Nutrition and the BRAIN

While ageing is a key factor in cognitive decline, the critical role of diet and lifestyle on the health of our brain cannot be underestimated.

We're a nation with an ageing population, and that has consequences on the statistics around brain health, such is the link with cognitive decline and getting older. But the story far from ends there, with increasing research confirming the very real impact a poor diet, lack of key nutrients and a sedentary lifestyle has on the long-term health of the brain.

William Jordan, Nutrition Advisor at Viridian, commented: "As we are an ageing and growing population, there is a considerably higher number of individuals over the age of 65 than ever before. More than 850,000 people in the UK have dementia, with one in 14 people over the age of 65 and one in six over the age of 80. Experts predict this number will double by the year 2050.

"While there is no one factor that can be attributed to cognitive decline, there is growing and developing evidence to suggest that diet and lifestyle are significant contributors to our brain health. Additionally, cardiovascular health is linked with brain health. Cerebral blood flow provides our brains with nutrients and oxygen, cardiovascular issues may disrupt this. By starving our brains of nutrients and oxygen, we see metabolic dysfunction, leading to an inadequate supply of nutrients, resulting in further health conditions. Cardiovascular disease, in turn, may negatively affect cognitive health."

Alice Bradshaw, Head of Nutrition Education and Information at Terranova, continued: "There does appear to be a growing prevalence of cognitive-related ill health, including conditions such as dementia, Alzheimer's, and brain fog. This rise is partly due to an ageing population, but lifestyle factors such as poor diet, stress, environmental toxins, and a lack of mental and physical activity also play a role. Increasing awareness and better diagnostic tools have highlighted more cases. This trend underscores the importance of early prevention and management strategies to address cognitive decline holistically.

"Cognitive issues are not an inevitable part of ageing. While the brain naturally slows in certain functions, severe cognitive decline is often preventable. Neuroplasticity—the brain's ability to adapt and form new connections—can be supported at any age with the right lifestyle choices. A nutrient-dense diet, regular physical activity, quality sleep, mental stimulation, and social engagement all play critical roles in maintaining sharp cognition throughout life."

And Catherine Gorman, Nutritional Therapist at Good Health Naturally, advised: "Studies show a strong link between poor dietary habits and worsening cognitive decline. A 10-year study in China found that a diet high in processed foods was associated with a greater risk of dementia. On a positive note, replacing just 10 per cent of processed foods with unprocessed or minimally processed alternatives was shown to reduce risk. Sugary processed foods, in particular, can impair insulin regulation, and type 2 diabetes has been shown to increase the risk of dementia. These foods also contribute to inflammation and oxidative stress, both of which are key risk factors for cognitive decline.

"Lack of physical activity can also negatively affect brain health. Research suggests regular exercise improves cognitive performance and memory. In older adults, physical activity has been linked to an increase in the size of the hippocampus, the area of the brain responsible for memory, learning, and emotion. Studies have even shown that regular exercise can enhance cognitive function in people already experiencing memory issues. Sleep is another crucial factor for brain health, as it is the time when neurological processing and memory formation take place. When we don't get enough rest, these vital processes can be disrupted."

Brain specific

If we look at the brain and the conditions we frequently see, dementia ranks as the most common.

Keri Briggs, Senior Brand Specialist at Lamberts, advised: "A certain amount of decline in memory and thinking is expected with age, but if this is progressing quicker than expected, a diagnosis of mild cognitive impairment (MCI) may be given. This is often seen as an intermediate state between normal decline and the development of dementia, and although symptoms

SIGNS OF COGNITIVE DECLINE

Decline in brain function can creep up over time, so it's important to spot those early warning signs.

"Early signs of cognitive decline include frequent memory lapses, reduced ability to focus, difficulty solving problems, or trouble recalling words. Other indicators may involve disorientation, poor judgment, and challenges in planning or organising. Behavioural changes such as irritability, anxiety, or a sense of detachment can also signify early-stage decline," Bradshaw advised.

Martina Della Vedova, Nutritional Advisor at NaturesPlus, added: "Signs that our brain function is struggling could be struggling to remember names/dates/words, leaving tasks unfinished, mood changes, social behaviour changes, poor coordination and control, getting lost in usual activities. Most of these are considered a normal part of ageing, however, if issues continue and deteriorate quickly than they could be signs of cognitive impairment. It is very important to set expectations and to stay in a positive mindset, as it has a powerful effect on our hormones and physiology."

