

AIR POLLUTION SHORT TERM EFFECTS ON RESPIRATORY HEALTH OF CHILDREN LIVING IN ATHENS

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ABSTRACT

The relationship between the daily variation or respiratory health of susceptible individuals and the daily variation of ambient air pollution was investigated. 6,454 screening questionnaires for respiratory symptoms were distributed to 3,242 primary school children living in the center of Athens, and 3,212 children living in a distance of about 15 kilometers from the center of Athens (control area). According to the inclusion criteria of the protocol two panels of 99 and 90 children respectively were selected. A detailed questionnaire was completed by the parents of the selected subjects concerning their respiratory health, allergic status, living circumstances, usual time activity pattern and socioeconomic status. Lung function and atopy with skin prick tests were assessed. All children were followed up for two winter months (60 days) with peak flow measurements twice daily and daily symptoms cards. Medication use and acute respiratory symptoms were also noted. A visiting nurse was regularly visiting all the children at home during the whole study period. Ambient air pollution exposure assessments were conducted with daily monitoring of SO₂, NO₂, PM₁₀ and Black Smoke for Athens center and NO₂, PM₁₀ and Black Smoke (BS) for the control area. Indoor and outdoor NO₂ measurements were also performed in a random sub-sample of homes. Higher mean concentrations levels were found in the urban area for all air pollutants. The diary cards assessment has shown a higher mean symptom prevalence in the urban area although there were more children diagnosed and treated as asthmatics in the rural area. A consistent negative association of PM₁₀ and NO₂ with evening peak expiratory flow measurements was observed which did not reach the level of statistical significance. The levels of particles (PM₁₀ and BS) were also associated with increases in symptoms for cough and upper respiratory symptoms and frequency of bronchodilator use as medication in the urban panel. This study indicates an effect of air pollution and mainly of PM₁₀ on lung function and respiratory symptoms in children. Air pollution and respiratory health of children : the PEACE panel study in Athens, Greece.