

IMPACT OF ATMOSPHERIC POLLUTION UPON THE HEALTH OF THE POPULATION: SINGULAR EVENTS

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Background and Aims: Recent studies point out that the association between morbidity and mortality with atmospheric pollution varies depending upon the region, seasonal period and the heterogeneous chemical composition of suspended particulate matter. From the environmental point of view, many studies exist about variations in PM levels, both on their size distribution as well as their chemical composition, according to certain singular events having an either natural or anthropogenic origin, identified by the analysis of the surrounding orographic, meteorological and environmental characteristics.

The objective of this study is to estimate the short-term association between the number of hospital emergency room admissions and atmospheric pollution, evaluated by a lone variable categorized as event.

Methods: Ecological study of temporal series relating hospital emergency room admissions caused by the circulatory apparatus cerebrovascular, total cardiac, total respiratory, asthma and chronic pulmonary obstruction and the atmospheric pollution indicated by the presence or not of a singular event in the city of Elche. The following are considered events: a) Saharan intrusion, contributing mineral dust masses from North Africa; b) Atmospheric stability, high stability situations favoring pollution accumulation; c) Regional accumulation, persistent recirculation of contaminated air masses; d) European episode, the entrance of air masses originating in Europe; e) Smoke or collections of particles resulting from incomplete combustion; and f) Firework displays. The magnitude of association was estimated using Poisson regression.

Results: The increase in atmospheric pollution during periods of atmospheric stability is associated with an increase of 1.64% (IC 95%: 1.30-2.08%) in hospital admissions from respiratory causes, and specifically from asthma (2.55%) or COPD (1.26%), but not statistically significant. On the other hand, a risk of becoming ill due to cardiovascular causes was obtained in both periods of Saharan intrusion as well as atmospheric stability, but they were not significant either.

Conclusions: Singular events are a variable to keep in mind in the study of the impact of atmospheric pollution upon the health of the population. Although these results can only be considered preliminary, as there were only two events – a Saharan intrusion and atmospheric stability – a sufficient number of days did transpire to be studied.