**Relationship between Fine Particulate Air Pollution and Hospital Admission for Respiratory and Cardiovascular Disease in Maharaj Nakorn Chiang Mai Hospital, Chiang Mai, Thailand**

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**Background:** Air pollution has become an alarming issue in Chiang Mai. The association between air pollution and respiratory and cardiovascular diseases is well known. However, there are only few studies on the effects of air pollution on Thai population’s health.

**Objective:** Our study aimed to investigate the short-term effects of air pollutants including PM10, PM2.5, SO2, NO2, CO, and O3 on respiratory, cardiovascular and cerebrovascular hospitalization in Chiang Mai, Thailand.

**Methods:** A retrospective cross sectional study was conducted from January 2014 to December 2016. Data on hospitalization were collected from Maharaj Nakorn Chiang Mai Hospital, Thailand and daily records of PM10, PM2.5, SO2, NO2, CO, and O3 from Pollution Control Department of Thailand. The association of an increased air pollutant level and the daily number of admission were analyzed by using a poisson regression model.

**Results:** There were a total of 1036 admissions for acute asthma (63), COPD exacerbation (382), acute coronary syndrome (290), and acute stroke (301). Total COPD admissions were significantly associated with the level of PM10 (1.019) per 10 mcg.m³ rise in daily mean pollutant concentration for PM10 and 1.025 for PM2.5 on the same day (for lag 1). Total asthma admissions were significantly associated with the levels of PM10 (1.040) per 10 mcg.m³ rise in daily mean pollutant concentration for PM10 and 1.043 for PM2.5 on the same day (for lag 5). Total COPD deaths were significantly associated with the levels of PM10 (1.052) per 10 mcg.m³ rise in daily mean pollutant concentration for PM10 and 1.054 for PM2.5 on the same day (for lag 6). No significant effects of air pollutants on admission and death of acute coronary syndrome and acute stroke were detected.

**Conclusion:** Significant associations are found between hospital admissions for asthma and COPD and the concentrations of two pollutants (PM10 and PM2.5).

**Keywords:** Air Pollution, Hospital Admissions Respiratory disease, Cardiovascular disease