



Diabetes Life Lines

Diabetes and the Brain

Did you know that diabetes can affect your brain? While scientists haven't yet figured out all of the connections between diabetes and brain health, it appears that it may be related to blood flow, blood sugar levels, and inflammation.¹

Diabetes can affect any part of your body where blood flows, and your brain is full of blood vessels. You already know that high blood sugar and high cholesterol can damage your blood vessels, making them stiffer and narrower. This makes it harder for the blood to flow and carry important nutrients like oxygen to the brain.

Without the nutrients flowing properly to the brain, thinking and memory problems (also called cognitive dysfunction) may occur. This lack of nutrients may also lead to changes in what's called the blood brain barrier resulting in issues with how the brain can use sugar and remove wastes.² The blood brain barrier is like a fence that keeps harmful substances from reaching the brain.

Its job is to keep the brain safe by keeping the harmful things, like toxins and wastes, out.³ The changes in blood glucose levels that happen with diabetes have been shown to change the blood brain barrier's ability to do its job. In other words, high or low blood sugar can affect what is being allowed into the brain which can cause problems with the brain's cells.⁴ Together, issues with blood flow and high blood glucose can break down the blood brain barrier.¹

Additionally, people with type 2 diabetes often have abnormal levels of specific proteins and cells that are normally helpful to the brain.⁵ When these build up, they can cause inflammation or an immune response. Inflammation is good when you have an injury or short term (acute) illness like a cold or flu. When inflammation doesn't go away, it is called chronic inflammation and can be bad for your brain health.⁵

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Together, these changes increase your chances of losing some thinking ability (cognitive function), which can eventually lead to some types of dementia and/or Alzheimer's disease.¹ The good news is that there are some things you can do to lower your chances of brain problems.

What you can do to reduce your risk

Remember, your hemoglobin A1C (HbA1C) is a test used to measure blood glucose levels in the past 2-3 months. HbA1C provides a picture of how well someone with diabetes is controlling their blood sugar over time. Studies show that higher HbA1C is related to greater risk for decline in cognitive function.² Being overweight or obese, having high cholesterol and/or triglycerides, high blood pressure, and depression can also increase your risk for cognitive decline.² The things you already do to manage your diabetes, weight, and heart health are the same things that can help you decrease your chances of cognitive problems like dementia and Alzheimer's disease:

Eat a brain healthy diet. Follow your meal plan provided by your health care provider or use the plate method to eat healthy, balanced meals. Omega 3 fats: Eat at least two servings of cold-water fatty fish, like salmon, tuna, or mackerel, each week. If you don't eat fish, look for other sources of omega-3, like walnuts, ground flax seed, and chia seeds. Talk to your doctor about supplements if you don't eat these foods.

Take medications and insulin as prescribed. Take all diabetes, heart health, insulin and other medications are prescribed by your doctor. These are essential in keeping things like blood glucose, cholesterol, and triglycerides in the healthy range.

Find movement you love. Getting regular exercise decreases your chances of getting many chronic diseases including dementia and Alzheimer's. Exercise can also stimulate your mind. Why not try playing a game of pickle ball or tennis with a friend? Or go for a walk in a new location that stimulates your brain?

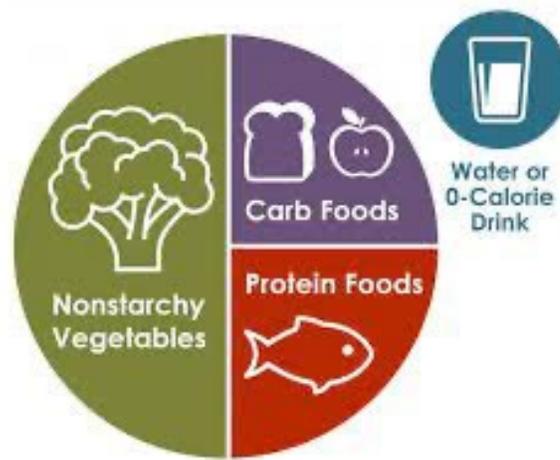
Stay socially connected. Social connections and activities that challenge your brain help flex your mental muscles. Find ways to connect with friends, neighbors, or family, read, and play games, even if it's over the phone or computer.

While more research is needed to understand the "why" of the connection between diabetes and brain health, we know a lot about the "how" to decrease our chances of brain problems. And the best part? The things that will help protect your brain also help protect the rest of you! Try these simple steps today to improve your overall health and to help protect your brain for a long healthy life.

