

IMPACT OF ATMOSPHERIC CONTAMINATION ON PATIENTS SEEN BY EMERGENCY MEDICAL SERVICES: A YEAR-LONG STUDY OF CASES AND CONTROLS



EMS2019
MADRID

26-28 APRIL 2019



Edite J. Simoes da Silva Pereira (1); Francisco J. Garcés Garcés (2); Ervigio Corral Torres (2)

(1) EMT SAMUR-Protección Civil Madrid; (2) Emergency Physician SAMUR-Protección Civil Madrid

WHO: NO₂ > 200 µg/m³
(1-hour mean) toxic gas



Objective

Studies carried out in the hospital setting point at the influence of atmospheric contamination over different pathologies.

Comparison of the morbimortality of patients seen by EMS on high-contamination days (HCD) vs. low-contamination days (LCD).

Method

Analytical, observational, and retrospective study of cases and controls.

Patients seen by EMS during 2017 .

Epidemiology: cardiovascular, neurological, respiratory, and allergic pathologies, exitus, and cardiorespiratory arrest.

Cases (HCD): 9 days with levels of NO₂ >300µg/m³ (median 308µg/m³, IQR=73).

Controls (LCD): 9 days with NO₂ <100µg/m³ (median 68µg/m³, IQR=33).

And 24 hours thereafter for both groups.

Data retrieved from the 2017 annual air quality memorandum, published by the City of Madrid.

Inferencial analysis. Exposure variable: Type of day depending on NO₂ level.

Quantitative outcome variables: Number of cases of each type of condition.

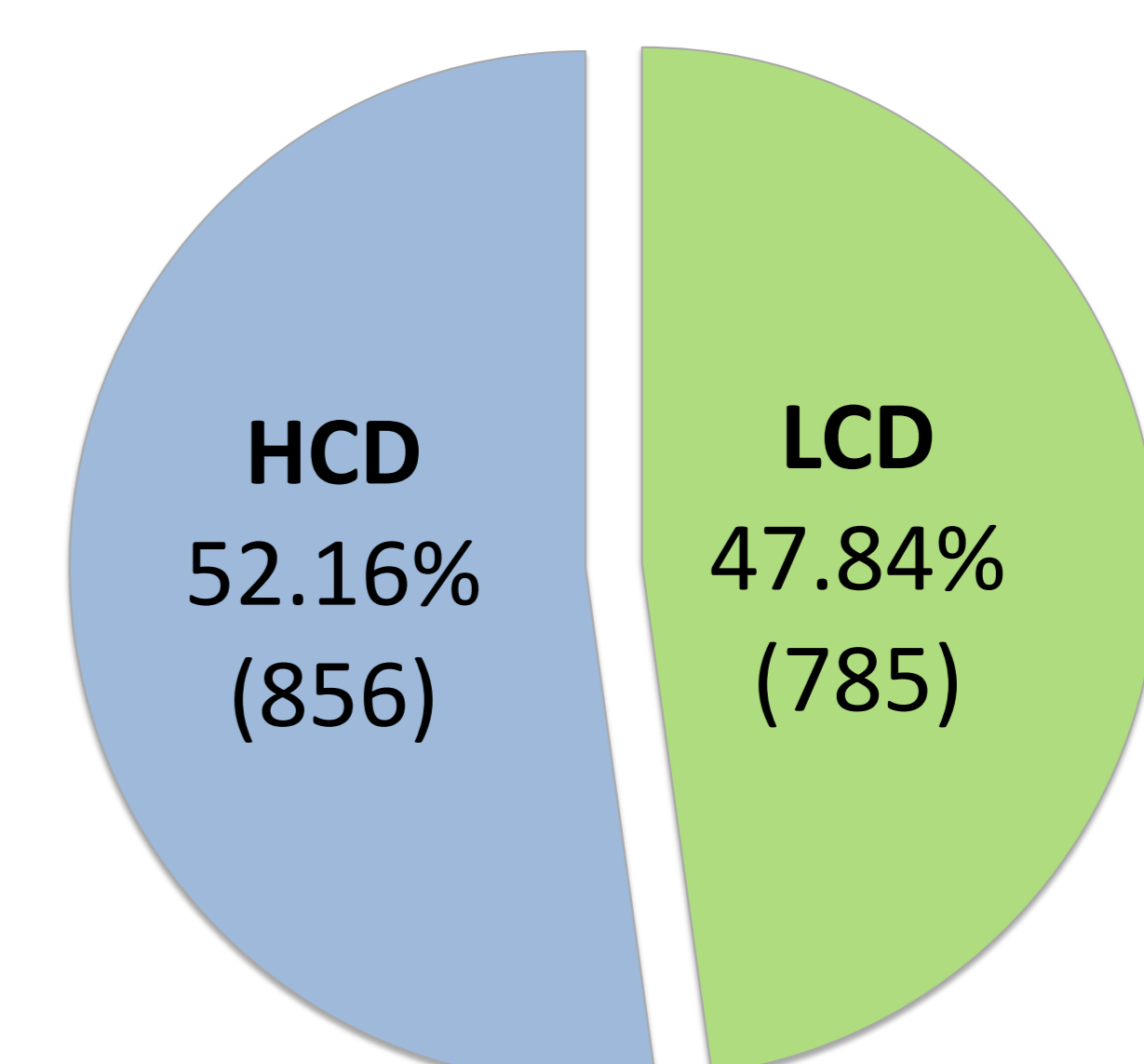
Means comparison analysis by Student's T-test (p < 0.05).

