

## LSC - 2021 - Ambient PM<sub>2.5</sub> Exposure and Respiratory Disease Hospitalization in Kandy, Sri Lanka

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### Abstract

**Introduction:** Ambient air pollution (AAP) is high in the South Asian region. Evidence of associations between AAP and health outcomes are sparse in this region due to limited exposure and lack of quality health-data. In this study, we aimed to investigate the effects of ambient PM<sub>2.5</sub> on respiratory diseases (RD) hospitalization in Kandy, Sri Lanka.

**Methods:** For the period of 2019-01-01 to 2019-12-31, PM<sub>2.5</sub> measurements were obtained using validated small sensors and daily RD hospitalization data were obtained from two major hospitals. In 2019 two distinct seasons of AAP were identified. First, we modeled the associations between RD hospitalization in high AAP period by selecting 3 months (19-03-01 to 19-05-31) compared to 3 months of the low AAP period (19-08-01 to 19-10-31) as the reference.

**Results:** During 19-03-01 and 19-05-31, higher daily average PM<sub>2.5</sub> levels (48.8µg/m<sup>3</sup>±14.9) were observed compared to 19-08-01 and 19-10-31 (25.3µg/m<sup>3</sup>±5.4). Compared to the low AAP reference period, high AAP period was associated with increased hospital admissions for RD, Rate Ratio (RR) 1.21(95%CI 1.15–1.28). Risk of RD hospital admissions were higher among elders (>65 years) RR 1.31(95%CI 1.20–1.43) in contrast to <65-year old's, RR 1.16 (95%CI 1.09–1.24). Compared to low AAP period high AAP period was associated with increased risk of Chronic Obstructive Pulmonary Disease (RR 1.35 (95%CI 1.20–1.51)) and pneumonia (RR 1.58 (95%CI 1.13-2.20)) hospital admissions.

**Conclusion:** High AAP levels and frequency of these events are much common in developing countries like Sri Lanka and these are linked with increased hospital admissions for RD. Continuous efforts are crucial to improve ambient air quality in this region.

### Footnotes

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