

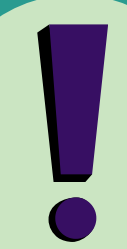
# OUTDOOR AIR POLLUTION AS A RISK FACTOR FOR ALZHEIMER'S DISEASE: A SYSTEMATIC REVIEW

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Special thanks to Sophie Robson

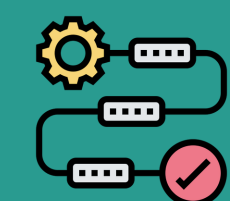
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## BACKGROUND

- Exposure to high levels of air pollutants has been shown to cause various illnesses.
- Recent research shows that air pollutant exposure plays a role in development of Alzheimer's disease (AD).



Air pollution is responsible for about 7 million deaths globally per year. <sup>(1)</sup>



## METHOD

Four primary databases were screened: Scopus, CINAHL, Embase and MEDLINE (via Ovid).

### KEY WORDS:

Alzheimer's disease

Neuroimaging

Air Pollutants



### CRITERIA FOR:

#### INCLUSION

All ages  
Long term exposure of air pollutants (months to years)

#### EXCLUSION

Lack of neuroimaging data  
Any other types of dementias



The selected papers were evaluated for quality using the Newcastle-Ottawa Scale (NOS)



## AIM

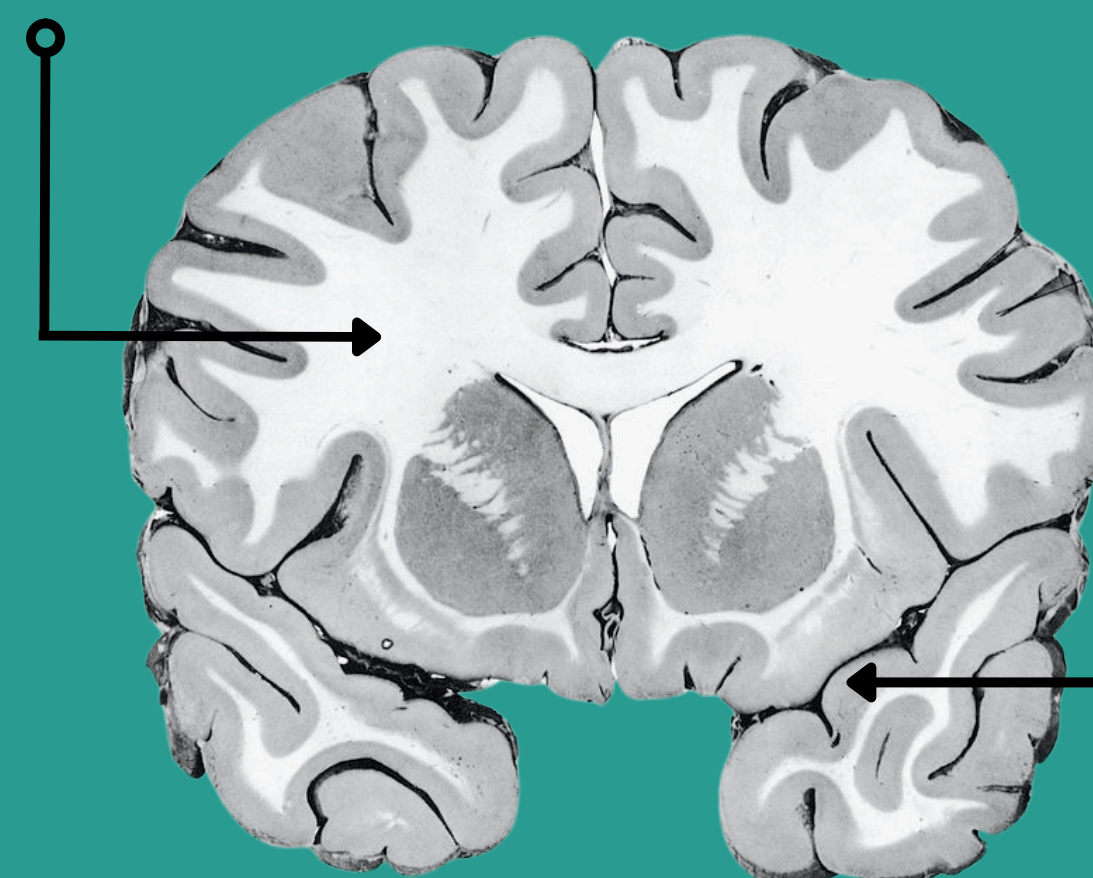
Assess the impact of outdoor air pollutant exposure on the development and progression of AD using neuroimaging data.



## RESULTS

Exposure to air pollutants particularly PM<sub>2.5</sub> led to a reduction in white matter volume in key brain regions linked to AD.

WHITE MATTER



GREY MATTER

Diagram from Atlas of the Human Brain <sup>(2)</sup>

Exposure to air pollutants resulted in some mixed findings as there was both an increase or decrease in the grey matter volume.

## REFERENCES

- (1) Air Pollution [Internet]. World Health Organization. 2023. Available from: [https://www.who.int/health-topics/air-pollution#tab=tab\\_1](https://www.who.int/health-topics/air-pollution#tab=tab_1)
- (2) White and grey matter (cross-section of the brain). Atlas of the Human Brain in Section, 2nd ed., by Melville Roberts, Joseph Hanaway, and D. Kent Morest.

262

Articles left after removing duplicates

Excluded during Title screening

154

71

Excluded during Abstract screening

Excluded during Full text screening

27

10

Articles Included



## CONCLUSION

The review was able to establish:

- Associations between PM<sub>2.5</sub>, NO and NO<sub>2</sub> exposure with brain changes linked to AD.
- Air pollution is considered a modifiable risk factor for AD development and progression.
- Need for policy changes to limit PM<sub>2.5</sub> emissions and update air quality guidelines.



## FUTURE RESEARCH

The impact of air pollutants on grey matter requires further investigation.