Some people's brain function still affected by long COVID years after infection

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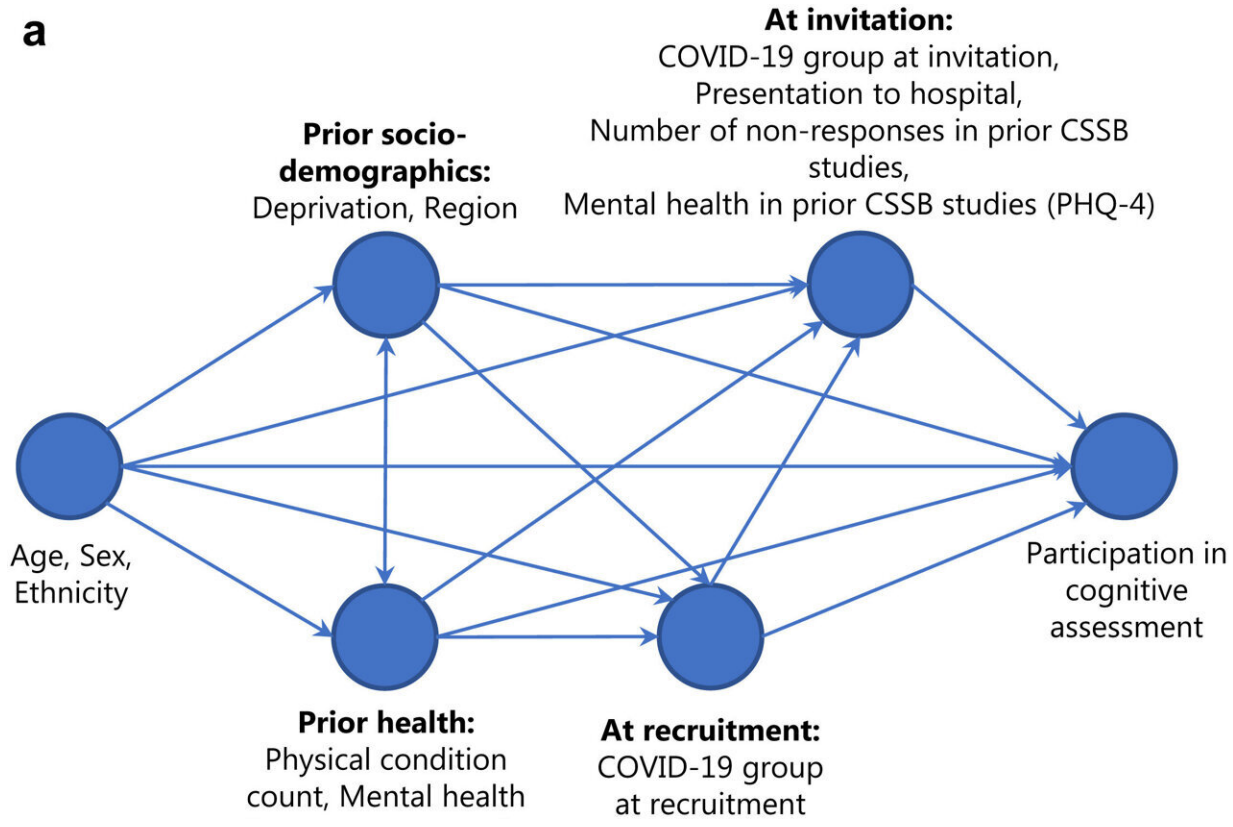

Directed acyclic graph describing hypothesized causal pathways. Proposed directed acyclic graphs (DAGs) used to generate minimal adjustment variable sets for estimation of the total causal effect of variables on outcomes of participation in cognitive assessment (a) and cognitive performance (b). DAGs are structured approximately in order of data generation from left to right. Credit: *eClinicalMedicine* (2023). DOI: 10.1016/j.eclinm.2023.102086

UK researchers have found that people with longer-term COVID-19 symptoms including brain fog showed reduced performance in tasks testing different mental processes up to two years after infection with the virus. Their study is published in the journal *eClinicalMedicine*.

Researchers from King's College London looked at whether infection with COVID-19 affected performance in two rounds of online cognitive testing that took place in 2021 and 2022. Data were collected for over 3,000 participants of the COVID Symptom Study Biobank study, across 12 tasks that tested memory, attention, reasoning, processing speed and motor control.

The participants whose test scores were most affected by COVID-19 were those who had experienced symptoms related to the virus for 12 weeks or more. In these people, the effect of COVID-19 on test accuracy was comparable in size to the effect of a 10-year increase in age.

There was no significant improvement in these test scores between the two rounds of testing, which took place nine months apart. By the second round of testing, the average time since participants' initial COVID-19 infection was almost two years.

Digging deeper into the analysis, the researchers separated participants by whether they felt fully recovered following COVID-19 infection. People who felt fully recovered after COVID-19 infection performed similarly to those who had not had the virus at all. In contrast, participants who did not feel fully recovered after infection had lower task accuracy scores on average.

Lead author Dr. Nathan Cheetham, a Senior Postdoctoral Data Scientist at King's College London said, "Our findings suggest that, for people who were living with long-term symptoms after having COVID-19, the

effects of the coronavirus on mental processes such as the ability to recall words and shapes are still detectable at an average of almost two years since their initial infection."

"However, the result that COVID had no effect on performance in our tests for people who felt fully recovered, even if they'd had symptoms for several months and could be considered as experiencing 'long COVID', was good news. This study shows the need to monitor those people whose brain function is most affected by COVID-19, to see how their cognitive symptoms continue to develop and provide support towards recovery."

Professor Claire Steves, a Professor of Ageing and Health at King's College London, added, "We used sensitive tests to measure speed and accuracy across a range of brain challenges. This study shows that some individuals have measurable changes in these tests after COVID-19 going on for nearly two years."

"The fact remains that two years on from their first infection, some people don't feel fully recovered and their lives continue to be impacted by the long-term effects of the coronavirus. We need more work to understand why this is the case and what can be done to help."

More information: Nathan J. Cheetham et al, The effects of COVID-19 on cognitive performance in a community-based cohort: a COVID symptom study biobank prospective cohort study, *eClinicalMedicine* (2023). DOI: 10.1016/j.eclinm.2023.102086

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