Researchers find smoking and high blood pressure may be linked to ageing of the brain

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(Medical Xpress)—Researchers at King's College London have identified several cardiovascular risk factors, including smoking and high blood pressure, which may be associated with the accelerated decline of memory, learning, attention and reasoning in older adults.

Published today in the journal Age and Ageing, the study found that participants over the age of 50 who smoked, had high blood pressure or were most at risk of suffering a stroke, performed more poorly on a range of cognitive tasks designed to test memory recall, verbal fluency,

attention and other cognitive outcomes.

The study is one of the few longitudinal investigations to explore the combined effect of multiple risk factors on cognitive decline in older adults. Researchers saythese findings indicate that future clinical trials looking at cognitive decline should focus on the combination of these risk factors rather than individual triggers.

Using information from the English Longitudinal Study of Ageing (ELSA), a nationally representative sample of more than 8,000 adults, the researchers analysed data on smoking, blood pressure, cholesterol levels and Body Mass Index (BMI), as well as Framingham cardiovascular and stroke risk scores (used to determine the probability of an individual developing heart disease or stroke within the next ten years).

At four and eight-year follow-ups, participants undertook two measures of cognitive performance, including memory and executive functioning, which were then combined into athird, overall 'cognitive index' score. The memory task involved learning ten unrelated words before immediate and delayed recall was tested. For the assessment of executive functioning, participants were asked to name as many animals as possible in one minute, which examined verbal fluency, and to cross-through specified letters in a series (letter cancellation), which measured attention, mental speed and visual scanning.

The study showed that smoking had the most consistent impact, linked with lower cognitive performance in all three cognitive tasks after four years. Those with high BMI, blood pressure and stroke risk scores performed less well on cognitive tasks, although this varied across the three tests. High BMI was associated with lower performance on the memory task, high blood pressure was linked with lower scores for memory and overall cognitive performance, and those with a high risk of

developing stroke were found to perform more poorly across all three cognitive assessments.

Dr Alex Dregan, Lecturer in Translational Epidemiology and Public Health at King's College London, said: 'Cognitive decline becomes more common with ageing and for an increasing number of people interferes with daily functioning and wellbeing. Some older people can become forgetful, have trouble rememberingcommon words or have problems organising daily tasks more than others.

'We have identified a number of risk factors which could be associated with accelerated cognitive decline, all of which, could be modifiable. This offers valuable knowledge for future prevention and treatment interventions.'
The study was also one of the few longitudinal studies to explore cognitive decline over a long period of time in older adults, which is useful in identifying the short and long-term effects of cardiovascular risk factors. High blood pressure was associated with lower performance on memory tasks and tests of overall cognitive ability after eight years, indicating that high blood pressure has a gradual impact over a longer period of time, as opposed to those with high stroke and cardiovascular risk, for whom the effect was more sudden (lower performance reported at four-year follow-up). The researchers say this finding could be one reason why short-term trials may have failed to show effects of blood pressure lowering drugs on cognitive decline, as potential benefits may only emerge over substantial periods of time.

Dr Dregan believes the findings could serve as a basis on which to develop future clinical trials aimed at identifying interventions for the UK's growing population of older adults. He said: 'Our research suggests that the most promising approach to delaying or preventing early ageing of the brain is one that acknowledges the multi-causality of cognitive decline. Thus, current efforts to reduce cardiovascular risk may prove

beneficial for cognitive decline. One such initiative is the NHS Health Check programme, aimed at preventing cardiovascular disease by inviting 40-74 years olds to five-yearly check-ups in order to assess their risk of developing stroke, diabetes, kidney disease or heart disease, and to offer advice and support to help them manage that risk.'

More information: www.ifs.org.uk/ELSA

Provided by King's College London

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