

# PM<sub>2.5</sub> reduction improves kidney function

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Air pollution has significant toxicity on the kidney. However, improving air quality may have a beneficial effect on kidney function, according to a population-based study published in *Health Data Science*.

The researchers found that ambient fine particulate matters (PM<sub>2.5</sub>) concentration reduction led to significant improvement in laboratory test

results used to assess a patient's [kidney function](#).

"Long-term exposure to PM<sub>2.5</sub> has been associated with declined kidney function. However, whether the association is causal remains unknown." says co-author Yiqun Han, research associate in School of Public Health, Imperial College London. "We conducted a quasi-experimental difference-in-difference analysis and identified a strong linkage between the reduced PM<sub>2.5</sub> with improved kidney function."

The researchers analyzed the demographic and laboratory records of 5,115 adults who participated in the China Health and Retirement Longitudinal Study (CHARLS). They investigated the change in kidney function parameters between 2011 and 2015 according to the population's long-term exposure to PM<sub>2.5</sub> derived from an environmental database.

The team found that a 10 µg/m<sup>3</sup> reduction in PM<sub>2.5</sub> significantly improved multiple kidney function parameters. Glomerular filtration rate (GFR) increased by 0.42 mL/min/1.73m<sup>2</sup>, blood urea nitrogen (BUN) decreased by 0.38 mg/dL, and uric acid (UA) decreased by 0.06 mg/dL, respectively.

"The Clean Air Action Plan, initiated in 2013 by the Chinese government, was a bold nationwide policy aiming at tackling the severe air pollution problem in China," Han said. "The rapid [air quality](#) improvement driven by the action provides an opportunity of to investigate the beneficial effect of [air pollution](#) reduction on population health, including cardiorespiratory diseases, metabolic diseases, mental and neurological disorders, and indicators for nonfatal risks (e.g., medical expenditure and disability), in addition to kidney diseases."

**More information:** Yiqun Han et al, Association of PM<sub>2.5</sub> Reduction with Improved Kidney Function: A Nationwide Quasiexperiment among

Chinese Adults, *Health Data Science* (2022). DOI: [10.34133/2022/9846805](https://doi.org/10.34133/2022/9846805)

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