

PubMed

Format: Abstract

Full text links



*Int J Cardiol.* 2017 Jan 1;226:110-117. doi: 10.1016/j.ijcard.2016.10.053. Epub 2016 Oct 25.

# The impact of short-term exposure to air pollutants on the onset of out-of-hospital cardiac arrest: A systematic review and meta-analysis.

Zhao R<sup>1</sup>, Chen S<sup>1</sup>, Wang W<sup>1</sup>, Huang J<sup>1</sup>, Wang K<sup>1</sup>, Liu L<sup>1</sup>, Wei S<sup>2</sup>.

## Author information

- 1 Department of Epidemiology and Biostatistics, Ministry of Education Key Laboratory of Environment and Health, School of Public Health, Tongji Medical college, Huazhong University of Science and Technology, Wuhan, Hubei, 430030, China.
- 2 Department of Epidemiology and Biostatistics, Ministry of Education Key Laboratory of Environment and Health, School of Public Health, Tongji Medical college, Huazhong University of Science and Technology, Wuhan, Hubei, 430030, China. Electronic address: ws2008cn@gmail.com.

## Abstract

**BACKGROUND:** Acute exposure to outdoor **air pollution** was considered to be associated with the incidence of out-of-hospital cardiac arrest (OHCA). But the relation between specific **air pollutants** and OHCA remains controversial. We conducted a systematic review and meta-analysis to quantitatively assess the acute effects of **air pollutants**, including particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO) and ozone (O<sub>3</sub>) on OHCA onset.

**METHODS:** Six databases were searched to identify studies analyzing the association between OHCA and the main **air pollutants**. We summarized the pooled estimates using random-effect models. Heterogeneity within studies was assessed using Cochran's Q and I<sup>2</sup> statistics. Funnel plots, Egger's regression test and Begg's rank correlation method were constructed to evaluate publication bias. Subgroup analyses and sensitivity analyses were also conducted to evaluate the potential sources of heterogeneity.

**RESULTS:** A total of 15 studies met the inclusion criteria. PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub> and O<sub>3</sub> were found to be significantly associated with increase in OHCA risk (PM<sub>10</sub> 1.021, 95%CI: 1.006-1.037; PM<sub>2.5</sub> 1.041, 95%CI: 1.012-1.071; NO<sub>2</sub> 1.015, 95%CI: 1.001-1.030 and O<sub>3</sub> 1.016, 95%CI: 1.008-1.024).

The acute exposure to SO<sub>2</sub> and CO was not associated with the incidence of OHCA. Additional analyses verified the findings in the overall analyses except SO<sub>2</sub> and NO<sub>2</sub>. Population attributable fractions for PM<sub>10</sub>, PM<sub>2.5</sub>, and O<sub>3</sub> were 2.1%, 3.9% and 1.6%, respectively.

**CONCLUSION:** The current evidence confirmed the associations between short-term exposure to PM<sub>2.5</sub>, PM<sub>10</sub> and O<sub>3</sub> and a high risk of OHCA, with the strongest association being observed for PM<sub>2.5</sub>.

Copyright © 2016 Elsevier Ireland Ltd. All rights reserved.

**KEYWORDS:** Air pollutant; Meta-analysis; Out-of-hospital cardiac arrests

PMID: 27806308 DOI: [10.1016/j.ijcard.2016.10.053](https://doi.org/10.1016/j.ijcard.2016.10.053)

[Indexed for MEDLINE]

---

**Publication types, MeSH terms, Substances**

---

**LinkOut - more resources**