

Association of PM_{2.5} level with pediatric patient visits for respiratory diseases in Bangkok, Thailand

Abstract

Background: High levels of PM_{2.5} in Bangkok are concerned. We aimed to study the association of PM_{2.5} level with pediatric patient visits for respiratory diseases.

Methods: This retrospective study collected hospital visits of children less than 18 years for respiratory diseases and PM_{2.5} level during 2018-2020. Number of hospital visits with diagnoses of upper respiratory infections (URIs), acute bronchitis, acute bronchiolitis, pneumonia and asthmatic exacerbation were collected. We analyzed the association of weekly average of PM_{2.5} level with pediatric patient visits for respiratory diseases using a time-series analysis using a negative binomial model. We adjusted year, seasons, number of influenza and respiratory syncytial virus (RSV) cases as confounders.

Results: We found a significant association between weekly average of PM_{2.5} level and patient visits for URIs and acute bronchitis in children less than 2 years and asthmatic exacerbation in children less than 5 years. During winter, when weekly average of PM_{2.5} level was above 55 µg/m³, there was 40% increase in URIs cases and 80% increase in acute bronchitis cases in children less than 2 years.

Conclusions: High level of PM_{2.5} was associated with number of pediatric outpatients with URI, acute bronchitis and asthmatic exacerbation. Younger age group had more significant association.

Keywords: air pollution, PM_{2.5}, respiratory diseases, children