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Biography 講者介紹

Dr. Hualiang Lin is a professor and doctoral supervisor at the School of Public Health, Sun Yat-sen University, as well as the director of Department of Epidemiology and assistant dean of School of Public Health. In 2017, Prof. Lin was introduced as Outstanding Young and Middle-aged Talents through "Hundred Talents Program" of Sun Yat-sen University. In 2018, he was awarded Outstanding Young Medical Talents by Health Commission of Guangdong Province. His research focuses on the role of air pollution and its interaction with genetic susceptibility in the development and progression of chronic diseases, and proposes a new method to control the concentration threshold of air pollution. Prof. Lin has been authorized to obtain one national invention patent and edited one English monograph. In recent years, he has published more than 60 high-level papers in prestigious international journals such as *Lancet Public Health*, *Environmental Health Perspectives* and *PLOS Medicine*, with over 7000 citations. In 2021, Prof. Lin was selected as one of the top 100,000 scientists worldwide.

林華亮，中山大學公共衛生學院教授、博士生導師、流行病學系主任、院長助理。2017年通過中山大學「百人計劃」中青年傑出人才引進，2018年獲得廣東省衛健委傑出青年醫學人才稱號。主要從事大氣污染及其與基因易感性交互作用在慢性病發生發展中的作用研究，並提出了大氣污染控制濃度閾值的新方法。曾獲國家發明專利授權1項，主編英文專著1部。 近年來在*Lancet Public Health*、*Environmental Health Perspectives*、*PLOS Medicine*等國際權威期刊發表高水平論著60 餘篇，引用超過7000次。2021年入選「全球頂尖前10萬科學家排名榜」。

Abstract 題目摘要

Ambient air pollution associated with incidence and progression trajectory of cardiometabolic diseases: A multi-state analysis of a prospective cohort
空氣污染與心血管代謝性疾病及共病發生發展關聯的多狀態動態軌跡分析

Along with the rapid population ageing, multimorbidity has gradually become an important global public health concern. Previous studies have shown that cardiometabolic multimorbidity, including ischemic heart disease, stroke, and type 2 diabetes, is one of the most common multimorbidity profiles, which is closely associated with adverse health outcomes. Mounting evidence has shown that ambient air pollution is associated with the increased risk of development and progression of individual cardiometabolic diseases. However, the association between ambient air pollution and cardiometabolic multimorbidity is poorly understood. In addition, there are different transitions in the progression trajectories of cardiometabolic multimorbidity, and the impacts of air pollution on different disease transition stages remain unclear. Based on the UK Biobank, a large prospective cohort, this study used multi-state model to explore the role of air pollution in the temporal trajectories of cardiometabolic multimorbidity. The results indicated that long-term exposure to ambient air pollution was significantly associated with all transition stages of cardiometabolic multimorbidity. In addition, ambient air pollution had diverse impacts on disease-specific transitions even within the same transition phase. For example, the associations of ambient air pollutants with the transition from type 2 diabetes to cardiometabolic multimorbidity were stronger than those with the transitions from ischemic heart disease and stroke to cardiometabolic multimorbidity. Clean air might be helpful for the prevention and management of cardiometabolic diseases and cardiometabolic multimorbidity.

隨著人口老齡化進程的加速，共病逐漸成為全球重要的公共衛生問題。既往研究顯示心血管代謝性共病（包括缺血性心臟病、腦卒中以及2型糖尿病）是最常見聚集的共病模式之一，與不良結局事件發生風險密切相關。目前已有許多研究表明空氣污染暴露可增加單一心血管代謝性疾病發生發展的風險，然而，很少有研究評估空氣污染對心血管代謝性共病的關聯。此外，心血管代謝性共病的發生發展歷經多個階段，空氣污染對其不同發展階段的影響尚不清楚。基於英國生物銀行大型前瞻性佇列，本研究利用多狀態模型評估空氣污染物長期暴露對心血管代謝性共病發生發展全過程不同階段的影響，研究結果顯示空氣污染暴露與心血管代謝性共病發生發展的所有階段均存在顯著關聯。進一步研究發現，空氣污染物在同一階段對不同疾病的影響存在差異。例如，相較缺血性心臟病和腦卒中，空氣污染物暴露促進2型糖尿病進展為共病的風險更大。清潔空氣可能有助於心血管代謝性疾病及共病的防控和管理。