

COVID-19: Impact on Mental Health

Dr. Manish Maladkar ¹, Chitra Tekchandani ², Dr. Raveena Bajaj ³

Abstract

The outbreak of the novel coronavirus (COVID-19) which was first detected in Wuhan, China in December 2019 has created havoc worldwide. It progressed to the status of a pandemic in March 2020 with countries across the various continents adversely affected.

This coronavirus crisis has not only affected the health, safety & well-being but has also significant negative impact on the mental health. Moreover, stigma of the disease, uncertain prognoses, imposition of unfamiliar preventive measures, large and growing economic burden, and information incessant on media platforms are among some of the major stressors that has undoubtedly contributed to widespread emotional distress. Though this coronavirus crisis has affected the mental health of almost everyone in the world, there are certain groups of people who may be more vulnerable to mental health illness than the rest of the general public. In particular, people who contract the disease, those at heightened risk for it (including the healthcare workers, elderly, people with compromised immune function, and family members/close contacts of COVID-19 patients) and people with pre-existing medical, psychiatric illness are at increased risk for adverse mental health outcomes. This review focusses on impact of COVID-19 on mental health of various population and explores various strategies to tackle these health concerns.

Keywords: COVID-19, mental health, neuropsychiatric symptoms

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Introduction

A newly emerged viral infection - novel coronavirus disease (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is highly transmissible & has affected people all over the world taking the form of a pandemic. Since its outbreak, there is a significant increase in morbidity & mortality due to this coronavirus crisis.^[1]

Novel coronavirus has evolved as a major stressor in the history of mankind. The coronavirus crisis is not only placing enormous strain on health and econ-

omy but also has significant implications on mental health and psychosocial well-being. The initial focus is primarily on the physical manifestations of the infection. Nevertheless, significant mental health consequences emerging out of this catastrophe also need to be addressed. Mental health concerns following the COVID-19 crisis could be arising out of direct consequences of infection or of restrictive measures imposed to contain the spread of infection. The widespread social and economic disruption of the coronavirus crisis has also produced a psychosocial impact unheard of in modern times. In addition, information overloads

¹ President - Medical and Regulatory Affairs; ² Dy. General Manager – Medical; ³ Asst. Manager – Scientific, Aristo Pharmaceuticals Private Limited, Mumbai, India.

Corresponding author: Dr. Manish Maladkar, President - Medical and Regulatory Affairs, Aristo Pharmaceuticals Private Limited, Mumbai-400053, India. Email: scientific@aristopharma.org

of media platforms that have relentlessly spread a mix of accurate as well as inaccurate information and even confounded theories, which in turn have had a psychological impact on the community as a whole.^[2]

One estimate suggests that approximately 50 percent of people who develop mental health effects need psychological support. Stress, anxiety, depression & frustration have been observed in COVID-19 infected patients including healthcare workers, family members and close contacts of patients, people with comorbid disorders, elderly and general population. In addition, COVID-19 may adversely affect patients who have psychiatric disorders predating the pandemic and may be at increased risk of infection, due to difficulties adhering to frequent hand washing and physical distancing as well as poor insight and problems understanding the risk of infection.^[3,4,5,6,7,8,9]

Impact of COVID-19 on Mental Health

1. Patients: Highly infectious nature of the disease,

associated fear & stigma may lead to psychiatric disturbances among the suspected and/or confirmed COVID-19 patients. In a systematic review of 12 studies (n >900) that examined mental health in COVID-19 patients, confusion and impaired consciousness were observed in 9 of the studies. One of the studies, which included 144 patients with COVID-19, found that anxiety occurred in 35% and depressive symptoms in 28% of the patients.^[10] A study of 1210 participants reported that 53.8% had a moderate or severe psychological impact, 31.3% had depression, 36.4% had anxiety and 32.4% had stress.^[11] A subsequent cross-sectional study included patients (n = 125) with a median age of 71 years, who were hospitalized with COVID-19. Acute alterations in behavior, cognition, consciousness, or personality were found in 3% patients.^[12] Another study in US found that 20% of COVID-19 patients developed psychiatric disorders within 90 days.^[13]

2. Healthcare Workers (HCW): Broad ranges of HCW who directly or indirectly treat patients with COVID-19 experience fear that can be overwhelming. The common stressors impacting mental health among HCW are mentioned in Table 1.

A recent study involving 1563 health professionals investigated that 50.7% of the healthcare professionals reported depressive symptoms, 44.7% anxiety and 36.1% sleep disturbances.^[18] Along with the physicians, the frontline healthcare providers (paramedics, ambulance personnel and healthcare workers) have also reported to have emotional disturbances and higher levels of depression and anxiety.^[3] Many cross-sectional studies used self-report instruments during the peak of the pandemic to assess hospital-based physicians and nurses (total n >1200) and frontline and second-line health care workers (n >1300) in Italy. It was investigated that 12-20% participants had anxiety, 15-25% had depression & 8% suffered from insomnia.^[8,19] Moreover, an online survey of Canadian health care workers (n >500) reported that 47% participants having mental health concerns required psychological support.^[20] Another cross-sectional study assessed nearly 300 healthcare professionals caring for patients with COVID-19 in Singapore, using self-report screening instruments. Relatively few participants (5-10%) screened positive for mental health concerns, which the authors attributed to better preparedness of the clinicians based upon their previous experience with the 2003 severe acute respiratory syndrome (SARS) epidemic.^[21]

