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Nine risk factors may contribute to two thirds of Alzheimer's cases worldwide

All potentially modifiable; could prove promising options for prevention, say researchers

Nine potentially modifiable risk factors may contribute to up to two thirds of Alzheimer's disease cases worldwide, suggests an analysis of the available evidence, published online in the ***Journal of Neurology Neurosurgery & Psychiatry***.

The analysis indicates the complexity of Alzheimer's disease development and just how varied the risk factors for it are.

But the researchers suggest that preventive strategies, targeting diet, drugs, body chemistry, mental health, pre-existing disease, and lifestyle may help to stave off dementia. This could be particularly important, given that, as yet, there is no cure, they say.

The researchers wanted to look at the factors associated with the development of Alzheimer's disease in a bid to determine the degree to which these might be modified and so potentially reduce overall risk.

They therefore trawled key research databases, looking for relevant studies published in English from 1968 up to July 2014.

Out of almost 17,000 studies, 323, covering 93 different potential risk factors and more than 5000 people, were suitable for inclusion in the analysis. The researchers pooled the data from each of the studies and graded the evidence according to its strength.

They found grade 1 level evidence in favour of a protective effect for the female hormone oestrogen, cholesterol lowering drugs (statins), drugs to lower high blood pressure, and anti-inflammatory drugs (NSAIDs).

They found the same level of evidence for folate, vitamins C and E, and coffee, all of which were associated with helping to stave off the disease.

Similarly, the pooled data indicated a strong association between high levels of homocysteine—an amino acid manufactured in the body—and depression and a significantly heightened risk of developing Alzheimer's disease.

The evidence also strongly pointed to the complex roles of pre-existing conditions as either heightening or lowering the risk.

The factors associated with a heightened risk included frailty, carotid artery narrowing, high and low blood pressure, and type 2 diabetes (in the Asian population). Those associated with a lowered risk included a history of arthritis, heart disease, metabolic syndrome, and cancer.

Certain factors seemed to be linked to altered risk, depending on the time of life and ethnic background.

For example, high or low body mass index (BMI) in mid-life and low educational attainment were associated with increased risk, whereas high BMI in later life, exercising one's brain, current smoking (excluding the Asian population), light to

moderate drinking, and stress were associated with lowered risk.

There were no significant associations found for workplace factors.

The researchers then assessed the population attributable risk (PAR) for nine risk factors which had strong evidence in favour of an association with Alzheimer's disease in the pooled analysis, and for which there are data on global prevalence.

PAR refers to a mathematical formula used to define the proportion of disease in a defined population that would disappear if exposure to a specific risk factor were to be eliminated.

The nine risk factors included obesity, current smoking (in the Asian population), carotid artery narrowing, type 2 diabetes (in the Asian population), low educational attainment, high levels of homocysteine, depression, high blood pressure and frailty.

The combined PAR indicated that these nine factors, each of which is potentially modifiable, contribute up to around two thirds of cases globally.

This is an observational study, so no definitive conclusions can be drawn about cause and effect, but the researchers suggest that preventive strategies, targeting diet, prescription drugs, body chemistry, mental health, underlying disease, and lifestyle might help curb the number of new cases of Alzheimer's disease.

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Notes for editors:

Research: Meta-analysis of modifiable risk factors for Alzheimer's disease

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