

# VASCULAR RISK FACTORS FOR COGNITIVE HEALTH

## WHAT ARE VASCULAR RISK FACTORS?

Vascular Risk Factors refer to risk factors that increase an individual's chances of developing cardiovascular disease [1]. Vascular risk factors have also been linked to an increased risk of cognitive impairment and dementia [2]. It is therefore important that we are aware of vascular risk factors that we can modify through healthy changes to our lifestyle in order to reduce our risk of cognitive impairment and dementia.

In this evidence brief, we identify some vascular risk factors that have been linked to cognitive health, and conclude with some practical tips and resources which may help you to reduce or manage your level of vascular risk factors.

## HYPERTENSION

### (HIGH BLOOD PRESSURE)

Analyses of the current literature have consistently shown that untreated high blood pressure in middle age is associated with an increased risk of cognitive decline, stroke and dementia [3]. It is believed that untreated high blood pressure may damage blood vessels in the brain [6]. Because your brain needs healthy blood vessels to ensure a good supply of blood and oxygen to the brain, this damage may prevent your brain cells from functioning well.

## HIGH CHOLESTEROL

Although more research is needed, there is a small evidence base which suggests that high levels of total serum cholesterol in middle-age may increase your risk of developing Alzheimer's Disease later in life [4].

## DIABETES

Diabetes is also associated with a greater dementia risk, although more research is needed to determine whether this increased risk is the same for people with type 1 and type 2 diabetes [5]. Studies have shown that people with diabetes have approximately double the risk of developing dementia compared to people without diabetes [6]. While more research is needed, it has been suggested that one of the ways in which diabetes increases dementia risk is by damaging brain cells and blood vessels in the brain [6].

## OBESITY

Despite some controversy in the literature, there is evidence to suggest that being overweight or obese in middle-age is also linked to an increased risk for dementia and Alzheimer's disease in later life, with recent reviews of the literature concluding that midlife obesity doubles one's risk for dementia development [7]. Obesity is also related to a range of chronic conditions including: hypertension, high cholesterol, stroke and diabetes [8]. As such, it is thought that one of the ways in which obesity contributes to dementia risk is by increasing the incidence of these chronic conditions.

## STROKE

With 16.9 million strokes occurring worldwide in 2010, stroke is one of the leading causes of disability and mortality, in the world [9]. Research studies now suggest that stroke also increases the risk of cognitive decline and dementia [3]. Hypertension, diabetes, obesity, alcohol consumption and lack of physical activity have all been shown to be important predictors of stroke [9].

## SMOKING

Smoking in late-life increases one's risk of dementia, including Alzheimer's disease and Vascular dementia [10]. However, research studies have also demonstrated that older adults who quit smoking show less cognitive decline and brain cell death than those who continue to smoke [11]. These studies therefore provide important evidence which suggests that quitting smoking at any age can be beneficial for your cognitive health.

# VASCULAR RISK FACTORS FOR COGNITIVE HEALTH



## WHAT CAN I DO?

Tips to minimise or manage your vascular risk factors

- // **Participate in regular physical activity** - research has shown physical activity to have lots of benefits for your physical and cognitive health. The Australian Government Department of Health recommends at least 30 minutes of moderate intensity physical activity on most (if not all) days.
- // **Quit smoking** - quitting smoking at any age is beneficial for cognitive and physical health. For more information on how to quit, speak with your GP.
- // **Reduce your alcohol intake** - the National Health and Medical Research Council (NHMRC) recommends drinking no more than two standard drinks per day (for both men and women), to reduce the lifetime risk of harm from drinking alcohol.
- // **Maintain a healthy body weight** - if you are concerned about your weight, speak with your GP about lifestyle changes you can make to achieve a healthy body weight
- // **Have regular visits with your GP to check your blood pressure, blood sugar, and cholesterol levels**
- // **If you have diabetes, ensure that you follow your GP's treatment advice and take medications as prescribed**
- // **Eat a balanced and healthy diet with at least 4.5 cups of fruits and vegetables everyday**

// **Reduce your consumption of saturated or 'bad' fats** often found in foods such as: fried chicken, margarine, chips, candy, and cakes.

// **Increase your consumption of 'good' fats** with foods rich in Omega-3. Examples of foods with 'good fat' includes: avocado, salmon, almond nuts, and spinach

## WHERE CAN I FIND MORE INFORMATION?

**The National Physical Activity Guidelines for Australians:**  
<http://health.gov.au>

**Your Brain Matters (Alzheimer's Australia):**  
[www.yourbrainmatters.org.au](http://www.yourbrainmatters.org.au)

**Your Local Council** can provide you with information regarding local exercise programs, (many specifically designed for older people) as well as local community sports clubs.

