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## THE ASSOCIATION BETWEEN AMBIENT PM<sub>2.5</sub> EXPOSURE AND THE RISK OF HYPERTENSION IN CHINA: A RETROSPECTIVE COHORT STUDY

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**Objectives:** The main objective of this study is to explore the effect of ambient particulate matter (PM<sub>2.5</sub>) exposure on hypertension.

**Methods:** In this study, we investigated the blood pressure of 1,998,795 participants and their individual PM<sub>2.5</sub> exposure values in China from 2014 to 2015 from National Free Pre-pregnancy Check-ups Project and the Ministry of Environmental Protection of the People's Republic of China. In this research, the PM<sub>2.5</sub> exposure time was divided into five periods (3 days before survey, 1 week before survey, 1 month before survey and 2 months before survey as well as 3 months before survey). We calculated the average concentration and the corresponding quartiles of PM<sub>2.5</sub> in these five periods. We used logistic regression to explore the association between PM<sub>2.5</sub> exposure and hypertension in different periods, and compared the effects of different quartiles of levels of PM<sub>2.5</sub> exposure on hypertension in each exposure phase. The effects were adjusted for age, body-mass index (BMI), education level, second-hand smoking and drinking.

**Results:** A total of 1,998,795 participants were included, among which 89,255 (4.5%) were hypertension. Each 10 µg/m<sup>3</sup> increase of PM<sub>2.5</sub> was associated with increases in the risk of hypertension of 9.56% (95% CI 9.29-9.83) in the period of 3 days before survey, 15.68% (95% CI 15.33-16.02) in the period of 1 week before survey, 27.22% (95% CI 26.71-27.72) in the period of 1 month before survey, 16.54% (95% CI 16.13-16.96) in the period of 2 months before survey, and 7.75% (95% CI 7.40-8.10) in the period of 3 months before survey. We found that PM<sub>2.5</sub> exposure during 1 month before survey had the highest significant increase in the

risk of hypertension, and we then explored the dose association between hypertension and PM<sub>2.5</sub> exposure based on quartiles. Compared with the lowest quartile of PM<sub>2.5</sub> exposure, the second, third and fourth quartile all increased the risk of hypertension, and fourth quartile PM<sub>2.5</sub> exposure during 1 month before survey was the most obvious increased, and the odds ratio was 1.674 (95% CI 1.643-1.706)

**Conclusion:** We observed that ambient PM<sub>2.5</sub> exposure played an important role in human health and could increase the risk of hypertension.

### Recent Publications

1. Guo T, Wang Y, Zhang H, Zhang Y, Zhao J, Wang Y et al. (2017) The association between ambient temperature and the risk of preterm birth in China. *Science of the Total Environment* 613-614:439-446.

### Biography

Guo Tongjun, a master candidate majoring in Epidemiology and Health Statistics in the National Research Institute for Family Planning, Peking Union Medical College, China. He focus in the data analysis of reproductive health, having strong interest in the relationship between environment and health. He has published an article entitled "The association between ambient temperature and the risk of preterm birth in China" in the science of the environment journal.

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