



## Commentary

## Neuropsychiatric and cognitive effects of the COVID-19 outbreak on multiple sclerosis patients



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The COVID-19 pandemic is the most disastrous pneumonia outbreak to date. Only 3 months after the initial patients were described in the city of Wuhan in China, hundreds of thousands of confirmed cases have been reported worldwide. The aim of this manuscript is to assess how this pandemic can affect the cognitive and neuropsychiatric functions of multiple sclerosis (MS) patients and to propose preventive measures.

The neuropsychiatric effects of the viral pandemics on general population have previously been demonstrated. During the COVID-19 pandemic in China, 53.8% of the 1210 respondents in a cross sectional study reported to bear moderate to severe psychological impact of the outbreak. Being a female, a student or having specific physical symptoms including coughs, myalgia and chills and a poor self-rated health status were factors associated with the psychological impact, anxiety and depression caused by the pandemic (Wang et al., 2020). Another study showed anxiety and stress disorder rates to be 23% and 27% respectively among the medical staff of a hospital in China (Huang et al., 2020).

Patients with MS are specifically vulnerable to the neuropsychiatric impacts of the COVID-19 pandemic. Variable degrees of cognitive and neuropsychiatric involvement already exist in MS patients. Cognitive dysfunction affects up to 70% of MS patients. It can be present even in the early stages of the disease, and is especially pronounced in the information processing speed and immediate and episodic memory domains (Oreja-Guevara et al., 2019). Anxiety and depression have been reported in up to 57% (Butler et al., 2016) and 40% (Feinstein et al., 2014) of these patients respectively which is highly above the rates in general population. Depression and anxiety result in a lower quality of life, increased fatigue and disability scores, and a more aggressive MS course (Patel et al., 2018). They have been shown to result in disease exacerbations and decreased treatment adherence in MS patients (Mohr and Cox, 2001). Additionally, several studies have shown that anxiety and depression can further impair cognitive function in MS patients. Depression negatively affects cognition by direct and indirect mechanisms, through reducing information processing speed and deleterious effects on cognitive reserve respectively (Lester et al., 2007). Researchers have shown that anxiety harms verbal learning in MS patients, probably through interfering with attention and information

processing speed. They have suggested that treatment of anxiety may improve cognitive function of MS patients (Vissicchio et al., 2019).

Just as any other member of the society, MS patients are disturbed by the emotional distress and health anxiety caused by the COVID-19 outbreak. However, patients with MS are known to undertake maladaptive coping strategies (Amato et al., 2019) which will make them even more susceptible to the detrimental neuropsychiatric effects of the outbreak. Most MS patients are on immunosuppressive or immunomodulatory therapies. Patients on immunosuppressive agents are theoretically at increased risk of being affected by viral pandemics and a higher level of health anxiety in this group of patients is anticipated. Moreover, MS patients are losing social support; they have no longer access to group therapies and cognitive and physical rehabilitation therapies which could all hypothetically add to the level and stress and anxiety perceived by these patients.

The impacts of cognitive dysfunction in MS patients are extensive, hence its treatment have been an area of focus in recent years. Since no pharmacologic agent has proved significant efficacy in symptomatic treatment of cognitive dysfunction in MS patients, physicians aim to undertake preventive strategies for cognitive decline to happen and progress. This highlights the importance of addressing stress and anxiety in MS patients particularly during demanding environmental conditions such as viral outbreaks.

Considering the rapid worldwide spread of the COVID-19 outbreak, MS specialists should adapt a strategy to monitor MS patients for neuropsychiatric complications and also opt for applicable treatment options. When planning support strategies special attention should be placed on patients more at risk to develop cognitive and neuropsychiatric complications, including patients with higher level of disability, those who are taking immunosuppressive therapies, patients at a progressive stage and patients with comorbid medical conditions. We suggest monitoring high risk MS patients using easily phone applicable anxiety scales and to consider therapeutic options including online support, at home yoga and exercise programs, and antianxiety medications when needed.

Long term effects of the neuropsychiatric complications of this pandemic on the cognitive function and disability status of MS patients

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is also a subject for future research.

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The authors declare there is no conflict of interest.

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