

Unfortunately, the behavior of openly spitting in the public is continuing in India and maybe in several other parts of the world. Further attempts should be made for early intervention by educating children about it through school and family interventions (through parental education). Public awareness and involving religious or spiritual leaders to condemn this unhealthy behavior may be useful in its prevention. Understanding the psychology behind the spitting behavior can help in its effective prevention and subsequent risk of community transmission of COVID-19.

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**Repurposing Selective Serotonin Reuptake Inhibitors for COVID-19: Rationale and Concerns**

With a global count of more than 28 million cases and 921,801 deaths till September 14, 2020, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV2) remains a challenge for health professionals. Though more than 500 trials ([clinicaltrials.gov](https://clinicaltrials.gov)) are ongoing, none of

the agents has been officially approved to treat the infection. Despite the preliminary favorable results of certain antiviral drugs, the research is curtailed by the risk of their toxicity and methodological flaws.<sup>1</sup> Though psychotropics are placed far away from antimicrobial and antiviral drugs in the taxonomy, antimicrobial and antiviral properties of various psychotropics have been documented.<sup>2</sup> With this background, we would like to discuss the potential role of selective serotonin reuptake inhibitors (SSRIs) in SARS-COV2 pathology.

Among those infected, only 5%–15% progress to severe acute respiratory syndrome. This is mediated through dysregulated immune response involving activation of nuclear factor kappa B (NF-κB), signal transducer activator of transcription (STAT 3), and inflammatory cytokines. This eventually establishes an inflammatory feedback loop, leading to a state of hypercytokinemia, known as “cytokine storm,” which is implicated in multiple organ dysfunction.<sup>3</sup> Though agents with a potential action at virus-entry-level can help in preventing

the infection, there is a vital need to investigate therapies that reduce dysregulated immune cascade. If successful, this could substantially reduce mortality.

Though there has been no systematic study of the antiviral property of SSRIs on SARS-CoV-2, their antiviral property—especially that of fluoxetine—for Hepatitis C, Enteroviruses, and Coxsackievirus has been reported. As STAT3 plays a vital role in the inflammatory loop, drugs that inhibit this pathway need consideration. Sertraline and paroxetine have been shown to attenuate mitogen-stimulated increases of STAT3 and Cyclooxygenases-2, which is also implicated in SARS-CoV2 immunopathology.<sup>4,5</sup> This action has been reported to be more pronounced than that of dexamethasone, another keystone in SARS-CoV2 treatment.<sup>5</sup> Secretion of cytokines is a crucial step in organ damage, and SSRIs have been known to reduce their levels.<sup>6</sup> Likewise, Interleukin-6 (IL-6) being a major cytokine of the inflammatory loop, there has been an ample number of studies showing a reduction of IL-6 levels with SSRI treatment.<sup>6</sup> Furthermore, SSRIs may have a potential role in regulating the release of tumor necrosis factor— $\alpha$ , IL-6, IL-10, and Interferon- $\gamma$ —since they require intracellular serotonin that is transported through a serotonin transporter—the target site of SSRIs.

Interestingly, the SARS-CoV2 targets sigma receptors that mediate autophagosome-lysosome fusion in the endoplasmic reticulum. In line with this finding, preliminary research on molecules with sigma receptor activity displayed antiviral properties.<sup>7</sup> With this background, fluvoxamine, a potent sigma-1 receptor agonist with immunomodulatory properties in animal studies, is being employed in trials to investigate the potential antiviral property (clinicaltrials.gov).

In addition, we know that stress by itself can produce alterations in the immune system, which may increase the risk of infection. In animal models, fluoxetine has been shown to reverse stress-induced immune dysfunction.<sup>8</sup> However, further studies are needed before we can translate it into clinical practice.

