DIET AND DEMENTIA

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REFERENCES
Please visit: www.NHDmag.co.uk/article-references.html

This article delves into the science behind the connection between dementia and nutrition, exploring how dietary choices can impact brain health and cognitive functions.

Dementia is a complex neuro-degenerative condition that affects millions worldwide, with Alzheimer's disease (AD) being the most common form. While there is no cure, emerging research suggests that certain dietary patterns and nutritional factors may influence the risk of developing dementia and slowing its progression.

Dementia is an umbrella term used to describe a range of conditions characterised by the impairment of at least two major cognitive functions, which include memory, thinking, language, judgement and behaviour.[1] AD is the most common cause of dementia in people aged 60 and older, making up 60-80% of dementia cases.[2]

As of 2023, over 55 million people globally are living with dementia, with nearly 10 million new cases being reported each year.[3] This number is projected to reach 78 million by 2030 and 139 million by 2050, predominantly in low- and middle-income countries. In the UK, around 944,000 people are affected by dementia, a figure expected to exceed one million by 2025 and 1.6 million by 2040.[3,4]

RISK FACTORS

Several scientific articles and studies have identified a range of risk factors for dementia. Here are some of the key risk factors:[5,6]

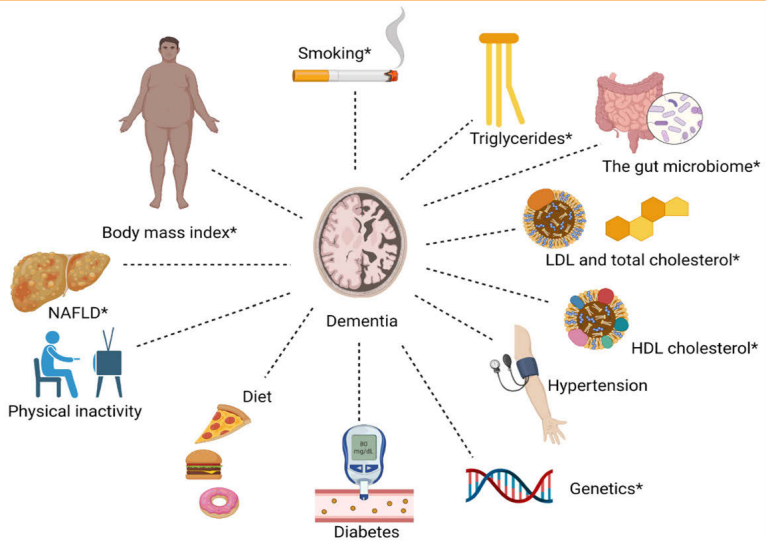
1. Ageing itself is known to cause significant changes in brain morphology, plasticity and function. These changes lead to decreased cognitive functions like memory and processing speed.
2. Individuals with Down's syndrome and other learning disabilities face a higher likelihood of developing young-onset dementia, most commonly as a result of AD.
3. Specific genes, such as APOE ε4, have been identified as significant contributors to the likelihood of developing AD and other forms of dementia. A family history of dementia also suggests a genetic predisposition, further highlighting the role of genetics in the onset and progression of the disease.

MODIFIABLE RISK FACTORS FOR DEVELOPING DEMENTIA

Potential modifiable risk factors for dementia include the following:[4,6]

1. Hypertension, or high blood pressure, can lead to vascular damage in the brain, increasing the risk of cognitive decline.[7,8]
2. Diabetes, particularly type 2, has been associated with an elevated risk of dementia due to insulin resistance and related vascular complications.[7]
3. Obesity is recognised as a significant risk factor for dementia. It is associated with cognitive deficits, impaired long-term potentiation and synaptic plasticity and reduced brain volume, all of which increase the likelihood of developing AD and other dementias.[1,6,7]
4. Smoking is another significant risk factor, as it contributes to oxidative stress and inflammation, which can harm brain cells.[7]
5. Physical inactivity and poor diet are also linked to cognitive decline. Sedentary lifestyles and diets high in saturated fats, sugars and processed foods can negatively impact brain health.[7]

Figure 1: Risk factors for atherosclerotic cardiovascular disease and dementia[5]



The associations for some risk factors differ between Alzheimer's disease and non-Alzheimer dementia. These are marked by *.

6 Poor sleep quality and disorders like sleep apnoea are linked to an increased risk of cognitive decline and dementia.[1,6]
7 Social isolation is another critical factor. It leads to increased cognitive decline and mental health issues.[6,7]

PREVENTION IS BETTER THAN CURE

There are currently no effective pharmacological treatments for debilitating cognitive conditions like dementia, underscoring the critical importance of preventive strategies.[8,9] With the ageing population and increased life expectancy, the incidence of dementia is on the rise and imposes a significant burden on individuals, families and society, both emotionally and economically.

