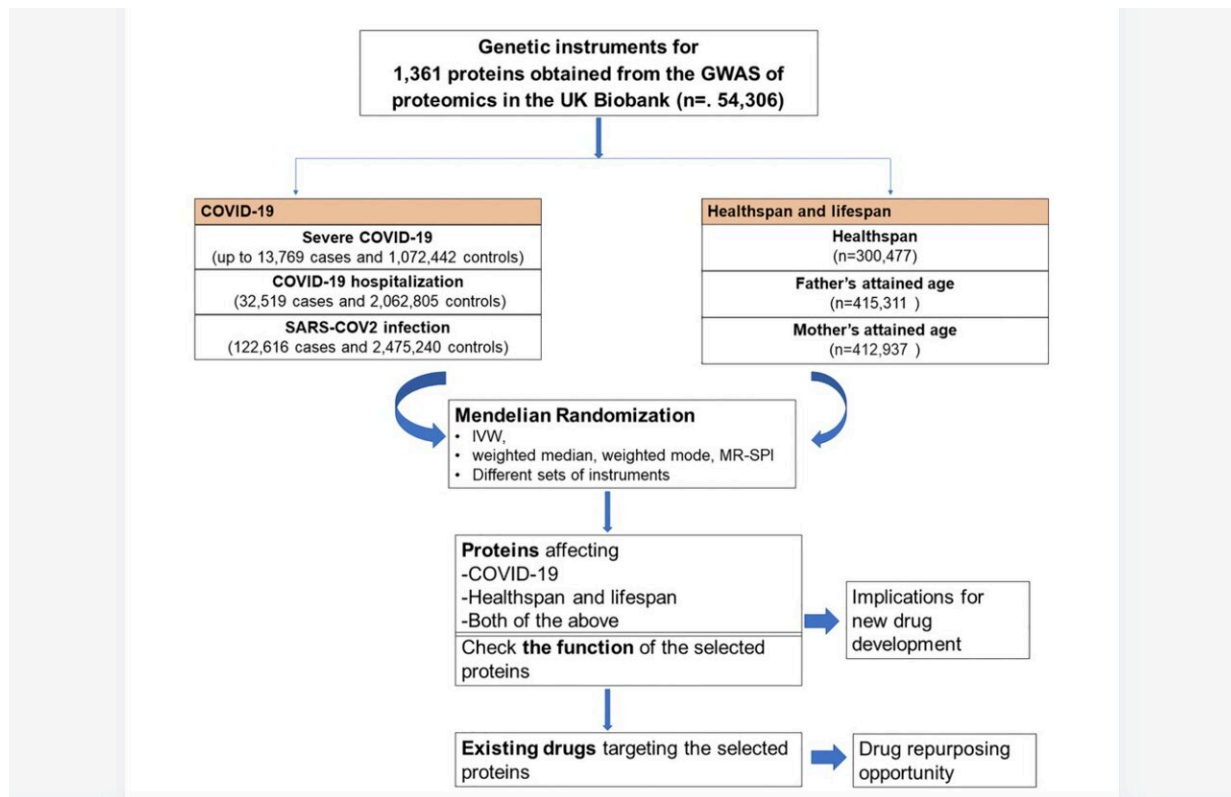


Identifying proteins causally related to COVID-19, healthspan and lifespan

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Flow chart of the study design. Credit: *Aging* (2024). DOI: 10.18632/aging.205711

A new research paper titled "Using genetics and proteomics data to identify proteins causally related to COVID-19, healthspan and lifespan: a Mendelian randomization study" has been published in *Aging*.

The COVID-19 pandemic poses a heavy burden on [public health](#) and accounts for substantial mortality and morbidity. Proteins are building blocks of life, but specific proteins causally related to COVID-19, healthspan and lifespan have not been systematically examined.

In this new study, researchers Jie V. Zhao, Minhao Yao, and Zhonghua Liu from The University of Hong Kong and Columbia University conducted a Mendelian randomization study to assess the effects of 1,361 [plasma proteins](#) on COVID-19, healthspan and lifespan, using large GWAS of severe COVID-19 (up to 13,769 cases and 1,072,442 controls), COVID-19 hospitalization (32,519 cases and 2,062,805 controls) and SARS-COV2 infection (122,616 cases and 2,475,240 controls), healthspan (n = 300,477) and parental lifespan (approximately 0.8 million of European ancestry).

"We included both COVID-19 and healthspan and lifespan in the outcome, because COVID-19 which occurred in recent years reflects a new threat to longevity, whilst healthspan and lifespan reflect overall morbidity and mortality," the researchers explain.

The researchers identified 35, 43, and 63 proteins for severe COVID, COVID-19 hospitalization, and SARS-COV2 infection; and 4, 32, and 19 proteins for healthspan, father's attained age, and mother's attained age. In addition to some proteins reported previously, such as SFTPD related to severe COVID-19, the team identified novel proteins involved in inflammation and immunity (such as ICAM-2 and ICAM-5, which affect COVID-19 risk; CXCL9, HLA-DRA and LILRB4 for healthspan and lifespan), apoptosis (such as FGFR2 and ERBB4 which affect COVID-19 risk and FOXO3 which affects lifespan) and metabolism (such as PCSK9 which lowers lifespan).

They found 2, 2, and 3 proteins shared between COVID-19 and healthspan/lifespan, such as CXADR and LEFTY2, shared between

severe COVID-19 and healthspan/lifespan. Three proteins affecting COVID-19 and seven proteins affecting healthspan/lifespan are targeted by existing drugs.

"Our study provided novel insights into protein targets affecting COVID-19, healthspan and [lifespan](#), with implications for developing new treatment and drug repurposing," the researchers conclude.

More information: Jie V. Zhao et al, Using genetics and proteomics data to identify proteins causally related to COVID-19, healthspan and lifespan: a Mendelian randomization study, *Aging* (2024). [DOI: 10.18632/aging.205711](#)

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