

COVID-19 PANDEMIC AND MENTAL HEALTH ISSUES**P. Kumar¹, Shalini Malhotra², Nirmaljit Kaur³, Nandini Duggal⁴ and Manjeet Singh Bhatia^{5*}**^{2,3,4}Department of Microbiology, ABVIMS & Dr R.M.L. Hospital and Associated PGIMER, New Delhi -110001.
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ABSTRACT

In the past few years, two coronavirus epidemics have occurred, which are SARS-CoV and MERS-CoV. COVID-19 (Corona virus disease-2019) is a disease caused by novel Coronavirus i.e. SARS CoV2. It is called novel because this strain of corona virus does not match with the previously identified Coronavirus strains. On January 30, 2020 the outbreak was declared by the WHO as a Public Health Emergency of International Concern (PHEIC). Coronaviruses spread by coughing, sneezing and close personal contact (Human to human transmission). It can present as a mild illness, Pneumonia or Acute Respiratory Distress Syndrome (ARDS). It can cause psychological problems like fear or phobia, acute stress reaction, chronic stress, anxiety, depression and even precipitation of existing illnesses. The problems may also arise due to caregivers or family burden. Health workers may also suffer from chronic stress, depression or burnout. The psychosocial problems which are going to arise after pandemic is over will put a new challenge to mental health workers. The problems will be peculiar due to loss of job or unemployment, financial stresses, malnutrition, appearance of medical illnesses (like obesity, metabolic syndrome etc.), career related issues among students, isolation and quarantine.

KEYWORDS: Covid-19, Pandemic, Psychological sequelae, Challenges.**INTRODUCTION**

COVID-19 (Corona virus disease-2019) is a disease caused by novel Coronavirus i.e. SARS CoV2. It is called novel because this strain of corona virus does not match with the previously identified Coronavirus strains. The disease emerged from Wuhan, China and soon almost the whole world got affected by this virus and it turned out into a pandemic. Initially the disease was called as "pneumonia of unknown etiology." but after an intensive outbreak investigation of Chinese Center for Disease Control and Prevention (CDC) the etiology of this illness was identified as a novel virus belonging to the coronavirus (CoV) family. The disease caused by this new CoV is called as "COVID-19," which is the acronym of "coronavirus disease 2019" as announced by WHO on February 11, 2020. The new virus was initially called as 2019-nCoV and subsequently, the International Committee on Taxonomy of Viruses (ICTV) named it as SARS-CoV-2 virus because it is very similar to the SARS-CoVs.^[1]

In the past few years, two coronavirus epidemics have occurred, which are SARS-CoV and MERS-CoV. SARS-CoV epidemic begun from China and involved various countries with approximately 8000 cases and 800 deaths, and the MERS-CoV that began in Saudi Arabia and led to around 2,500 cases and 800 deaths and it still

occur over there as sporadic cases. But this new coronavirus seems to be highly contagious and it spread globally very quickly.^[1]

On January 30, 2020 the outbreak was declared by the WHO as a Public Health Emergency of International Concern (PHEIC). Various measures are being tried to control this pandemic out of which lockdown is an important step. Since it is a respiratory illness social distancing plays an important role in the containment of the disease.

However, all the factors for the prevention or containment of disease and the disease which is still evolving itself is having a major impact on the mental health of the people.

HISTORY

On 31 December 2019, the WHO China Country Office was informed of cases of pneumonia of unknown etiology detected in Wuhan City, Hubei Province of China. From 31 December 2019 through 3 January 2020, i.e. within 4 days, a total of 44 patients with pneumonia of unknown etiology were reported to WHO by the national authorities in China.^[2] During this reported period, the causal agent was not identified. WHO received further detailed information from the National

Health Commission China that the outbreak is associated with exposures in one seafood market in Wuhan City? The Chinese authorities identified a new type of coronavirus, which was isolated on 7 Jan and then on 12 January, China shared the genetic sequence of the novel coronavirus with other countries on the global platform for the development of specific diagnostic kits.

On 13 January the first imported case of novel coronavirus (2019-nCoV) from Wuhan, Hubei Province, China was reported in Thailand. Japan also reported an imported case of 2019-novel coronavirus (2019-nCoV) from Wuhan, Hubei Province, China, On 15 January. On 20 January 2020, Republic of Korea reported the first case of novel coronavirus from a patient who had also travelled to Wuhan.^[2]

In Wuhan, the first and the subsequent cases of the infected patients have been traced to the Huanan Wholesale Seafood Market, which had been shut down for disinfection. Apart from fish, the market also sold other live animals, including birds, rabbits and snakes -- sparking concerns that the virus might have been transmitted to humans from animals.

The United State confirmed the first case of 2019 Novel Coronavirus (2019-nCoV) in the state of Washington on 21st January and this patient had also recently returned from Wuhan. India also reported 3 cases of novel coronavirus in Kerala and all of them were students who had returned from China. Screening of the passengers

travelling from China was started at the airports of most of the countries. An additional landmark occurred in the United States on February 26, 2020, when the first case of the disease, not imported from China, was reported.^[1]

