

Online supplements

Are people with a history of disease more susceptible to a short-term exposure to Asian dust? A case-crossover study among the elderly in Japan

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eTable 1. Adjusted odds ratios (ORs)^a and 95% confidence intervals (CIs) for emergency room visits resulting from cardiovascular disease events following an increase in Asian dust stratified by disease history.

	Lag0			Lag1			Lag2			Lag3			Lag4			Lag04 ^b		
	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction
History of coronary heart disease																		
Yes	1.07	(1.01, 1.13)	0.07	1.00	(0.94, 1.05)	0.56	0.94	(0.88, 1.01)	0.21	1.00	(0.95, 1.06)	0.69	1.02	(0.96, 1.08)	0.63	1.02	(0.92, 1.12)	0.72
No	1.01	(1.00, 1.03)		0.99	(0.97, 1.01)		1.00	(0.98, 1.01)		1.01	(0.99, 1.03)		1.00	(0.98, 1.02)		1.00	(0.97, 1.04)	
History of arrhythmia																		
Yes	1.04	(0.93, 1.16)	0.73	1.04	(0.88, 1.22)	0.54	1.03	(0.93, 1.14)	0.41	1.02	(0.90, 1.14)	0.88	1.04	(0.95, 1.15)	0.36	1.11	(0.91, 1.35)	0.38
No	1.02	(1.00, 1.04)		0.99	(0.97, 1.01)		0.99	(0.97, 1.01)		1.01	(0.99, 1.02)		1.00	(0.98, 1.02)		1.00	(0.97, 1.03)	
History of hypertension																		
Yes	0.99	(0.95, 1.04)	0.30	0.97	(0.93, 1.02)	0.51	0.98	(0.94, 1.03)	0.71	1.00	(0.96, 1.03)	0.47	1.01	(0.97, 1.05)	0.73	0.97	(0.91, 1.04)	0.46
No	1.02	(1.01, 1.04)		0.99	(0.97, 1.01)		0.99	(0.97, 1.01)		1.01	(0.99, 1.03)		1.00	(0.98, 1.02)		1.01	(0.98, 1.05)	
History of cerebrovascular disease																		
Yes	1.02	(0.98, 1.07)	0.88	0.99	(0.94, 1.04)	0.89	0.96	(0.92, 1.01)	0.29	1.03	(0.99, 1.06)	0.22	0.99	(0.95, 1.04)	0.86	1.01	(0.94, 1.08)	0.85
No	1.02	(1.00, 1.04)		0.99	(0.97, 1.01)		1.00	(0.98, 1.02)		1.00	(0.98, 1.02)		1.00	(0.98, 1.02)		1.00	(0.97, 1.04)	
History of respiratory disease																		
Yes	0.96	(0.85, 1.09)	0.51	0.98	(0.88, 1.10)	0.90	1.09	(1.00, 1.19)	0.03	1.08	(0.99, 1.17)	0.15	0.99	(0.90, 1.09)	0.98	1.09	(0.92, 1.28)	0.35
No	1.02	(1.00, 1.04)		0.99	(0.97, 1.01)		0.99	(0.97, 1.01)		1.01	(0.99, 1.02)		1.00	(0.98, 1.02)		1.00	(0.97, 1.03)	
History of diabetes mellitus																		
Yes	1.01	(0.95, 1.08)	0.86	1.00	(0.94, 1.07)	0.68	1.03	(0.97, 1.10)	0.17	0.98	(0.91, 1.05)	0.46	0.97	(0.90, 1.04)	0.44	1.01	(0.90, 1.13)	0.89
No	1.02	(1.00, 1.04)		0.99	(0.97, 1.01)		0.99	(0.97, 1.01)		1.01	(0.99, 1.03)		1.00	(0.98, 1.02)		1.00	(0.97, 1.04)	

Adjusted for the same-day temperature [degrees of freedom (df)=6], same-day relative humidity (df=3), reported influenza cases among residents ≥60 years of age, and public holidays.

^a Effect of an increase of one interquartile range, or 20.7 μg/m³ of Asian dust.

^b Lag0–4 represents the mean concentration between 0 and 4 lag days.

P values for the interactions between disease history and Asian dust level were operationalized as a categorical variable.

eTable 2. Adjusted odds ratios (ORs)^a and 95% confidence intervals (CIs) for emergency room visits resulting from cerebrovascular disease events following an increase in Asian dust stratified by disease history.

