

Can We Prevent Dementia?



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Abstract

Dementia is a world health issue that impacts on the individual, the family, the society and the country. Any prevention by addressing risk factors will have a global impact. At least one third of those risk factors can be preventable. In this article we review those risk factors.

Keywords: Dementia; Prevention; Risk factors

Introduction

Dementia affects millions of people worldwide and is one of the most significant health issues of the 21st century. Dementia is a syndrome where memory loss, language dysfunction, problem-solving and other thinking abilities that are severe enough to interfere with our daily life. The Lancet Commission report (2020) indicates that there are things we can all do that have the potential to prevent dementia from developing, or at least delay the onset [1]. Evidence estimates shows that approximately one third of Alzheimer's disease cases may be preventable and outlines the key risk factors that are potentially modifiable. Depending on which risk factors are included and what part of the world we look at, different approximations for how much of dementia is preventable emerge, with recent estimates of 40-50% [1]. Prevention means trying to stop the disease process happening at all. If we think that age is the highest risk factor for dementia, then we think it is an inevitable process that cannot be prevented. Research evidence suggest that we can reduce the risks of developing dementia, and that is related to earlier life changes such as exercise, healthy diet, reducing obesity, smoking and alcohol intake. Currently, research is focused on early detection and diagnostics such as Amyloid- β and tau biomarkers. It is very difficult to screen the whole population for cognitive disorders. However, there are variable risk factors which relate to early, mid and later life, and dealing with these will be considered primary prevention in principle. Educating the public about those risk factors and introducing community programmes to promote protective factors will be an effective strategy in reducing those risks [2]. There are several major modifiable risk factors that are linked to dementia such as diabetes, high blood pressure, high cholesterol, obesity, traumatic brain injury, depression, physical inactivity, smoking, excessive alcohol consumption, a diet high in saturated fat and low in fruit and vegetable consumption, low

educational attainment and air pollution[1]. The Alzheimer's society concluded that there is no definitive link between caffeine intake and dementia [3]. There is also no evidence that suggests consuming turmeric will be beneficial for either reducing the dementia risk [4]. Vascular risk factors such as hypertension, heart failure, cardiac arrhythmias, peripheral vessel disease, high cholesterol in midlife, atherosclerosis, diabetes, sedentary lifestyles, obesity, and depression are a risk factor for heart disease, stroke and for dementia. Improving heart health, and vascular function by addressing these factors in middle age will reduce the risk for vascular dementia and Alzheimer's disease. Regular physical exercises and activities will improve weight management, sleep and reduce both high cholesterol and blood pressure. Erickson et al. [5] demonstrated that hippocampal and medial temporal lobe volumes are larger in higher-fit adults, and physical activity training increases hippocampal perfusion.

In a randomized controlled trial with 120 older adults, the authors showed that aerobic exercise training increases the size of the anterior hippocampus volume by 2%, leading to improvements in spatial memory, and effectively reversing age-related loss in volume by 1 to 2 years[5]. Zhong & colleagues [6] suggested that smoking cessation can potentially reduce the dementia risk. The authors conducted a meta-analysis of 37 studies that investigated how smoking interacts with risk for dementia. They found that current smoking increased the risk of dementia significantly (34% for every 20 cigarettes consumed per day).

The WHO Guidelines on Risk Reduction of Cognitive Decline and Dementia (2019) conclude that "Vitamins B and E, polyunsaturated fatty acids and multi-complex supplementation should not be recommended to reduce the risk of cognitive decline and/or dementia". On the other hand, there has been evidence suggesting that adherence to healthy diet approaches, such

as the Mediterranean diet and Dietary Approaches to Stop Hypertension (DASH), reduces some of the cognitive deficits associated with ageing [7]. Wood et al. [8] suggested that limits might need to be reduced to 5-6 standard drinks per week for safe alcohol consumption. Alcohol consumption was associated with a higher risk of stroke (HR per 100 g per week higher consumption 1.14, 95% CI, 1.10–1.17), coronary disease excluding myocardial infarction (1.06, 1.00–1.11), heart failure (1.09, 1.03–1.15), fatal hypertensive disease (1.24, 1.15–1.33); and fatal aortic aneurysm (1.15, 1.03–1.28) [8]. Early life education is particularly important for brain development and function and relates strongly to future risk of dementia. A question arises in mind, will those who leave school at an earlier age have a higher risk of developing Alzheimer's disease? Roe et al. [9] demonstrated that education may protect the brain from cognitive decline, and that more years of completed education protects from the damaging effects of Alzheimer's disease especially in participants who had a high presence of amyloid plaques. The Epidemiological Clinicopathological Studies in Europe (Eclipse) study [10], indicate that completing more years of education provides protection from the emergence of the cognitive symptoms of Alzheimer's disease. The study concluded that individuals with more education do appear to have heavier brains and maintain cognition in the face of a burden of neuropathology, neurodegenerative or vascular brain disease compared to those with less education and that education attenuates dementia risk but does not mitigate it altogether. Both Hearing loss and air pollutions have been added to the risk factors for dementia, but the evidence is not as strong as for the other key factors [1,7].

Conclusion

The above evidence proves that by tackling those modifiable risk factors individuals can improve their cognitive reserve. By improving our cognitive reserve, we can develop a greater capacity and ability to overcome cognitive impairment. The author believes that it is our responsibility to adapt local public

health or community model that suits our local population to reduce the risk factors for dementia. The author suggests that focusing on education and physical health could be an early start to a bigger wider public model. We need to encourage healthy lifestyle, education and mentally stimulating activities at all levels to help protect against dementia. We need to consider cognition as part of our healthy lifestyle especially that a healthy body indicate a healthy brain.

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