Nutritious Menu Choices Made Easy

Meals prepared away from home make up about 50% of Americans' food budget.⁶ Quick-service and fast casual restaurants as well as food delivery services like Uber Eats are becoming more popular. This increase in availability of food prepared away from home has shaped our food choices. With so many options to choose from, such as traditional sit-down restaurants, drive-thrus, take-out, heat and eat meals from grocery stores, and delivery, learning to make balanced food choices has become more important than ever.

Meals prepared away from home tend to be higher in calories and lower in overall nutritional value.⁷ They are higher in sodium, saturated fat, and added sugar, which most Americans already get too much of. They also tend to be lower in fiber, calcium, and iron than meals prepared at home. Cooking at home is associated with higher fruit and vegetable intake and an overall healthy meal pattern like the DASH diet or Mediterranean eating pattern. But preparing all meals at home may not be practical. Learning to read menus and identify healthy options is key to making nutritious food choices when eating out.



Tips for making the most of your meal. Planning ahead can help you make sure you are fueling your body with balanced meals. Here are a few tips to help you along the way.

Plan your plate: Make sure your meal contains lean or plant protein, non-starchy vegetables, and whole grains. We can use a visual like the Diabetes Plate Method (pictured above) when ordering food just like we do when planning a meal at home.⁸

Non-starchy vegetables: Asparagus, broccoli, cauliflower, Brussels sprouts, carrots.

Protein: Chicken, turkey, eggs, salmon, cheeses, beans, lentils, edamame, tofu.

Carbohydrate Foods: brown rice, quinoa, squash, peas, potato, beans, fruits, yogurt.

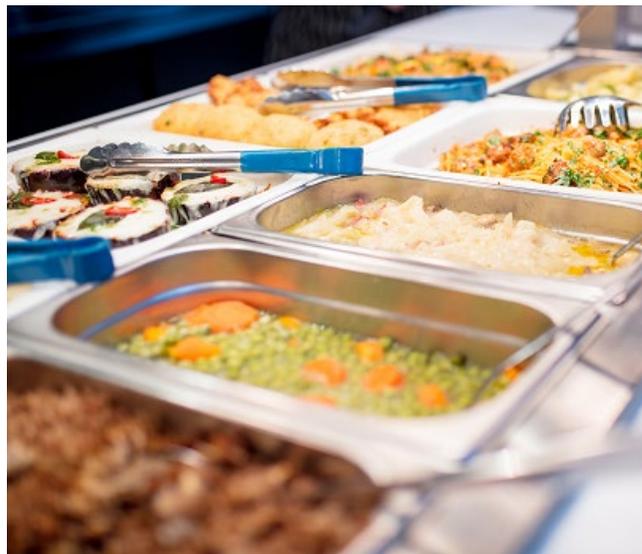
Look up the menu ahead of time: Chain restaurants with 20 or more locations must display the calorie content of their menu items.⁹ Some examples include Chick-fil-A, Wendy's, Subway, Chipotle, Starbucks, McDonalds, Golden Corral, and Olive Garden. These restaurants must post calories on menu or signs in the restaurant. Ask a worker if you do not see it. Most major restaurants also post detailed nutrition information online. Food tracking apps may also be sources of nutrition information, but you still need to compare them with online or manufacturer information. Visiting a website prior to your meal gives you more awareness of the fat, carbohydrate, and sodium content of your meal.

Choose your meal before you arrive: If you know what you want ahead of time, you will be less tempted to make unhealthy choices.

Choose carbohydrates wisely: Look for whole grain or whole wheat options. Ask for any "extras," like chips or rolls, to be served along with your meal instead of before the meal. Seeing food on your plate can help you avoid overeating or filling up before your meal arrives.

Moderate your alcohol intake: If you drink, limit to 1 drink per day for women and 2 drinks per day for men.

Food pairing: Pair your carbohydrates with protein and fat.



For example, instead of ordering buttered noodles alone, top them with a serving of protein and a side of non-starchy vegetables.

Share or split a meal: Share half with a friend or ask for a to-go box so you can save your food for another meal.

Scan the buffet line first: Look at everything offered before you build your plate. Take only items you truly enjoy. Try to have a balance of lean protein, non-starchy vegetables, and whole grains.