Briggs added: "According to the Mayo Clinic, symptoms of cognitive decline range from difficulties in following a book, film or conversation and forgetting minor things such as appointments, your train of thought and names, through to more concerning issues such as problems making decisions and completing tasks and displaying poor judgement. These symptoms may also be accompanied by depression, anxiety, an avoidance or lack of interest in tasks and frustration and anger."

Jordan added: "Not everybody is the same, and not everyone will develop any form of cognitive decline, however, it is vital to recognise the early symptoms. Mild cognitive impairment, which is prevalent in 12-18 per cent of older adults, is the period between expected cognitive decline of normal ageing and the early phase of more serious neurodegenerative conditions. Whether it is yourself, or a loved one, spotting the early signs could potentially reduce the likelihood of developing neurodegenerative condition, like Alzheimer's Disease or dementia."

can be noticeable to those close to the individual, it generally has little impact on daily life. However, it can be very concerning to the sufferer. Other significant cognitive issues include dementia, which affects 944,000 people in the UK and Parkinson's, which affects 145,000. Both conditions are on the increase, due in part to better diagnosis and partially due to an increasingly ageing population: dementia cases have increased by 56 per cent between 2010/11 and 2015/6 and are set to be in excess of one million by 2030 and 1.6 million by 2050. Parkinsons cases are predicted to increase to 172,000 by 2030."

And Gorman advised: "There does seem to have been a rise in cases of cognitive-related ill health. In the UK, it's now estimated that almost one million people are living with dementia, and this number is expected to rise to 1.4 million by 2040. While it most commonly affects older adults, it is not considered a normal part of ageing. Mild cognitive impairment may affect up to 20 per cent of people over the age of 65. Symptoms include forgetfulness, difficulty with problem-solving and trouble finding the right words. It can be caused by factors such as depression, low vitamin levels, or thyroid problems, and does not necessarily lead to dementia. Brain fog, fatigue, and poor concentration are widely recognised as symptoms of long Covid. In the UK, figures show that 1.3 million people are living with long Covid a year after infection, with 762,000 experiencing symptoms for more than two years. It is hypothesised that long Covid may be linked to inflammation affecting brain cell function."

Bradshaw went on: "Elevated homocysteine, a marker of inflammation and cardiovascular stress, is particularly significant. High levels can damage neurons and are influenced by deficiencies in B vitamins (B6, B12, and folate). Fortunately, most of these factors are modifiable through lifestyle changes, including diet, regular exercise, stress management, and reducing exposure to environmental toxins. Emerging issues like brain fog, which may result from hormonal imbalances, chronic inflammation, or poor gut health, are increasingly recognised. Elevated homocysteine levels are linked to vascular-related cognitive problems, while chronic stress can lead to burnout and memory deficits."

Jordan also pointed out: "Cognition is the process of managing high

level intellectual processes that include memory, knowledge, planning, decision making, attention, reasoning, judgement, perception, language, and spatial awareness. The most common conditions are those linked with memory, including dementia, amnesia, and delirium. There are over 100 different types of dementia, with the most common being vascular dementia, which reduces blood flow to the brain that damages brain cells. Cognitive impairments can range from anything that significantly impairs or prevents any part of cognition, from memory, planning, and knowledge to language, perception, and judgement."

A Med diet

One of the best researched dietary patterns for the brain is the Mediterranean diet.

Briggs explained: "A Med style diet focuses on polyphenol-rich fruits and vegetables, nuts and seeds, which contain omega 3 and 6 fatty acids, olive oil and lean meats and oily fish, such as herring, mackerel, salmon and sardines, which are also rich in omega 3 fats. They recommend that processed foods are avoided, and the emphasis is on the consumption of fresh, unprocessed or minimally processed foods which are naturally much lower in sugar, salt and trans and hydrogenated fats.

"A Mediterranean diet is considered to be one of the most useful for heart and circulatory heath, which will ultimately play a significant role in brain function. Several studies have specifically examined the link between this diet and cognitive function and found there to be a positive correlation between the two; those adhering to the Mediterranean diet showed improvements in cognitive function, prevention of cognitive decline and improved scores on function tests. The DASH (Dietary Approaches to Stop Hypertension) diet, which is very similar to the Mediterranean diet, focuses on lots of fruit, vegetables, wholegrains and low fat dairy produce, with a specific emphasis on low sodium intake. It is important, regardless of the specific diet followed, to consume adequate levels of high-quality protein, to ensure a consistent and sufficient supply of amino acids."