	Lag0			Lag1			Lag2			Lag3			Lag4			Lag04 ^b		
	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction
History of coronary heart disease																		
Yes	1.14	(1.01, 1.27)	0.10	1.03	(0.90, 1.18)	0.58	0.96	(0.85, 1.08)	0.59	0.97	(0.84, 1.11)	0.49	1.02	(0.88, 1.19)	0.96	1.07	(0.86, 1.32)	0.75
No	1.03	(1.01, 1.06)		0.99	(0.97, 1.02)		1.00	(0.97, 1.02)		1.01	(0.99, 1.04)		1.01	(0.99, 1.03)		1.03	(0.99, 1.07)	
History of arrhythmia																		
Yes	1.04	(0.88, 1.24)	0.75	0.92	(0.65, 1.30)	0.81	0.94	(0.75, 1.18)	0.70	0.97	(0.80, 1.19)	0.85	1.04	(0.92, 1.19)	0.53	1.02	(0.73, 1.42)	0.84
No	1.04	(1.01, 1.06)		1.00	(0.97, 1.02)		1.00	(0.97, 1.02)		1.01	(0.99, 1.03)		1.01	(0.99, 1.03)		1.03	(0.99, 1.07)	
History of hypertension																		
Yes	1.01	(0.96, 1.07)	0.54	0.98	(0.93, 1.04)	0.79	1.00	(0.95, 1.06)	0.78	1.01	(0.96, 1.06)	0.62	1.02	(0.97, 1.07)	0.68	1.02	(0.93, 1.11)	0.80
No	1.05	(1.02, 1.07)		1.00	(0.97, 1.03)		0.99	(0.97, 1.02)		1.02	(0.99, 1.04)		1.01	(0.98, 1.03)		1.04	(0.99, 1.09)	
History of cerebrovascular disease																		
Yes	1.03	(0.98, 1.08)	0.77	1.00	(0.95, 1.06)	0.65	0.97	(0.92, 1.02)	0.29	1.02	(0.99, 1.06)	0.51	1.00	(0.95, 1.05)	0.74	1.02	(0.94, 1.10)	0.90
No	1.04	(1.02, 1.07)		0.99	(0.97, 1.02)		1.01	(0.98, 1.03)		1.01	(0.98, 1.03)		1.01	(0.99, 1.04)		1.04	(0.99, 1.09)	
History of respiratory disease																		
Yes	0.87	(0.67, 1.12)	0.19	1.00	(0.84, 1.20)	0.85	1.15	(1.01, 1.31)	0.02	1.11	(0.97, 1.26)	0.21	0.98	(0.80, 1.21)	0.67	1.21	(0.93, 1.59)	0.44
No	1.04	(1.02, 1.06)		0.99	(0.97, 1.02)		0.99	(0.97, 1.01)		1.01	(0.99, 1.03)		1.01	(0.99, 1.03)		1.03	(0.99, 1.07)	
History of diabetes mellitus																		
Yes	1.05	(0.98, 1.14)	0.51	1.05	(0.95, 1.16)	0.24	1.09	(1.00, 1.19)	0.05	0.95	(0.84, 1.07)	0.23	0.99	(0.91, 1.07)	0.63	1.09	(0.93, 1.28)	0.52
No	1.04	(1.01, 1.06)		0.99	(0.97, 1.02)		0.99	(0.97, 1.01)		1.02	(0.99, 1.04)		1.01	(0.99, 1.04)		1.03	(0.99, 1.07)	

Adjusted for the same-day temperature [degrees of freedom (df)=6], same-day relative humidity (df=3), reported influenza cases among residents ≥60 years of age, and public holidays.

^a Effect of an increase of one interquartile range, or 20.7 μg/m³ of Asian dust.

^b Lag0–4 represents the mean concentration between 0 and 4 lag days.

P values for the interactions between disease history and Asian dust level were operationalized as a categorical variable.

eTable 3. Adjusted odds ratios (ORs) and 95% confidence intervals (CIs) for emergency room visits resulting from pulmonary disease events following an increase in Asian dust stratified by disease history.

