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Editorial: Impact of Environmental Factors on the Health of Children and Older Adults

Provisionally accepted

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Air pollution and environmental pollutants have been implicated in a broad range of health conditions including asthma, developmental disorders, cardiovascular disease, and premature mortality. As climate change accelerates, these risks are likely to increase, exacerbating health disparities. This Topic focused on quantifying these effects, developing exposure models, and advancing tools to support public health interventions, particularly in the context of children's development and older adults' chronic conditions.

This Research Topic presents a collection of studies that explore the impact of environmental factors on children's health. Li et al. conducted a nationwide study involving 32,000 children in China and found that 4.1% had elevated blood lead levels. Risk was significantly higher among children exposed to poor air quality and secondhand smoke (Li et al., 2025). Bao et al. analyzed time-series data on pediatric asthma hospitalizations in Eastern China. Although seasonal trends were evident, no consistent association was found with air pollution, suggesting other mediating factors may influence hospitalization risk (Bao et al.,

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key drivers of seasonal outbreaks, with temperature and humidity significantly shaping transmission patterns (Husein et al., 2025). In relation to older adults, He et al. estimated the global ischemic heart disease (IHD) burden attributable to particulate matter (PM) pollution in populations aged 70 and above. While global age-standardized DALY rates have declined, total DALYs are projected to rise through 2044 due to aging populations, particularly in low-and middle-income countries (He et al., 2025). The Topic also includes several studies on environmental risk modeling and assessment. Yang et al. used machine learning to predict outpatient visits for respiratory illness, identifying ozone concentration and temperature as the most influential predictors (Yang et al., 2025). Kobza et al. analyzed ozone levels in Upper Silesia, Poland, finding a complex dual effect where low NO_x concentrations led to increased ozone formation (Kobza et al., 2025). Behavioral and community health dimensions are also addressed. Kaplan et al. developed and validated a scale to measure public awareness of BPA (bisphenol A) exposure, offering a practical tool for future behavioral research. Wei et al. studied public perception of air quality in Tianjin, China, and found that protective behaviors were

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al., 2025). Regarding regional and dietary exposures, Shen et al. assessed heavy metal contamination in rice and drinking water in a rural Chinese county. Arsenic and cadmium levels were found to be dangerously high, posing serious health risks (Shen et al., 2025). Xie et al. evaluated an eco-health education program targeting preschool children and their caregivers, demonstrating significant improvements in environmental knowledge and preventive behaviors (Xie et al., 2025). Finally, studies also examined occupational and urban environmental risks. Shan et al. investigated occupational exposure to volatile organic compounds (VOCs) among spray painters, identifying poor ventilation and inadequate personal protection as key factors linked to elevated biomarker levels (Shan et al., 2025). Hu et al. proposed a framework to improve hospital adaptation to environmental stressors related to climate change, emphasizing infrastructure resilience and workforce training (Hu et al., 2025). Tang et al. examined how access to urban green spaces influences children's physical activity, finding that more accessible green areas are associated with reduced sedentary behavior (Tang et al., 2025). Collectively, the 14 articles in this Research Topic offer a rich and

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models to global burden estimates and local risk perception studies, this collection underscores the urgency of tailored environmental health policies for vulnerable populations. We extend our gratitude to the authors, reviewers, and editorial staff for contributing to this important endeavor. We hope the findings here inform future environmental health governance, supporting healthier environments across all stages of life.

Keywords: environmental factors, Health, Children, older adults, exposures

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