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Title: Comparing children hospital admission due to asthma in days with GOOD and NONGOOD air quality in Tehran

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Body: Background: The relationship between air pollution and asthma has been investigated but the results of these studies were different and a definitive conclusion was impossible especially about the type and amount of pollutants that are harmful to health. This study investigated the effects of various air pollutants using GIS-based information on the rate of hospitalizations due to asthma in children in Tehran. Methods: Information of patients who admitted with diagnosis of asthma in government run hospitals in Tehran and the total number of admissions in the same age range (2 to 14 years) from March 3th 2009 to March 3th 2011 obtained from medical records. Days of year divided in GOOD and NONGOOD days according guideline for reporting of daily air quality-pollutant standard index (PSI). Two thousand two hundred nineteen cases enrolled in the study and asthma admission to total admission ratio compared with air pollutants data in admission day (725 days) using nonlinear regression method. Results: Analysis of study data revealed that there is a significant relationship between NONGOOD nitrogen dioxide (P value<0.001), ozone (P value<0.001), and sulfur dioxide (P value=0.04), levels and admission due to asthma in children but There was no significant relationship between carbon monoxide levels and asthma admission in children. Conclusions: Significant relationship between nitrogen dioxide, ozone and sulfur dioxide concentration in air and admission due to asthma at levels other than GOOD, reveals air pollutants levels can be significantly harmful for children before PSI reaches to hazardous levels.