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Factors affecting in-hospital heat-related mortality: a multi-city case-crossover analysis

M Stafoggia[1], F Forastiere[1], D Agostini[2], N Caranci[3], F de'Donato[1], M Demaria[4], P Michelozzi[1], R Miglio[5], M Rognoni[6], A Russo[6], C A Perucci[1]
[1] Department of Epidemiology, Rome E Health Authority, Rome, Italy [2] Epidemiological Observatory, Department of Public Health, Local Health Authority, Bologna, Italy [3] Epidemiological Services, Grugliasco 5 Health Authority, Turin, Italy [4] Epidemiological Services, Regional Environmental Protection Agency, Piedmont, Turin, Italy [5] Department of Statistical Sciences, University of Bologna, Bologna, Italy [6] Epidemiological Unit, Local Health Authority, Milan, Italy
Correspondence to: Francesco Forastiere, Department of Epidemiology, Rome E Health Authority, Via Santa Costanza 53, 00198 Rome, Italy; forastiere@asplazio.it

Background: Several studies have identified strong effects of high temperatures on mortality at population level; however, individual vulnerability factors associated with heat-related in-hospital mortality are largely unknown. The objective of the study was to evaluate heat-related in-hospital mortality using a multi-city case-crossover analysis.
Methods: We studied residents of four Italian cities, aged 65+ years, who died during 1997–2004. For 94 944 individuals who died in hospital and were hospitalised two or more days before death, demographics, chronic conditions, primary diagnoses of last event and hospital wards were considered. A city-specific case-crossover analysis was performed to evaluate the association between apparent temperature and mortality. Pooled odds ratios (OR) of dying on a day with a temperature of 30°C compared to a day with a temperature of 20°C were estimated with a random-effects meta-analysis.
Results: We estimated an overall OR of 1.32 (95% confidence interval: 1.25, 1.39). Age, marital status and hospital ward were important risk indicators. Patients in general medicine were at higher risk than those in high and intensive care units. A history of psychiatric disorders and cerebrovascular diseases gave a higher vulnerability. Mortality was greater among patients hospitalised for heart failure, stroke and chronic pulmonary diseases.
Conclusions: In-hospital mortality is strongly associated with high temperatures. A comfortable temperature in hospitals and increased attention to vulnerable patients during heatwaves, especially in general medicine, are necessary preventive measures.