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Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active. activities that could help to explain why different activities differentially activate various mechanisms of action.

We declare no competing interests.

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- Fancourt D, Aughterson H, Finn S, Walker E, Steptoe A. How leisure activities affect health: a narrative review and multi-level theoretical framework of mechanism of action. *Lancet Psychiatry* 2021; 8: 329–39.
- Stebbins R A. Leisure activities in context: a micro-macro/agency-structure interpretation of leisure. New York: Routledge, 2017.
- 3 Stebbins R A. The serious leisure perspective: a synthesis. New York: Palgrave McMillan, 2020.

## Neuropsychiatric disorders and COVID-19

We read with interest the Article by Maxime Taquet and colleagues that reports on the incidence rates of anxiety disorders after a COVID-19 diagnosis,1 and we noted from the appendix that this outcome includes codes F40-F48 of the ICD-10. Given the known occurrence of developing post-traumatic stress disorder after admission to an intensive therapy unit,<sup>2</sup> we wondered if the authors had considered re-analysing their data to assess the incidence of posttraumatic stress disorder in survivors of COVID-19, including both those treated in intensive therapy units and those treated elsewhere?

It is very concerning that 4.72% of patients with COVID-19related encephalopathy received a first diagnosis of dementia within 6 months. We note that the authors have included F01–F03, G30, G31, and G31-83 when defining dementia, and we wondered whether the authors were able to provide more information on the incidence rates for these different types? We believe that it would be useful to know if a particular type of dementia is observed, both to help understand the pathophysiology and to help assess patients.

In the appendix of the Article, the authors state that "for chronic illnesses, only first diagnoses were counted".1 In the case of dementia, were patients with a history of mild cognitive impairment (eq, F06.7) or delirium (F05) excluded? This clarification would help to establish whether COVID-19related encephalopathy is associated with the rapid onset of dementia, or whether these patients were already a group at risk of developing dementia, considering that delirium and mild cognitive impairment can act as markers of vulnerability to dementia and can themselves lead to dementia.3,4

We wondered if there were any data reporting on the psychiatric outcomes in patients with asymptomatic COVID-19 (given that it is suspected that these patients account for at least one-third of all COVID-19 cases<sup>5</sup>), or in patients with only mild symptoms? This information would be useful for future planning of mental health services.

Finally, given that the estimated incidence of a neurological or psychiatric diagnosis in the 6 months after a COVID-19 diagnosis was 33.62%, we would propose a number of measures. First, we would suggest that questions about past COVID-19 infection become a standard part of clinical history taking. Second, we would propose that psychiatrists become an integral part of long COVID clinics nationwide. Finally, we would like to introduce the notion of reverse redeployment, in which health-care workers from general medicine might support mental health services, given the expected increased demand after this pandemic.

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Taquet M, Geddes JR, Husain M, Luciano S, Harrison PJ. 6-month neurological and psychiatric outcomes in 236 379 survivors of COVID-19: a retrospective cohort study using electronic health records. *Lancet Psychiatry* 2021; **8**: 416–27.

- 2 Righy C, Rosa RG, da Silva RTA, Kochhann R, et al. Prevalence of post-traumatic stress disorder symptoms in adult critical care survivors: a systematic review and meta-analysis. Crit Care 2019; 23: 213.
- 3 Fong TG, Davis D, Growdon ME, Albuquerque A, Inouye SK. The interface between delirium and dementia in elderly adults. *Lancet Neurol* 2015; 14: 823–32.
- Campbell NL, Unverzagt F, LaMantia MA, Khan BA, Boustani MA. Risk factors for the progression of mild cognitive impairment to dementia. *Clin Geriatr Med* 2013; **29:** 873–93.
  Oran DP. Topol EL The proportion of SARS-
- 5 Oran DP, Topol EJ. The proportion of SARS-CoV-2 infections that are asymptomatic: a systematic review. Ann Intern Med 2021; 174: 655–62.

Maxime Taquet and colleagues reported an increased incidence of neurological and psychiatric disorders in patients diagnosed with COVID-19 (ie, group 1) compared with two matched control cohorts: patients diagnosed with influenza (ie, group 2) and patients diagnosed with any respiratory tract infection, including influenza (ie, group 3).<sup>1</sup> In my opinion, having two control groups containing patients with influenza is a shortcoming of the study, and patients with influenza in group 3 should have been transferred to group 2. The authors suggested that the potential mechanisms for the association of neurological and psychiatric disorders with COVID-19 include viral invasion of the CNS, hypercoagulable states, neural effects of the immune response, and psychological and other implications of a COVID-19 diagnosis for people with common psychiatric disorders (eq, mood and anxiety disorders).<sup>1</sup> Other mechanisms, however, should be considered. One mechanism is that morbidity could have increased if patients did not attend necessary medical appointments during the COVID-19 pandemic because of decreased access to medical services during lockdown and semi-lockdown periods or patients' anxiety at getting infected.

The authors did not report information about the anti-COVID-19 medications that were given to the patients in group 1 during or after