

Abstract

Many studies have shown an association between long-term exposure to particulate matter having an aerodynamic diameter of 2.5 μm or less ($\text{PM}_{2.5}$) and diabetes mellitus (DM), but few studies have focused on Asian subjects. We thus examined the association between long-term exposure to $\text{PM}_{2.5}$ and DM prevalence in Okayama City, Japan. We included 76,591 participants who had received basic health checkups in 2006 and 2007. We assigned the census-level modeled $\text{PM}_{2.5}$ data from 2006 and 2007 to each participant and defined DM using treatment status and the blood testing. $\text{PM}_{2.5}$ was associated with DM prevalence, and the prevalence ratio (95% confidence interval) was 1.10 (1.00-1.20) following each interquartile range increase ($2.1 \mu\text{g}/\text{m}^3$) in $\text{PM}_{2.5}$. This finding is consistent with previous results and suggests that long-term exposure to $\text{PM}_{2.5}$ is associated with an increased prevalence of DM in Okayama City, Japan, where the $\text{PM}_{2.5}$ level is lower than in other cities in Asian countries.