one drink or less per day for adult women and two drinks or less per day for adult men (one drink is equal to a 12 oz beer, a 5 oz glass of wine, or 1.5 oz of distilled spirits).<sup>1</sup> Those taking insulin and/or insulin secretagogues should be aware of delayed hypoglycemia after alcohol consumption and educated on the importance of glucose monitoring after drinking alcoholic beverages.

## Nutrition assessment questions<sup>1,27</sup>

The patient-centered questions below are designed to support patients in understanding their food choices and evaluating how these decisions impact their personal goals, treatment targets, and health outcomes. There are no correct or incorrect choices, and nutrition education ensures that patients have the knowledge to make informed decisions.

- What nonstarchy vegetables do you typically eat? Which could you add to your meal plan or eating pattern? What would help you to choose these more often?
- Which foods and drinks do you currently choose that contain added sugars? Which contain refined grains? What would help you choose these less often? What could you choose instead to incorporate more whole grains?
- Which foods that you currently choose are highly processed? What could you choose instead?
- What are your preferred beverages? How often do you drink SSBs? What could you choose instead?
- What foods are meaningful to you and your family and important to include in your eating pattern?
- How often do you use food to manage your stress, diabetes distress, or emotions?
- How often do you drink alcohol? Have you ever experienced low blood sugar after alcoholic drinks?
- How do you use your blood glucose monitoring results to make and evaluate your food choices?
- How do you use your BP monitoring and cholesterol levels to make and evaluate your eating patterns?

### Creating a self-management plan

- What questions or concerns do you have?
- What is currently working well for you?
- What is currently a struggle or is hard for you?
- What do you think is the most important goal for you to work toward? What would be a reasonable first step to get you started in reaching this goal? How will this step help you reach your treatment targets and personal goals? How can you maintain and build on this first step?
- What are some of your anticipated barriers?
- What kind of support do you need?

nutrition is traditionally viewed as the purview of registered dietitian nutritionists (RDNs), nurses can support patients in creating meal plans and eating patterns that improve their diabetes outcomes and overall health.

Nurses should educate patients about using meal plans and blood glucose logs to understand how different foods affect blood glucose levels and explain how to integrate other aspects of diabetes self-care, such as medication, healthy coping, and physical activity, into daily decision-making. Additionally, by asking patient-centered nutrition questions, nurses can better identify

knowledge gaps, provide education, and collaborate with patients in creating effective personal diabetes self-management plans (see *Nutrition assessment questions*).<sup>26,27</sup>

The ADA standards noted the importance of ongoing education and support for persons with diabetes and prediabetes.<sup>4,8</sup> Nurses play a major part in assessing a patient's immediate health and educational needs. They should ensure that their patients are referred for MNT with an RDN specializing in diabetes, as well as to a recognized or certified comprehensive diabetes self-management education support service or a certi-

fied diabetes care and education specialist.<sup>4,8,26</sup> Additionally, people with diagnosed prediabetes who are overweight or obese should be referred to an intensive lifestyle intervention program that incorporates patient-centered goal setting such as the Diabetes Prevention Program.<sup>1,4,26,28,29</sup>

## Improving long-term health

Because no single nutrition strategy or eating pattern is recommended for people with diabetes, nurses can support patients as they design plans based on their personal preferences and experiences with diabetes self-management, as well as other health concerns, responsibilities, and priorities. If the goals are not met, the plan needs to change, not the patient. By implementing a patient-centered approach that uses empowering language and provides the necessary referrals, nurses support people with diabetes and prediabetes to gain the knowledge, skills, and confidence to accept responsibility for their diabetes care. This includes coping with life stresses, diabetes distress (significant negative emotions caused by the burden of living with diabetes), and other emotions; collaborating with the healthcare team; making informed decisions; solving problems; and developing personal goals and action plans to enhance long-term health and quality of life.<sup>8</sup> ■

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