depression should have been handled as either major contributing factors or covariates with confounding effects.

Finally, aside from the depression and anxiety symptoms, other notable and common mental health problems in COVID-19 survivors such as post-traumatic stress disorder symptoms and stigma[5,6] were not examined. Such problems could lead to a host of negative health outcomes, including depression and anxiety in the survivors of serious infectious diseases.[7,8]

We declare no competing interests. Y-JZ and WB contributed equally.

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The conditions that linger after recovery from COVID-19 are commonly referred to as the long-term effects of COVID-19 (long COVID). The risk for sequelae varies according to the severity of the initial acute SARS-CoV-2 infection.[1]

We note that the proportion of patients admitted to intensive care units included in Lixue Huang and colleagues' analysis of 1-year outcomes in hospital survivors with COVID-19 was small (4%) and might not realistically capture the repercussions of long COVID. Furthermore, patients with comorbid activity-limiting health conditions or disabilities, a patient demographic previously shown to have an increased prevalence of long COVID by the UK Office for National Statistics, were excluded.[3]

Anxiety or depression were observed infrequently in patients at both 6 months (23%) and 12 months (26%). Self-reported symptoms of depression might be misleading and overestimate the actual prevalence. This over-estimation might explain why only one patient with COVID-19 reported participation in a psychological intervention programme.[2] In the future, the investigators might consider using questionnaires specific to depression and anxiety to avoid this issue.

Cytokines are closely associated with the progression and severity of chronic fatigue syndrome.[4] Given the high rate of fatigue and weakness and the availability of data on cytokines, are the investigators able to compare the difference in the number of survivors between patients with fatigue or muscle weakness and those without fatigue or muscle weakness?

Lastly, reinfection with SARS-CoV-2 variants have been confirmed with genetic evidence.[5] It is unclear whether patients with long COVID also have an increased susceptibility to reinfection because of the poor durability of their antibody response. Despite the success of COVID-19 vaccines, their effectiveness in preventing long COVID has yet to be elucidated.

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Authors' reply

Yan-Jie Zhao and colleagues and Chengliang Yang and colleagues all recommend specific questionnaires to evaluate depression and anxiety symptoms in hospital survivors with COVID-19 1 year after onset.[1] We agree that the professional questionnaires could provide the actual prevalence of psychiatric symptoms. However, these questionnaires are somewhat complex and time-consuming. It is challenging to integrate all these assessments into our follow-up study.[1] The EuroQol five-dimension five-level (EQ-5D-5L) questionnaire is commonly used to assess the quality of life from five domains in clinical studies. The EQ-5D-5L questionnaire used in our research is from the Chinese version of the EQ-5D user guide.[2] Zhao and colleagues point out that the EQ-5D-5L

item on anxiety or depression was not validated in Chinese populations. However, to our knowledge, the reliability of the Chinese EQ-5D has been validated in China, and it has shown acceptable construct validity and fair-to-moderate levels of test–retest reliability.[3] Additionally, according to a large multinational study involving China, the EQ-5D-5L provided precise measurement at individual and group levels compared with the EQ-5D three-level, both in terms of descriptive system data and usefulness.[4] Hence, we believe that descriptive system data from the EQ-5D-5L questionnaire could well reflect the health status of our cohort.

We acknowledged that the low proportion of patients admitted to the intensive care unit in our cohort limits the generalisability of the study findings. Similarly, the findings cannot be generalised to those who were excluded from the study.

We appreciate Yang and colleagues' interest in the association between cytokines and fatigue syndrome. As shown in the appendix of the Article,[1] no statistically significant association between cytokine change (at discharge until 6 months) and fatigue or muscle weakness was apparent. However, because of the small number of patients with cytokine tests, these findings should be interpreted as exploratory and need to be validated in a larger sample population.

Zhao and colleagues are concerned that all the somatic symptoms at follow-up could be attributed to depression or anxiety or both, rather than the so-called sequelae symptoms caused by COVID-19. We agree these sequelae symptoms might not be directly caused by COVID-19, a factor that is difficult to differentiate. The definition of sequelae symptoms in our study is consistent with the current concept of long COVID,[5] whether directly caused by COVID-19 or partly attributed to depression or anxiety, so it is appropriate to call it COVID-19-related sequelae symptoms.

We appreciate Zhao and colleagues' suggestion to explore the post-traumatic stress disorder symptoms and stigma of patients recovered from COVID-19 in the future. In addition, Yang and colleagues pointed out that it is unclear whether patients with long COVID have an increased susceptibility to reinfection and whether COVID-19 vaccines could play a role in preventing long COVID. Answering these research questions will require the full breadth of scientific and high-quality clinical studies. The scientific and medical communities might wish to collaborate to explore the mechanism and pathogenesis of long COVID.

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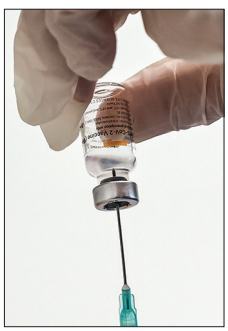
CoronaVac efficacy data from Turkey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Mine Tanriover and colleagues[1] report that the efficacy of CoronaVac against laboratory-confirmed symptomatic COVID-19 in a trial in Turkey is 83·5% (95% CI 65·4–92·1). By contrast, the efficacy of CoronaVac against symptomatic COVID-19 has been estimated at 50·7% (36·0–62·0) in a Brazilian trial and at 65·3% (20·0–85·1) in an Indonesian trial.[2,3] Noting that post-vaccination neutralising antibody titres are quite strongly associated with vaccine efficacy against symptomatic infection,[4,5] the efficacy estimated from the Turkish dataset is much higher than we would expect given the modest post-vaccination neutralising antibody titres after the second dose of CoronaVac.

There was a high proportion of hospitalised COVID-19 cases in the placebo group, accounting for six (19%) of the 32 cases included in the interim analysis,[1] compared with 6% and 0% of cases in the Brazilian and Indonesian trials, respectively.[2,3] It is possible that some milder cases were missed in this trial, and the efficacy could therefore be skewed towards a higher value given that CoronaVac, similar to other COVID-19 vaccines, has a higher efficacy against severe disease than mild disease. Moreover, the short median follow-up time of 15 days (IQR 8–20) at risk could reduce the generalisability of the findings.

Given the global shortage of vaccines, the approval and distribution of as many effective vaccines as possible will maximise the number of lives saved during the COVID-19 pandemic. However, reports of a high efficacy in clinical trials that are not borne out by real-world vaccine effectiveness data would damage confidence in vaccines.

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