

URBAN HEAT ISLAND AND SOCIO-ECONOMIC POSITION AS FACTORS THAT INCREASE THE RISK OF HEAT-RELATED MORTALITY IN ROME, ITALY

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Background and Aim: High temperatures have an impact on health but few studies address the heterogeneity of the impact within cities. The study assesses the spatial variation in the impact of heat on mortality by socio-economic position (SEP) and urban heat island (UHI) in Rome.

Methods: A four-level UHI indicator by census block was defined using satellite data for summer (May-September) 2003-2006. Mortality data for residents 65+ years during summer 2004-2006 were analysed. Age, gender and SEP by census tract of residence were considered.

To investigate the spatial differences in mortality according to residence, the relative risk of dying in each UHI level adjusted for gender, age and SEP was estimated using a Poisson regression model.

The short-term impact of maximum apparent temperature (Tappmax) on mortality was estimated through a case-crossover analysis where the %increase in mortality for 1°C increment above the threshold (Tappmax=27°C) by levels of UHI and SEP was computed.

Results: Results from the Poisson regression model, adjusted for gender and SEP, showed a higher RR in mortality in the hottest areas compared to the cooler ones. However, adjusting for age showed no differential suggesting that the gradient was mainly attributable to higher proportion of elderly living in the hottest areas.

A gradient of risk for SEP and UHI in the impact of Tappmax on mortality was observed. The percent increase in mortality in the deprived areas was higher than in the richer areas (SEP4-5:4.5%vsSEP1-2:2.6%). The effect in the hot areas was double that of the cooler areas (UHI3-4:4.3%;CI95:2.2-6.4%;vsUHI1-2:2.1%;CI95:0.3-3.9%). This difference increased with age. Furthermore, the differential was maintained when considering the increase in mortality by UHI level and SEP combined.

Conclusions: UHI and SEP are important risk factors to consider when identifying susceptible subgroups to whom prevention measures should be targeted.