Environmental Justice: A Brief Overview

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"Environmental justice" (EJ) is a concept that gradually entered the public domain in the 1980s. By 1991, the First National People of Color Environmental Leadership Summit outlined "17 principles of environmental justice," and in 1994 President Clinton issued Environmental Justice Executive Order #12898, establishing "fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." This order mandated that "no group shall bear a disproportionate share of negative environmental consequences from industrial, government, or commercial policies," and that people have the opportunity to participate in decisions, community concerns will be considered, and decision makers would seek out those potentially affected.

Like most issues of race in the US, those goals remain aspirational and substantially unfulfilled. And numerous studies have confirmed that minorities still suffer disproportionately from the health effects of climate change and environmental degradation.

A 2019 study in the journal Climate is a case in point.[1] In the 1930s–40s, the Home Owner's Loan Corporation (HOLC) created maps to aid banks in mortgage refinancing as an economic stimulus, focusing on urban areas across all regions of the US. The maps were color-coded as green (best), blue, yellow, or red (least desirable, hence the term "redlining"). Reference articles demonstrated that the racial distribution of those neighborhoods remains to this day. The authors of the 2019 Climate study cross-referenced those maps with satellite data to determine surface temperature, impervious surfaces (paved, more heat retention), and percentage of tree canopy of each respective area. The Landsat data confirmed that the "red" areas lag behind national averages, the "green" exceed them even today in all 3 parameters. The reasons are numerous and complex. The historically lower rating of the red areas/ properties rendered them of poorer investment quality so their value underperformed, resulting in less wealth accumulation and lower tax base. The buildings tended to be built from cinderblock and other cheap, heat-retaining materials. Lower land value made it easier and cheaper to locate highway and factory projects in those neighborhoods. And, fewer tax receipts equaled less political clout, thus fewer green/tree projects dedicated to those areas.

So as that study demonstrates, the policies of the 1930s redound to the detriment of our society today. At present, Houston, Texas is now proposing new public works projects to address the risks to poorer neighborhoods, which were hit particularly hard by floods from Hurricane Harvey in 2017. Virtually all previous initiatives in Houston of this nature had gone to preserve more expensive property. On its face, that strategy makes sense—saving the more expensive buildings and land better salvages the city's tax base, so "more bang for the buck" from a revenue standpoint. Of course, the poorer communities are largely minority and the more affluent ones are Whiter. So the problem repeats itself. Needless to say where issues of money (and race) are involved, debates and turf battles over these proposals are the rule rather than the exception.

CDC reports confirm much of this data[4]—a disproportionate share of the 4% of US citizens living within 150 meters of a major highway are Black and Brown; 30–45% of urban dwellers live fewer than 500 meters from a highway and/or fewer than 100 meters from a major road. Researchers from the Universities of Montana and Michigan,[7,8] reviewing longitudinal data in a similar way, determined that half of US inhabitants who live within 3 kilometers of hazardous waste sites are people of color. Other studies of the Texas populace found that, after controlling for population density, people of color were 1.3 times more likely than non-Hispanic Whites to live fewer than 5 kilometers from fracking facilities. Neighborhoods with greater than 80% minority composition were twice as likely to be situated near wastewater wells when compared to those with less than 20% minority composition.[6]

However, the disparity goes deeper. The Proceedings of the National Academy of Sciences[5] reported in 2019 on "pollution inequality" using spatially explicit economic input-output and consumption data for fine particulate matter < 2.5microns ("PM2.5"), comparing it to similar spatially explicit emissions and population health data. They determined that non-Hispanic Whites enjoy a 17% "pollution advantage," while Blacks have a 56% and Hispanics a 63% "pollution disadvantage." Whites live in communities that, by lifestyle, consume materials and disproportionately cause the pollution; while minorities reside in the communities that generate rather than consume those commodities. They further note that PM2.5 is responsible for 63% of environmental mortality and 3% of US deaths overall—100,000 Americans yearly.

