Statement on Environmental Health

Student National Medical Association

Health Policy and Legislative Affairs Committee

Statement on Environmental Health

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INTRODUCTION

Established in 1964 by medical students from Howard University College of Medicine and Meharry Medical College, the Student National Medical Association (SNMA) is the nation's oldest and largest student-governed organization focused on the needs and concerns of medical students of color. The SNMA is committed to supporting current and future underrepresented minority medical students, addressing the needs of underserved communities, and increasing the number of clinically excellent, culturally competent and socially conscious physicians. In line with this mission, the SNMA recognizes the detrimental health impact of environmental hazards, both man-made and natural, that disproportionately affect communities of color. In this statement, we seek to provide education and recommendations aimed at reducing the risk of morbidity and mortality associated with negative environmental exposures.

BACKGROUND

Several medical conditions and diseases have been strongly linked to environmental factors including, but not limited to, allergies and asthma;[1,2] autism;[3] cancers;[4,5] lung disease;[6] lupus;[7] Parkinson's disease;[8] and reproductive disorders.[9–11] Marginalized communities, particularly communities of color, experience a greater burden of disease from the aforementioned conditions due to historic and systemic factors that place them in proximity to pollution and unsanitary conditions.[12]

In 2015, 1.8 billion people globally resorted to using drinking water that was contaminated with fecal matter and more than 2 billion people lacked access to basic sanitation.13 According to the World Health Organization (WHO), almost one in four global deaths were attributable to modifiable environmental conditions in 2016, which translates to approximately 13.7 million people.[14] In the United States (US), 26.5 million people were using public water systems that failed to meet minimum quality standards established by the Safe Drinking Water Act in 2013.[15] Such populations are often subject to several different environmental hazards, including food contamination, toxic waste, and poor housing conditions[13] while simultaneously having inadequate resources to address their cumulative impact.[16]

Research suggests climate injustice and health disparities develop from the same underlying causes, including social inequities, lack of institutional power, and the need for foundational changes in our health and transportation systems and energy management.[16] In

response, the Environmental Protection Agency (EPA) established a strategic plan called the Environmental Justice (EJ) 2020 Action Agenda, which includes goals to "deepen environmental justice practice within EPA programs to improve the health and environment of overburdened communities" and "work with partners to expand [the EPA's] positive impact within overburdened communities."[17] As this plan acknowledges, addressing environmental hazards and the inequities in exposure to them undoubtedly plays an important role in addressing the needs of medically underserved populations. Systemic solutions that act on the shared root causes of unsafe environmental exposures and health disparities have the ability to provide primary prevention and promote the development of healthy, equitable and resilient communities.[18]

SCOPE OF THE PROBLEM

Climate Change

NASA defines climate change as "a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates." The further acknowledge that these changes have a broad range of observed effects that are synonymous with the term including but not limited to increase in temperature, rising sea levels, food supply issues, environmental degradation, and extreme weather events.[19]

Natural disasters are some of the most direct examples of the ways in which intense extremes of climate can impact health and healthcare delivery. In 2005, Hurricane Katrina struck New Orleans, Louisiana. The hurricane's widespread flooding, in part due to the failure of the city's levees near more impoverished areas, resulted in significant property damage and the subsequent displacement and resettlement of these communities. Studies have demonstrated strong correlations between the intense weather conditions of the hurricane itself and the displacement process with negative psychosocial and physical health effects.[20] These effects have continued to wreak havoc years later economically, socially and in health among the cities mostly Black/African American population. This continued influence highlights the relationship between poverty, racism, and environmental and residential segregation.[20-22] In 2017, Hurricane Maria devastated Puerto Rico and other parts of the Caribbean, leading to over 3,000 fatalities and drastically reducing access to food and potable water.[23,24] The loss of clean water in Puerto Rico led to an uptick in communicable disease related to unclean water and lack of sanitation, including

vomiting and diarrhea, conjunctivitis, and at least four deadly cases of leptospirosis. Further, the loss of power in some parts of the island for months on end greatly limited the existing health system's ability to care for its inhabitants and sent ripple effects through the medication and medical equipment supply chain throughout the United States.[23] Both events represent a huge failure of federal and local government in protecting its most vulnerable residents and highlight the gravity of the climate crisis.

