Supplement

Evaluation of a meta-analysis of air quality and heart attacks, a case study

S. Stanley Younga and Warren B. Kindzierskib,c

aCGStat, Raleigh, NC,USA; bSchool of Public Health, University of Alberta, Edmonton, Alberta, Canada

cCorresponding author: School of Public Health, University of Alberta, 3-57 South Academic Building, 11405-87 Avenue, Edmonton, Alberta, T6G 1C9 Canada; warrenk@ualberta.ca

**11 Pages, 1 Table**

Case Study Selection Strategy

For the selection of our case study, we performed a search using the Web of Science electronic database (Clarivate Analytics, Philadelphia, PA) within the University of Alberta libraries system (www.library.ualberta.ca) on 28 June 2018.

Web of Science (formerly ISI Web of Knowledge) is an online subscription-based scientific citation indexing service of multiple databases that reference cross-disciplinary research. Web of Science includes over 50,000 scholarly books, 12,000 journals and 160,000 conference proceedings.

We searched the Web of Science records between the period 1 January 1980 and 28 June 2018 using the following strategy:

* An initial search was performed using the terms *meta-analysis* AND *myocardial infarction* within a record title. This search yielded 1,024 results.
* A second independent search was performed using the terms *air pollutants* OR *air pollution* within a record title. This search yielded 36,239 results.
* A combined search of initial and secondary results was then performed. This search yielded 3 results.

A screenshot image of the Web of Science search history results is shown below:



The Web of Science record for set #3 results was:

1. Main Air Pollutants and Myocardial Infarction A Systematic Review and Meta-analysis

By: Mustafic, Hazrije; Jabre, Patricia; Caussin, Christophe; et al.

JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Volume: 307 Issue: 7 Pages: 713-721

Published: FEB 15 2012

Times Cited: 226 (from All Web of Science Databases)a

a Web of Science note – *As of March/April 2018, this highly cited paper received enough citations to place it in the top 1% of its academic field based on a highly cited threshold for the field and publication year*.

2. Short-term exposure to particulate air pollution and risk of myocardial infarction: a systematic review and meta-analysis

By: Luo, Chunmiao; Zhu, Xiaoxia; Yao, Cijiang; et al.

ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH

Volume: 22 Issue: 19 Pages: 14651-14662

Published: OCT 2015

Times Cited: 11 (from All Web of Science Databases)

3. Air Pollution and Myocardial Infarction: A Systematic Review and Meta-Analysis

By: Mustafic, Hazrije; Jabre, Patricia; Caussin, Christophe; et al.

CIRCULATION

Volume: 124 Issue: 21 Supplement: S Meeting Abstract: A11876

Published: NOV 22 2011

Times Cited: 0 (from All Web of Science Databases)

The 1st study (Main Air Pollutants and Myocardial Infarction A Systematic Review and Meta-analysis) had the highest citation record and was selected as the case study.

# References of 34 Base Papers used in Case Study (number indicated on the left is the reference number in Mustafic et al. (2012))

7. Braga AL, Zanobetti A, Schwartz J. 2001. The lag structure between particulate air pollution and respiratory and cardiovascular deaths in 10 US cities. J Occup Environ Med. 43(11):927−933.

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12. Linn WS, Szlachcic Y, Gong H Jr, et al. 2000. Air pollution and daily hospital admissions in metropolitan Los Angeles. Environ Health Perspect. 108(5):427−434.

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21. Rich DQ, Kipen HM, Zhang J, et al. 2010. Triggering of transmural infarctions, but not nontransmural infarctions, by ambient fine particles. Environ Health Perspect. 118(9):1229−1234.

22. Sullivan J, Sheppard L, Schreuder A, et al. 2005. Relation between short-term fine-particulate matter exposure and onset of myocardial infarction. Epidemiology. 16(1):41−48.

23. Eilstein D, Quenel P, Hedelin G, et al. 2001. Air pollution and myocardial infarction: Strasbourg France, 1984-89 [in French]. Rev Epidemiol Sante Publique. 49(1):13−25.

24. Lanki T, Pekkanen J, Aalto P, et al. 2006. Associations of traffic related air pollutants with hospitalisation for first acute myocardial infarction: the HEAPSS study. Occup Environ Med. 63(12):844−851.

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27. Poloniecki JD, Atkinson RW, de Leon AP, et al. 1997. Daily time series for cardiovascular hospital admissions and previous day’s air pollution in London, UK. Occup Environ Med. 54(8):535−540.

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**Table S1 Summary description of Mustafic et al. (2012) base studies.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Cit #1** | **Location** | **Time period** | **Data source** | **MI events** | **Air pollutants** | **Study type** | **Model type** | **Study quality2** |
| 7 | 10 US cities | 1986−1993 | Death registry | Not given | PM10 | Time-series | Mono-pollutant | Good |
| 8 | Denver, US | 1993−1997 | MI hospitaladmissions | 1,576 | O3, CO, NO2,SO2, PM10 | Time-series | Mono-pollutant | Low |
| 9 | Australia(5 cities),New Zealand(2 cities) | 1998−2001 | MI hospitaladmissions | Not given | O3, CO, NO2,PM10, PM2.5 | Case crossover | Mono-pollutant & multi-pollutant | Good |
| 10 | Stockholm, Sweden | 2001−2007 | MI registry | 660 | O3, CO, NO2,PM10 | Case crossover | Mono-pollutant | Intermediate |
| 11 | Sao Paulo, Brazil | 1998−1999 | MI hospitaladmissions | 19,272 | O3, CO, NO2,SO2, PM10 | Time-series | Mono-pollutant | Low |
| 12 | Los Angeles, US | 1988−1994 | MI hospitaladmissions | Not given | O3, CO, NO2,PM10 | Time-series | Mono-pollutant | Intermediate |
| 19 | Tokyo,Japan | 1980−1995 | MI emergency hospitaladmissions | Not given | O3, CO, NO2,SO2, PM10 | Time-series | Mono-pollutant | Low |
| 20 | Boston, US | 1999−2001 | MI registry | 772 | O3, CO, NO2, SO2,PM10, PM2.5 | Case crossover | Mono-pollutant | Low |
| 21 | New Jersey, US | 2004−2006 | MI hospitaladmissions | 5,864 | PM2.5 | Case crossover | Multi-pollutant | Intermediate |
| 22 | Washington, DC | 1988−1994 | MI hospitaladmissions | 5,793 | CO, NO2,PM2.5 | Case crossover | Mono-pollutant | Intermediate |
| 23 | Strasbourg, France | 1984−1989 | MI registry | Not given | O3, CO, NO2, SO2 | Time-series | Mono-pollutant | Good |

