Protecting the Brain to Prevent Cognitive Decline

The human brain is a supercomputer that processes information from the senses and allows a person to react, think, and reason. As the most complex organ in your body, the brain is involved in learning, decision-making, behavior, mood, and emotions.

Most young or middle-aged adults cannot imagine living without full cognitive ability, but by age 70, two out of three Americans will experience some degree of impairment.[1] Nutrition and lifestyle strategies can help protect your brain and reduce the risk of early cognitive decline.

Who is at Risk for Cognitive Decline?

As with every part of your body, the brain is affected by aging. Age-related inflammation and long-term toxin exposure affect the brain's cells, tissues, and blood vessels. Damage to the brain results in cognitive disorders ranging from mild memory loss to various types of dementia and Alzheimer's disease.

A 2020 study that examined data from more than 29,000 older adults found that women have a 37% chance of developing dementia during their lifetime, with an average age of onset at age 83. The risk is 24% for men, with an average onset at age 79.[1]

The following factors increase the risk of age-related dementia and Alzheimer's disease:[2]

- Cigarette smoking
- Excessive alcohol use or binge drinking
- Long-term air pollution exposure
- A sedentary lifestyle
- Less education
- Low social contact
- Obesity
- Hearing loss
- Depression
- Hypertension
- Diabetes
- History of traumatic brain injury

Brain impairment or dementia is not an inevitable part of aging. Experts suggest approximately 40% of Alzheimer's disease and related dementia cases are associated with the above risk factors.[2] Reducing as many of these as possible may significantly protect brain health.

Protecting your brain is much easier than treating dementia. Since cognitive decline happens gradually, all adults benefit from lifestyle changes to reduce their risk.

The Effect of Diet on Brain Health

One of the most effective ways to protect your brain is with diet and nutrition. A whole-food diet rich in plant foods provides antioxidants and anti-inflammatory compounds that protect the brain from oxidative damage. Research on flavonoids, naturally occurring plant compounds with antioxidant properties found abundantly in fruits (especially berries,) vegetables, cocoa, tea, coffee, olive oil, and nuts, shows that adults with a higher intake of flavonoids have better cognitive health as measured by a mental health status questionnaire, compared to those with low flavonoid intake.[3]

The omega-3 fats EPA (eicosapentaenoic acid), DHA (docosahexaenoic acid), and ALA (alpha-linolenic acid) also feed the brain. They support cognitive and behavioral health by protecting brain cells and tissue and supporting the healthy function of neurotransmitters, the chemical messengers that carry signals between brain cells. DHA, EPA, and ALA are essential fats, meaning you must obtain them from your diet. Cold-water fish such as salmon, sardines, mackerel, and rainbow trout are excellent sources of DHA and EPA, while nuts and seeds are rich in ALA.

Omega-3 fats, particularly DHA, are vital for brain health and development in infants and young children. They are also associated with healthier brain function in adults.[4] Research suggests that consumption of omega-3 from fish or supplements may improve learning, memory ability, cognitive well-being, and blood flow in the brain.[4] Additionally, fish oil with higher levels of EPA has been shown to help people with depression, a risk factor for dementia.[5]

While these foods and nutrients are neuro-protective, a Western-style diet, typically low in fiber and high in ultra-processed foods made with refined carbohydrates, added sugar, unhealthy fats, and additives, harms brain health. Over the long term, this way of eating increases inflammation throughout the body and brain. People with Alzheimer's disease and cognitive impairment commonly have higher levels of inflammatory markers compared to healthy people.[6]

A May 2024 study published in *Neurology* supports the link between ultra-processed foods and brain function. Researchers examined data from more than 30,000 adults and determined that those who eat 10% more ultra-processed foods have a 12% increased risk of cognitive decline. [7]

The MIND diet has been studied extensively for its effect on the aging brain. It is a combination of the Mediterranean and DASH (Dietary Approaches to Stop Hypertension) diet patterns. The MIND diet stresses eating more of these brain-healthy foods:

- Green, leafy vegetables such as kale, spinach, Brussels sprouts, or other cooked greens
- Other vegetables, including carrots, cauliflower, and sweet peppers

- Berries such as strawberries, blueberries, blackberries, and raspberries
- Nuts, including almonds, walnuts, and pecans
- Whole grains such as oats, brown rice, quinoa, and whole wheat.
- Beans/legumes such as lentils, chickpeas, kidney, black, or pinto beans
- Fish, especially oily fish like salmon
- Skinless poultry (except for fried)
- Olive oil - use this as your primary oil for cooking, baking, and seasoning

There are also five foods to avoid or limit as much as possible on the MIND diet:

- Butter and margarine
- Cheese
- Red meat
- Fried food
- Pastries and sweets

Researchers have found a 53% lower rate of Alzheimer's disease for those who follow the MIND diet closely.[8] Studies also link better adherence to the MIND diet to better cognitive functioning, larger total brain volume, higher memory scores, lower risk of dementia, and slower mental decline, compared to low adherence to the diet.[8]

It is important to note that besides directly protecting brain health, this type of diet also helps reduce obesity, diabetes, and high blood pressure — all of which are risk factors for cognitive decline.

