Antidepressant Fluvoxamine in Reducing COVID-19 Hospitalization

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Dear Editor,

In this era of the 21st century, when a global pandemic has taken over the lives of millions, causing severe hospitalization and even death, the need for treatment has become an ongoing challenge despite the relative progress made by vaccination. Current data shows more than 0.57 million COVID-19 related hospitalizations being registered in the United Kingdom and more than 3.2 million in the United States[1,2].

To reduce the burden of hospitalization, different treatment modalities are being considered and tested worldwide for severely ill COVID-19 patients. Despite the availability of different medications such as corticosteroids including Dexamethasone, Prednisone, Methylprednisolone, antiviral drugs i.e., Remdesivir and IL-6 antibodies, Tocilizumab, healthcare systems still need to restrict the number of hospital admissions. Fluvoxamine [Selective Serotonin Reuptake Inhibitor (SSRI)], an antidepressant that has recently been added to the list of successful treatments for COVID-19 patients. A major clinical trial held in Brazil proved the efficacy of Fluvoxamine in reducing the risk of hospitalization in patients. According to available data, 11% of patients who were treated with fluvoxamine were shifted to tertiary care hospitals, and 16% of patients who were treated with placebo needed hospitalization which proved that early treatment with Fluvoxamine may decrease the susceptibility of hospitalization[3]. Fluvoxamine acts as a selective serotonin reuptake inhibitor (SSRI) and σ-1 receptor agonist. It is commonly used as an antidepressant and as a treatment for obsessive-compulsive disorder (OCD). Fluvoxamine, unlike corticosteroids used by COVID-19 patients, does not suppress the immune system's antiviral activity, it rather acts as an immunomodulator.

It is also relatively better than other SSRIs like fluoxetine at activating the sigma-1 receptor which in turn reduces the production of cytokines (inflammatory signaling protein molecules) [4]. It has been documented that the replication of SARS COV 2 takes place in the endoplasmic reticulum (ER) of the cells and this replication is responsible for the production of inflammatory cytokines and the development of stress in the ER. The possible mechanism behind the effectiveness of Fluvoxamine in reducing mortality is its affinity for the σ-1 receptor. Its agonistic activity at the σ-1 receptor decreases the production of inflammatory cytokines ultimately reducing the ER stress that possibly reduces the hospital stay[5]. A study by Hoertel et al. also concluded the effectiveness of Fluvoxamine; the use of the antidepressant led to reduced risk of intubation or death in hospitalized covid patients[4]. Although fluvoxamine is a widely available, inexpensive, oral drug with a relatively better safety profile, it is still reported to shows few adverse events like pneumonia, shortness of breath (SOB), headache, muscle ache, vasovagal syncope and bacterial infections[6].

Although clinical trials favoring Fluvoxamine have shown auspicious results, it is essential to have more data from extensive, prolonged multi-centered clinical trials before prescribing it to the masses. This will enable the health workers and researchers to identify efficacy in different populations as well as other potential adverse events of the drug. Moreover, to the best of our literature search, there is still a gap of knowledge that needs to be identified in this aspect where there is a possibility of varying responses of people to this drug by those who are fully vaccinated versus those who get reinfected after inoculation. Furthermore, the effectiveness of Fluvoxamine in different COVID-19 strains including delta variant, as well as adolescent and pregnant patients still needs evaluation. We are optimistic about the use of Fluvoxamine globally especially in developing countries like Pakistan, Bangladesh, and India because of its cost-effectiveness, low adverse potential and where vaccination programs still have a long way to go.

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CONFLICT OF INTEREST
The authors declare no conflict of interest.

AUTHORS' CONTRIBUTION
All authors equally contributed to this write-up.

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