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Promoting Sustainable Kidney Health: The Asia-Pacific and Beyond
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Air Pollution and Kidney Disease: Mechanisms Proposed for the Effect of Particulate Matter on Renal Health

Duk-Hee Kang
Ewha Womans University Seoul Hospital, Korea

Increasing environmental pollution which is inevitable due to an accelerated industrialization and urbanization worldwide, have become a global health challenge. There have been extensive investigations regarding the association of air pollution and pulmonary and cardiovascular diseases, however the research on kidney disease has not been sufficiently explored and rather can be said to be just beginning. Previous association studies demonstrated that fine particulate matter (PM) exposure is associated with an increased risk of lower eGFR, the development & progression of CKD, and an increased mortality in CKD patients. Direct exposure of PM to cultured renal tubular cells induced oxidative stress & phenotype transition. Inhalation of PM in normal or UUO animals for 5 to 14 days resulted in an induction of inflammatory reaction, oxidative and ER stress although it did not lead to renal fibrosis or decreased eGFR. Indoor PM2.5 concentration was associated with high SBP, ESR, PWV, and increased levels of some cytokines. Intervention using indoor air purifier in CKD patients for 4 weeks led to a decrease in plasma levels of some inflammatory cytokine levels with an improvement of ABI in CKD patients.