Risks of exposure to ambient air pollutants on the admission of respiratory and cardiovascular diseases in Kuala Lumpur

ABSTRACT

Epidemiological study of the health consequences due to air pollution exposures is vital, especially in areas with high emissions of pollutants. This study aims to assess the risks of exposure to air pollutants (PM10, CO, NO2 and SO2) on respiratory and cardiovascular admissions in Kuala Lumpur. The quasi-Poisson generalized linear model (GLM) combined with distributed lag non-linear model (DLNM) was used to estimate the associations. The key findings were expressed as the relative risk (RR) with a 95% confidence interval (CI) for single-day and cumulative lag effects (0–7). The highest association of respiratory admissions and PM10 was observed at lag 05 (RR=1.0549, 95%CI=1.0131,1.0984) and NO2 at lag 07 (RR=1.1000, 95%CI=1.0141,1.1931) for an increase of 10 µg/m3 and CO at lag 07 (RR=1.1163, 95%CI=1.0164,1.2260) for an increase of 1 mg/m3 in the concentrations. Changes in levels of NO2 was associated with cardiovascular admissions with the highest RR value was found at lag 01 (RR=1.0491,95%CI=1.0220,1.0770). Adverse respiratory health effects at the population level were observed at low levels of exposure to air pollutants where the current air quality standards were being met. Timely preventive measures should be adopted to lessen the exposure to air pollution, thus modifying the risks to human health.