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Brief Report

Environmental Injustice: Air Pollution and Asthma in Children

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Brief Case History

Asthma is an inflammatory disease of the lungs that affects millions of people in developed and developing countries worldwide [1]. According to the World Health Organization (WHO) [1], there were over 400, 000 lives lost to Asthma in 2016, and 24.8 million Disability-Adjusted Live Years (DALY) lost related to Asthma. In the United States, over 25 million people are affected by the disease and account for chronic illness among 7 million children [2]. According to Gomez, et al. [3], the built environment plays a crucial role in population health. Therefore any pollutant and structural defect of the built environment can have severe implications for health outcomes. Khreis, et al. [4], in a meta-analysis, found positive and statistically significant associations between several Traffic-Related Air Pollution (TRAP) and causes of Asthma. Since environmental factors are considered amendable, improvement in the environment can positively impact health outcomes related to childhood Asthma.

Asthma accounted for approximately 136 000 hospitalizations of children in the United States in 2010 [5]. According to the Centers for Disease Control and Prevention [6], many of those hospitalizations were preventable, especially those associated with environmental pollution. Exposure to TRAP during the prenatal and postnatal period negatively influences lung development and subsequently increases asthma prevalence in children [5]. Burbank, et al. [5] reported that 46% of pediatric patients hospitalized for environmental pollution-associated Asthma in the Detroit metropolitan area were Black and Latinos. Alcala, et al. [7] reported similar findings among the immigrant community in California's central valley. Also, particulate matter is one of the leading pollutants found in TRAP, which has a delirious effect on respiratory function [8].

Social Determinants that Affect Air Pollutants and Children's Asthma

As Marmot describes, health disparities continue to be a challenge in achieving population health [9]. Low social-economic status is a crucial determinant of health in developed and developing countries. Low economic families live closer to freeways or heavy traffic areas in the city, which ultimately exposed them to TRAP [10]. According to Burbank, et al. [5], those families are mainly Black and Latinos who are more likely to have no health insurance. Low-income households are less likely to access preventable health care, a common practice in California's predominant immigrant neighborhood, which recorded the highest TRAP-related asthma rate [7]. Education is another vital social determinant of health that adversely affect childhood Asthma related to TRAP. Evandrou, et al. [11] called deprivation of information due to low educational attainment among Black and immigrant a crucial factor to health disparities.

The fear of deportation among undocumented immigrant families also fuels the lack of access and low housing, which increases the risk of environmental pollution related to Asthma [7]. Lack of transportation is also common among low socioeconomic households, contributing to the barriers accessing preventative care to Asthmatic patients [12]. Income disparity among ethnic groups in the population must be address to bring about health equality and Asthma prevention in children, primarily related to TRAP.

The Role of Advocacy in Advancing Social Justice

Advocating for social justice is a social responsibility of every healthcare professional to improve population health. Social justice advocates should promote both public and private

enterprise partnerships to ensure quality and accountability at all societal levels [10]. Marmot, [9] challenged leaders at the local, national, and international levels to play their part in achieving a more just and equitable society in meeting the goals of population health. Galer-Unti, et al. [13] reported that the best way to influence policy change to benefit population health is by developing an ongoing relationship with policymakers. Inviting them to meetings involving health education and coalition meetings about health concerns or problems is a best practice strategy to influence policy change. Health care leaders should familiarize themselves with the agency or district representative's staff to ensure vital information reaches the right person or agency in their advocacy efforts [13]. The role of the nurse goes beyond the bedside into policymaking and a champion for social justice. Addressing the problem's root cause is also a more efficient way to ensure social justice changes are sustained [14]. Myers, [14] recommended the County Ranking Health Model as a positive step to address health disparities and promote social justice. The framework promotes addressing the modifiable causes of disparity, such as economic and social factors, which account for approximately 40% of health determinants [14]. Promoting advocacy at both the micro and macro level of health care to make meaningful changes in realizing the aims of population health and social justice is strongly encouraged [15].

According to the American Nurses Association (ANA) [16], advocacy is one of the nursing ethics pillars. Nurses advocate for their patients/clients to improve health outcomes; therefore, advocating for environmental justice to improve Asthma care in children is an expectation of nurses and the nursing profession. The ANA calls for the nurse's presence at the legislature, both at State and Federal level, to influence positive patient care outcomes, including environmental justice [16]. The American Organization of Nursing Leaders (AONL) [17], in its nurse executive competencies, calls for nursing leaders to advocate for vulnerable populations and be the agent of change at the community, state, and nationally. Clemmon-Brown, [18] believes nurses are unique in influencing positive changes that will benefit vulnerable populations because of their role in health care and their influence of trust in society. Advocating for social justice by nursing professionals is not just a moral act of kindness but an expectation of the profession to reduce healthcare disparity and build a more just society. Nurses advocating at the grass-root level and through their professional organizations are vital in implementing changes that will reduce the risk of environmental pollution and Asthma in children [18].

Intersectional Action to Address Air Pollution and Asthma

Health care leaders should advocate for reducing environmental pollutions in underserved or impoverished neighborhoods to reduce the risk of developing Asthma, especially in children [1]. A needs assessment to identify TRAP causes through the county's health need is the first step in finding long and short-term solutions to air pollution [14]. Christaldi, et al. [19] showed how community participation identifies the disparities associated with the social determinants of health and its impact on the community; therefore, engaging the community is vital to meeting community needs.

In every jurisdiction, the housing development authorities must consider TRAP's effects on housing development planning to avoid unnecessary air pollution exposure [7]. Investing and transitioning mass transit to clean air vehicles will reduce pollutants and enhance the air quality for residents in heavy traffic areas [20]. The US Environmental Protection Agency (EPA) should monitor the air quality in communities affected by TRAP. The EPA should also sponsor Asthma prevention programs to reduce the financial burden on counties on Asthma prevention [20]. The education department should play a key role in promoting school attendance to mitigate education challenges in poor socioeconomic communities. The immigrant community should have the linguistically appropriate education to promote Asthma prevention and treatment of children with Asthma [20]. At the State and Federal level, developing policies that encourage and incentivize investment to improve residents' socioeconomic status is paramount in reducing the wealth gap and health disparities [9,10]. Achieving environmental justice should be a multifactorial and interdepartmental undertaking.

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