**ASSOCIATION BETWEEN AIR POLLUTION AND CARDIOVASCULAR DISEASES DURING DUST STORMS IN TAIWAN**

**H.-R. Guo**, S.-W. Yang

Department of Environmental and Occupational Health, National Cheng Kung University, Tainan, Taiwan

**Objectives:** To describe the associations between acute exposures to air pollutants and cardiovascular diseases (CVD) during the dust storm periods.

**Background:** Atmospheric fine particulate aerosol and meteorological factors may affect the health of humans, but studies evaluating both factors are limited. We conducted an epidemiology study to assess effects of fine particulate aerosol and meteorological factors on CVD.

**Method:** This study covered three metropolitan areas—Taipei, Taichung, and Kaohsiung. From the random sample of one million people in the National Health Insurance Research Database, we retrieved records of outpatient visits for CAD from 2005 to 2010. Daily data on PM10, PM2.5, carbon monoxide (CO), ozone (O3), nitrogen oxide (NO), nitrogen dioxide (NO2), and sulfur dioxide (SO2) were obtained from the air quality monitoring stations established by the Environmental Protection Administration. A pre-post event comparison design was applied to evaluate the effects of air pollutants. We selected 17 dust storms (35 days) that were at least 21 days apart and compared CAD outpatient visits and levels of air pollutants between event days and their referent days, and lag effects were taken into account in the further analyses. We evaluated the effects of dust storms on CVD outpatient visits by using Poisson regression models.

**Results:** Of the 21,245 outpatient visits for CVD in the study period, 5,266 were on event days. The levels of PM10 during dust storms days were significantly higher than those during the 2 days before dust storms days. Levels of CO, NO, NO2, O3 SO2, PM10 and PM2.5 in the three areas were all correlated with the number of outpatient visits for CVD. The number of outpatient visits for CVD increased with the levels of O3, SO2, PM10,and PM2.5 but decreased with the levels of CO, NO, and NO2 during the dust storm days. When the lag effects were considered, the associations between individual pollutants and CVD visits had different changes in different areas.

**Conclusion:** This study provides evidence supporting the effects of CO, NO, NO2, SO2, PM10, and PM2.5 on outpatient visits for CVD with different lag effects in three metropolitan areas in Taiwan during dust storms.