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Gorman added: "Well-known diets like the Japanese, Mediterranean, and DASH have all been linked to brain health and a lower risk of cognitive decline. A combination of the Mediterranean and DASH diets, known as the MIND (Mediterranean-DASH Intervention for Neurodegenerative Delay) merges the best elements of both approaches to support brain health. The MIND diet emphasises natural, plant-based foods with limited animal products and saturated fats. It recommends whole grains, nuts, berries, vegetables, especially leafy greens, and fish. A study showed people who strictly follow it have a 53 per cent lower risk of cognitive decline, while those who follow it moderately experience a 35 per cent reduced risk.

"Long-term research conducted in Finland with seniors aged 60-77 further highlights the benefits of a brain-healthy diet combined with exercise and brain training. The intervention group followed a diet high in vegetables, fruit, and fish, but low in sugar, along with exercise and cognitive training. They were encouraged to eat at least two portions of fish per week and take fish oil supplements if they didn't consume enough oily fish. Vitamin D supplementation was also recommended. Participants in the intervention group showed significant improvements in cognitive function, with results ranging from 25 per cent to 150 per cent better than those in the control group."

Jordan went on: "The human brain is approximately 60 per cent fat, which means it is essential to get enough healthy fats in the diet. Fats from oily fish, eggs, dairy, avocado, and nuts are high in omega 3 fatty acids, which helps support the structure and fluidity of brain cells. It is also important to include foods high in antioxidants, such as berries and green tea. These provide the body with compounds that protect against oxidative stress and free radical damage, which can cause inflammation and damage to brain cells. Brains of those with cognitive decline have been shown to have higher levels of oxidants and inflammatory markers present."

Bradshaw went on: "Blood sugar balance is a critical factor in brain health, as the brain relies on a steady supply of glucose for energy. Refined sugars and processed foods, which cause rapid blood sugar spikes and crashes, can impair cognition by triggering inflammation, oxidative stress, and insulin resistance. Over time, frequent blood sugar fluctuations can harm brain cells and impair memory and focus. The connection between blood sugar dysregulation and Alzheimer's is now so well-established that Alzheimer's is often referred to as type 3 diabetes. Insulin resistance in the brain impairs glucose metabolism, depriving neurons of the energy they need to function and survive. This leads to the build-up of amyloid plaques and tau tangles, hallmark features of Alzheimer's. Furthermore, diets high in processed foods and refined sugars often contribute to chronic inflammation, which exacerbates cognitive decline and neurodegeneration."

Brain fuel

Good nutrition is critical for a healthy brain, and a lack of important nutrients can have a range of effects.

Della Vedova advised: "Magnesium and B vitamins are at the top as these nutrients are involved in so many different biochemical pathways involved in the function of the brain. Many people might have genetic predispositions towards a slower metabolism of these and supplementing might have a huge impact on their lives. Omega 3 and high-quality protein are also key as they represent the structure of the brain. Brain cells are made of fat and protein and to function we need enzymes, receptors, hormones, and membranes that work together, synchronised and regenerating.

"A variety of fibre keeps the gut in on operational equilibrium that can compensate and recalibrate brain activity. I recommend a unique form of curcumin. Longvida Curcumin has extensive scientific research showing it as an effective curcumin delivered to the brain. A free form of curcumin crossing the blood brain barrier makes a real difference to the effects that it can give."

Bradshaw added: "B vitamins – especially B6, B12, and folate – help regulate homocysteine levels, which, when elevated, can damage brain cells. Supplements can be beneficial when dietary intake falls short. Algae-based omega 3 supplements provide essential EPA and DHA for brain health without relying on animal sources. A high-quality B-complex supplement can support homocysteine regulation and energy production. Adaptogens such as ashwagandha, rhodiola, and lion's mane mushroom can help enhance focus, resilience to stress, and overall mental clarity."

