High temperatures in cities increase hospitalisation for the elderly

High summer temperatures have a clear impact on rates of admission to hospital for elderly patients with breathing problems, according to new research. Although data reveals considerable variation among cities across Europe, admission rates for respiratory causes among the 75+ age group were more than twice the admission rate for all ages in all cities.

Data on hospital admissions, heat, humidity and pollution levels in 12 European cities during summer months over a three-year period were analysed as part of the EU funded study PHEWE. The total population of these cities is around 25 million.

The researchers computed a ‘maximum apparent temperature’ or ‘T_{appmax}’ for each city, as daily mean, taking both temperature and humidity into account. For example, Dublin had a T_{appmax} of just 14.7°C while Valencia’s was 29.5°C. In most cities, each degree increase over 90 per cent of the T_{appmax} led to an increase in respiratory related hospital admissions for all ages, but especially in the 75+ age group. Humidity is included in the index because it influences the body’s ability to cool itself through evaporation and perspiration. T_{appmax} was calculated for the period April-September, the hottest part of the year.

Although previous research has shown that the death rate for cardiovascular conditions, such as heart attacks and strokes, rises in heat waves, this study did not find a rise in rates of hospital admission for these causes. This suggests that during periods of high temperature, many deaths from acute causes such as heart attack and stroke occur rapidly before patients can be admitted to hospital. By contrast, respiratory problems tend to peak later, up to three weeks after a high temperature event, giving patients more chance to receive medical attention in hospital.

With the latest IPCC Assessment Report predicting an increase in the frequency and intensity of summer heat waves in Europe, climate change is expected to contribute to an increasing burden of disease and premature death, especially in sectors of the population less able to adapt to these changing conditions such as the elderly.

A rising proportion of between 5 and 10 per cent of the population in the cities included in the study is in the 75+ age group, so the findings have important implications for public health. Preventative measures are needed to reduce the additional burden during the summer months on elderly people, who have pre-existing chronic health problems and so are more vulnerable. Their bodies also have a less effective thermoregulatory (heat regulating) system for coping with increases in heat stress and pollution.

1. PHEWE (Prevention of acute Health Effects of Weather conditions in Europe) was supported by the European Commission under the Fifth Framework Programme. The twelve cities were Barcelona, Budapest, Dublin, Ljubljana, London, Milan, Paris, Rome, Stockholm, Turin, Valencia and Zurich. For more information, see: http://ec.europa.eu/health/ph_information/dissemination/unexpected/unexpected_2_en.html#3


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