

# INFLUENCE OF LOCAL FACTORS IN THE RELATIONSHIP BETWEEN DAILY MORTALITY AND TEMPERATURE DURING HEAT WAVES PERIODS IN CASTILE- LA MANCHA (1975-2003)

**Juan Carlos Montero**, *Health Sciences Institute, Castile-La Mancha Regional Health & Social Welfare Authority, Talavera de la Reina (Toledo), Spain.*

**Isidro Juan Mirón**, *Torrijos Health District, Castile-La Mancha Regional Health & Social Welfare Authority, Torrijos, Spain*

**Juan José Criado-Álvarez**, *Castile-La Mancha Health Service (Servicio de Salud de Castilla-La Mancha - SESCOAM), Talavera de la Reina (Toledo), Spain.*

**Cristina Linares**, *Cancer and Environmental Epidemiology Unit, National Centre for Epidemiology, Carlos III Institute of Health, Madrid, Spain*

**Julio Díaz**, *National School of Public Health, Carlos III Institute of Health, Madrid, Spain.*

**Background and Aims:** Climate model projections foresee that the principal changes -particularly insofar as temperature extremes are concerned- will occur in the interior of mainland Spain, where Castile-La Mancha is situated. The characteristics that modulate and determine the relationship between high temperatures and health must therefore be ascertained in the greatest possible detail, so that really effective prevention plans can be designed to address temperature extremes. This study sought to characterise and quantify the impact of heat waves on mortality in Castile-La Mancha.

**Methods:** We examined the effect of heat waves on daily non-accidental-cause mortality across all age groups in the Castile-La Mancha region (Spain) from 1975 to 2003. Quantitative analyses were performed using autoregressive integrated moving average (ARIMA) models, with other covariates, such as pressure trends, relative humidity, and duration and chronological number of heat waves.

**Results:** For each degree centigrade that temperatures exceeded the designated provincial thresholds in Castile-La Mancha, the percentage increase in mortality amounted approximately 12% over the daily mean, albeit with provincial variations. The longest heat waves were associated with daily mortality, with those at the end of summer causing the lowest mortality. Meteorological situations most closely associated with increases in mortality were cyclonic conditions accompanied by low humidity.

**Conclusions:** The reported health benefits of implementing heat wave prevention plans are undeniable; it is also evident that these must be optimised through in-depth knowledge of the relationship between temperature and health. The influence of variables, such as heat-wave duration or time of appearance, is important in the total increase in mortality during temperature extremes. Since parameters, such as humidity or pressure trends, can play very different roles in different geographical settings, they should be analysed separately from temperature.