Environmental Agents and Exposure Routes

The largest driver of climate change is the unprecedented increase in the concentration greenhouse gases of which carbon dioxide is the most notable. Since the Industrial Revolution, there has been a steady increase in the global temperature owing to the rising levels of CO2 (the most prevalent GHG). Health Affairs notes that approximately 8.5% of US greenhouse gases are contributed by the health sector while the remainder is a combination of natural processes, pollution and human action.[25] Exposure to these gases and other chemicals in the environment has been linked to adverse health effects. These agents include nitrous oxide, methane, fluorinated gases, dioxins, electromagnetic fields (EMFs), and endocrine-disrupting compounds, examples of which are dichlorodiphenyltrichloroethane (DDT), lead, mercury, mold, ozone, and pesticides.[26] Many of these agents can be found the air we breathe and in items such as plastic bottles, metal food cans, herbicides, detergents, flame retardants, food, toys and cosmetics.[26] Exposure routes include, but are not limited to, air and water pollution, as well as proximity to hazardous waste and materials. Studies demonstrate that although these exposure routes are common to all people, minorities and communities of color tend to reside and work in locations where they are more susceptible to elements that can utilize the aforementioned routes as vehicles for transmission of disease.[27,28]

Environmental Health Disparities

Gilbert Gee, a former instructor of Health Behavior and Health Education at the University of Michigan School of Public Health, noted that environmental conditions play an important role in health outcomes, which is supported by the stress-exposure disease model.[29] According to Gee's work and that of others, communities of color demonstrate higher rates of mortality, morbidity, and health risk factors when compared to predominantly white or more affluent neighborhoods,

even after accounting for income and other characteristics.[28-30] A person or community'ss zip code and the degree of racial segregation in one's area of residence can serve as a powerful indicator for a variety of health outcomes further highlighting the geographic influence of enviroment and climate on health.[11,32,33] Community resources in said zip code are one reason for this correlation. For example, the health of individuals living in zip codes without a physical and infrastructural resources such as access to fresh fruits, vegetables and nutritious foods (absent in so-called "food deserts"),[34] access to healthcare, access to green space, and clean air is negatively impacted by this lack of access.[29] Economic stability, tax availability, and legislative priorities of elected officials directly influence how and where these vital resources are made available. These factors are deeply influenced by racism and classism that devalue certain lives--specifically, Black, Indigenous and People of Color (BIPOC) lives.

Man-made disasters, including the Flint, MI water crisis, also lay bare the insidious links between health disparities and structural conditions determined by one's zip code or local government. After Flint's city government chose to switch its water supply from Detroit to the Flint River in April 2014 without using anti-corrosives, the lead levels in residents' water greatly increased, putting the community at risk for numerous health issues.[35] After April 2014, fetal deaths rose by 58% and fertility rates decreased 12%.[35] Notably, the county in which Flint is located, Genesee County, was ranked 82nd out of 83 counties in the state for health outcomes and 81st for health behaviors by the Robert Wood Johnson Foundation.[36] Gov. Gretchen Whitmer's signing of bipartisan Senate Bills 1251 and 1252 allots $641.2 million in funding settlements in civil Flint water cases. Passed at the end of 2020, this settlement was the result of strong grassroots organizing of Flint residents and serves as a first step in rectifying the harm done. It fails, however; to reverse some of the long-term effects of lead exposure among already affected Flint residents and does not create sustainable prevention measures against similar harms in other areas outside of the county in which Flint is housed.[37] Disproportionate lead exposure to communities of color, which can lead to a variety of respiratory, reproductive, and developmental disorders, including learning disabilities, has been identified elsewhere, including Chicago.[38] The EPA lists addressing racial disparities in childhood lead exposure as one of its current challenges as it seeks to reach the goals of the EJ 2020 Action Agenda.[39]

