

ASH Fact sheet: Smoking and Dementia

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INTRODUCTION

This fact sheet examines the links between smoking and dementia. 14.4% of adults in England are current smokers, and smoking contributes to almost 78,000 deaths every year.¹

Smoking is associated with an increased risk of dementia.² A 2017 Lancet Commission on dementia risk ranked smoking third among 9 modifiable risk factors for dementia.³ The WHO estimates that 14% of cases of Alzheimer's disease worldwide are potentially attributable to smoking.⁴

Globally, there are an estimated 50 million people living with dementia. Dementia is an umbrella term for a range of progressive neurodegenerative conditions which are characterised by symptoms such as memory loss, difficulties with thinking, problem-solving or language (cognitive function). The most common causes of dementia are Alzheimer's disease, vascular dementia, frontotemporal dementia and dementia with Lewy bodies.⁵ It can be caused by a combination of different types which is sometimes referred to as mixed dementia.⁶ In all types of dementia, brain cells degenerate and die at a faster rate compared to the normal ageing process.^{7 8}

Dementia predominantly occurs in older people and is a consequence of complex interactions between genetic, environmental and lifestyle factors.⁹ Late-onset dementia (in people aged over 65) is the most common form, accounting for over 90% of cases.¹⁰ The two main types of dementia are Alzheimer's disease and vascular dementia.¹¹

Alzheimer's, the most common cause of dementia, is a physical disease where the brain progressively becomes more damaged leading to a gradual worsening of symptoms. Life expectancy following diagnosis is typically three to eleven years.¹²

The cause of Alzheimer's disease is poorly understood, but the disease is characterised by the build-up of plaques (structures of amyloid proteins) and tangles (made up of tau filaments) in the brain.¹³ This leads to a loss of connections between nerve cells and eventually to the death of nerve cells and loss of brain tissue.^{9 14}

Genetic studies have found that there are more than 20 genes associated with susceptibility to Alzheimer's disease¹⁵. Genetic risk factors will likely interact with modifiable environmental risk factors to further increase the risk of developing Alzheimer's disease.¹⁶ It is possible more genetic risk factors for Alzheimer's disease and other manifestations of dementia will be discovered.

Vascular dementia is dementia caused by problems in the supply of blood to the brain. There are many overlapping symptoms of Alzheimer's disease and Vascular dementia meaning that diagnosis can be challenging.¹⁷ About 20% of people who have a stroke develop post-stroke dementia within the following six months.¹⁸

THE LINK BETWEEN SMOKING AND DEMENTIA

Smoking is associated with an increased risk of dementia.² A 2017 Lancet Commission on dementia risk ranked smoking third among 9 modifiable risk factors for dementia.³

A meta-analysis of studies undertaken in the 1990s and early 2000s found that relative to never smokers, current smokers had a risk ratio of 1.79 for Alzheimer's disease and 1.78 for vascular dementia.¹⁹ Another systematic review found slightly lower odds, with risks of 1.59 for Alzheimer's and 1.35 for vascular dementia.²⁰ A more recent review of 37 studies found that compared to never smokers, current smokers had an increased risk of all-cause dementia of 1.30, and a risk ratio of 1.40 for Alzheimer's disease.²¹

A large Finnish study found that people who smoke heavily (more than two packs a day) in their midlife years more than double their risk of developing Alzheimer's disease or other forms of dementia two decades later. This suggests that there is a possible dose-response relationship – i.e. the more someone smokes, the higher their risk of developing dementia.²² Similar results were recorded in the Honolulu-Asia Aging study (odds ratio for Alzheimer's disease of 2.18 for medium and 2.40 for heavy smoking levels).²³ A Chinese study also found that, compared to low consumption smokers, the adjusted risk of Alzheimer's disease was significantly increased among medium to high consumption smokers.²⁴

The WHO estimates that 14% of cases of Alzheimer's disease worldwide are potentially attributable to smoking.⁴

This evidence contradicts the findings of some studies conducted in the early 1990s which had suggested that smoking had a protective effect against dementia, particularly Alzheimer's disease.²⁵ It was hypothesised that nicotine from cigarettes could compensate for the loss of nicotinic receptors in the brain associated with Alzheimer's disease. This theory was perpetuated by the tobacco industry which influenced a number of studies examining smoking and mental health disorders.^{26 27} This theory has now been discredited.

