Research and Reports in Pulmonology

Abstract

The Outcome of an Emergency Respiratory Admission: Influence of Air Pollution and Humidity

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Abstract:

Both prevailing air pollution or humidity levels may influence the outcome of an acute hospital episode; we investigated whether higher pollutant or humidity levels on the day of a respiratory admission were associated with worse outcomes.Between 2002 and 2016, we studied all emergency medical admissions (96,526 episodes in 50,731 patients) and investigated air pollutant levels (sulphur dioxide) and humidity levels on the day of admission. We employed a logistics multiple variable regression model, to identify the extent to which the prevailing pollutant or humidity levels influenced 30day hospital mortality outcome, stratified by respiratory or nonrespiratory type, having adjusted for other outcome predictors including Acute Illness Severity and Case Co-morbidity/ Complexity.Respiratory admission were older-70.2 yr. (IQR: 55.0, 79.9) vs. 59.6 yr. (IQR: 39.1, 77.8], had a longer hospital length of stay – 7.0 days (IQR: 3.4, 14.7] vs. 5.1 days (IQR: 1.9, 11.8%] and a higher 30-day hospital episode mortality – 7.9% (95% CI: 7.7%, 8.2%] vs. 4.0% (95% CI: 3.8%, 4.2%]. The pollutant level on the day of admission (SO2 quintiles) predicted worsening outcomes from Q2 – OR 1.40 (95% CI: 1.21, 1.62) to Q5 – OR 2.57 (95% CI: 2.18, 3.03) with an overall Odd Ratio for SO2 level of 1.27 (95% CI: 1.23, 1.32). There was significant interaction between pollutant and humidity levels and respiratory category. With saturated air (humidity>95%), the predicted 30-day hospital mortality for SO2 quintiles Q3 and Q5 was 11.2% and 12.4% respectively but with dry air (humidity<70%) the predicted mortality rose to 14.2% and 16.7% respectively. At any given humidity and pollutant level, respiratory patients had worse outcomes.

Conclusion: Baseline air pollutant and humidity levels influenced 30-day hospital mortality outcomes. At any given levels, the outcome for respiratory patients was significantly worse.

Biography:

Nadim Akasheh was a Pulmonologist and also a researcher at Department of Internal Medicine, St James's Hospital, Dublin 8, Ireland

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