

Cystic Fibrosis Research News

Citation:

Oates GR, et al. The Association of Area Deprivation and State Child Health with Respiratory Outcomes of Pediatric Patients with Cystic Fibrosis in the United States. *Pediatr Pulmonol*. 2020

What was your research question?

This observational study investigated the relationship between area-level socioeconomic deprivation, state child health, and CF respiratory outcomes in a national cohort.

Why is this important?

Because differences in socioenvironmental exposures influence overall childhood health, their association with pediatric cystic fibrosis (CF) outcomes is unclear. Thus, both area socioeconomic characteristics and state child healthcare play a role in pediatric CF outcomes.

What did you do?

We assessed relationships between the 2015 area deprivation index (ADI), which measures socioeconomic disadvantage. We also assessed the 2016 child health index, a state-specific measure of overall child health as well as CF respiratory outcomes in the 2016 Cystic Fibrosis Foundation Patient Registry (CFFPR).

What did you find?

The sample included 9,934 individuals with CF, aged 6-18 years. In multiple regression analysis, those residing in the worst tertile for area deprivation had a 2.8% lower percent predicted forced expiratory volume in 1s.

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Furthermore, these individuals had 1.2 more intravenous (IV) treatment nights (CI: 0.1-2.4), and 20% higher odds of pulmonary exacerbations compared to their best-tertile counterparts. Children with CF in states at the worst tertile for child healthcare had 2.3% lower ppFEV1 2.2 more IV treatment nights and 40% higher odds of exacerbations than best-tertile counterparts. State child healthcare accounted for the association between area deprivation and multiple exacerbations and more IV treatment nights.

What does this mean and reasons for caution?

Both area socioeconomic characteristics and state child health play a role in the outcomes of pediatric patients with CF. Upon conducting controls for area deprivation, this has affected the ability of state programs to mitigate effects on poverty. As the CFFPR collects only residential ZIP codes rather than full addresses, ADI scores were calculated at that level of geography. This is an inferior method of data aggregation and can result in less precise estimates. We did not adjust CF outcomes for the size, performance, or other characteristics of the CF programs in each state.

What's next?

Improvements in the social, economic, living environments and public health infrastructure will benefit the health of children with CF. Population-level policy, system, and environmental interventions may be more impactful than individual patient-level interventions.