Table 1: Various stressors affecting mental health among HCW ^[14,15,16,17]

- Increased workload due to increased demand of healthcare services during such coronavirus crisis may result in physical exhaustion, fear, emotional disturbances and sleep disorders among healthcare workers.
- Isolation due to fear of transmitting the infection to the family members, friends, colleagues, and patients.
- Uncertainty due to the lack of treatment guidelines for COVID-19. Interventions being limited to supportive care rather than treatment per se.
- Lack of access to or lack of belief on personal protective equipment.
- Undertaking the unfamiliar clinical duties with insufficient preparation.
- Lack of support & unclear communication from supervisors.
- Moral dilemmas arising from situations such as inadvertently placing others in danger, and implementing clinical decisions by others that one think are contrary to best practices.
- Feeling physically & emotionally disconnected from patients and their families due to personal protective equipment and physical distancing.
- Social stigma due to exposure to the disease.
- Handling the grief-stricken family members of patients who lose their life to disease.

3. Family members, close contacts, co-morbid disorders, elderly populations: Along with the COVID-19 patients, the family members and close contacts of patients are affected as they are traced, isolated or quarantined.^[22] Elderly populations are at a higher risk of COVID-19 infection due to their decreased immunity and body reserves, as well as multiple associated co-morbidities like diabetes, hypertension, chronic kidney disease, cancer and chronic obstructive pulmonary disease. Also, course of disease tends to be more severe in case of elderly population resulting in higher mortality.^[3]

4. Patients with pre-existing psychiatric illness: A self-report, online survey of outpatients with pre-existing psychiatric disorders (n >1400) conducted for 2 months found that 21% patients had deterioration of mental health. New or worsening mental health problems included anxiety, depression, and insomnia, which were attributed to fear of infection, restrictions on transportation and isolation at home.^[23] In a self-report, in the online survey of individuals having a mental illness such as an anxiety disorder, unipolar major depression, or bipolar disorder (n=193), 23% were coping poorly & majority had specific concerns about the potential effects of the coronavirus crisis upon their mental health, such as worsening of their illness (64%), inability to receive treatment (39%), and running out of medication (38%).^[24]

5. General Public: The COVID-19 crisis may be associated with psychiatric symptoms in the general population of adults and children. Cross-sectional, self-report surveys for the duration of 4 months reported that up to 36% of adults presented with clinically significant psychiatric symptoms of anxiety, depression & distress.^[24] An online survey (n>1200) conducted found that moderate to severe anxiety was present in 29%. Moderate-severe depression was present in 9-17% adults investigated by two internet surveys (n >1200 and n >2400).^[25] Two online studies of individuals (n >1000 and n >1200) found that psychological distress was present in 8-12%.^[26] Another internet survey of adults (n >1400) from the United States in April 2020 found out that 14% of partic-

ipants had psychological distress.^[27] Children & adolescents are experiencing psychological distress due to parental anxiety, home confinement, disruption of routine & less physical activity. An online survey conducted in India reported that about 38.2% had anxiety and 10.5% of the participants had depression. Moderate level of stress was reported in about three-fourth (74.1%) of the participants and 71.7% reported poor well-being.^[28]

Pathogenesis ^[29]

The neuropathogenic mechanism of SARS-CoV-2 includes direct and indirect pathways as shown in Table 2.

Direct pathway:

The virus penetrates into the CNS by infecting endothelial cells of the blood-brain-barrier, epithelial cells of the blood-cerebrospinal fluid barrier in the choroid plexus and can cause neuropsychiatric symptoms like delirium and acute confusional state.

Indirect pathways:

- Brain hypoxia may follow direct infection of the lung tissue and neuroinvasion of the virus directly affecting the medullary cardiorespiratory centre. Hypoxia of the brain increases anaerobic metabolism in the mitochondria of the brain cells, and the resultant lactic acid leads to cerebral oedema, reduced blood flow, raised intracranial pressure, which can clinically present with a range of neuropsychiatric symptoms like somnolence, headache, confusion, etc.

Table 2: Possible pathogenesis for the Neuropsychiatric manifestations of COVID-19.

Pathogenic Process	Mechanisms	Neuropsychiatric Manifestations
Direct injury (blood circulation)	Cytokines increasing blood-brain-barrier (BBB) permeability	• Delirium and acute confusional state
Hypoxic injury	Impaired pulmonary exchange and pulmonary oedema can cause cerebral hypoxia Cerebral oedema, vasodilation, ischaemia and vascular congestion Increased intracranial pressure	• Somnolence • Headache • Confusion
Immune cell transmigration to CNS	Increased neuro-inflammation Microglial activation Neural and glial cells as latent 'viral-carriers'	• Both acute and chronic neuropsychiatric effects

- Human SARS-CoV-2 may play a plausible role in the development of psychiatric symptoms via the opportunistic infection of peripheral myeloid, which are then trafficked to the brain causing microglial activation & neuroinflammation and thus, virus-induced neuropathology.