Nitrogen dioxide (NO_2) is an air pollutant that is public ally discharged from trucks and car fuels, as well as power plants.[40] Intake can cause short-term respiratory issues, such as wheezing and coughing, serve as an asthma trigger, and a large Danish cohort study found that long-term residential exposure may increase the risk of heart failure.[41,42] Researchers at the University of Washington discovered that while the overall number of Americans exposed to NO_2 dropped from 2000 to 2010, Black/African Americans and Hispanics still experienced 37% more exposure to NO_2 than whites in 2010, only a slight decrease from 40% in 2000.[43] Had non-whites inhaled the same levels of NO_2 as Whites during this time frame, around 5000 premature heart disease deaths could have been prevented in 2010.[43] It is important to note that heart disease death rates were higher in 2017 for non-Hispanic Black men and women than for all other racial groups, and almost half of all black adults have some form of cardiovascular disease.[44] Since environmental pollution can have such drastic effects on health, Mohai and Saha's 2015 review of current environmental justice research demonstrated the need for further longitudinal research and new, more comprehensive frameworks, in studying the effects of toxic waste disposal in close proximity to communities of color.[45,46]

Although widely believed to be mostly eradicated in the U.S. and much of the developed world, hookworm infections are resurging in the U.S. South, particularly in areas like Lowndes County, Alabama, a fact that garnered the attention of the United Nations in their recent survey of U.S. poverty and human rights.[26] According to 2017 population estimates, Lowndes County is 72% black and 31% of residents live in poverty.[47] Partially due to the cost-prohibitive nature of laying new sewage systems in such rural areas, around half of Lowndes County's residents do not have sewage systems.[9] As residents are forced to "straight pipe" waste material into their yards, this can create a breeding-ground for the *Necator americanus* hookworm and other parasites whose larvae mature in feces.[9] As a result, a study published in 2017 found gastrointestinal parasites, including hookworm, in more than 30% of the at-risk subjects included in the study.[9] While the Alabama Department of Public Health has refuted the article's claims that hookworm had been identified in samples from the subjects, the issues with sanitation in Lowndes County are an important reminder of how class, race, and environmental factors can interact, leading to dangerous environmental risks and health disparities.[48]

STATEMENT OF POSITION AND RECOMMENDATIONS

The SNMA advocates for the following measures to be considered to reduce the contributions that environmental hazards have on the health and well-being of communities of color:

1. Recognize that racism and classism cannot be divorced from the discussion about environmental health.
2. Prioritize environmental justice in all reform efforts.
3. Declare climate change as a public health crisis.
4. Provide increased funding to local, state, and federal agencies that are tasked with providing surveillance and data on environmental hazards and their impact on morbidity and mortality.
5. Advocate for increased tracking of environmental disparities in health.
6. Ensure that communities are compliant with laws and regulations that are adequate to protect public health or the environment. If adequate standards are not currently established, new environmental quality standards should be developed and enacted.
7. Advocate for environmentally responsible planning and design principles to be utilized in the development, construction, and operation of businesses or residential properties.[49]
8. Advocate for more green space: Studies have demonstrated that green space positively impacts mental health.[49]
9. These measures should promote environment sustainability through the efficient use and conservation of resources, landscaping and ground maintenance practices.
10. Establish stricter guidelines for and greater penalties relating to residential and housing discrimination.
11. Prevent pollution by minimizing solid waste generation and the potential release of pollutants into the environment through waste reduction, reuse and recycling, treatment and proper disposal.
12. Minimize hazardous waste and toxic materials by instituting and enforcing policies and processes for the safe and efficient use, tracking, storage, and disposal of hazardous and toxic materials.
13. Promote environmental health by implementing environmental education and awareness programs.
14. Investigate how changes in greenhouse gases can affect health outcomes.

15. Investigate the effects Particulate Matter (PM) on overall health and how it relates to the death rate for the coronavirus disease caused by the novel coronavirus SARS-CoV2 (COVID-19).
16. Promote the efficient use and conservation of energy, water, and other resources.
17. Advocate for and incentivize environmentally responsible purchasing decisions.
18. Encourage primary care providers to relay information about climate change and health to patients. Studies have demonstrated patient outcomes are more favorable when critical health information is conveyed by a physician with whom trust has been established, such as a primary care provider.[49]

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