	Lag0			Lag1			Lag2			Lag3			Lag4			Lag04 ^b		
	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction	OR	(95% CI)	<i>p</i> for interaction
History of coronary heart disease																		
Yes	1.06	(0.92, 1.21)	0.48	0.98	(0.85, 1.14)	0.89	1.00	(0.86, 1.17)	0.94	0.93	(0.79, 1.09)	0.28	0.96	(0.84, 1.10)	0.68	0.96	(0.77, 1.21)	0.73
No	1.02	(0.99, 1.04)		1.01	(0.99, 1.03)		1.02	(1.00, 1.04)		1.02	(1.00, 1.04)		1.00	(0.98, 1.03)		1.04	(1.01, 1.08)	
History of arrhythmia																		
Yes	1.10	(0.91, 1.34)	0.40	0.90	(0.65, 1.25)	0.72	0.86	(0.56, 1.33)	0.43	1.06	(0.74, 1.54)	0.94	1.11	(0.93, 1.31)	0.20	1.17	(0.76, 1.79)	0.68
No	1.02	(0.99, 1.04)		1.01	(0.99, 1.03)		1.02	(1.00, 1.04)		1.02	(1.00, 1.04)		1.00	(0.98, 1.02)		1.04	(1.00, 1.08)	
History of hypertension																		
Yes	1.07	(0.98, 1.16)	0.27	1.06	(0.99, 1.14)	0.33	1.09	(1.01, 1.17)	0.07	1.07	(1.00, 1.15)	0.18	0.98	(0.90, 1.07)	0.77	1.17	(1.03, 1.33)	0.16
No	1.01	(0.99, 1.04)		1.01	(0.98, 1.03)		1.01	(0.99, 1.03)		1.02	(1.00, 1.04)		1.01	(0.98, 1.03)		1.03	(0.99, 1.07)	
History of cerebrovascular disease																		
Yes	0.94	(0.87, 1.01)	0.05	0.94	(0.88, 1.01)	0.11	1.00	(0.94, 1.06)	0.74	1.05	(1.00, 1.10)	0.20	0.95	(0.88, 1.02)	0.13	0.95	(0.86, 1.06)	0.25
No	1.03	(1.00, 1.05)		1.02	(1.00, 1.04)		1.02	(1.00, 1.04)		1.01	(0.99, 1.04)		1.01	(0.99, 1.03)		1.06	(1.01, 1.10)	
History of respiratory disease																		
Yes	1.01	(0.97, 1.06)	0.76	1.00	(0.96, 1.05)	0.76	1.01	(0.97, 1.05)	0.75	1.02	(0.98, 1.07)	0.87	1.01	(0.97, 1.06)	0.74	1.04	(0.96, 1.12)	0.92
No	1.02	(0.99, 1.05)		1.01	(0.99, 1.04)		1.02	(1.00, 1.05)		1.02	(1.00, 1.04)		1.00	(0.98, 1.03)		1.05	(1.00, 1.09)	
History of diabetes mellitus																		
Yes	1.03	(0.95, 1.12)	0.84	1.04	(0.96, 1.12)	0.75	0.98	(0.87, 1.11)	0.54	0.92	(0.82, 1.04)	0.09	0.88	(0.77, 1.02)	0.11	0.96	(0.81, 1.14)	0.37
No	1.02	(0.99, 1.04)		1.01	(0.99, 1.03)		1.02	(1.00, 1.04)		1.02	(1.00, 1.05)		1.01	(0.99, 1.03)		1.05	(1.01, 1.09)	

Adjusted for the same-day temperature [degrees of freedom (df)=6], same-day relative humidity (df=3), reported influenza cases among residents ≥60 years of age, and public holidays.

^a Effect of an increase of one interquartile range, or 20.7 µg/m³ of Asian dust.

^b Lag0–4 represents the mean concentration between 0 and 4 lag days.

P values for the interactions between disease history and Asian dust level were operationalized as a categorical variable.