There is substantial evidence indicating that lifestyle choices significantly influence the risk of developing dementia. Research suggests that around 40% of dementia cases could potentially be prevented through the modification of certain risk factors. Adopting healthy behaviours during mid-life (ages 40-65) is crucial in reducing this risk.[10,11]

DIETARY CHOICES CAN REDUCE THE RISK OF DEMENTIA

Nutrition significantly impacts the onset and progression of dementia, making it a fundamental aspect of lifestyle interventions aimed at addressing this condition.[9-11] Cognitive decline is significantly more pronounced in individuals who consume diets high in sugar and saturated or trans fats while lacking sufficient fibre and essential vitamins. These dietary patterns can lead to inflammation and oxidative stress, contributing to brain function deterioration over time.[8] Higher intake of fatty acids promotes atherosclerosis, thrombogenesis and impaired fibrinolysis. These vascular issues compromise cerebral blood flow and can result in cognitive decline and vascular dementia.[9,10]

A growing body of evidence suggests that the intake of specific macro- and micronutrients in balanced diets can reduce cognitive impairment and the risk of brain diseases linked to cognitive deficits, including dementia. Furthermore, certain 'special foods', particularly those containing B vitamins, flavonoids and long-chain ω-3 fatty acids, have been shown to prevent or mitigate age-related degenerative processes.[9,11]

The Mediterranean diet (MeDi), the Dietary Approach to Stop Hypertension (DASH) diet and the Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) diet have all been extensively studied for their potential effects on reducing the risk of dementia.[10] Recent studies suggest that adhering to a MeDi is linked to several cognitive benefits, including slower cognitive decline, a decreased risk of progressing from mild

cognitive impairment to AD, a lower risk of AD itself and reduced mortality rates amongst AD patients.[13] The DASH diet has shown promising results in lowering high blood pressure, which is associated with a higher risk of vascular dementia and cognitive decline.[14] Similarly, the MIND diet, which combines elements of the Mediterranean and DASH diets and places particular emphasis on brain-boosting foods like berries, leafy greens, nuts and olive oil, has demonstrated a significant reduction in the risk of AD, with adherents experiencing up to a 53% lower risk when following the diet rigorously.[14,15]

This dietary pattern combines various foods and nutrients that have been individually proposed as protective against dementia and pre-dementia conditions. Epidemiological evidence highlights a potential association between the intake of fish, monounsaturated fatty acids and polyunsaturated fatty acids (PUFAs), especially n-3 PUFAs, with a reduced risk of cognitive decline and dementia.[13-15]

WHAT TO EAT TO REDUCE COGNITIVE DECLINE?

Omega-3 fatty acids: Abundant in fish such as salmon, mackerel and sardines, omega-3 fatty acids have been linked to a reduced risk of cognitive decline. A systematic review of 12 clinical studies revealed that increased intake of omega-3 fatty acids correlates with greater hippocampal volume, increased total grey matter and overall brain volume, as well as fewer white matter lesions.[16-18]

Antioxidants: Found in fruits and vegetables, antioxidants, such as vitamins C and E, as well as flavonoids, help protect cells from oxidative stress and inflammation, which are implicated in the development of dementia. Studies suggest that a diet rich in antioxidants may help preserve cognitive function in old age.[12,19]

Folate and vitamin B12: Found in leafy greens, legumes and fortified cereals, folate and vitamin B12 are involved in the methionine cycle, where they are required for the efficient elimination of homocysteine, a compound associated with cognitive decline and neurodegenerative diseases like dementia. However, studies on the relationship between folate and B12 and dementia have been inconclusive.[19,20]

Healthy fats: Monounsaturated fats, found in olive oil, nuts and avocados, are staples of the Mediterranean, DASH and MIND diets and have been associated with a reduced risk of cognitive decline. These fats help maintain healthy blood vessels and reduce the risk of heart disease and stroke, conditions that are linked to a higher likelihood of developing AD.[14,16,18]

Low sodium: The DASH diet emphasises reducing sodium intake, which can help lower blood pressure and reduce the risk of cardiovascular disease. High blood pressure is a risk factor for cognitive decline and dementia, so managing sodium intake is important for brain health.[21]

Plant-based foods: Both the Mediterranean and MIND diets emphasise plant-based foods, such as fruits, vegetables, wholegrains and legumes.[11,13] These foods are rich in vitamins, minerals and phytochemicals that support overall health, including brain health.

Moderate alcohol consumption: The Mediterranean diet includes moderate consumption of red wine, which contains resveratrol, a compound that may have neuroprotective effects and help reduce the risk of dementia.[22]

CONCLUSION

In conclusion, prioritising dietary patterns rich in nutrient-dense foods holds significant promise for improving cognition and reducing the risk of dementia. Whilst comprehensive approaches like the Mediterranean, DASH and MIND diets emphasise whole foods, healthy fats, lean proteins and abundant fruits and vegetables to enhance cognitive function, many older adults face formidable barriers, such as physical limitations, cognitive decline, economic constraints and social isolation.

Overcoming these obstacles requires a multifaceted strategy, including community support programmes, tailored nutrition education and policy changes to enhance food access. By addressing these challenges and promoting balanced dietary habits, older adults can safeguard their cognitive health and improve overall well-being.