Researchers: Lifestyle changes can reduce dementia risk by maintaining brain plasticity, but the time to act is now

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Walk 10,000 steps a day, cut back alcohol, get better sleep at night, stay socially active—we're told that changes like these can prevent up to 40%

of dementia cases worldwide.

Given that dementia is still one of the most feared diseases, why aren't we pushing our doctors and governments to support these lifestyle changes through new programs and policy initiatives?

The truth, however, is more complex. We know that making lifestyle changes is hard. Ask anyone who has tried to keep their New Year's resolution to visit the gym three times a week. It can be doubly difficult when the changes we need to make now won't show results for years, or even decades, and we don't really understand why they work.

Taking control of your health

Anyone who has watched a loved one living with dementia, facing the small and large indignities and declines that leave them eventually unable to eat, communicate or remember, knows it is a devastating disease.

There are several new drugs making their way to the market for Alzheimer's disease (one of the most common forms of dementia). However, they are still far from a cure and are currently only effective for early-stage Alzheimer's patients.

So lifestyle changes may be our best hope of delaying dementia or not developing dementia at all. Actor Chris Hemsworth knows it. He watched his grandfather live with Alzheimer's and is making lifestyle changes after learning he has two copies of the APOE4 gene. This gene is a risk factor for Alzheimer's, and having two copies significantly increases his risk of developing the same condition.

Research has identified modifiable risk factors that contribute to increasing the risk of dementia:

- physical inactivity
- excessive use of alcohol
- less sleep
- social isolation
- hearing loss
- less cognitive engagement
- poor diet
- hypertension
- obesity
- diabetes
- traumatic brain injury
- smoking
- depression
- air pollution

Our understanding of the biological mechanisms for these risk factors is varied, with some more clearly understood than others.

But there is a lot we do know—and here's what you need to know as well.

Cognitive reserve and neuroplasticity

Cognitive reserve is the brain's ability to withstand damage or neurodegenerative disease. If there is tissue or functional loss in one part of the brain, other brain cells (neurons) work harder to compensate. In theory, this means lifelong experiences and activities create a dam against the damages of disease and aging in the brain.

Neuroplasticity is the brain's amazing ability to adapt, learn and reorganize, create new pathways or rewire existing ones to recover from damage. The key takeaway is that neuroplasticity can happen at any time and any age, which means learning and activities should be lifelong.

Many of the risk factors linked to dementia likely work in combination, which is why an overall lifestyle approach is crucial. For example, studies have shown that exercise, cognitive and social engagement stimulate your brain and maintain its plasticity by growing new neural connections and building cognitive reserve.

The mechanism behind this is a combination of factors: increased oxygen and blood flow to the brain, stimulating growth factors that keep neurons healthy and reduced inflammation.

The opposite is also true. Poor sleep, diet, social isolation and untreated depression are linked to decreased cognitive reserve.

The same rationale applies to hearing loss, a key emerging risk factor for dementia. As a person's hearing decreases, it can make it difficult to socially engage with others, resulting in a loss of sensory input. The brain has to work harder to compensate for this, potentially drawing down its cognitive reserve and leaving it less able to withstand dementia.

The role of stress and inflammation

Stress responses and inflammation are the body's complex answer to injury. Inflammation is an important component of the body's immune system, helping defend against threats and repair tissue damage. While short-term inflammation is a natural and good response, chronic or prolonged inflammation disrupts normal function and causes damage to the brain's cells.

For example, one of the commonalities between dementia and untreated depression is the inflammatory process. Prolonged exposure to stress hormones can lead to chronic inflammation. Hypertension, physical inactivity, smoking and air pollution are also associated with chronic inflammation and stress, which can damage blood vessels and neurons in

the brain.

In a newer area of research still being explored, social isolation has also been linked to inflammation. As we learned during the COVID-19 pandemic, the brain is wired to respond to social engagement as a means of bonding and emotional support, especially in times of distress.

With surveys showing more than one in three Canadians feel isolated, the lack of social connection and loneliness can trigger the body's stress response and neuroendocrine changes, and prolonged exposure to this inflammatory process can damage the brain.

Similar pathways across multiple diseases

Several of these risk factors, and their biological pathways, cut across multiple chronic diseases. Accumulating evidence of decades of research supports the concept of "what's good for your heart is good for your head."

This means that making these lifestyle changes not only reduces your risk of dementia, but also your risk of diabetes, hypertension and heart concerns. This highlights the complex nature of dementia but also offers a united strategy to deal with multiple health concerns that may arise as people age.

It's never too late

It's never really too late to change. The human brain and body have a remarkable capacity for adaptation and resilience throughout life.

While there are benefits to being physically and socially active at any age, some research shows the payoff from those gains can be higher

after age 40 when the body's metabolism slows, risk factors increase and cognitive reserve becomes even more essential to help protect against cognitive decline.

If making lifestyle changes means you can watch your child navigate adulthood, stroll 20 blocks to your favorite café every day and continue to live in your own home, perhaps walking the daily 10,000 steps, changing diets and keeping your friendship network strong is worthwhile. At worst, you'll be healthier and more independent with or without dementia. At best, you might completely avoid dementia and other major diseases and keep living your best possible life.

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