Selection bias may affect the outcome of some studies since a higher proportion of smokers die prematurely.²⁸ Therefore, it is possible that the association between smoking as a risk factor for dementia has been obscured.²⁹

In terms of mechanistic links between smoking and dementia, our current understanding is limited. Nevertheless, chronic exposure to cigarette smoke has been linked to oxidative stress which is connected to the onset of dementia. Smoking also increases the risk of developing risk factors for Alzheimer's disease such as stroke and hypertension.⁶

SECONDHAND SMOKE (SHS) AND DEMENTIA

There has been evidence of an association between secondhand smoke (SHS) and dementia.^{30 31} A review of three cross-sectional studies showed a significant association between SHS and cognitive impairment in older adults with a relative risk of 1.30 - 1.90.³² Other studies suggest that there may be a dose-response risk with those exposed to tobacco smoke over many years at increased risk of dementia.^{33 34 35 36}

SMOKING, DEMENTIA AND OTHER MODIFIABLE RISK FACTORS

People who adopt a healthy lifestyle are less likely to develop dementia. Not smoking, exercising regularly, maintaining a healthy weight, eating a balanced diet and drinking alcohol within NHS lower-risk guidelines all help minimise the risk of dementia, as well as reducing the risk of cancer, circulatory disease and other mental health disorders.^{37 38} As there is no cure for dementia it is essential to identify and raise awareness of these modifiable risk factors in order to reduce the burden of the disease on society. Using computer modelling, an Australian study estimated that for each 5% fall in smoking prevalence there would be a 2% reduction in dementia risk.³⁹

THE AGEING POPULATION AND DEMENTIA RATES

Globally, there are an estimated 50 million people living with dementia, a number predicted to triple by 2050.⁴⁰ In the UK, about 850,000 people have the condition. The Alzheimer's Society forecasts that this will rise to over one million people by 2021 and over two million by 2051 if no action is taken and current trends continue.⁴¹

The rise in dementia is largely due to an ageing population; advanced age is the biggest single risk factor for dementia. As a 2015 editorial in *The Lancet* noted: "The ageing of populations is poised to become the next global health challenge. During the next 5 years, for the first time in history, people aged 65 years and older in the world will outnumber children aged younger than 5 years."⁴² After the age of 65, a person's risk of developing Alzheimer's disease doubles approximately every 5 years. One in six people over the age of 80 have dementia.⁴³ However, dementia is not an inevitable part of ageing.

BENEFITS OF SMOKING CESSATION

Stopping smoking at any age is beneficial and the younger a person quits, the greater the benefits in terms of life expectancy gained. Long-term smokers lose on average 10 years of life, compared to those who have never smoked.⁴⁴ A longitudinal study of British doctors spanning 50 years showed that people who stop smoking at age 60, 50, 40, or 30 gain, respectively, about 3, 6, 9, or 10 years of life expectancy.⁴⁴ In another study, both long term quitters and never smokers were found to have a decreased risk of Alzheimer's disease and vascular dementia compared to smokers.⁴⁵

A Whitehall cohort study found that, compared with never smokers, middle-aged male smokers experienced faster cognitive decline. However, among former smokers who had refrained from smoking for at least 10 years, there were no adverse effects on cognitive decline.⁴⁶

Stopping smoking in middle age and keeping other risk factors under control will reduce the risk of dementia. There are also immediate health benefits such as reduced blood pressure and improved lung function even after a person has been diagnosed with the disease.

People with early stages of dementia who smoke and are reluctant to quit, or find stopping difficult, may benefit from using electronic cigarettes to reduce the harm from smoking. Leading UK health and public health organisations including the [RCGP](#), [BMA and Cancer Research UK](#) now agree that e-cigarettes are far less harmful than smoking. Based on an assessment of the available international peer-reviewed evidence, [Public Health England](#) and the [Royal College of Physicians](#) estimate the risk reduction to be at least 95%.⁴⁷

REDUCED FIRE RISK

People with dementia who smoke have an increased risk of fire at home as they are less likely to follow safe smoking procedures, such as extinguishing cigarettes fully and disposing of them correctly.⁴⁸ In order to reduce the risk of fire, it is clearly advantageous to help people with dementia to stop smoking as soon as possible. They may be assisted by the adoption of smokefree policies in residential care homes. Although bedrooms and designated smoking rooms in care homes are exempt from the smokefree workplace law, the providers of sheltered accommodation may choose to make the whole premises smokefree.⁴⁹ Provided that this policy is communicated to residents and their relatives, as well as being properly enforced, going smokefree can lead to a safer, more pleasant environment for both staff, residents and visitors.

FURTHER INFORMATION AND RESOURCES

For details of local Stop Smoking Services see: <http://www.nhs.uk/smokefree/help-and-advice/local-support-services-helplines>

Alzheimer's Society: www.alzheimers.org.uk

National Dementia Helpline: 0300 222 11 22

[ASH Fact sheet: Smoking and mental health](#)

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