

# **Air Pollution and Paracetamol Usage Are Related to Eczema among Children: A Retrospective Cohort Study**

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## **Abstract**

Air pollution related to eczema is an important public health task, especially for sensitive population like children. Current studies indicate that paracetamol usage during pregnancy increases the risk of air pollution on eczema. The potential mechanism can be through glutathione and inflammation induction. The objective of this study is to investigate the effect of air pollution exposure and paracetamol usage in early life (before one year old) on eczema incidence during childhood. This study was a retrospective cohort study. Children born from 2000 to 2004 and exposed to air pollution and postnatal paracetamol usage before one year old was followed up to ages 7-11. Air pollutant concentration was estimated by Geographic Information Systems (GIS) with air quality monitoring stations data in Taichung. At the meantime, we assessed children's paracetamol usage by LHID 2005. To estimate the risk of eczema related to air pollution and paracetamol usage, Cox Proportional Hazard Regression Model was used with adjustment of gender, antibiotic, household income, temperature and relative humidity. Our results demonstrated that both PM<sub>2.5</sub> and PM<sub>10</sub> had significant effects on eczema among children with paracetamol usage. Although the interaction of air pollutants and paracetamol usage to eczema was unapparent, our findings concurred in the assumption of earlier study which had proposed that exposing PM<sub>2.5</sub> may decrease glutathione within the human body and then make the toxicity of paracetamol usage rise to occur eczema. However, paracetamol is commonly used for fever, especially among children. PM<sub>2.5</sub> and PM<sub>10</sub> with paracetamol usage related to eczema should be taken further concern for public health and preventive medicine, especially for sensitive group like children. Further research is suggested.

**Keywords:** Eczema; Paracetamol; Air pollution; Children; Longitudinal Health Insurance Database 2005 (LHID 2005)