The effect of daily concentrations of fine particulate matter (PM2.5) on cardiovascular diseases hospitalizations in Isfahan

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Statement of the Problem: The association between PM2.5 levels and adverse cardiovascular health outcomes is well-known. Several studies that focused on hospital admissions for cardiovascular diseases showed that increase in PM2.5 concentration was associated with an increase in hospital admissions for ischemic heart disease, arrhythmias and heart failure.

Methods: We examined the impact of daily concentrations of fine particulate matter (PM2.5) on admission to all patients with a diagnosis of cardiovascular disease in all hospitals that has wards, heart and CCU, during the 2011-2012 (March 2011 to February 2012) in Isfahan, using a case-crossover study design. Data were received on PM2.5 concentrations for each hour in a station and were obtained for temperature and humidity in all the weather stations. The analysis was performed using SAS 9.2 software.

Results: There were 16690 hospital admissions for cardiovascular diseases. The average age of the subjects was 59.63±18.87 years. The mean concentration of PM2.5 was 56.64±28.83 µg/m³ during the study period. The effect of PM2.5 on the risk of hospitalization for cardiovascular disease was significant and daily concentrations of PM2.5 are directly related with cardiovascular disease hospitalization rate (OR=1.064, CI: 1.038-1.090). Maximum of the association after adjustment for O3 (OR=1.086, CI: 1.051-1.122). Adjustment for PM10 was not significant (OR=1.014, CI: 0.986-1.043).

Conclusion: This study provides evidence that higher levels of PM2.5 increase the risk of hospital admissions for cardiovascular disease during the 2011-2012 in Isfahan. Also, the level of pollutant is higher than the WHO standard.

Biography
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