Water Enhancers

Water needs are unique to each person. They vary based on factors such as age, gender, health status, activity level, and climate. However, there are general guidelines for how much water we should take in each day. Recommended water intake is 3.7 liters (125 ounces) each day for men and 2.7 liters (91 ounces) each day for women aged 19 and older.¹⁰

For example, someone who is younger, physically active, or working outdoors in warm weather may need more water. A person who is older, less active, or spends most of the day indoors is likely to need less water. Medical conditions, like congestive heart failure and kidney disease, influence individual fluid needs.

Why do we need water? Much of our body is made of water. We need it to think clearly, maintain our temperature, get rid of bodily wastes, and cushion our joints.¹¹

Plain water is a great choice because it provides the hydration we need without any added sugars. But we don't have to meet the recommendation with plain water alone. Don't forget, we consume water not only from drinking plain water, but also from other beverages and foods with high water content, like fruits, vegetables, smoothies, or soups. Other beverages, like plain (unsweet) coffee or tea, seltzer or sparkling water, and low-fat milk or fortified milk alternatives, can help us meet our water needs.¹¹

It is estimated that we get about 80% of our water from beverages and about 20% from foods. This is just one more reason to fill half your plate with fruits and vegetables.

What to do when we feel we can't drink another drop?

- Try playing with temperature and see whether you enjoy your water icy cold, room temperature, or even a bit warm (in some cultures, drinking warm water is the norm).
- Use a straw, add ice cubes, or grab a favorite water bottle to track your progress.
- Slices of fresh fruits and vegetables add subtle flavor; think citrus fruits, berries, cucumbers, or sprigs of fresh herbs like basil or mint.

Water enhancers are food products that add flavor to water with very few added sugars or calories. They often rely on non-nutritive sweeteners and natural flavors like ascorbic acid. They are quick and portable. You can easily keep some stashed at work or in your car. They come in forms including liquid drops, powders, or ready-to-drink/pre-mixed bottles. You can pick the best one for you based on flavor, the type of sweetener used, and any additives that may be included. If you are not sure which is the best option for you, check with your medical provider.

Product name	Form	Sweetener(s)	Additives/extras	Cost
Crystal Light	Powder	Aspartame	Some with added caffeine	\$2.99/10 servings \$0.20 per serving
Hint	Ready-to-drink	None	None	\$7.99/6 servings \$1.33 per serving
Mio	Liquid drops	Sucralose, acesulfame potassium	Some with added B vitamins, electrolytes, caffeine	\$3.69/24 servings \$0.15 per serving
Nuun	Tablet	Monk fruit extract, Stevia leaf extract	Electrolytes, some with added caffeine	\$5.99/10 servings \$0.60 per serving
Sweet Leaf Water Drops	Liquid drops	Monk fruit extract, Stevia leaf extract	None	\$2.96/48 servings \$0.06 per serving
True Lemon	Powder	Stevia leaf extract	Some with added caffeine	\$2.79/10 servings \$0.28 per serving

Table 1: prices checked 2/2022 at www.kroger.com

Above is a brief review of some of the water enhancers on the market. Remember, you'll often be able to find a store brand version with similar or identical ingredients at a lower price.

Recipe Corner: Fruit Infused Water (serves 8)

Suggested combinations:

Peach blueberry water: 8 cups cool water, 1 peach (sliced), ½ cup blueberries

Cucumber lemon water: 8 cups cool water, ½ cucumber (sliced), 1 lemon (sliced)

Watermelon lime water: 8 cups cool water, ½ cup strawberries (sliced), 1 lime (sliced)

Strawberry orange with mint: 8 cups cool water, ½ cup strawberries (sliced), 1 small orange (sliced), 4 fresh mint leaves

Instructions:

1. Wash fruits and vegetable well before cutting.
2. Fill a large pitcher with the water; add other ingredients. Put in the refrigerator for at least 30 minutes to infuse the flavors. The longer it sits, the more flavorful the water.
3. Pour into a glass filled with ice. Enjoy! Keep any leftovers in the refrigerator and use within 2 days.

Recipe source: www.foodtalk.org

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Dear Friend,

Diabetes Life Lines is a bi-monthly publication sent to you by your local county Extension agent.

It is written by an Extension Nutrition and Health Specialist and other health professionals from the University of Georgia. This newsletter brings you the latest information on diabetes self-management, healthy recipes and news about important diabetes-related events.

If you would like more information, please contact your local county Extension Office.

Yours truly,

County Extension Agent

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