



Public Health
England

Protecting and improving the nation's health

The effect of mid-life risk factors on dementia in older age

Key messages

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Key messages

This paper sets out the key messages from the focused literature review carried out by the Personal Social Services Research Unit (PSSRU) at the London School of Economics and Political Science (2016) on the effect of mid-life risk factors on dementia in older age. The review included relevant published papers since the year 2000.

The aim of the study was to provide information to assist commissioners to make decisions about prioritisation of primary prevention measures relevant to dementia. The review focussed on recent literature on the relationship between changes in risk factor behaviours or conditions in mid-life (ages 40 to 64) and onset of dementia later in life:

- around one-third of cases of dementia in old age could potentially be prevented through changes in behaviour in mid-life (Norton et al 2014). This highlights the importance of pursuing preventative measures
- although the evidence is fairly limited, there is sufficient evidence to show that a range of behaviours in mid-life impact on the risk of dementia in later life
- there is evidence that physical inactivity, current smoking, diabetes, hypertension in mid-life, obesity in mid-life and depression increase the risk of dementia and that mental activity can reduce the risk of dementia
- there is currently insufficient evidence that alcohol, diet, mental distress, social isolation, loneliness or air pollution - considered as individual risk factors - affect the risk of dementia in later life. Further research is needed on these potential risk factors
- further research is also required to better understand the relationship between the various mid-life risk factors and the impact on dementia

Sufficient evidence for action	Further evidence needed
Physical and mental inactivity Current smoking Diabetes Hypertension in mid-life Obesity in mid-life Depression	Alcohol Diet Mental distress Social isolation and loneliness Air pollution

Implications for commissioners

- evidence tells us that the greatest mid-life risk factor for dementia is physical inactivity. People who are physically inactive in mid-life have more than double the risk of dementia in old age than those who are physically active
- in order to decide where to take action, commissioners should consider not just the relationship between the mid-life risk factors and dementia, but also the prevalence of each risk factor within their local population. PHE's [dementia profile](#) contains localised data on the prevalence of risk factors
- risk factors are correlated (eg depression can be reduced through increased physical activity) so they shouldn't be considered in isolation. Commissioners may want to consider multi-component measures which aim to address more than one risk factor simultaneously
- the relationship between at least some of the risk factors and dementia may be complex rather than causal in one direction: for example, depression and dementia may in later life be inter-related rather than depression causing dementia
- reductions in mid-life risk factors (eg increased physical activity) are likely to increase overall life expectancy. Given that dementia risk increases with age, measures to reduce risk factors may result in reduced risk of dementia in early old age but an increased lifetime risk of dementia. This should be regarded as a valuable outcome since an increase in total life expectancy and dementia-free life expectancy is achieved
- there will be little or no effect of changes in behaviours in mid-life on prevalence around onset of dementia for many years and the biggest impact will occur after 2040 even from smoking cessation or commencement of physical activity in 2017. The return on investment of mid-life approaches to reducing dementia risk is, therefore, limited to a long-term return of over 20 years. Based on current evidence, there cannot be quick wins from primary prevention of dementia in terms of reduced prevalence of the condition or financial savings, but there is a significant opportunity for improving life expectancy and quality of life in old age

Implications for further research

- further studies are required to examine the impact on incidence of dementia of lifestyle changes in midlife. For example, further research is needed to determine how many years of physical activity and of what level of intensity needs to be undertaken to achieve optimal impact
- the association between the different risk factors needs to be studied in greater detail to explore the impact of changes in combinations of risk factors. It will be important to understand the impact on incidence of dementia in old age of changes at different ages in different combinations of risk factors