1 Citation number of Mustafic et al. (2012) base study.

2 General quality rating of study assigned by Mustafic et al. (2012).

**Table S1 Summary description of Mustafic et al. (2012) base studies (con’t).**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Cit #1** | **Location** | **Time period** | **Data source** | **MI events** | **Air pollutants** | **Study type** | **Model type** | **Study quality2** |
| 24 | Europe (5 cities) | 1992−2000 | MI registry & MI hospitaladmissions | 26,854 | O3, CO, NO2, PM10 | Time-series | Mono-pollutant | Good |
| 25 | Madrid, Spain | 2003−2005 | Death registry | 1,096 | PM2.5 | Time-series | Mono-pollutant | Good |
| 26 | Paris, France | 1991−1995 | Registry of doctor’s house calls | Not given | O3, NO2, SO2, PM10 | Time-series | Mono-pollutant | Low |
| 27 | London, UK | 1987−1994 | MI hospitaladmissions | 68,300 | O3, CO, NO2, SO2 | Time-series | Mono-pollutant & multi-pollutant | Good |
| 28 | 14 cities in Canada | 1992−2003 | MI emergency hospitaladmissions | 63,184 | O3, CO, NO2, SO2,PM10, PM2.5 | Time-series | Mono-pollutant | Low |
| 29 | 21 US cities | 1986−1999 | MI hospitaladmissions | 302,245 | PM10 | Case crossover | Mono-pollutant | Intermediate |
| 30 | 112 US cities | 1999−2005 | Death registry | 397,894 | PM2.5 | Time-series | Mono-pollutant | Intermediate |
| 31 | 26 US cities | 2000−2003 | MEDICARE registry &MI hospitaladmissions | 121,652 | PM2.5 | Time-series | Mono-pollutant | Intermediate |
| 32 | Netherlands | 1986−1994 | Death registry | 62 per day | O3, CO, NO2, SO2, PM10 | Time-series | Mono-pollutant | Good |
| 33 | Kaohsiung, Taiwan | 1996−2006 | MI hospitaladmissions | Not given | O3, NO2, SO2,PM10 | Case crossover | Mono-pollutant & multi-pollutant | Low |
| 34 | Taipei, Taiwan | 1996−2006 | MI hospitaladmissions | 23,420 | O3, CO, NO2, SO2, PM10 | Case crossover | Mono-pollutant | Low |

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|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Cit #1** | **Location** | **Time period** | **Data source** | **MI events** | **Air pollutants** | **Study type** | **Model type** | **Study quality2** |
| 35 | Utah, US | 1991−2001 | Angiographic registry | 3,910 | PM2.5 | Case crossover | Mono-pollutant | Intermediate |
| 36 | Roma, Italy | 1995−1997 | MI hospitaladmissions | 6,531 | CO, NO2 | Case crossover | Mono-pollutant | Good |
| 37 | Dijon, France | 2001−2007 | MI registry | 771 | O3 | Case crossover | Multi-pollutant | Good |
| 38 | 9 cities in Japan | 2002−2004 | Death registry | 67,897 | PM2.5 | Time-series | Mono-pollutant | Low |
| 39 | California, US | 1988−1995 | Insurance registry | 19,690 | O3, CO, NO2, PM10 | Time-series | Mono-pollutant | Intermediate |
| 40 | Sao Paulo, Brazil | 1996−1998 | Death registry | 12,007 | CO, SO2,PM10 | Time-series | Mono-pollutant | Good |
| 41 | Roma, Italy | 2001−2005 | MI emergency hospitaladmissions | 22,659 | PM10, PM2.5 | Case crossover | Mono-pollutant | Intermediate |
| 42 | Tuscany,Italy | 2002−2005 | MI registry | 11,450 | CO, NO2,PM10 | Case crossover | Mono-pollutant & multi-pollutant | Intermediate |
| 43 | Augsburg, Germany | 1999−2001 | MI registry | 851 | O3, CO, NO2, SO2,PM10, PM2.5 | Case crossover | Mono-pollutant | Low |
| 44 | Toulouse, France | 1997−1999 | MI registry | 399 | O3, NO2, SO2 | Case crossover | Mono-pollutant | Good |
| 45 | Boston, US | 1995−1999 | MI hospitaladmissions | 15,578 | O3, CO, NO2,PM2.5 | Case crossover | Mono-pollutant | Good |
| 46 | England& Wales | 2003−2006 | MI registry | 79,288 | O3, CO, NO2,PM2.5 | Case crossover | Mono-pollutant & multi-pollutant | Good |

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