
Article:
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Title: Putting fine particulate matter and dementia in the wider context of non-communicable disease, where are we now and what should we do next? A systematic review. – supplementary file.

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Supplementary text 1

Search terms for the relationship between Particulate Matter 2.5 and dementia or cognition

1 (alzheime* or dementia or cogniti*).af.

2 (air pollut* or particulate matter or roadway or PM10 or Particle Size or PM* or vehicle or diesel).af.

3 1 and 2

4 limit to yr="2018 -Current" (extending a prior review from inception to 20 Sept 2018)

5 limit to humans

Search terms for the relationship between Particulate Matter 2.5 and non-communicable disease

1 air pollut* or particulate or PM10 or PM2 5 or Roadway or Vehicle or Diesel.ti.

2 systematic review.ti.

3 1 and 2

Supplementary Table 1 Reasons for exclusion after full text review, for incident non-communicable disease and $PM_{2.5}$

	Reviewed Systematic Review	**Reasons for exclusion**
1	Liu et al 2019 [1]	More recent review available
2	Balti et al 2014 [2]	More recent review available
3	Moore et al 2016 [3]	More recent review available
4	Orellano et al 2017 [4]	Data from children and adults combined
5	Park et al 2014 [5]	More recent review available
6	Li et al 2016[6]	More recent review available
7	Wang et al 2014 [7]	A review of the same date but with a greater time range.
8	Janghorbani et al 2014 [8]	More recent review available
9	Mustafic et al 2012 [9]	More recent review available
10	Eze et al 2015 [10]	More recent review available
11	Braithwaite et al 2019 [11]	More recent review available
12	Yang et al 2014[12]	More recent review available
13	He et al 2017[13]	More recent review available
14	Meo et al 2015[14]	More recent review available
15	Gowers et al 2012[15]	More recent review available
16	Li et al 2012[16]	More recent review available
17	DeVries et al 2017[17]	More recent review available
18	Chen et al 2015[18]	Not incident disease
19	Wang et al 2018[19]	Review of methodology
20	Cui et al 2014[20]	Search dates match Hamra et al [21]
21	Scheers et al 2015[22]	No separate data for $PM_{2.5}$
22	Song et al 2014[23]	More recent review available

Supplementary Table 2 Reasons for exclusion after full text review, for incident dementia, Alzheimer's Disease and $PM_{2.5}$

Reviewed publication	**Reasons for exclusion**
Andersson et al 2018 [24]	No results for $PM_{2.5}$
Chen 2017 [25]	Same population as Chen 2017 [26] and $PM_{2.5}$ included primarily as a co-variate.
Cerza et al 2019 [27]	Unable to determine if dementia measures only reflect incident dementia
Ilango et al 2019 [28]	Population appears to overlap with Chen et al 2017
Petkus et al 2020 [29]	Population appears to be from the same study as Cacciolotto et al 2017
Younan et al 2020 [30]	Population appears to be from the same study as Cacciolotto et al 2017
Shin et al 2019 [31]	Cognitive measure not dementia and cross temporal not incident decline.
Lo et al 2019 [32]	Cognitive measure not dementia and cross temporal not incident decline.
Lee et al 2019 [33]	Prevalent dementia
Li et al 2019 [34]	Prevalent dementia

Supplementary Table 3. Assessment of bias [35]								
	Risk of Bias (RoB)							
	clear aims (lower risk of bias with clear aims reported)	appropriate methodology (lower risk of bias with use of appropriate methodology)	generalizability (lower risk of bias where samples are generalizable)	exposure measurement (lower risk of bias where standard methods used to assess exposure)	outcome measurement (lower risk of bias where standard tools/criteria used to assess outcome)	un-addressed confounds (lower risk of bias where adjustments include known confounders)	adjustments	overall RoB rating
Weuve [36] et al., 2012	Low	Low	Moderate (female nurses)	Low	Low	Low	age, education, husband's education, long term physical activity, long term alcohol consumption States that secondary analyses using further adjustment found similar pattern of results	Low-moderate
Loop [37] et al., 2013	Low	Low	Low	Low	Low	Low	length of follow up, temperature, season, incident stroke, age, race, region, education, income, behavioral factors (alcohol, smoking, exercise, body mass index), depression, dyslipidemia, diabetes, hypertension	Low
Tonne [38] et al., 2014	Low	Low	Moderate (male civil servants)	Low	Low	Low	time, age, sex, ethnicity, socioeconomic status, physical activity, consumption of alcohol, age x time and main effect of exposure	Low-moderate

