Exposure to PM2.5 and respiratory health among traffic policemen in Kuala Lumpur

ABSTRACT

Exposure to traffic air pollutant have shown a significant health effect on respiratory systems and decreased in lung function among traffic policemen. The main objective of this study was to determine the relationships between personal exposure levels to PM2.5 and respiratory health among traffic policemen working at Traffic Police Station in Kuala Lumpur and general duty policemen attached to Police Headquarters, Bukit Aman. A cross sectional comparative study was conducted among 50 traffic policemen from Traffic Police Station Kuala Lumpur and 50 general duty policemen from Police Headquarters Bukit Aman as comparative group. A purposive sampling method was used to select the respondents based on inclusive criteria such as age between 25 to 60 years, no history of respiratory disease and working not less than 3 years as traffic policemen. Questionnaire based on ATS (1978) was used to collect information on socio-demographic and respiratory symptoms. Spirometer (Spirolab II Model) was used to perform lung function tests. Personal Air Sampling Pump (Aircheck 52) was used to measure personal exposure level to PM2.5. The mean exposure level of PM2.5 among the traffic policemen was 22.33 ± 8.54εg/m³ compared to only 5.60 ± 4.29εg/m³ for comparative group. There was a significant difference in all lung function parameters between the exposed group and comparative group. From the finding, it shows that there was significant relationship between working duration (years) and lung function parameters among both exposed and comparative group. The result from this research shows that traffic policemen were determined as having lower lung function parameters due to their nature of work and the environment. Also, there was a significant association between exposure to fine particle (PM2.5) and lung function among the exposed group. Finding from this study indicated that exposure to elevated concentration level to traffic related air pollutant was the risk factors in the development of respiratory diseases as shown by the higher prevalence of respiratory symptoms and the reduction in lung function among traffic policemen.

Keyword: Fine particle (PM2.5); Lung function; Respiratory symptoms; Traffic air pollutant