

## **Dementia and Prevention**

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The numbers of people with dementia is expected to double in the next 20 years with associated costs rising faster. Delaying the onset of dementia by five years could reduce deaths directly attributable to dementia by 30,000 a year.

There is growing evidence indicating that certain medical conditions - such as high blood pressure, diabetes and obesity - may increase the risk of dementia whereas a healthy lifestyle may reduce the risk. Furthermore, aggressive management of vascular risk factors may slow the progression of vascular dementia and Alzheimer's disease (Alzheimer's Society).

### **High blood pressure and dementia:**

The HYVET clinical trial (Hypertension in the Very Elderly Trial). HYVET is designed to observe the benefits and risks of reducing blood pressure in very elderly hypertensives (aged 80 or more) and is the largest clinical trial in very elderly hypertensives. 3845 patients participated in the HYVET study from 11 different countries. The trial showed reductions of 21% in total deaths, 39% in stroke-related death, 64% in fatal and non-fatal heart failure, and 34% in cardiovascular events. There was also evidence from the HYVET-COG sub-study that blood pressure lowering may reduce or delay dementia.

Source: HYVET website

### **Diabetes and dementia:**

A group of experts at King's College London have found that older people with mild memory loss are three times more likely to develop dementia if they have diabetes. The researchers, from the Alzheimer's Research Trust, had their work published in the British Journal of Psychiatry. The research team followed some 61 people aged 65 or over who had mild cognitive impairment. Of those who progressed to dementia over a four year period, seven had diabetes.

This is also supported by other studies, in 2006 the Lancet Neurology Journal reported evidence on the relationship between diabetes and dementia, it went on to detail that the incidence of "any dementia" was higher in individuals with diabetes than in those without diabetes in seven of ten studies reporting this aggregate outcome. This high risk included both Alzheimer's disease and vascular dementia (eight of 13 studies and six of nine studies respectively).

Source: Diabetics.co.uk and the Lancet Neurology Journal

### **Obesity and Dementia:**

A study in the year 2000 in the Neurology Journal concluded that central obesity in midlife increases the risk of dementia independent of diabetes and cardiovascular comorbidities.

The Alzheimer Society state the following findings from the Obesity Reviews Journal:

- Obesity increases the overall dementia risk dementia by 42% and being underweight increases the risk by 36%.

- But the obesity/dementia risk is greater with Alzheimer's Disease (up 80%) and vascular dementia (up 73%).
- People who are normal or overweight do not face an increased risk.
- Researchers reviewed 10 international studies published since 1995, covering people with various forms of dementia
- The risks were greater in studies where sufferers developed Alzheimer's or vascular dementia (linked to high blood pressure, heart disease etc) before the age of 60.

Source: Alzheimer's Society and the Obesity Review Journal

### **Healthy Lifestyles and Dementia:**

People can reduce their risk of developing dementia by up to 20 per cent if they lead a healthy lifestyle according to the British Medical Journal. By keeping a healthy weight, getting regular exercise throughout a person's life and managing blood pressure and cholesterol from 35 onwards, the risk of dementia can be reduced by up to 20 per cent.

Source: Alzheimer's Society

Prevention of dementia syndromes (including delaying onset) could have a significant impact on prevalence. Not surprisingly, there appears to be a huge literature on this subject.

Given that there are a number of underlying conditions that cause the symptoms of dementia, we might expect the risk factors and preventability to differ from type to type. For example, because of the pathological processes associated with vascular dementia, we would expect it to be associated with established cardiovascular risk factors, such as smoking, arteriosclerosis, hypertension, and diabetes. However, in addition, there appears to be a large overlap between risk factors for the main types of dementia, i.e. Alzheimer's disease and vascular dementia.<sup>1,2</sup>

Despite the large number of publications on the subject, reviews of the evidence on risk factors and preventive strategies for dementia point out that there is a lack of large prospective cohort studies designed to look specifically at dementia, and therefore much of the evidence base relies on lower-quality studies<sup>1,3,4</sup> or is derived from studies that were originally designed and conducted to investigate other conditions, such as cardiovascular disease and cancer<sup>3</sup>. As with many other public health issues, it appears that there are many studies suggesting association between particular risk factors and the development of dementia, but considerably fewer studies providing evidence that modification of these risk factors leads to a reduction in dementia rates.