Carey [39] et al., 2018	Low	Low	Low	Low	Moderate (used health care records, likely to be subject to bias)	Low	Age, sex, ethnicity, smoking, body mass index, Index of Multiple Deprivation (area socioeconomic status), ischemic heart disease, stroke, diabetes, heart failure, night time noise. Each pollutant also adjusted for exposure to others.	Low
Chen [26] et al., 2017	Low	Low	Low	Low	Moderate (used health care records, likely to be subject to bias)	Low	living in the Toronto area, age, sex, region, comorbidity, socioeconomic status, treatment for diabetes, hypertension, coronary heart disease, stroke, heart failure, arrhythmias, traumatic brain injury, income, urban residence, recent migration, education, unemployment rate	Low-moderate
Cleary [40] et al., 2018	Low	Low	Moderate (selected from an ongoing longitudinal study)	Low	Moderate (used participants from an existing dementia focused study, likely to be subject to bias)	Low	age, gender, education, race, APOE genotype, smoking, B12 deficiency and population density	Moderate
Jung [41] et al., 2015	Low	Low	Low	Low	Moderate (used health care records and Alzheimer's disease only, not mixed or vascular dementia, likely to be subject to bias)	Low	age, sex, income, diabetes, hypertension, myocardial infarction, stroke, asthma	Low-moderate

Cacciottolo [42] et al., 2017	Low	Low	Moderate (female only, from the Women's Health Initiative Memory Study)	Low	Low-moderate (cognitive function and dementia diagnosis was periodic and time to event analyses requires a date of onset whereas actual onset is insidious so potential for bias)	Low	Age, geographic region, education, income, employment status, smoking, alcohol use, physical activities, use of hormone treatment, depression, body mass index, hypercholesterolemia, hypertension, diabetes, history of cardiovascular disease	Low-moderate
Oudin [43] et al., 2018	Low	Low	Low	Low	Low-moderate (dementia assessment was periodic and cox regression requires a date of onset whereas actual onset is insidious so potential for bias)	Low	Physical activity, smoking, sex, body mass index, waist hip ratio, alcohol and age. $PM_{2.5}$ from residential wood burning and $PM_{2.5}$ from vehicle exhaust.	Low
Cullen [44] et al 2018	Low	Low	Low-moderate (Subgroup from a larger study)	Low	Low (touch screen cognitive testing with automated scoring)	Low	Duration between baseline and follow-up as well as baseline age, gender, ethnic group, Townsend score (socioecomonic), education, smoking status, physical activity time outdoors, major road proximity, traffic intensity, and population density category.	Low
Kulick [45] et al 2020	Low	Low	Low-moderate (Subgroup from a larger study)	Low	Low (neuropsycholgical test battery)	Low	Visit number, visit by pollutant interaction, age, sex, race-ethnicity, education, neighbourhood socioeconomic status, and an indicator for cohort wave to account for secular trends.	Low

Grande [46] et al., 2020	Low	Low	Low-moderate (a study population from a particular geographical area)	Low	Low (robust assessment of dementia)	Low (study also included evaluation of moderation and mediation for cardiovascular risk factors)	Age, sex, education, smoking, physical inactivity, socioeconomic status, early retirement, BMI, depression, baseline MMSE and cardiovascular risk factors.	Low
Yuchi., [47]et al 2020	Low	Low-moderate (methods lack some details)	Low	Low-moderate (methods lack some details)	Moderate (used health care records, likely to be subject to bias)	Low	Age, sex, comorbidities including traumatic brain injury, diabetes, hypertension, stroke, coronary heart disease, arrhythmia plus household income, ethnicity.	Low-moderate

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