Relationship between $PM_{2.5}$ Exposure and Smoking Habits with Lung Function Status in Workers of PT. X, Pasuruan Regency, East Java

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Abstract

Workplace air quality is a crucial factor that can affect workers' health. Long-term exposure to fine particulate matter ($PM_{2.5}$) can have a negative impact on lung function. In addition, smoking as a lifestyle factor also contributes to the deterioration of respiratory health. The combination of environmental exposure and individual habits increases the risk of impaired lung function, especially among industrial workers. $PM_{2.5}$ is an air pollutant consisting of very small particles that can be easily inhaled and enter the respiratory tract. Smoking habits also play a role as an individual factor that has the potential to worsen lung function. This study aims to analyze the relationship between $PM_{2.5}$ exposure and smoking habits with lung function status among workers at PT. X in Pasuruan Regency. This research employed an analytical observational design with a cross-sectional approach, involving 65 respondents selected through simple random sampling. $PM_{2.5}$ exposure was measured using the EVM-7 device, while smoking habits were assessed through a questionnaire. Lung function status was measured using a spirometer. The results showed a significant relationship between $PM_{2.5}$ exposure ($p=0.009$) and smoking habits ($p=0.000$) with lung function status. It can be concluded that $PM_{2.5}$ exposure and smoking habits are contributing factors to decreased lung function among furniture workers. It is recommended that workers reduce smoking habits and always wear masks while working to minimize $PM_{2.5}$ exposure.

Keywords: $PM_{2.5,}$ smoking habits, lung function, furniture industry workers