Jordan continued: "Magnesium helps regulate and cofactor many enzymatic reactions and is integral in our brain homeostasis. The majority of the UK population do not get adequate magnesium intake through diet and this may cause our brain to demand more magnesium, increasing neuroexcitatory transmitters and causing an imbalance. Plant-based diets may be low in B-vitamins such as B12 as this is generally found in animal products, with some exceptions. Choline, while not being a B vitamin, is often grouped with them. Choline maintains the levels of acetyl choline, which can improve short-term memory and attention. It is recommended to choose a multivitamin and mineral formula that contains a blend of vitamins and minerals that contribute to normal cognitive function and protection.

"Look for therapeutic amounts of B vitamins, as well as minerals including zinc, iodine, and iron, which contribute to normal cognitive function. Fat-soluble antioxidants, including vitamin A and E, help to protect brain cells from oxidative stress, which is a major factor in many human diseases. Brahmi has been found to maintain brain function by preventing the breakdown of acetylcholine, which is a major contributing factor to memory and muscle function, and sage and lemon balm extracts can help with mental alertness and aid quick recall of information from memory due to the natural rosmarinic acid content, which been found to provide benefits in dementia patients."

Gorman added: "Vitamin D is a crucial nutrient for brain health. The brain contains a high concentration of vitamin D receptors. It has been well-established people with Alzheimer's often have lower circulating levels of vitamin D. Studies suggest it may help reduce amyloid-induced toxicity and inflammatory responses in neurons, potentially protecting against cognitive decline.

"Polyphenols, such as curcumin, catechins and resveratrol, have shown promise as neuroprotective agents. These compounds are known for their antioxidant and anti-inflammatory properties, which can help reduce oxidative stress and inflammation in the brain, which are two key factors in cognitive decline. Curcumin, in particular, has been used in various protocols for managing dementia. Studies suggest that, in addition to its anti-inflammatory and antioxidant effects, curcumin may help slow neuronal degeneration and support metal chelation, which could further protect the brain."

Meanwhile, Briggs recommended: "Coenzyme Q10 (CoQ10) has significant effects on the function of the mitochondria. These organelles are vital for the production of energy, via the electron transport chain. Mitochondria are very susceptible to oxidative stress and damage and therefore maintaining the balance of oxidation and antioxidants is of importance. CoQ10 supports the production of energy and decreases as we age. CoQ10 appears to reduce inflammation and act as an antioxidant as well as having effects on the dilation of the blood vessels, via the production of nitric oxide.

"Decreases in CoQ10 and the resulting increase in oxidative stress causes declines in attention and executive function (which defines the ability to plan, focus attention, remember instructions, and juggle multiple tasks) and depleted CoQ10 levels are associated with cognitive impairment. Supplementation with the reduced form of CoQ10, ubiquinol, appears to reduce endothelial cell damage and inflammation, which may improve MCI.

"One of the main herbal products studied for cognitive function is ginkgo biloba extract. As a plant material, it has antioxidant properties which may help protect the brain and neurons, but it also appears to improve the flow of blood, and other nutrients and oxygen to the brain, via its effects on vasodilation and platelet aggregation. Rosemary has compounds such as rosmarinic acid, which exert antioxidant effects in the body. It also appears to have a neuroprotective effect on dopaminergic neurons, which may be directly linked to memory and learning."

TRAINING THE BRAIN

Keeping the brain active goes a long way to protecting cognitive function.

"Research has indicated that those who do not exercise their mind and keep their body active have an increased risk of cognitive decline. Maintaining good habits, like a good sleep routine, outdoor exercise, keeping active throughout the day, brain teasers and puzzles can significantly improve your brain health and quality of life," Jordan suggested.

Bradshaw added: "Keeping the brain active is crucial for maintaining neuroplasticity and delaying cognitive decline. Engaging in activities that challenge the brain – such as learning new skills, practicing a musical instrument, solving puzzles, or engaging in meaningful social interactions – can strengthen neural connections. Regular exercise, particularly aerobic and resistance training, improves blood flow to the brain and promotes mental resilience. Mindfulness meditation and stress management further support cognitive health by reducing the detrimental effects of chronic stress."

Briggs continued: "There is good evidence for the role that cognitive engagement plays in brain function and cognitive decline – the concept of 'use it or lose it'. Taking part in activities such as mentally demanding work, leisure activities (such as reading, crosswords and sudoku, playing an instrument or learning a new language) and social activities (such as visiting the theatre, dancing and participating in group activities) are all associated with a reduced risk of cognitive decline." **hfb**