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Press release

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KORA Study: 40 Years of Impact in Public Health Research

This year marks the 40th anniversary of the KORA study (Cooperative Health Research in the Region of Augsburg), one of Germany's most influential population-based research initiatives. Over the past four decades, KORA has followed around 18,000 participants in the Augsburg region (Southern Germany), and provided insights into prevention, early detection, and management of non-communicable diseases such as cardiovascular disease, type 2 diabetes, lung disease, and mental health disorders.

Launched in 1984 as part of the World Health Organization's MONICA project (Monitoring of Trends and Determinants in Cardiovascular Disease), KORA has become a cornerstone of both national and international epidemiological research. "KORA is a flagship study at Helmholtz Munich that has continually shaped public health policies and advanced our understanding of disease prevention and treatment," says Prof. Annette Peters, Director of the Institute of Epidemiology at Helmholtz Munich and principal investigator of the KORA study. "Its impact on improving public health is invaluable."

Exploring Cardiovascular Disease and Its Risk Factors

Cardiovascular disease remains the leading cause of death worldwide, yet its complexities are not fully understood. KORA has significantly advanced knowledge of risk factors, early detection, and prevention. By employing cutting-edge-technologies such as OMICs—comprehensive analyses of biological data such as genes (genomics), proteins (proteomics), and metabolites (metabolomics)—along with artificial intelligence, researchers are tackling air pollution and emerging health threats such as climate change and heatwaves.

Shaping Health Guidelines on Air Pollution

KORA researchers discovered in 1997 that an episode of ambient air pollution in Augsburg was linked to increased blood plasma viscosity, providing the first evidence of a systemic inflammatory response in the general public. Further studies in 1999 showed that elevated levels of C-reactive protein (CRP), a blood marker of inflammation, could predict coronary heart disease and cardiovascular mortality. These findings not only advanced the understanding of the health risks associated with air pollution but also influenced the World Health Organization's stricter air quality guidelines in 2021, and the Ambient Air Quality Directive which was enacted by the European Union in autumn 2024.

Ameliorating Ambient Temperature Effects on Common Chronic Diseases

An illustrative case is the ongoing research led by Dr. Alexandra Schneider, Deputy Director of the Institute of Epidemiology at Helmholtz Munich. The study examines the effects of extreme temperatures on individuals with chronic conditions like hypertension, type 2 diabetes, and chronic obstructive pulmonary disease (COPD). Over 15 months, participants aged 50 to 80 will undergo monthly assessments to understand how heat and cold affect their health. Combined with nationwide analyses of anonymized health insurance data, the study aims to provide insights into how

temperature extremes influence disease burdens. “Our goal is to develop protection strategies for specific age, gender, and disease groups, while also addressing treatment gaps related to climate change,” states Schneider.

From Diabetes to Obesity: Insights Driving Prevention

In 2003, KORA researchers uncovered that nearly half of participants aged 55-74 with type 2 diabetes were undiagnosed, and 20% in pre-diabetes stages. This crucial finding continues to inform diabetes prevention strategies, underscoring KORA’s lasting contributions to combating the disease. Since 2005, KORA has also led genetic research, providing valuable data for OMICs studies. These studies, including epigenome-wide association studies (EWAS), have revealed critical insights into disease risk, such as epigenetic changes in individuals with obesity, demonstrating that these genetic modifications not only increase certain disease risks but can also be passed to future generations.

Paving the Way for Personalized Health Solutions

As a prospective cohort study, KORA has advanced disease prevention while fostering both national and international collaboration to better understand health risks across different populations. In 2025, KORA will launch a digitally delivered lifestyle intervention study to explore the effectiveness of personalized, digital health programs in helping individuals achieve their health goals. “The KORA study remains a dynamic resource for advancing health research and policy, playing a crucial role in shaping public health and ensuring future generations benefit from its findings,” so Annette Peters.

About Helmholtz Munich:

Helmholtz Munich is a leading biomedical research center. Its mission is to develop breakthrough solutions for better health in a rapidly changing world. Interdisciplinary research teams focus on environmentally triggered diseases, especially the therapy and prevention of diabetes, obesity, allergies, and chronic lung diseases. With the power of artificial intelligence and bioengineering, researchers accelerate the translation to patients. Helmholtz Munich has around 2,500 employees and is headquartered in Munich/Neuherberg. It is a member of the Helmholtz Association, with more than 43,000 employees and 18 research centers the largest scientific organization in Germany. More about Helmholtz Munich (Helmholtz Zentrum München Deutsches Forschungszentrum für Gesundheit und Umwelt GmbH): www.helmholtz-munich.de/en

Original publication:
Relevant KORA publications

Cardiovascular disease and air pollution

Peters et al., 1997: Increased plasma viscosity during an air pollution episode: a link to mortality? Lancet. 349(9065):1582-7. DOI: 10.1016/S0140-6736(97)01211-7

Koenig et al., 1999: C-Reactive protein, a sensitive marker of inflammation, predicts future risk of coronary heart disease in initially healthy middle-aged men: results from the MONICA (Monitoring Trends and Determinants in Cardiovascular Disease) Augsburg Cohort Study, 1984 to 1992. Circulation. 99(2):237-42. DOI: 10.1161/01.cir.99.2.237

Diabetes

Rathmann et al., 2003: High prevalence of undiagnosed diabetes mellitus in Southern Germany: target populations for efficient screening. The KORA survey 2000. Diabetologia. 46(2):182-9. DOI: 10.1007/s00125-002-1025-0

OMICs

Wahl et al., 2017: Epigenome-wide association study of body mass index, and the adverse outcomes of adiposity. Nature. 541(7635):81-6. DOI: 10.1038/nature20784