

TEMPERATURE AND HEALTH IN GUADALAJARA, MEXICO

Arturo Curiel Ballesteros, *IMACH University of Guadalajara, Mexico*

Guadalupe Garibay, *IMACH University of Guadalajara, Mexico*

Ana Karen Osuna Osuna, *Technological Institute of Mazatlan, Mexico*

Arturo Pérez Romero, *Ministry of Health Jalisco, Mexico*

Background and Aims: The city of Guadalajara, like many other cities throughout the world, experiences a heat-island condition which has resulted in increased temperatures; thus, it is highly relevant to identify the temperature associated to higher morbidity rates among its inhabitants.

Methods: The criteria to define excessive temperature levels are based on determining maximum temperature thresholds at a 95 percentile, of the series of maximum daily temperatures. That is, the temperature threshold is established based on merely statistical considerations, without necessarily taking into account at and above what temperature the effects on health begin to emerge.

The study proposed to determine whether this is the temperature at which the highest association to heart and vascular diseases—coronary heart disease, cerebrovascular disease, peripheral artery or atherosclerotic disease, rheumatic heart disease, congenital heart defects, deep vein thrombosis and pulmonary embolisms as registered by the Public Health Department—can be established.

Results: The temperature representing the 95 percentile for the period of study, from 1996-2005, was 35.4 °C.

The greatest number of days with temperatures above 35.4 occurred in 1998 and 2002. Upon determining the correlation between the number of days with temperatures between 29.4 and 35.4 °C and percentage of the city of Guadalajara population suffering cardiovascular diseases, the results showed that at 29.4°C there is a 0.76 correlation, with diseases increasing upon exposure to such temperatures for more than 150 days per year; 0.79 at 32.4°C with diseases increasing upon exposure for more than 15 days per year, and 0.53 at 35.4°C with diseases increasing upon exposures of 1 day per year.

Based on the foregoing, it is established that a temperature of 32.4°C results in a higher association to cardiovascular morbidity rates.

Conclusions: The rise in cardiovascular diseases is determined at 62% due to increased exposure regarding the number of days with temperatures above 32.4 °C.

References:

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