

Editorial

Role of Fruits, Vegetables, Spices, Cereals, Pulses, whole Grains in the Management of Diabetes

Mohsin Masud Jan

Editor

Diabetes is a chronic, silent killer disease that occurs either when pancreas does not produce enough insulin or when the body cannot effectively use the insulin.

According to International Diabetes Federation (IDF), Diabetes Atlas 2021 reports that 10.5% adult (20 to 79 years) has diabetes with half unaware that they are living with condition. Diabetes around the world in 2021 was 537 million adults and now-a-days 440 million people worldwide have diabetes over 90% have type 2 diabetes which is driven by Socioeconomic Demographic, Environmental and Genetic factors.

Diabetes has become a serious and increasing global health burden. An estimated 382 million people worldwide were affected by diabetes in 2013, and this number is expected to rise to 592 million by 2035¹. Consequently, diabetes is predicted to become the major cause of death and disability in the world by 2030^{2,3}.

According to IDF, 643 million people will have diabetes upto 2030 and 783 million upto 2045. Pakistan ranks 3rd in the world in diabetes.⁴ According to the World Health Organization (WHO), the number of diabetics will increase by 170%, by 2025.⁵ It is a condition difficult to treat and expensive to manage.⁶

It is important for a person with diabetes or pre-diabetes to understand how the foods, fruits and others they eat impact their blood sugars. A diet rich in fruits, vegetables, spices and their fibers significantly reduces the risk of type 2 diabetes, cardiovascular diseases, stroke and some type of cancer, obesity and alzheimer's disease. Researchers have found that dietary fiber reduces a diabetic's need for insulin, improves blood glucose control, lower blood cholesterol and fat level and also help with weight loss.

Fruits, vegetables, and dietary fibers are very important as part of the diet for health and nutrition. Eat more fruit and vegetables in the diet to provide vitamins and fiber as well as to help keep a balanced overall diet. Fruits and vegetables are very healthy and nutritious as they contain various healthy phytochemicals like vitamin C, provitamine A, minerals, dietary fibers, phytates, and so on. Spices are food adjuncts that have been used as flavoring and coloring agents and as preservatives, and have also been recognized to possess medicinal properties, and their use is seen in traditional systems of medicine for various human disorders, including diabetes.^{7,8}

Healthy eating is a cornerstone of healthy living – with or without diabetes. But if you have diabetes, you need to know how foods affect your blood sugar levels. It's not only the type of food you eat, but also how much you eat and the combinations of food types you eat.

A high fibre diet (40 grams per day but start slowly) may help control or prevent diabetes.

Choosing nutrient-rich foods can help you feel full without raising your blood sugar too much if you have diabetes. This can include avocados, chickpeas, and almonds. When you have diabetes, it might be challenging to select healthful snacks. It's important to select snacks that are rich in fibre, protein, and good fats. Your blood sugar levels will be better managed with the aid of these nutrients. Snacking on nutrient-dense foods that advance general health is also crucial. Here we list down foods that people with diabetes can eat. There are five best fruits for diabetics which are apple, guava, orange, papaya and melon because these fruits have high fibre and low sugar. In the cereals with lowest, glycemic index that's 55 or less in the whole grains barley, oats, millet, corn, whole wheat flour, oat flour and brown rice. Best pulses for diabetes chickpeas, kidney beans (Rajma), Bengal gram (dal chana), green gram (dal moong) and black gram (dal urad).

The glycemic index identifies foods that increase blood sugar rapidly. This handy tool allows one to favor foods that have a much lesser effect on blood sugar. High-glycemic-index foods include sugar itself, white potatoes, most wheat flour products, and most cold cereals. Glycemic Index (GI) is a scale that ranks foods by how much they raise blood sugar levels. The higher the glycemic index of a food, the more it raises the blood sugar levels. The goal is to include low GI foods in the diet. These include whole grain foods, fruits, and vegetables. High-protein foods (i.e., meat, poultry, fish, eggs, peanut butter, nuts) have a low GI; choose low-fat / lean-protein foods.^{9,10}

Best dry fruits for diabetic are apricots, dates, figs, prunes, almond, walnut, etc.

Hard-boiled eggs are a healthy snack for people with diabetes. Their protein content really makes them shine. One large hard-boiled egg provides 6.3 grams, which is helpful for diabetes because it helps prevent your blood sugar from rising too high after you eat.

For several reasons, yoghurt and berries make a great diabetic-friendly snack. First, the antioxidants in berries may lessen inflammation and shield cells in the pancreas, the organ in charge of secreting hormones that lower blood sugar levels, from damage. Berries are also a fantastic source of fibre. A 1-cup (150 grammes) serving of blueberries, for instance, has 3.6 grammes of fibre, which helps slow digestion and maintain blood sugar levels after meals. Another benefit of yoghurt is that it lowers blood sugar levels. This is mainly because of the probiotics it has, which may enhance your body's capacity to metabolise sugar-containing foods.

