Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Olfactory dysfunction and COVID-19

In their meta-analysis, published in *The Lancet Psychiatry*, Jonathan Rogers and colleagues[1] highlighted common neuropsychiatric symptoms in patients with severe acute respiratory syndrome (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) compared with COVID-19 and emphasised the need to recognise these potential problems in the management of COVID-19. Sommer and Bakker[2] called for caution when making direct comparisons between these coronaviruses because chronic sequelae of COVID-19 are still unknown and confounding factors cannot be excluded.

We would like to draw attention to an important factor that was not alluded to in the meta-analysis.[1] Olfactory dysfunction (anosmia and hyposmia) has a strikingly high prevalence (60–70%) in patients with severe acute respiratory syndrome 2 (SARS-CoV-2) compared with other coronaviruses.[3] Olfactory dysfunction was not reported as a symptom during past SARS-CoV and MERS-CoV outbreaks. In our community care facilities, we have seen patients with SARS-CoV-2 and pure olfactory dysfunction without nose block or other signs of respiratory infections. These individuals were anxious about permanently losing their sense of smell, and in some cases their sense of taste. The anxiety is understandable because olfactory dysfunction usually occurs early during infection with SARS-CoV-2 and can be severe, with some patients experiencing severe dyspnoea.[3]

In animal models, disruption of olfactory pathways and experimental removal of the olfactory bulb can lead to neurochemical and behavioural changes seen in depressive states that are reversible with antidepressant drugs.[4] In humans, olfactory dysfunction has been reported in patients with depression and cognitive impairment.[4,5] In a study of 6783 adults, better olfactory performance was associated with better cognitive performance.[5]

The potential neuropsychiatric burden associated with cranial nerve problems, such as olfactory and gustatory dysfunctions, is still largely unexplored in the COVID-19 pandemic. Olfactory dysfunction can lead to both short-term and long-term neurological and neuropsychiatric complications that need to be investigated. Recognising neuropsychiatric sequelae of olfactory dysfunction and other neurological complications, such as stroke as a result of COVID-19, and facilitating closer longitudinal follow up of patients with structural or functional brain damage will improve their quality of care and mental wellbeing.

We declare no competing interest.

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1 Rogers JP, Chesney E, Oliver D, et al. Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: a systematic review and meta-analysis with comparison to the COVID-19 pandemic. *Lancet Psychiatry* 2020; published online May 18. https://doi.org/10.1016/S2215-0366(20)30203-0.

2 Sommer IE, Bakker PR. What can psychiatrists learn from SARS and MERS outbreaks? *Lancet Psychiatry* 2020; published online May 18. https://doi.org/10.1016/S2215-0366(20)30219-4

3 Speth MM, Singer-Cornelius T, Obere M, Gengler I, Brockmeier SJ, Sedaghat AR. Olfactory dysfunction and sinonasal symptomatology in COVID-19: prevalence, severity, timing, and associated characteristics. *Otolaryngol Head Neck Surg* 2020; published online May 19. DOI:10.1177/0194599820929185.

4 Wang F, Wu X, Gao J, Li Y, Zhu Y, Fang Y. The relationship of olfactory function and clinical traits in major depressive disorder. *Behav Brain Res* 2020; published online May 27. DOI:10.1016/j.bbr.2020.112594

5 Yahiaoui-Doktor M, Luck T, Riedel-Heller SG, Loeffler M, Wirkner K, Engel C. Olfactory function is associated with cognitive performance: results from the population-based LIFE-Adult-Study. *Alzheimers Res Ther* 2020; published online May 10. DOI:10.1186/s13195-019-0494-z.

Psychiatric and neuropsychiatric syndromes and COVID-19

The systematic review and meta-analysis by Rogers and colleagues[1] of acute and post-illness psychiatric and neuropsychiatric presentations of individuals with suspected or laboratory-confirmed coronavirus infection was much needed. However, it does not address one of the key susceptible groups with high rates of neuropsychiatric symptoms—people with dementia.

People with dementia have an increased risk of delirium,[2] and might also be particularly sensitive to the potential neurotropic effect of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).[3] 98% of patients with dementia experience neuropsychiatric symptoms over the course of their disease.[4] These symptoms might be exacerbated during the acute or post-illness phases of infection with SARS-CoV-2 as a result of the virus itself and related social and environmental effects. Importantly, inappropriate management of neuropsychiatric symptoms in people with dementia could lead to substantial excess morbidity and deaths.

It is essential to gather further evidence regarding the effect of delirium on individuals with dementia who are infected with SARS-CoV-2, the broader impact and management of neuropsychiatric symptoms, and the different approaches to physical distancing. Optimising management and preventing inappropriate and potentially harmful management strategies are all the more urgent given people with dementia are at an increased risk of mortality and strokes associated with the antipsychotic medications[5] that are too often used for managing delirium and neuropsychiatric symptoms.