2016 Madrid Air Quality Guidelines

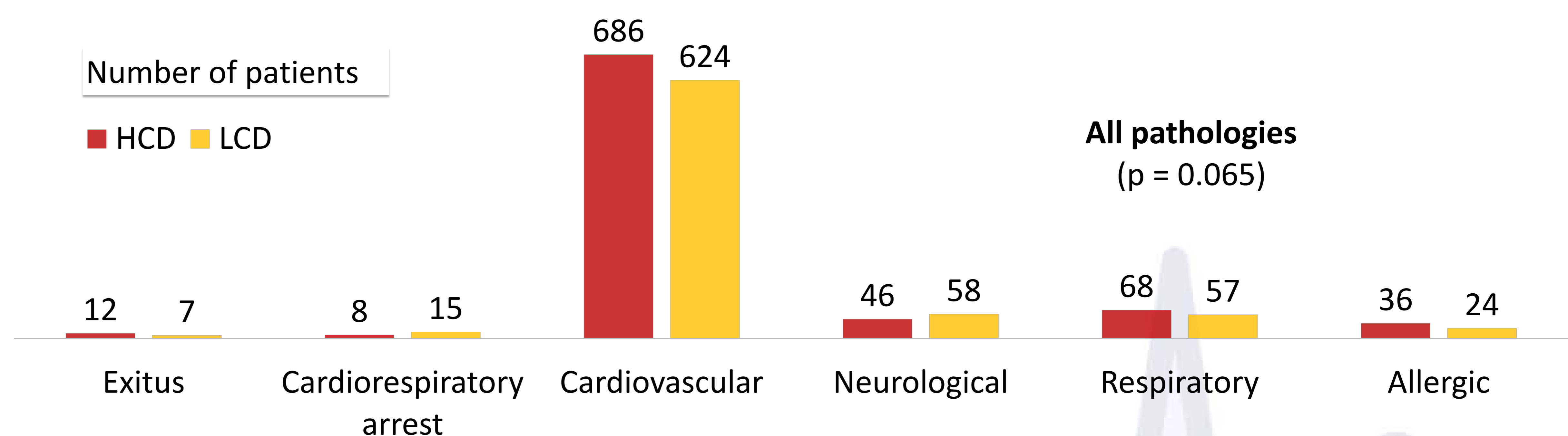
- **Good** < 100
- **Acceptable** 100-200
- **Deficient** 201-300
- **Bad** > 300

Nitrogen Dioxide Levels (NO₂ µg/m³)

1,641 patients analyzed



Results



Cardiovascular: HCD 686/856 (80.14%) vs. LCD 624/785 (79.49%), p = 0.070.

Respiratory and allergic: HCD 104/856 (12.5%) vs. LCD 81/785 (10.32%), p = 0.031.

Cardiovascular, respiratory and allergic combined: 790/856 (92.29%) during HCD vs. 705/785(89.81%) during LCD, p = 0.513.



Conclusions

In our study, high NO₂ levels contamination *is significantly associated* with a higher number of respiratory and allergic pathologies.

The remaining pathologies analyzed are near statistical significance.

It will be necessary to evaluate additional days in future studies to determine whether this trend in the remaining pathologies becomes significant.