Analysis finds biomarkers that improve prediction accuracy of cardiovascular disease risk in people with type 2 diabetes

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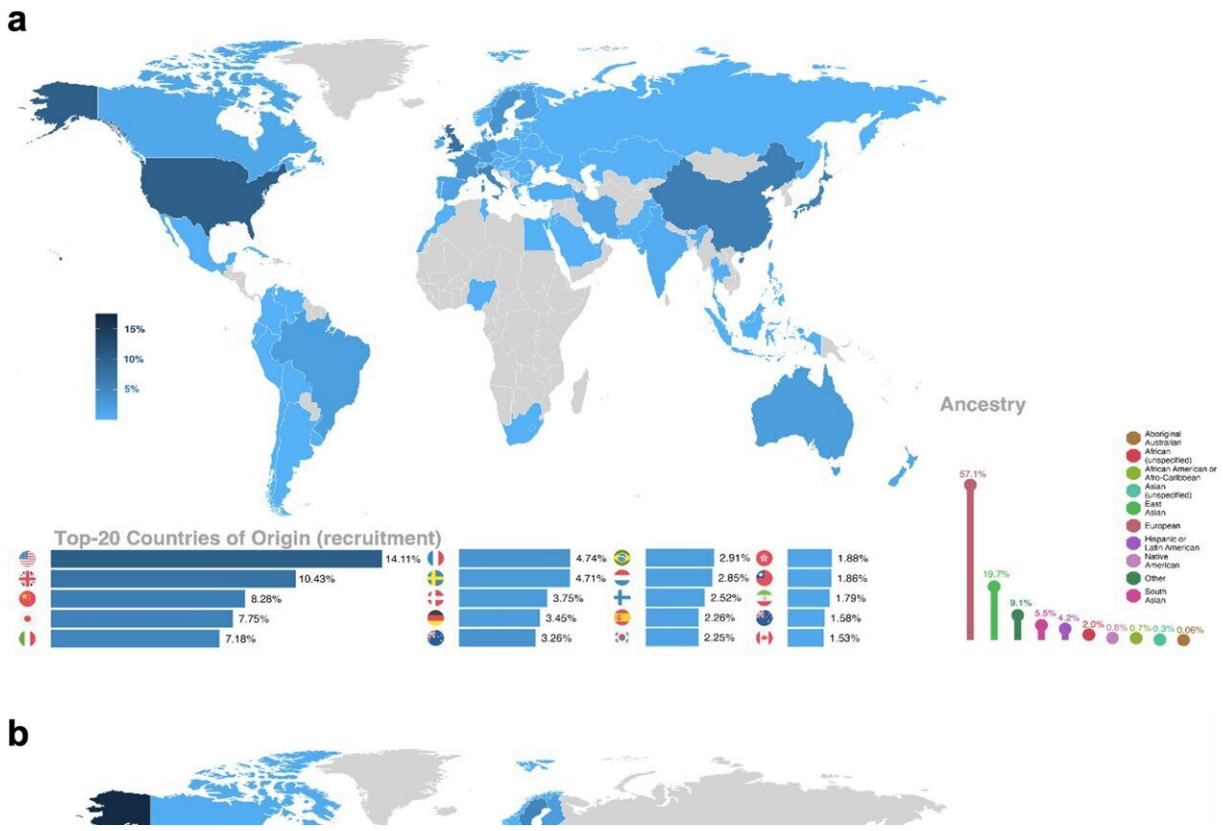

Global distribution of origin and ancestry of the study populations and countries of affiliation and gender distribution of authors of the included studies. Credit: *Communications Medicine* (2024). DOI: 10.1038/s43856-023-00429-z

An international academic consortium has identified 13 biomarkers that significantly improve the ability to accurately predict cardiovascular disease risk in people with type 2 diabetes. The analysis, conducted by 23 experts from 11 countries, was led by The Johns Hopkins University in the United States, the Chinese University of Hong Kong in Hong Kong, and Lund University in Sweden.

The analysis was published Jan. 22 in *Communications Medicine*.

Although people with type 2 diabetes are two times more likely to develop cardiovascular disease than those without diabetes, it is a challenge for clinicians to predict who in this population is most at risk. Traditional risk scores, which reflect risk level in the presence of certain risk factors, have become dated and do not perform well in diverse populations.

"More than 500 million people worldwide live with diabetes," says Maria F. Gomez, Ph.D., co-senior author of the analysis, research group leader at the Lund University Diabetes Centre and professor of physiology at Lund University. "With numbers that high, it's important to identify readily available ways to accurately classify patients so that those at higher risk of cardiovascular disease can receive the preventative care they need."

With this in mind, the research team reviewed and analyzed medical studies published from the year 1990 onward that investigated the differences between people with type 2 diabetes who experienced cardiovascular disease and those who did not.

"Our goal was to identify promising markers that could improve cardiovascular risk prediction in people with type 2 diabetes," says Nestoras Mathioudakis, M.D., M.H.S., co-senior author of the analysis, co-medical director of the Johns Hopkins Medicine Diabetes Prevention

& Education Program, and an associate professor of medicine at the Johns Hopkins University School of Medicine. "We wanted to look beyond traditional prognostic factors like hypertension and smoking."

From their review and analysis of the published medical literature, the team extracted data on 321 biomarkers and found that 13 were significantly associated with cardiovascular risk in people with type 2 diabetes.

The standout biomarker was N-terminal pro b-type natriuretic peptide (NT-proBNP), which is currently used to monitor heart failure status in patients. The team found that across several studies, higher levels of NT-proBNP in the body correlated with a higher risk of cardiovascular disease. One study of 16,000 patients that the team reviewed found a 64% hazard rate increase for every standard deviation increase of NT-proBNP.

"The 13 biomarkers, especially NT-proBNP, warrant further testing to evaluate their potential," says Ronald Ma, M.B. B.Chir., FRCP, FHKCP, FHKAM, co-senior author of the analysis and S.H. Ho Professor of Diabetes at the Chinese University of Hong Kong. "If future studies confirm their value in predicting cardiovascular risk in patients with type 2 diabetes, we may be able to change standards of care."

More information: Abrar Ahmad et al, Precision prognostics for cardiovascular disease in Type 2 diabetes: a systematic review and meta-analysis, *Communications Medicine* (2024). DOI: 10.1038/s43856-023-00429-z

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