

THE ASSOCIATION BETWEEN EXPOSURE TO PARTICULATE AIR POLLUTANTS FROM FIRECRACKERS AND OUTPATIENT VISITS FOR CARDIOVASCULAR AND RESPIRATORY DISEASES

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Background and aims: Fireworks are used worldwide for the celebrations. In Taiwan, the largest firework is held at a southern Taiwan township, and thousand pounds of firecrackers are fired in the township during the Lantern Festival. The aim of this study was to investigate the impact of exposure to particulate firework pollutants on the occurrence of outpatient visits for cardiovascular and respiratory diseases.

Methods: This study applied case-crossover study design to investigate the association between exposure to particulate firework pollutants emitted from the firecrackers and the outpatient visits for cardiovascular and respiratory disease. The information on outpatient visits were abstracted from National Health Insurance database. Environment exposure data were secured from the Taiwan Environmental Protection Agency.

Results: The results indicate that the concentrations of air pollutants were high on the evening of Lantern Festival, when most of the firecrackers were fired. It was increased on the first, second, and third day following the Festival. Firecracker particulate exposure (per $10 \cdot \text{g}/\text{m}^3$ increase) was significantly associated with outpatients visits for cardiovascular diseases (OR 1.41, 95% CI 1.37-1.45), hypertension (OR 1.47, 1.43-1.52), ischemic heart Disease (OR 1.25, 1.14-1.37), respiratory diseases (OR 1.42, 1.40-1.44), upper respiratory infection (OR 1.42, 1.40-1.43), asthma (OR 1.42, 1.31-1.55), COPD (OR 1.54, 1.50-1.58), and pneumonia/bronchiolitis (OR 1.54, 1.50 -1.58).

Conclusions: The results indicate that air pollutants emitted from firecrackers increase the risk of outpatient visits for cardiovascular and respiratory diseases. Prevention measures are needed to reduce the adverse health effect incurred by particulate firework pollutant exposure.