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Differential follow-up patterns in COVID-19 and comparison cohorts

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See Online for appendix

Maxime Taquet and colleagues¹ showed that the incidence of a first psychiatric diagnosis in the 14–90 days after a diagnosis of COVID-19 was considerably higher than the incidence in the six matched comparison cohorts (ie, with influenza, other respiratory tract infections, skin infection, cholelithiasis, urolithiasis, and fracture of a large bone). To investigate possible explanations for these findings, we reconstructed the daily numbers of new diagnoses and patients at risk of psychiatric diagnosis in each cohort. Our comparison of the numbers of patients with a new psychiatric diagnosis in COVID-19 versus influenza cohorts is shown in the figure, and comparisons of the COVID-19 cohort with the other

five cohorts are shown in the appendix (p 8).

For each of their reported comparisons with the COVID-19 cohort, the numbers of new cases of psychiatric illness were closer to each other than the reported hazard ratios and the Kaplan-Meier curves suggested. However, the number of patients who were followed up in the COVID-19 cohort was considerably smaller than the number in each of the comparison cohorts. Although the numbers of people who were being followed up in each cohort were equal at baseline, and quite similar to each other on day 14, thereafter they quickly diverged. Of particular concern is that fewer than half of the people who were at risk of psychiatric illness on day 14 were at risk on day 15. Additionally, the increasing absence of symmetry between cohorts in subsequent follow-up days raises the possibility that, even though the cohorts were well-matched at the very outset (see appendix pp 9–20 of the original Article¹), the profiles of the people who were still being followed up might also have diverged by day 15 and diverged even more in days 16–90. This divergence might have reintroduced the same confounding that the extensive initial matching sought to remove or introduced new selection or confounding factors.

might have been other differences and factors that were specific to each cohort that determined the differing censoring patterns and could have led to selectivity and diverging risk profiles. Additionally, we suspect that fewer people in the comparison cohorts had died by Aug 1, 2020, and are concerned about findings from analyses that were limited to people who were alive at the end (rather than the beginning) of follow-up.

In each comparison, the numbers of first psychiatric diagnoses in the two initially equal-sized cohorts were quite close. Thus, we look forward to learning why the censoring patterns are so different and whether these disparate patterns, and any other design aspects, could explain the large differences in cumulative incidences during this short-term follow-up.

We declare no competing interests.

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1 Taquet M, Luciano S, Geddes JR, Harrison PJ. Bidirectional associations between COVID-19 and psychiatric disorder: retrospective cohort studies of 62 354 COVID-19 cases in the USA. *Lancet Psychiatry* 2021; **8**: 130–40.

Authors' reply

We thank Rebecca Fuhrer and James Hanley for their comments. They are correct that the timing of COVID-19 and the control events differ (as shown in the appendix of the Article),¹ and that, in turn, the duration of available follow-up differs between cohorts. They are also right that, as a result, there is a possible risk that the matching between cohorts might be partly lost at follow-up. This loss of matching would occur, for instance, if patients who were diagnosed with COVID-19 in July, 2020, (ie, with less opportunity for follow-up) were systematically different in their baseline characteristics from patients who were diagnosed in March, 2020 (ie, with more opportunity for follow-up). Addressing this issue was the purpose of our sensitivity analysis,

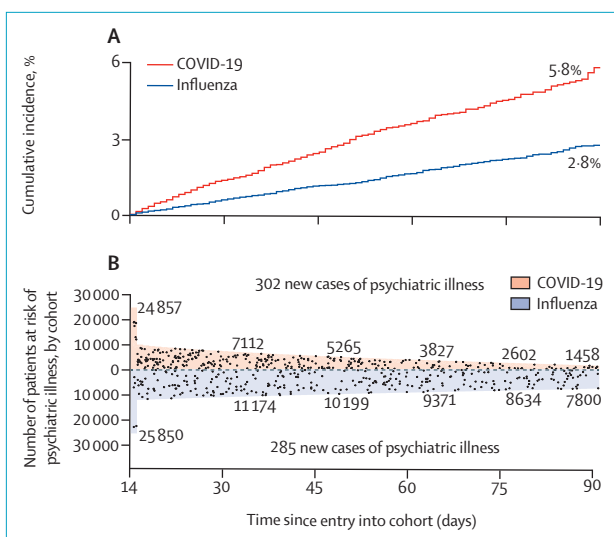


Figure: Differential follow-up patterns in COVID-19 and influenza cohorts, based on reconstructed numbers of patients being followed up each day Comparison of cumulative incidence curves for (A) and daily numbers of patients at risk of (B) new psychiatric diagnoses (classified by ICD-10: F20–48). The area of each coloured polygon represents the total follow-up time, and each dot represents a case of a first psychiatric diagnosis. The overall numbers of cases of new psychiatric illness in the two cohorts (ie, 302 cases for COVID-19 and 285 cases for influenza) are much closer to each other than are the 90-day cumulative incidences (ie, 5.8% for COVID-19 and 2.8% for influenza). The number of people who were at risk of psychiatric illness (ie, the number of people who were being followed up) were almost equal on day 14 but unequal on day 15 and beyond. The different daily numbers of patients who were at risk of psychiatric illness in the two cohorts raise questions as to how much of the initial matching of risk profiles might have been lost, and how much any imbalances and selectivity might have contributed to the differences in incidence.

