

# Flawed body of research indicates true 'long COVID' risk likely exaggerated, says new study

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Overly broad definitions, a lack of appropriate, or any, comparison groups, among other things, in studies looking at the incidence,

prevalence, and control of the condition—epidemiology—have distorted the risks, say the researchers.

This is further compounded by inclusion of poorly conducted studies into systematic reviews and pooled data analyses that end up overstating the risk yet again, they add.

The likely consequences of this include, but aren't limited to, increased public anxiety and [health](#) care spending; misdiagnoses; and diversion of funds from those who really do have other long term conditions secondary to COVID-19 infection, suggest the researchers.

Many after effects of COVID-19 infection include post-ICU syndrome—a constellation of health issues that are present when the patient is in intensive care and which persist after discharge home—and shortness of breath following pneumonia. Trouble is: these are common to many upper respiratory viruses, point out the researchers.

None of the working definitions of "long COVID" used by influential health bodies, such as the US Centers for Disease Control and Prevention, the World Health Organization, the UK National Institute for Health and Care Excellence (NICE), Scottish Intercollegiate Guidelines Network (SIGN), and the Royal College of General Practitioners requires a [causal link](#) between the virus responsible for COVID-19 (SARS-CoV2) and a range of symptoms.

Not only should comparator (control) groups be included in long COVID studies, when they often aren't, but they should also be properly matched to cases, ideally by age, sex, geography, socioeconomic status and, if possible, underlying health and health behaviors, which they rarely are, say the researchers.

During the early stages of the pandemic, when SARS-CoV-2 testing

wasn't widely available, studies were more likely to include a non-representative sample of SARS-CoV-2-positive patients by including fewer patients with mild or no symptoms.

This is known as sampling bias, which occurs when certain members of a population have a higher probability of being included in a study sample than others, potentially limiting the generalizability of a study's findings, explain the researchers.

"Our analysis indicates that, in addition to including appropriately matched controls, there is a need for better case definitions and more stringent [long COVID] criteria, which should include continuous symptoms after confirmed SARS-CoV-2 infection and take into consideration baseline characteristics, including physical and mental health, which may contribute to an individual's post COVID experience," they write, adding that the umbrella term long COVID should be jettisoned in favor of different terms for specific after effects.

While the results of high quality population studies on long COVID in adults and children have been reassuring, they point out, the body of research "is replete with studies with critical biases" they add, setting out common pitfalls.

"Ultimately, biomedicine must seek to aid all people who are suffering. In order to do so, the best scientific methods and analysis must be applied. Inappropriate definitions and flawed methods do not serve those whom medicine seeks to help," they insist.

"Improving standards of evidence generation is the ideal method to take long COVID seriously, improve outcomes, and avoid the risks of misdiagnosis and inappropriate treatment," they include.

The research is published in *BMJ Evidence-Based Medicine*.

**More information:** How methodological pitfalls have created widespread misunderstanding about long COVID, *BMJ Evidence-Based Medicine* (2023). [DOI: 10.1136/bmjebm-2023-112338](https://doi.org/10.1136/bmjebm-2023-112338)

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