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Editorial

Outdoor Air Pollution and the Onset and Exacerbation of Asthma

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EDITORIAL

Outdoor air pollution has been linked to asthma in numerous studies. In this investigation, we looked at epidemiological studies on the link between outdoor air pollution and asthma aggravation and onset published in the last five years. In the previous five years, a considerable number of studies have been published. Exacerbation of pre-existing asthma is linked to short-term exposure to outdoor air pollution, which manifests as worsened symptoms and an increase in asthma-related emergency department visits and hospital admissions. Furthermore, there is mounting evidence that long-term exposure to outdoor air pollution can lead to the development of asthma. Children are especially vulnerable to pollutants in the air. Future research should focus on the processes behind the link between air pollution and the start of asthma, particularly the role of genes. Disentangling the effects of a mixture of air pollutants and identifying the essential components of air pollution will also help to fill in the gaps in the research. More crucially, a better knowledge of the future impact of air pollution on asthma in the face of climate change is required.

According to the 2017 Global Burden of Disease report, outdoor air pollution is a key risk factor for human health, contributing to 3.4 million early deaths. Due to population ageing, increases in non-communicable disease rates, and fast rising industrialisation and urbanisation in low- and middle-income nations, the global burden of disease related to air pollution has been increasing in recent years. Despite improvements in air quality in wealthy countries, air pollution remains a significant health hazard. Even at low levels of air pollution, significant negative health effects have been recorded.

Asthma is a chronic inflammatory illness of the airways characterised by bronchial hyper-responsiveness, reversible airflow limitation, and recurrent wheezing, chest tightness, and cough. Asthma is the most common chronic respiratory condition in the world, affecting 235 million people. In recent decades, the prevalence of childhood asthma, in particular, has risen. Asthma's aetiology is complex, involving both genetic and environmental stimuli, as it are a classic multifactorial disease. Because population-level genetic changes take several generations, the increased prevalence of asthma in recent decades cannot be explained only from a genetic standpoint. Changes in environmental conditions, such as outdoor air pollution, may be to blame for this rise. According to epidemiological and clinical studies, outdoor air pollution can cause airway inflammation and hyper-responsiveness, as well as oxidative stress, which can lead to asthma exacerbations and possibly even the start of asthma.

A wide number of observational studies and meta-analyses have found a link between outdoor air pollution and asthma exacerbations in people who already have asthma. The effect of outdoor air pollution in the initiation or early development of asthma is, however, unknown. Because of their higher breathing rates and lower nasal deposition efficiency for inhaled particles, infants and children are more vulnerable to air pollution. Another continuing study question is whether and how early-life and childhood exposure to outdoor air pollution can cause asthma.

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