Lifestyle Strategies to Protect the Aging Brain

Many of the risk factors for dementia and cognitive decline are lifestyle-related and modifiable. Everyone should take the following steps to protect brain health as early in life as possible:[2]

- Quit smoking. Smoking increases blood pressure and damages blood vessels in the body and brain. Stopping smoking, even when older, decreases dementia risk.

- Drink alcohol in moderation. Heavy drinking causes changes in the brain and cognitive impairment.

- Protect your head with a helmet if you play contact sports or ride a horse, bike, or motorcycle. Concussions and other more severe brain injuries increase the risk of dementia and Alzheimer's disease.

- Stay socially connected. Participating in social activities and having a strong social network with friends, family, neighbors, or work colleagues is associated with better cognitive function later in life.

- Exercise your brain as much as possible. A higher level of education is highly protective, but that doesn't mean older adults must return to school. Reading, attending lectures, doing puzzles, and playing brain-training games are all helpful.

- Get daily physical activity. Regular physical activity is associated with a lower risk of dementia and Alzheimer's. Exercise may protect the brain directly by reducing inflammation and supporting blood vessels. It also reduces risk factors such as obesity, hypertension, and diabetes. All adults should aim for a minimum of 30 minutes of exercise most days of the week.

- Aim for eight hours of quality sleep. Sleep is vital for brain health because, during REM sleep, the brain clears itself of toxins. Sleep hygiene practices include turning off blue-light-emitting devices one hour before bedtime, abstaining from alcohol and caffeine in the late evening, and maintaining a cool, comfortable bedroom temperature. These can help you fall asleep faster and have more restful sleep.

- Use anti-anxiety and sleep medications cautiously. These can affect memory function, and some studies suggest they may increase dementia risk.[2] Adaptogenic herbs, melatonin, or other herbal sleep aids may be safer alternatives.

- Manage chronic health conditions. Health conditions such as diabetes, high cholesterol, and high blood pressure affect blood vessels, reducing blood flow, oxygen, and nutrients to the brain. If left untreated, they increase the risk of dementia and Alzheimer's.

Lean Into the Gut-Brain Connection

The gut microbiome can also influence cognitive function and mood disorders through the gut-brain axis, the bidirectional communication system between the gut and brain. Gut microbes communicate with the brain and digestive tract by acting on neurons, hormones, and immune pathways.

Researchers suspect that chronic, low-grade inflammation impairs blood vessels in the brain over time, contributing to mood disorders and age-related cognitive impairment. However, a balanced, diverse mix of gut microbes supports a healthy response to inflammation throughout the body and brain. A growing body of research suggests that supporting the gut microbiome with a whole-food, high-fiber diet, a healthy lifestyle, and probiotics, prebiotics, and synbiotics as needed may promote improved attention, perception, memory, and mood.[9]

Nootropics and Cognitive Function

Nootropics are a class of plant compounds that support thinking, learning, and memory. Many have been long used in traditional medicine. Research suggests that these compounds may have cognitive benefits by relaxing blood vessels and enhancing blood flow in the brain, protecting brain tissue, and improving the brain's supply of glucose and oxygen.[10]

Plants that have been studied and found to have nootropic effects in lab, animal, and human studies include:[10]

- *Panax ginseng*
- *Ginkgo biloba*

- *Withania somnifera* (Ashwagandha)
- *Bacopa monnieri*
- *Rhodiola rosea*
- *Schisandra chinensis*

Note that although these compounds are considered safe for healthy individuals, some may interact with prescription medications or existing health conditions. Therefore, it is best to consult a healthcare practitioner for guidance on the best products, dose, and length of use.

Cognitive function is something nearly everyone takes for granted until they begin to notice changes in memory or mental function. Loss of cognitive function is devastating, but many people can prevent or delay it with appropriate lifestyle changes. It is never too early or too late to protect your brain.

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