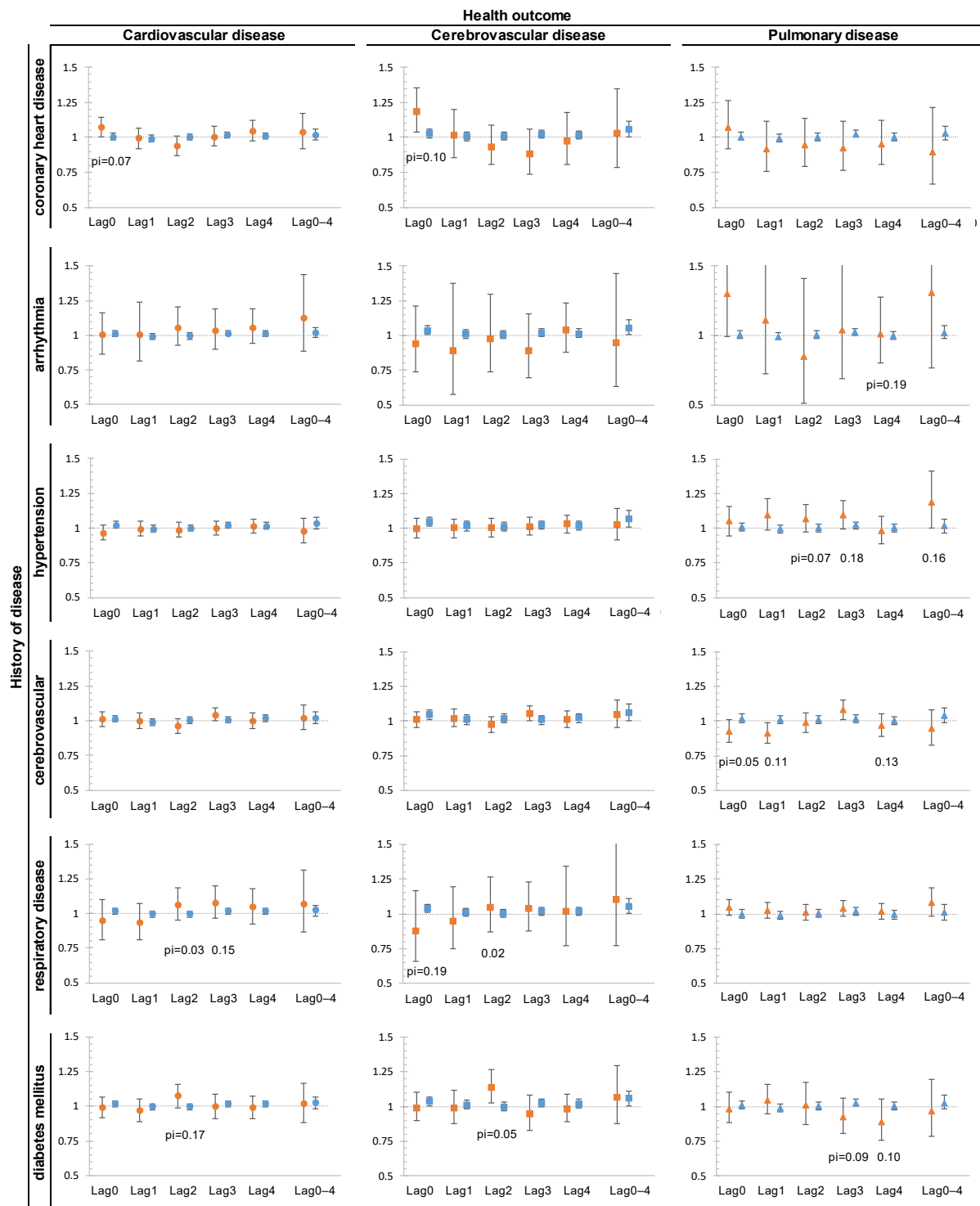
eTable 4. Adjusted odds ratios (ORs)^a and 95% confidence intervals (CIs) for emergency room visits resulting from cardiovascular, cerebrovascular, and pulmonary disease events following an increase in Asian dust concentrations. The study population consisted of residents ≥ 65 years of age who resided in Okayama, Japan. A two-pollutant model was used and study participants were stratified by disease history.

	Cardiovascular disease		Cerebrovascular disease		Pulmonary disease	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Lag0	1.01	(0.99, 1.04)	1.04	(1.01, 1.07)	1.01	(0.98, 1.04)
Lag1	0.99	(0.97, 1.02)	1.01	(0.98, 1.04)	1.00	(0.97, 1.02)
Lag2	1.00	(0.98, 1.02)	1.01	(0.98, 1.04)	1.00	(0.98, 1.03)
Lag3	1.02	(1.00, 1.04)	1.02	(0.99, 1.05)	1.02	(1.00, 1.05)
Lag4	1.01	(0.99, 1.04)	1.02	(0.99, 1.05)	1.00	(0.97, 1.03)
Lag0–4 ^b	1.02	(0.98, 1.06)	1.06	(1.01, 1.11)	1.03	(0.98, 1.08)

Adjusted for the same-day temperature (df=6), same-day relative humidity (df=3), reported influenza cases among residents aged ≥ 60 years, and public holidays.

^a Asian dust (interquartile range or $20.7 \mu\text{g}/\text{m}^3$) and suspended particulate matter (an increase of one interquartile range or $17.8 \mu\text{g}/\text{m}^3$) were entered as pollutants into the same model.

^b Lag0–4 represents the mean concentration between 0 and 4 lag days.



eFigure 1. Adjusted odds ratio of emergency room visits for an increase in the interquartile range of Asian dust in a two-pollutant model and stratifying patients by disease history

Asian dust (an increase of interquartile range or $20.7 \mu\text{g}/\text{m}^3$) and suspended particulate matter (an increase of interquartile range or $17.8 \mu\text{g}/\text{m}^3$) were entered into a single two-pollutant model. Orange points represent ORs in patients with a disease history and blue ones represent patients without a disease history. Vertical bars represent 95% confidence intervals. *P* values for the interactions (*pi*) between disease history and Asian dust level were operationalized as a categorical variable. Circles, squares, and triangles represent cardiovascular disease events, cerebrovascular disease events, and pulmonary disease events, respectively.