

## Understanding the Psychological Underpinning of Spitting: Relevance in the Context of COVID-19

To the Editor,

*It's a serious business. Bodily fluids, depending on what they may be carrying, AIDS, Hepatitis C, is just as deadly as a knife or a bullet.*

—Keith Gillespie, Former Paramedic, 2014

The Cambridge English dictionary defines spitting “as an act to force out the contents of the mouth, especially saliva.” Pathological spitting behaviors have often been mentioned. These include spitting as a compulsion in obsessive-compulsive disorder, as a manifestation of anxiety, in the context of gustatory hallucinations or sensory pathology, and as an automatism in temporal lobe epilepsy. Intellectually disabled persons spit as

are already in place in various parts of the world, reflecting the seriousness of public spitting. Over time, as the knowledge about infectious diseases progressed, spitting has been acknowledged as a means of infection transmission, and public health awareness campaigns too followed.

Voluntary spitting can be an expression of hostility and disrespect, but this has not always been the case. Spitting can even be a pleasure-generating phenomenon. Psychological theories link spitting with ejaculation or urination.<sup>4</sup> Ejaculation and urination are associated with pleasure by means of sexual gratification and a sense of release from discomfort. The psychoanalytic theories link spitting with the phallic phase of psychosexual development.<sup>4</sup> Spitting can be a similar pleasurable behavior.

Even today, cultural expectations, responses, and attitudes towards public spitting exist.<sup>5</sup> While in the west spit-

to several culture-bound beliefs. The practice of lightly spitting to the side of a person as a way to guard the person against evil forces and protect them from *buri nazar* (*buri nazar* is a phrase in Hindi whose English equivalent could be 'evil eye or evil gaze' pertaining to a stare believed to cause misfortune) is still rampant in some rural parts of North India. Some shopkeepers consider the act of spitting on the cash from the first sale of the day as a way to repress bad luck. The act of spitting is also used as a gesture to convey disdain, disregard, or anger.

Also, in India, the use of chewable forms of tobacco is commonplace. Chewing *paan* and *gutka* and then spitting it almost anywhere, be it a government setting or public toilets, walls, roads, or even a cinema hall, is not an uncommon sight. Since 2017, public spitting is an offence in India and punishable by a meagre fine. But, the lack of proper enforcement of the existing regulations, along with the cultural acceptance of the act, has done little to tackle this public health issue.

Over the past several months, COVID-19 has significantly affected the life globally. There is a rapid spread of the infection as the disease is highly contagious. The commonest mode of spread of COVID-19 is through droplets.<sup>7</sup> When a healthy person comes in contact with an infected person or contaminated surfaces, the risk of acquiring the infection increases. Evidence supports that the salivary gland is an important reservoir of the COVID-19 pathogen.<sup>8,9</sup> A major content of spit is saliva, other than oral and nasopharyngeal secretions. So, theoretically, when an infected person spits openly, the pathogens are likely to suspend in the air for a particular time, and the surface where the spitting is done is expected to contain the pathogen for several hours. It is expected to spread the infection to others who come in contact with that surface.

Considering the risk of the spread of infection, attempts are being continuously made to educate the public to refrain themselves from spitting openly.<sup>10,11</sup> The Indian Ministry of Home Affairs even raised the fine for public spitting.<sup>12</sup>



a maladaptive way of expressing needs/hostility, while in those with dementia,<sup>1</sup> spitting may be a form of combative behavior or due to an inability to ingest saliva. Chewing and spitting were recently established as a compensatory behavior in individuals with an eating disorder<sup>2</sup> or a side effects of medications.<sup>3</sup>

Spitting and public spitting are ubiquitous. However, the prevalence of these spitting behavior patterns, and public spitting in particular, is unclear. Public spitting is widespread enough to meet the eyes of policymakers; relevant restrictions

was considered heinous and demanded a civic responsibility to one's health and the health of others, studies from Southeast Asian countries paint a different picture altogether. Along with the public health perspectives involved, in India, compulsive spitting has been proposed as a culture-bound symptom.<sup>6</sup> In the country, the act of public spitting is considered admissible and is only infrequently frowned upon in the Indian culture. There are specific reasons that maintain this behavior. Since ancient times, the act of spitting has been linked

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