wherein cohorts were limited to people with a subsequent health visit within the 14 to 90 day period after diagnosis (as shown in the appendix of the Article).¹

With the benefits of the longer follow-up that is now available compared with when we did the study, we ran an additional sensitivity analysis in which the same cohorts of patients (ie, with COVID-19 and influenza) as in our primary analysis were followed up until Feb 12, 2021. This analysis allowed us to distinguish people who were potentially lost to follow up in the 3 months after their diagnosis from people who had not yet made contact with a health-care organisation from the network. In this additional analysis, there was substantially less difference in the follow-up rates between cohorts, particularly at 15 days, where the number of people who were at risk of psychiatric illness differed only by 0.2% (ie, 62.2% of the COVID-19 cohort vs 62.0% of the influenza cohort). In this analysis, at 90 days, the relative risk of having had a psychiatric illness in the COVID-19 versus influenza cohorts was 1.86 (95% CI 1.65–2.06), which is similar to that in the primary analysis. This similarity provides further evidence that differences in loss of patients to follow-up do not account for the observed differences in rates of psychiatric diagnoses.

Regarding the exclusion of patients from the analysis who had died after the index event, we included these patients as part of a sensitivity analysis in a follow-up study.² Similar findings were obtained when patients who had died were included.

SL is an employee of TriNetX. All other authors declare no competing interests. MT and PJH accessed and verified the data in the study and the corresponding author had final responsibility for the decision to submit for publication.

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- 1 Taquet M, Luciano S, Geddes JR, Harrison PJ. Bidirectional associations between COVID-19 and psychiatric disorder: retrospective cohort studies of 62 354 COVID-19 cases in the USA. *Lancet Psychiatry* 2021; **8**: 130–40.
- 2 Taquet M, Geddes JR, Husain M, Luciano S, Harrison PJ. Six-month neurological and psychiatric outcomes in 236 379 survivors of COVID-19: retrospective cohort studies using electronic health records. *Lancet Psychiatry* 2021; **8**: 416–26.

India needs rigorously tested, culturally adapted cognitive behavioural therapy

As of 2017, the Global Burden of Disease study estimated that approximately one in seven people living across 29 states in India were affected by mental illness.¹ Some challenges that were highlighted were the mental health treatment gap, the need for community-based psychological interventions, and the need for cultural adaptation of psychological interventions like cognitive therapies, keeping in mind the existing plurality in approaches to treatment. Beck and colleagues² emphasised the need for increased acceptance of, and access to, culturally adapted models of cognitive behavioural therapy as a potential solution to the vast unmet mental health treatment gap in low-income and middle-income countries. In support of adaptation of psychotherapy for indigenous populations, Bhargava and colleagues³ reported that the integration of Indian theories such as karma and rebirth, drawn from the Bhagwad Gita, with cognitive behavioural therapy have been beneficial. Other systems, such as the Patanjali Yoga philosophy, the Siddha philosophy, and the Ayurveda, describe aetiology, stages of progression, and treatment for mental disorders, and aim for holistic mental health. In India, these systems of wellbeing are widely accepted and popular. Although attempts to infuse Eastern concepts and practices into

Western psychotherapy have been promising, cultural adaptations of psychological therapies are limited to language of delivery and context and cultural orientation of the therapist, rather than content.⁴ Models of adaptation of Western psychotherapies need to be improved through studies of systematic adaptation in conformance with specific requirements of a population.⁵

One of us, DS, is a practicing psychotherapist, who, to improve acceptance for psychological therapies, has introduced the concept of therapy in the non-clinical setting of coffee shops in Pune, India. DS has felt the need for indigenisation of cognitive behavioural therapy, not only for rural populations but also for middle and lower socioeconomic groups in urban centres. In India, concepts of Karma-phal (cycle of actions and consequences), Prarabdha (sins connected to past lives), Moh (attachment), and Dukkha (suffering) are preferred over sophisticated but unfamiliar western philosophy, to explain and cope with psychological suffering. Psychotherapists improvise to include the client's religious and cultural concepts in therapy, compromising its empirical basis.

We urge organisations and researchers to endeavour to create and test a comprehensive model of psychotherapy that combines principles of cognitive behavioural therapy with the philosophy and practices from the Bhagwad Gita, the Patanjali Yoga Darshan, and the Ayurveda. Psychotherapy in India needs to shift from an individual and ad hoc approach to an empirical and standardised one to improve mental health outcomes.

DS has a private psychotherapy practice. BPC declares no competing interests.

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