

PubMed

Format: Abstract ▾

Full text links



*J Diabetes Investig.* 2019 Oct 3. doi: 10.1111/jdi.13152. [Epub ahead of print]

# Association between environmental quality and diabetes in the USA.

[Jagai JS](#)<sup>1</sup>, [Krajewski AK](#)<sup>2</sup>, [Shaikh S](#)<sup>3</sup>, [Lobdell DT](#)<sup>4</sup>, [Sargis RM](#)<sup>5</sup>.

## Author information

- 1 School of Public Health, Division of Environmental and Occupational Health Sciences, University of Illinois at Chicago, Chicago, Illinois, USA.
- 2 Oak Ridge Institute for Science and Education, National Health and Environmental Effects Research Laboratory, Environmental Public Health Division, U.S. Environmental Protection Agency, Chapel Hill, North Carolina, USA.
- 3 Program on Global Environment and Public Policy Studies, University of Chicago, Chicago, Illinois, USA.
- 4 National Health and Environmental Effects Research Laboratory, Environmental Public Health Division, U.S. Environmental Protection Agency, Chapel Hill, North Carolina, USA.
- 5 Department of Medicine, Division of Endocrinology, Diabetes, and Metabolism, University of Illinois at Chicago, Chicago, Illinois, USA.

## Abstract

**AIMS/INTRODUCTION:** Caloric excess and physical inactivity fail to fully account for the rise of diabetes prevalence. Individual environmental pollutants can disrupt glucose homeostasis and promote metabolic dysfunction. However, the impact of cumulative exposures on diabetes risk is unknown.

**MATERIALS AND METHODS:** The Environmental Quality Index, a county-level index composed of five domains, was developed to capture the multifactorial ambient environmental exposures. The Environmental Quality Index was linked to county-level annual age-adjusted population-based estimates of diabetes

prevalence rates. Prevalence differences (PD, annual difference per 100,000 persons) and 95% confidence intervals (CI) were estimated using random intercept mixed effects linear regression models. Associations were assessed for overall environmental quality and domain-specific indices, and all analyses were stratified by four rural-urban strata.

**RESULTS:** Comparing counties in the highest quintile/poorest environmental quality to those in the lowest quintile/best environmental quality, counties with poor environmental quality demonstrated lower total diabetes prevalence rates. Associations varied by rural-urban strata; overall better environmental quality was associated with lower total diabetes prevalence rates in the less urbanized and thinly populated strata. When considering all counties, good sociodemographic environments were associated with lower total diabetes prevalence rates (prevalence difference 2.77, 95% confidence interval 2.71-2.83), suggesting that counties with poor sociodemographic environments have an annual prevalence rate 2.77 per 100,000 persons higher than counties with good sociodemographic environments.

**CONCLUSIONS:** Increasing attention has focused on environmental exposures as contributors to diabetes pathogenesis, and the present findings suggest that comprehensive approaches to diabetes prevention must include interventions to improve environmental quality.

© 2019 The Authors. Journal of Diabetes Investigation published by Asian Association for the Study of Diabetes (AASD) and John Wiley & Sons Australia, Ltd.

**KEYWORDS:** Air; Cumulative environmental exposures; Sociodemographic

PMID: 31579986 DOI: [10.1111/jdi.13152](https://doi.org/10.1111/jdi.13152)

**Free full text**



**Grant support**



## LinkOut - more resources