Management

The major focus to deal with coronavirus crisis is on adopting various preventive strategies and providing medical care, however psychological needs of the affected individuals must be taken into consideration.

General Approach:^[30]

1. Patients & family members

Care and support to be provided to patients who have been separated from their families and caregivers. For patients who are undergoing a treatment in hospitals, the associated staff can create a video record of patient's daily routine & recovery; this could be shared with concerned family members to provide some reassurance.

2. Healthcare workers:

Healthcare workers use a variety of approaches to

Table 3: Measures to address the impact of the Covid-19 crisis on mental health of healthcare workers

- Preparing staff for job associated challenges & avoiding false reassurances.
- Reaching out to staff, especially vulnerable staff to discuss emotional and social challenges.
- Providing adequate periods of rest to frontline medical workers and ensuring rotation of workers in high-pressure roles.
- Reducing workload on medical workers in hospitals by developing online platforms to provide medical advice to the public, decreasing non-critical work activities such as routine follow-ups & non-essential administrative tasks.
- Provide training in terms of managing psychological problems in patients.
- Timely access to personal protective equipment to reduce anxiety among HCW.
- Provide accommodation facilities to staff in order to temporarily isolate themselves from their family and reduce concerns around transmitting the virus.
- Supplies of basic provisions such as snacks, water, phone chargers and toiletries for staff

handle with stressors related to the COVID-19 crisis as listed in Table 3. A cross-sectional, online survey of clinicians (n >600) working at a medical center in New York City during April 2020 found that coping behaviors included physical activity/exercise (59%), psychotherapy (26%), yoga (25%), religious or spiritual practices (23%), meditation (23%), and virtual support groups (16%).

3. Elders

Elders are particularly vulnerable to COVID-19 due to weaker immune system, comorbid medical and mental health conditions such as cognitive decline/dementia. Providing information to elders in a clear, simple language about the disease and preventive strategies to contain the spread of virus would help them withstand the crisis. Family members can encourage elders who need to be isolated to use video calls and keep in touch.

4. General public

Certain strategies that can help to cope up include physical exercises (yoga/stretching), relaxation exercises like breathing, meditation and mindfulness, reading books/magazines, reducing time spent looking at fearful images on TV & listening to rumours, search information from reliable sources (decreasing the time spent in looking for information related to COVID-19 to 1-2 times per day rather than every hour). Healthcare professionals or media can play a role in counselling the public during the time of crisis. Spending more time with family and keeping in touch with friends through phone and social media platforms would also help.

5. Children

If children need to be isolated, then provide a healthy, safe and playful environment. Providing reassurance regularly to child is important. Engaging them in activities which will educate them about prevention strategies like hand washing, imaginary stories /pictures of viruses which they can colour in fun games. Apart from these, child-friendly videos, positive pep talks, etc. would help child to battle with mental health disturbances that may arise due to isolation.

Pharmacotherapy

Initially, efforts are made to manage the patients with education about COVID-19, reassurance, and support. In subjects with significant mental health disturbances, psychotropic drugs have to be considered in order to prevent deterioration of the condition

Table 4: Drugs for acute psychiatric conditions in patients with COVID-19^[2]

Condition	Recommended drugs
Delirium	Haloperidol 2.5-5 mg PRN Olanzapine 5-10 mg PRN
Acute psychosis/ mania	Risperidone 4-8 mg/day* Olanzapine 10-20 mg/day
Anxiety	For acute anxiety attacks Lorazepam 1-2 mg PRN Alprazolam/Clonazepam 0.25-0.5 mg OD/BD For long term treatment of anxiety disorders Escitalopram 10-20 mg
Depressive disorder	Escitalopram 10-20 mg/day Sertraline 50-100 mg/day
Insomnia	Lorazepam 1-2 mg PRN When benzodiazepine are contraindicated Zolpidem 2.5-5 mg PRN Amitriptyline 25 mg/day Trazadone 50 mg/day Quetiapine 25 mg/day

*Trihexyphenidyl may be added to prevent extrapyramidal symptoms PRN (pro re nata)- prescription is taken as needed.

& restore health. National Institute of Mental Health & Neuroscience (NIMHANS) in collaboration with Ministry of Health and Family Welfare, Government of India (MOHWF) has recommended drug therapy (Table 4) for acute psychiatric conditions in patients with COVID-19.

Conclusion

The coronavirus crisis has caught the world unprepared to deal with an infection of mammoth magnitude. It has adversely affected the health & well-being of the public & has negatively influenced their mental health. Based on observational studies, it is clear that the impact on mental health is being taken into consideration at multiple levels – in the general population, among healthcare workers, and in vulnerable populations. With the drastic increases in cases, stress, workload and uncertainty of the coronavirus crisis, a focus on mental health management is essential especially in people with moderate to severe effects that may need psychiatric support to deal with it. To conclude, early and timely interventions may stave off a mental health crisis.

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