Almonds are very nutritious and convenient to snack on. A 1-ounce (28-gram) serving of almonds provides

over 15 Trusted Source vitamins and minerals, including 0.6 milligrams or 27% of the recommended daily intake for manganese, 76.5 milligrams or 18% for magnesium and 0.32 milligrams or 25% for riboflavin. Research has shown almonds may help control blood sugar in people with diabetes. In one study, 58 people who included almonds in their diets every day for 24 weeks experienced a 3% decrease in their long-term blood sugar levels.

Chickpeas are used to make hummus, a creamy spread. When eaten with raw vegetables, it is delicious. Hummus and vegetables both include plenty of fibre, vitamins, and minerals. In addition, hummus offers a negligible quantity of protein and fat. People with diabetes who have trouble controlling their blood sugar may benefit from all of these characteristics.

If you have diabetes, snacking on avocado may help manage your blood sugar levels. The high fiber content and monounsaturated fatty acids in avocados make them a diabetes friendly food. These factors may prevent your blood sugar from spiking after a meal.

A key to many diabetes management plans is learning how to count carbohydrates. Carbohydrates often have the biggest impact on your blood sugar levels. For people taking mealtime insulin, it's important to know the amount of carbohydrates in your food, so you get the proper insulin dose.

Plan for every meal to have a good mix of starches, fruits and vegetables, proteins, and fats. Pay attention to the types of carbohydrates you choose.

Too little food in proportion to your diabetes medications – especially insulin – may result in dangerously low blood sugar (hypoglycemia). Too much food may cause your blood sugar level to climb too high (hyperglycemia). Inquire about how to best coordinate meal and medication schedules.

Sugar-sweetened beverages tend to be high in calories and offer little nutrition. And because they cause blood sugar to rise quickly, it's best to avoid these types of drinks if you have diabetes.

Physical activity is another important part of your diabetes management plan. When you exercise, your muscles use sugar (glucose) for energy. Regular physical activity also helps your body use insulin more efficiently. The more strenuous your workout, the longer the effect lasts and it can also improve your blood sugar.¹¹

In general, most adults should get at least 150 minutes a week of moderate aerobic activity. Aim for about 30 minutes of moderate aerobic activity a day on most days of the week.

Exercise, especially if you take insulin or medications that lower blood sugar. Exercise can lower your blood sugar levels even up to a day later, especially if the activity is new to you, or if you're exercising at a more intense level. Be aware of warning signs of low blood sugar, such as feeling shaky, weak, tired, hungry, lightheaded, irritable, anxious or confused.

Drink plenty of water or other fluids while exercising because dehydration can affect blood sugar levels.

Always have a small snack or glucose tablets with you during exercise in case your blood sugar level drops too low. Wear a medical identification bracelet.

If you take insulin, you may need to reduce your insulin dose before exercising and monitor your blood sugar closely for several hours after intense activity as sometimes delayed hypoglycemia can occur.

You may also need to adjust treatment if you've increased your exercise routine.

Insulin and other diabetes medications are designed to lower your blood sugar levels when diet and exercise alone aren't sufficient for managing diabetes. But the effectiveness of these medications depends on the timing and size of the dose. Medications you take for conditions other than diabetes also can affect your blood sugar levels.

REFERENCES

1. Guariguata L, Whiting DR, Hambleton I, et al Global estimates of diabetes prevalence for 2013 and projections for 2035. *Diabetes Res Clin Pract* 2014;103: 137–149.
2. Whiting DR, Guariguata L, Weil C, et al. IDF diabetes atlas: global estimates of the prevalence of diabetes for 2011 and 2030. *Diabetes Res Clin Pract* 2011; 94: 311–321.
3. Shaw JE, Sicree RA, Zimmet PZ. Global estimates of the prevalence of diabetes for 2010 and 2030. *Diabetes Res Clin Pract* 2010; 87: 4–14.
4. Kastorini CM, Panagiotakos BD. Mediterranean diet and diabetes prevention: Myth or fact? *World J Diabetes* 2010;1:65–7.
5. Verlangiere AJ. Fruit and vegetable consumption and cardio vascular mortality *Med Hypothesis*. 1985;16:7–15.
6. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes: Estimates for the year 2000 and projections for 2030 *Diabetes Care* 2004;27:1047–53.
7. Neff LM. Evidence-based dietary recommendations for patients with type 2 diabetes mellitus *Nutr Clin Care*. 2003;6:51–61.
8. Nitithan S, Komindr S, Nichachotsalid A. Phytate and fiber content in thai fruits commonly consumed by diabetic patients *J Med Assoc Thai* 2004;87:1444–6.
9. Fadupin GT, Keshinro OO. Factors influencing dietary compliance and glycaemic control in adult diabetic patients in Nigeria *Diabetes Int* 2001; 11:59–61.
10. Fadupin GT, Keshinro OO, Sule ON. Dietary recommendations: Example of advice given to diabetic patients in Nigeria *Diabetes Int* 2000;10:68–70
11. Thomas DE, Elliott EJ, Naughton GA. Exercise for type 2 diabetes mellitus *Cochrane Database Syst Rev*. 2006;3:CD002968