However, most of the modifiable risk factors and corresponding interventions that have been proposed as important in the aetiology and prevention of dementia are those that have been identified more generally in relation to prevention of cardiovascular disease and maintenance of good general health. This can be seen in a saying that appears in a lot of articles on the subject of dementia: "*What is good for your heart is good for your head*". Therefore, these are lifestyle interventions that we would want to promote for other reasons, because they would have other positive health outcomes without adverse effects, even if the evidence is insufficient to recommend a particular intervention specifically as a preventive measure for dementia. As one review paper says: "*In the most optimistic view, dementia could be delayed or even prevented by these interventions. At worst, people will improve their overall health, especially their*

*cardiovascular health, and enjoy a more cognitively and socially engaging life."*<sup>2</sup>

I think that Emily's review has covered most of the purported modifiable risk factors, which – as discussed above – are essentially those that primarily apply to cardiovascular disease. In addition to her list of **hypertension, diabetes and obesity**, we might also add **smoking** to the list of cardiovascular risk factors<sup>1,3</sup>– and **physical activity**<sup>1-4</sup> and **fruit and vegetable consumption** ('Mediterranean diet')<sup>2-4</sup> to the list of protective factors – for which there is some evidence for dementia.

There are some additional risk factors that have been suggested in reviews relating to dementia, that may not be considered in relation to the established cardiovascular risk factors:

- **Excessive alcohol consumption** is considered as a risk factor.<sup>1</sup> (However, light to moderate alcohol consumption has been suggested to be possibly protective.<sup>1,3</sup> *"These associative studies are not a basis on which to advise consumption of alcohol, though they do imply that drinking within the recommended range (up to 14 units per week for women and up to 21 units for men) is unlikely to increase risk of dementia."*<sup>1</sup>)
- **Depression.** A complex relationship between depression and dementia is suggested by the literature.<sup>1</sup> Rates of depression are increased in those with dementia, while depression can sometimes be an early prodrome or manifestation of a dementing illness.<sup>1,2</sup> In addition, those with depression may have reduced cognitive performance, which may mimic dementia.<sup>1</sup> Studies which have examined depression as a risk factor for dementia have suggested an increased risk of subsequent risk of dementia in those with a history of depression, but the nature of the relationship is unclear (whether depression is a risk factor for dementia, or whether depression is an early prodrome of dementia, or whether both conditions have other shared confounding environmental or genetic risk factors).<sup>1,2</sup> There are no prospective studies that have examined whether reducing depression subsequently reduces dementia risk.<sup>1,2</sup>
- **Head injury** also appears to have been implicated as a risk factor in some studies.<sup>1</sup> (A good reason for discouraging boxing as a sport?!)
- **Engagement in cognitively stimulating activities, and social interaction.** This is another area where there are likely to be complex associations. Some studies have reported an apparent protective effect of participation in cognitively demanding activities,<sup>1-4</sup> suggesting a 'use it or lose it' hypothesis<sup>1</sup>. However, the interpretation of findings is difficult, because it is difficult to establish whether there is a real effect or an artefactual effect due to alteration of the threshold at which dementia becomes apparent in people with greater 'cognitive reserve'.<sup>1,2,4</sup> Similarly, some studies have suggested that people with limited social networks and low social engagement may be more likely to develop dementia compared with those with more socially active lives.<sup>2</sup> Again, however, the association may be complicated by the possibility that low social engagement may be an early symptom of cognitive impairment rather than a risk factor.<sup>2</sup>

As Emily has said in her review, it has been suggested by an 'expert panel' that a total reduction of up to 20% ("approximately 15% to 20%") in an individual's dementia risk would be possible if they were to combine "the best healthy lifestyle factors."<sup>5</sup> It is also reported that this panel highlighted the four most important areas to tackle with a view to minimizing the risk of developing dementia as: increasing levels of exercise (across all age groups), reducing midlife

obesity, bringing blood pressure to optimal levels in midlife and reducing cholesterol in midlife.<sup>5</sup>

Given that it is suggested that modification of lifestyle factors may reduce risk only by up to 20%, it needs to be recognized that there are a number of established non-modifiable risk factors for dementia. These include:

- Advancing age. This is, of course, the single biggest risk factor for developing all the main types of dementia.<sup>1,2,5</sup>
- Genetic factors. These are paramount in some forms of dementia: several autosomal dominant forms of young-onset dementia have been described, although these account for only a very small proportion of cases.<sup>1</sup>  
In relation to the more common (late-onset) forms of dementia, the genetic component is less clear-cut, although it has been suggested that genetic factors may explain up to half the liability to develop the condition.<sup>1</sup> For Alzheimer's disease, possession of the apolipoprotein E (ApoE) gene variation is a risk factor,<sup>1,3</sup> although it is reported that at least 50% of late-onset Alzheimer's disease occurs without the apoE4 allele.<sup>1</sup>
- Learning disabilities are a recognized risk factor. People with Down's syndrome are recognized to be at risk of developing a dementia of Alzheimer type earlier than the rest of the population, and some research has also suggested the prevalence of dementia in people with learning disabilities without Down's syndrome is also raised.<sup>1</sup>

#### References:

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