Considering the mentioned factors and owing to their relatively better safety and tolerability profile, SSRIs merit further investigation for their role in treating SARS-CoV-2 infection. Encouraging preliminary evidence is available from research using in vitro human cell culture models<sup>9,10</sup> as well as hospitalized patients<sup>11</sup> with COVID-19, all of which point to a beneficial role for SSRIs in treating the condition through mechanisms such as reducing virus entry and propagation. Nevertheless, researchers have also highlighted the potential risks with SSRI in SARS-CoV2, such as impaired coagulation, risk of arrhythmias, liver injury, and cytochrome-mediated drug interactions, which can potentially limit the use of SSRI in such patients. Future research must balance these safety considerations against potential benefits of SSRIs in SARS-CoV-2 and identify the right candidates who may benefit optimally from add-on SSRI.

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## Mental Health Impact of COVID-19 on Police Personnel in India

India reported the first case of coronavirus disease (COVID-19) on January 30, 2020. The government, since then has advocated wearing masks, physical distancing, avoiding public gathering, shutting down malls and theatres, isolation of positive cases, and quarantine of high-risk individuals as major preventive measures against COVID-19. Police were among the first responders to the COVID-19 disaster and are popularly listed among the “corona warriors,” along with health care personnel.

Police personnel in India are generally trained in dealing with natural and man-made disasters, though pandemic control is not emphasized as a subject during the training of the police.<sup>1</sup> Consequently, the COVID-19 pandemic required many police personnel to assume responsibility for the emergencies that were not part of their regular work profile.<sup>1,2</sup> The primary responsibility of implementing the lockdown through restricting public movement and ensuring physical distancing was shouldered by the police force during the pandemic, through the enforcement of the Epidemic Disease Act, 1987, and the Disaster Management Act, 2005.<sup>1</sup> Police personnel was mobilized for a variety of tasks—to monitor check posts, monitor COVID-19 infection hotspots, and ensure lockdown as well as containment. In addition to this, police personnel also carried out a variety of unconventional duties, including creating social awareness, clarifying fake news, daily inspection of people in isolation or quarantine, assisting the health department in contact tracing activities, helping migrant workers to enter shelters, and helping the needy persons to access

medical and other essential services.<sup>3,4</sup>

Lack of awareness and specific knowledge of COVID-19 prevention and inadequate or inappropriate use of personal protective gear like mask and gloves substantially increase the risk of exposure to COVID-19 among police personnel.<sup>1</sup> **Table 1** shows the impact of COVID-19 on police personnel in India and **Table 2** shows the infection rate in the police force in comparison to the general population as of August 31, 2020.<sup>5-7</sup> It appears that police personnel are 8.78 times more

likely to get affected by COVID-19 compared to the general population. In order to reduce the risk of transmission of COVID-19, the police departments have made risk mitigation plans like modifications in their human resource allotment (working with a small team, desk job for the vulnerable population rather than fieldwork) and use of technology in the services.<sup>1,2,4,8</sup>

The unconventional responsibilities, demanding working conditions, and the ambiguity in the role of the police may result in job stress and burnout and have been established in earlier studies as a source of occupational stress among Indian police personnel.<sup>9,10</sup> The concern about being infected from the community and workplace may also be a potential source of fear among police personnel.<sup>1</sup> Furthermore, concerns about carrying the infection to the family members may also be a source of psychological distress. Additionally, fear of quarantine



TABLE 1.

### The Impact of COVID-19 on Indian Police Personnel (as on August 31, 2020)

Number of police personnel who tested positive	71,832	
Number of police personnel quarantined	25,013	
Number of police personnel who died	428	
Number of police personnel injured in attacks	260	
Top five states/division (personnel tested positive)	Maharashtra	14,792
	Central Reserve Police Force (CRPF)	7,144
	Telangana	5,684
	Border Security Force (BSF)	4,983
	West Bengal	4,500
Top five states/division (personnel quarantined)	Maharashtra	8,000
	Border Security Force (BSF)	7,981
	Madhya Pradesh	2,000
	Uttarakhand	1,970
	Kerala	1,166

Source: Indian Police Foundation website.<sup>6</sup>