Why does this matter? The adverse health effects to Black and Brown citizens from environmental toxins and climate change are extensive and pervasive, including:

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1) Infant mortality—The rate for Blacks in US is 10.9 per 1,000 births, more than double the rate in Whites (4.9 per 1000). Among the established risk factors for SIDS is exposure to outdoor pollutants.

2) Low Birth Weight—Numerous studies associate low birth weight and decreasing head circumference to environmental contaminants like air pollution, pesticide exposure due to in-home vermin, and PM2.5. Recall the Flint Michigan lead crisis in 2017. State officials, trying to address revenue shortfalls for the cash-strapped city, changed the water source for the city, and we all witnessed the result. Flint is 57% Black, 37% White.

3) Asthma—Black children are twice as likely to be asthmatic compared to Whites; Black children under two years are 3 to 4 times more likely to be hospitalized for asthma than White children. Again, numerous studies tie many of the above agents as both root cause and exacerbation of the problem.

4) Neurodevelopment—the 2016 consensus statement by Project TENDR (Targeting Environmental Neuro-developmental Risks), an alliance of over 50 leading scientific, health professionals, and health advocates with expertise in chemicals and brain development, cites a long list of neurotoxins felt to play a significant role in this problem. The National Health Interview Survey indicates a higher prevalence of these disorders among Medicaid recipients and families with income below the poverty line.

5) Birth defects—The Journal of Environmental Research found a noticeable increase in a variety of cardiac and neural tube defects, as well as cleft lip/palate, among children of women living within 1,500 meters of a major highway in Massachusetts.[9] Similar findings, confirmed by satellite data, were noted in California's predominantly Latino San Joaquin valley.[10] At the time of the writing of this article, the New York Times reported on a study noting that Hispanic women living within 5 kilometers of flares from oil and gas wells in South Texas had a 50% increased risk of premature and low birth weight infants.[6] There were similar findings among inhabitants of the Marcellus Shale region in western Pennsylvania as well.

6) Preterm birth can have serious sequelae for the newborn including but not limited to significant morbidity and even death. Many studies suggest that environmental quality can directly influence birth outcomes including the length of gestation. The literature supports that there are many environmental factors that may cause or be associated with preterm birth, however, there are often more than one factor present in the environment that a pregnant person is exposed to as well as social demographics that can increase the risk of a premature birth.[11]

7) Cardiovascular disease—the American Heart Association HeartSCORE study determined that increased exposure to PM2.5 is associated with essentially all components of heart disease. They reported that Blacks had a higher average exposure to fine particulates and black carbon air pollutants, and identified a 45% increased risk of cardiac events and death compared to Whites. They postulate that 25% of the phenomenon is directly attributable to increased exposure to PM2.5

Given all of the above, what can we pediatricians do about this? Some recommendations from the New Jersey Climate Adaptation Alliance[2] and the Pediatric Environmental Health chapter on Environmental Equity include:[3]

Build a network to hear about environmental concerns in your community.

Become involved in medical-legal partnerships (http://medical-legalpartnerships.org) Familiarize yourself with the history of the problem.

Consider local cultural practices that may increase the risk to members of minority communities. (example: greater consumption of fish—mercury—among Asian/Pacific Islanders).

Ask about supplements/herbal remedies/imported spices and powders among minority/immigrant communities in your practice.

Speak out on behalf of policies and practices locally, statewide, and nationally that help improve the environment for our patients:

Tighter enforcement of environmental regulations Increase funding for education on climate change and EJ

Increase use of energy efficiency and renewable energy on personal, community, and national basis.

Advocate for locally sourced food system

Increase green infrastructure to address "heat island" effect.

Help improve communication between government/political/business/scientific authorities to develop new strategies to address the problem.

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The EJ executive order was an important step in this effort. However, much effort will be needed at all levels of governance across public and private sectors to address the inequitable historic legacy exposures that continue to disproportionately burden minority communities. EJ is a multi-faceted, difficult problem. No single person can solve it, and it isn't going away anytime soon. In taking as many of the above steps as possible, however, we can "move the ball forward."

To continue the discussion on climate change, join NJAAP's Committee on Environmental Health and Climate Change. Contact Bethany Kondavaty (bkondavaty@njaap.org) for more information.

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