

AIR POLLUTION AND RISK OF PARKINSON DISEASE IN A LARGE PROSPECTIVE STUDY OF WOMEN

Natalia Palacios, *Harvard University, USA*

Francine Laden, *Harvard University, USA*

Alberto Ascherio, *Harvard University, USA*

Background: Very little is known about the effects of air pollution on neurological outcomes, particularly in the area of Parkinson's disease (PD) epidemiology. The toxins in air pollution are thought to cause damage to human health by evoking an inflammatory response¹⁹ and by increasing oxidative stress, and inflammation is thought to play an important role in the pathogenesis of PD.

Methods: We assessed whether exposure to air pollution is related to risk of PD in the Nurses Health Study (NHS), a large prospective study of women. Data on cumulative exposure to air pollution before onset of PD was obtained using geographical information systems (GIS) to link an individual place of residence at different ages with location-specific air pollution levels. We prospectively followed 121,701 women in the NHS and used Cox proportional hazards models to estimate the risk of PD associated with exposure to PM₁₀ (particulate matter less than 10 micrometers in diameter) and PM_{2.5} (particulate matter less than 2.5 micrometers in diameter) air pollution.

Results: In models adjusted for age in months, and pack years of smoking, we did not observe a significant association between PM₁₀ or PM_{2.5} air pollution and risk of incident PD. The relative risk (RR) for a 10 ug/m³ increase in PM₁₀ was 1.01 (95% CI: 0.82, 1.24). For a 10 ug/m³ increase in PM_{2.5}, the RR of incident PD was 1.14 (0.70, 1.77).

Conclusions: In this study, exposure to PM₁₀ and PM_{2.5} was not related to risk of PD. Other measures of air pollution, such as exposure to specific pollutants with relation to risk of PD should be further explored.