



AIR POLLUTANTS CONCENTRATIONS IN RELATION TO CHRONIC OBSTRUCTIVE PULMONARY DISEASE EXACERBATIONS IN ZAGREB, CROATIA

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Objective:

Air pollutants are a known factor contributing to disease burden of COPD. Recently, studies have been emerging about the relationship between different air pollutants and the acute exacerbations of COPD (AECOPD). We aimed to study the relation between the concentration of different air pollutants in Zagreb and the number of patients with AECOPD requiring urgent medical care.

Methods:

Publicly available data of daily concentrations of airborne particles of $\leq 10\mu\text{m}$ in diameter (PM₁₀), nitrogen dioxide (NO₂), sulphur dioxide (SO₂) and carbon monoxide (CO) measured in the inner part



of Zagreb were collected. The daily number of patients diagnosed with AECOPD from the January 1st to December 31st 2017 in our city's only pulmonary adult emergency department were gathered from digital medical records.

Result:

A total of 1176 patients were diagnosed with an AECOPD after an examination in the emergency department of our centre in 2017. Weekly average concentrations of PM10, SO₂, NO₂ and CO were compared to the weekly number of AECOPD patients. Linear regression analysis shows that higher SO₂ concentrations are associated with an increase in AECOPD patients in our emergency department (estimate=1.553, t=2.698, p=0.010). This is the first retrospective study of this kind in Croatia, performed on data from the country's largest respiratory medicine center.

Conclusion:

Air pollution in a city with just over 800,000 inhabitants significantly contributes to the acute worsening in COPD patients. More studies with a wider set of data are needed to confirm this finding and to determine the underlying pathophysiology.