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PM 2.5 Components Linked to Increased Dementia Risk.

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Background

Before examining the study it is important to provide some background on dementia and alzheimers. These conditions both negatively impact the brain, especially concerning memories. In order to better understand the logistics of the related article it is important to define the difference between the two conditions. Dementia is a condition classified by cognitive decline resulting from various factors, this is linked particularly to impaired cognitive function beyond what is typically expected with aging. Alzheimers disease is an irreversible cause of dementia that is marked by negative impacts on memory retention, thinking, and behavior.

Long-term exposure to constituents of fine particle air pollution (PM 2.5) was found to be associated with higher rates of dementia and Alzheimer's disease, and fossil fuel combustion may be the cause for the association. While previous studies focused on various observed health conditions, this study focused on specific PM 2.5 components to determine which pollutants are linked to increased dementia risk.

The study was published on December 27, 2022, in the Proceedings of the National Academy of Sciences.

"[In this study], using two independent exposure datasets allows us to examine the robustness of findings and thus strengthen the credibility of the evidence for the associations. Our results will facilitate targeted source-specific pollution control strategies," wrote the researchers.

Call to Action

With the prevalence of dementia related conditions such as Alzheimers to rise to over 115 million cases world wide in 2050 it is important to consider any possible causes or influencing factors related to these conditions. As a result, maintaining a healthy lifestyle, eating habits, and managing pre-existing conditions can best improve preventing the development of different dementing conditions. Below is an article written by the National Institute on Aging containing what we know about Alzheimers and the best recommended prevention methods.

Findings

The study found that long term exposure to PM 2.5 was strongly associated with an increase in Alzheimers and Dementia. The study reported that there was a 9% increase in Alzheimers and 7% increase in Dementia. In particular specific types of PM 2.5 such as black carbon (associated with emissions released from traffic) and sulfate (associated with emissions from fossil fuels) were associated with higher percentages of Dementia and Alzheimers. These findings strongly imply that there should be regulations and laws set to reduce the amount of black carbon and sulfate percentage as there is a strong correlation among the two.

Future Implications

"Our findings imply that policies that target the reduction in ambient PM2.5 concentrations, particularly primary and secondary particulate from sources such as traffic and sulfur-containing fossil fuel combustion, have a significant impact on public health," the researchers wrote. The study results suggest high exposure to specific PM 2.5 constituents rather than total PM 2.5 levels may be a key factor in dementia risk. By highlighting the pollutants associated with increased dementia risk, the researchers note that policies targeting vehicle emissions and the combustion of fossil fuels could play a role in limiting these specific PM 2.5 compounds.

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