**The Healthy Ageing Quiz,**  
(National Ageing Research Institute):  
<http://www.nari.net.au/resources/health-professionals/healthy-ageing>

The **ANU-ADRI** (Centre for Research on Ageing, Health & Wellbeing): <http://anuadri.anu.edu.au>

## REFERENCES

- [1] van de Vorst, I.E., Keok, H. L., de Vries, R., Bots, M. L., Reitsma, J. B., Vaartjes, I. (2016) Effect of vascular risk factors and diseases on mortality in individuals with Dementia: A systematic review and meta-analysis. *Journal of the American Geriatric Society*, 64(1), 37-46. doi: <http://dx.doi.org.ezp.lib.unimelb.edu.au/10.1111/jgs.13835>
- [2] Cyarto, E. V., Lautenschlager, N. T., Desmond, P. M., Ames, D., Szeoke, C., Salvado, O., ... & Cox, K. L. (2012). Protocol for a randomized controlled trial evaluating the effect of physical activity on delaying the progression of white matter changes on MRI in older adults with memory complaints and mild cognitive impairment: The AIBL Active trial. *BMC psychiatry*, 12, 167. doi: 10.1186/1471-244X-12-167
- [3] Dregan A., Wolfe C. D., & Gulliford M. C. (2013). Does the influence of stroke on dementia vary by different levels of prestroke cognitive functioning?: A cohort study. *Lancet*. Retrieved from: [http://dx.doi.org.ezp.lib.unimelb.edu.au/10.1016/S0140-6736\(13\)62457-5](http://dx.doi.org.ezp.lib.unimelb.edu.au/10.1016/S0140-6736(13)62457-5)
- [4] Anstey K. J., Lipnicki D. M., & Low L. F. (2008). Cholesterol as a risk factor for dementia and cognitive decline: A systematic review of prospective studies with meta-analysis. *American Journal of Geriatric Psychiatry*, 16(5), 343-54. doi: 10.1097/01.JGP.0000310778.20870.ae
- [5] Cheng G., Huang C. T., Deng H., Wang H. (2012). Diabetes as a risk factor for dementia and mild cognitive impairment: A meta-analysis of longitudinal studies. *Internal Medicine Journal*, 42(5), 484-491. doi: 10.1111/j.1445-5994.2012.02758.x
- [6] Alzheimer's Australia. (2014). *Dementia and Diabetes*. Alzheimer's Australia: Victoria. ISBN: 978-1-921570-49-0
- [7] Anstey K. J., Cherbuin N., Budge M., & Young J. (2011). Body mass index in midlife and late-life as a risk factor for dementia: A meta-analysis of prospective studies. *Obesity Reviews*, 12(5), 426-437. doi: 10.1111/j.1467-789X.2010.00825.x
- [8] Beydoun, M. A., Beydoun, H. A., & Wang, Y. (2008). Obesity and central obesity as risk factors for incident dementia and its subtypes: A systematic review and meta-analysis. *Obesity Reviews*, 9, 204-218. Retrieved from: <http://dx.doi.org.ezp.lib.unimelb.edu.au/10.1111/j.1467-789X.2008.00473.x>
- [9] Gardener, H., Wright, C. B., Rundek, T., & Sacco, R. L. (2015). Brain health and shared risk factors for dementia and stroke. *Nature Reviews Neurology*, 11, 651-657. doi: 10.1038/nrneuro.2015.195
- [10] Anstey K. J., von Sanden C., Salim A., & O'Kearney R. (2007). Smoking as a risk factor for dementia and cognitive decline: A meta-analysis of prospective studies. *American Journal of Epidemiology*, 166, 367-78. Retrieved from: <http://aje.oxfordjournals.org.ezp.lib.unimelb.edu.au/content/166/4/367>
- [11] Almeida O.P., Garrido G.J., Alfonso H., Hulse G., Lautenschlager N.T., Hankey G.J., & Flicker, L. (2011). 24-month effect of smoking cessation on cognitive function and brain structure in later life. *Neuroimage*, 55(4), 1480-1489. doi: 10.1016/j.neuroimage.2011.01.063

Other references:

The Australian National Health and Medical Research Council (NHMRC): <https://www.nhmrc.gov.au/>  
The Australian Government Department of Health: <http://www.health.gov.au/>

Designed by Ashleigh Tenaglia.

- <https://au.linkedin.com/in/ashleigh-tenaglia-2a9508b0>  
- [aatdesigns@gmail.com](mailto:aatdesigns@gmail.com)

Produced with the support of the Dementia Collaborative Research Centre - Early Diagnosis and Prevention (DCRC-EDP)