Dementia threat soars in areas hit by pollution

Up to 40 per cent increased risk on worst roads

Chris Smyth, Health Editor

September 19 2018, 12:01am, The Times

Cases of the illness could be reduced by cleaning up dirty air in cities and townsLiving in a polluted area increases the risk of dementia by up to 40 per cent, the first British study of its kind has found. Thousands of cases of the illness could be prevented every year by cutting traffic fumes, said researchers who have added to growing evidence that dirty urban air can damage the brain.

Polluted air is known to cause lung and heart problems as tiny soot particles and chemicals such as nitrogen dioxide (NO_2) pass deep into the body.

Research is also increasingly linking traffic fumes to thinking problems. Last year a Canadian study of 2.2 million people concluded that those who lived continuously near a busy road were 12 per cent more likely to get dementia.

Scientists now say that Britain’s higher pollution levels may make the risk even greater in this country after looking at data on 131,000 Londoners aged above 50, of whom 2,200 developed dementia over seven years.

The research cannot prove a causal link but it found that people living in the fifth of areas with the highest levels of fine particulate matter (PM2.5) were 20 per cent more likely to get dementia during the study. Those exposed to the highest fifth of NO2 levels were 40 per cent more likely to get dementia even after adjusting for age, class and other health habits, according to results in the journal *BMJ Open*.

Frank Kelly, of King's College London, senior author of the study, said that while the results were not conclusive "it is increasingly appreciated that the impacts of air pollution on health are seen far beyond the lungs".

He said it was "very likely that high air pollution alone does not cause dementia but rather it increases the risk of an individual developing it", adding: "Air pollution is linked with many more conditions than dementia and therefore there is now overwhelming evidence that we should be improving air quality in cities to improve public health."

Traffic fumes, particularly from diesel, are the main sources of PM2.5 and NO2 and Professor Kelly said that ministers had a responsibility to cut pollution. He advised people wanting to minimise their exposure to "plan low-pollution routes and try to avoid rush hour".

He added that indoors, people could decrease emissions by not burning candles or having open fires and by increasing ventilation when cooking.

Exactly how pollution harms the brain is not fully understood, nor how long people need to be living in polluted areas to be at risk, as the study looked only at pollution exposures at one point in time. Professor Kelly said that damage was likely to build up over years or decades as the result of inflammation and other reactions to pollution.

"We thus hypothesise that it is these reactions by our body to elevated pollution occurring over and over again that leads to the eventual tissue damage such as to the lungs, blood vessels or brain," he said. The study suggested that each extra microgram per cubic metre of PM2.5 increased dementia risk by 7 per cent, compared with 1 per cent in the Canadian research. Professor Kelly said: "The pollution concentrations in London are higher and this would be the most likely explanation."

He estimated that bringing pollution down to the lowest levels seen in London could prevent 7 per cent of all dementia cases in the study. With 210,000 people developing dementia each year in Britain, cleaner air could result in a "significant public health gain" he said.

Martie van Tongeren, of the University of Manchester, said: "There is a growing body of evidence of the link between air pollution and brain health, including dementia and Alzheimer's. This study adds to this . . . As most people in the UK live in urban areas, exposure to traffic-related and other air pollutants is ubiquitous. Hence, even a relatively small increase in risk will result in a large public health impact."

With no treatment for Alzheimer's, experts increasingly believe that preventing the condition is the best hope of mitigating its toll. However, James Pickett, of the Alzheimer's Society, said that despite the evidence that pollution particles could reach the brain the link was still uncertain. "We

need more robust research into how pollution affects brain health before we can decide whether we should get out of the city and move to Emmerdale," he said.

David Reynolds, of Alzheimer's Research UK, said it was possible that other diseases not measured by the study could skew the results, as could differences in diagnosis rates by GP surgeries. "The diseases that cause dementia can begin in the brain up to 20 years before symptoms start to show. We don't know where people in this study lived in the two decades before their dementia diagnosis, so we have to be cautious about how we interpret these results," he said.

"The link between air pollution and dementia risk is a growing area of research. This study highlights the importance of further studies that look into exposure to pollution over a longer period of time."

THE SUNDAY TIMES