

# CORRELATION BETWEEN MAXIMUM TEMPERATURES AND ACUTE RESPIRATORY INFECTIONS IN THE METROPOLITAN AREA OF GUADALAJARA, MEXICO

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**Background/Aims:** It is recognized worldwide that there is a link between increases in temperature and heat waves, and respiratory morbidity and mortality rates. In Guadalajara's Metropolitan Area (GMA) temperatures have increased and Acute Respiratory Infections (ARIs) ranks first in morbidity rates. The relationship between maximum observed temperatures and ARIs in the GMA between 1996 and 2009 is analyzed.

**Methods:** Observational, retrospective, longitudinal and comparative study undertaken from 1996-2009. Variables analyzed were maximum observed daily temperature, heat waves and their duration and morbidity due to ARIs.

Maximum temperatures during the period from 1996 to 2009 were identified with respect to those observed from 1960-1980 considered as the baseline, in order to identify the highest levels of ARIs cases.

Heat waves was defined as observing a daily maximum temperature equal or above 32 °C for three consecutive days.

Correlation analyses were conducted between the maximum observed temperature and the total ARIs cases each week.

**Results:** The highest temperatures in the GMA from 1996-2009 are registered from April to June; the greatest increases with respect to the baseline occurred from November to February. The greatest frequency and duration of heat waves occurred in April and May; 2009 was atypical with respect to maximum temperatures and equally for ARIs, which showed an unusual increase in cases from April to June. The correlation between these two variables was found to be 0.49.

**Conclusions:** The maximum observed daily temperatures in 2009 are found to have increased within GMA with respect to those registered during the period from 1960 to 1990. 24% of the increase in ARIs in 2009 is determined by the increase in temperature.

The increase in ARIs during the periods of greater heat is a tendency recently observed in 2009, which makes it of great relevance, in the face of climate change scenarios, to maintain monitoring activities which provide daily data.

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