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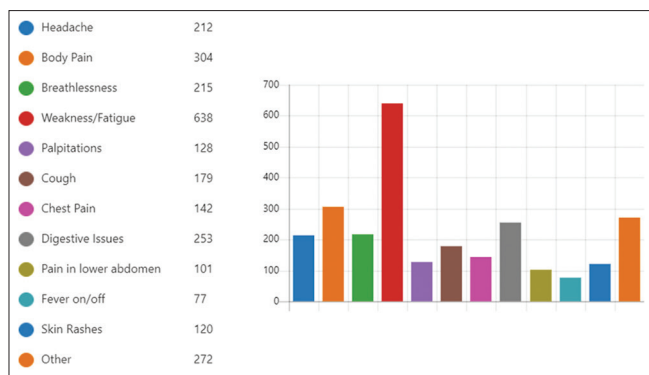
## Postcoronavirus disease-2019 symptoms are not uncommon among recovered patients: A cross-sectional online survey among the Indian population

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Dear Sir,

Patients recovered from coronavirus disease-2019 (COVID-19) can have disabling persistent symptoms for a long duration.<sup>[1,2]</sup> However, there is a paucity of literature on post-COVID-19 symptoms from India. Hence, we aimed to assess the incidence of post-COVID-19 symptoms in patients recovered from COVID-19.

An online Microsoft forms survey was conducted through multiple social media platforms [Questionnaire in Supplementary Appendix 1]. The Institutional Ethics Committee approved the study vide letter no. AIG/IEC-Post BH&R 15/06/2021-07. Categorical variables are expressed as *n* (%). The categorical data were compared between two groups using Pearson's Chi-square test. A  $P < 0.05$  was considered statistically significant.



**Figure 1:** Symptoms reported by respondents

A total of 2486 individuals responded to the survey. Most patients (66%) had recovered from COVID-19 recently (<3 months). Forty percent had required hospitalization for COVID-19.

Seventy-four percent (743/998) of the admitted patients had received steroids. Not all the patients who received steroids required oxygen. Only 46.8% (348/743) of those who received steroid therapy required oxygen support. In rest of the 53.2% of patients, steroids were given despite the absence of hypoxemia.

Forty-two percent of all admitted and outpatients (1039/2486) still had persistent symptoms postrecovery. Six percent of them required hospitalization for post-COVID symptoms. The commonest symptom was fatigue (61.4%), followed by body pain (29.25%) and gastrointestinal symptoms (25%) [Figure 1]. Only 60% of the respondents felt that the symptoms were adequately cared for. Forty-seven percent (470/998) of the hospitalized and 38.2% (569/1488) of the nonhospitalized patients reported post-COVID-19 symptoms ( $P < 0.001$ ).

Fifty-one percent (379/743) of those who received steroids and 35.7% (91/255) of those who did not receive steroids developed post-COVID-19 symptoms ( $P < 0.001$ ). Patients who had hypoxemia and received steroids have a higher incidence of post-COVID-19 symptoms (55%) compared to those who did not receive steroids and did not receive oxygen support (35.7%).

The survey demonstrated that a significant proportion of patients recovered from COVID-19 suffer from post-COVID-19 symptoms. There are few reports of post-COVID-19 syndrome.<sup>[1,2]</sup> Most studies have reported fatigue and persistent respiratory symptoms.<sup>[2]</sup> The reasons for developing post-COVID-19 symptoms are multiple: Persistent chronic inflammation in the convalescent phase, sequelae of critical illness, organ damage (lung injury resulting in pulmonary fibrosis), and nonspecific effects from the hospitalization and social isolation (psychological trauma, nutritional anemia, muscle wasting).<sup>[3,4]</sup> The limitation of our survey is we did not capture the data on age and comorbidities of the patients who reported

symptoms. However, to our knowledge, this is the first Indian study to report a high incidence of post-COVID-19 symptoms among COVID-19 recovered individuals. Both hospitalized and nonhospitalized patients suffer from post-COVID-19 symptoms. Furthermore, the injudicious use of steroids led to a significant increase in the risk of post-COVID-19 symptoms (47.8%).

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Nil.

#### Conflicts of interest

There are no conflicts of interest.

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