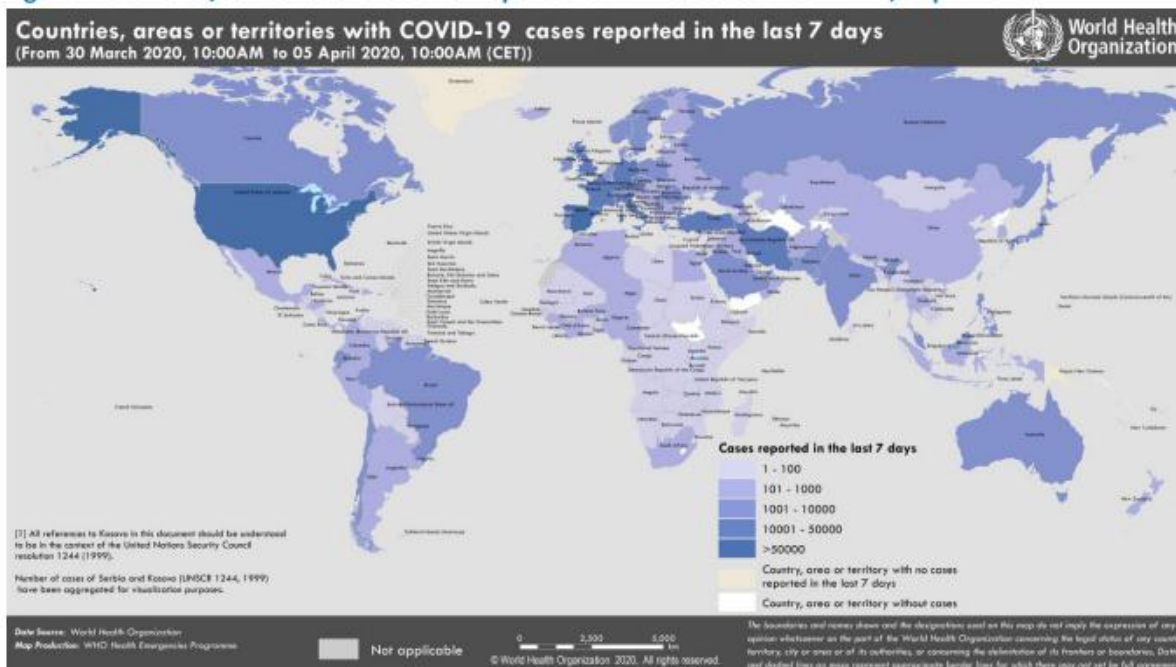
Subsequent to this, WHO declared it as a public health emergency of international concern. Despite the rigorous screening at the airport, the cases continued to increase rapidly worldwide and soon it became a pandemic.

EPIDEMIOLOGY

The epidemic of 2019 novel coronavirus started from Wuhan then expanded throughout the China and got exported to the other countries.

According to WHO latest report on 5th April, globally 1,33,758 confirmed cases and 62,784 deaths were reported. Amongst these, Western Pacific Region has 1,11,396 confirmed cases and 3,838 deaths, European Region has 6,21,407 confirmed cases and 46,416 deaths, South-East Asia Region has 7,816 confirmed cases and 302 deaths, Eastern Mediterranean Region has 70,293 confirmed cases and 3,794 deaths, Region of the Americas has 3,15,714 confirmed cases and 8187 deaths, and African Region has 6,420 confirmed cases or 236 deaths. Amongst these, the most drastically affected countries^[3] are Western Pacific Region China, Spain and Italy in European Region, India in South-East Asia Region, Iran in Eastern Mediterranean Region and New York in USA. It is being regularly updated by World Health Organization.^[2,3]

Figure 1. Countries, territories or areas with reported confirmed cases of COVID-19, 5 April 2020



CLASSIFICATION

Coronaviruses (CoVs) belong to the subfamily Orthocoronavirinae in the family Coronaviridae and the order Nidovirales. CoVs have an enveloped, crown-like

viral particle from which they were named after. The CoV genome is a positive-sense, single-strand RNA (+ssRNA), 27–32 kb in size, which is the second largest of all RNA virus genomes. Typically, two thirds of the

genomic RNA encodes for two large overlapping polyproteins, ORF1a and ORF1b, that are processed into the viral polymerase (RdRp) and other non-structural proteins involved in RNA synthesis or host response modulation. The other third of the genome encodes for four structural proteins (spike (S), envelope (E), membrane (M), and nucleocapsid (N)) and other accessory proteins. While the ORF1a/ORF1b and the four structural proteins are relatively consistent, the length of the CoV genome is largely dependent on the number and size of accessory proteins.^[3] There are:

Two subfamilies: Coronavirinae and Torovirinae

Subfamily Coronavirinae: **Genera**

- Alphacoronavirus – including HCoV-229E and NL63 (New Heaven Coronaviruses)
- Betacoronavirus- including SARS-CoV, MERS-CoV, **SARS-CoV-2**, OC43(Organ culture), and HKU-1
- Gammacoronavirus
- Deltacoronavirus

MORPHOLOGY

Coronavirus is an enveloped, approx. 30 kilobases in length, positive sense, single stranded RNA Virus.^[4,5] The prominent feature of coronaviruses is the presence of club-shape spikes on the surface of the virion. These spikes are a unique feature of this virus and gives the appearance of a solar corona to the virus and hence the name coronaviruses.^[4]

MODE OF TRANSMISSION

Coronaviruses spread by coughing, sneezing and close personal contact (Human to human transmission). The virus is known to be zoonotic in origin. SARS-CoV was transmitted from civet cats to humans and MERS-CoV from camels to humans. Several known coronaviruses are circulating in animals that have not yet infected humans. Initially for the CoVID-19 disease, animal-to-human transmission was presumed as the main mechanism of transmission because the first few cases of the disease were linked to the direct exposure to the Huanan Seafood Wholesale Market of Wuhan, China. But the subsequent cases were not linked to the Huanan Seafood market and hence it was concluded that the virus also has human-to-human transmission and the symptomatic people act as the source of COVID-19 infection. The possibility of transmission before development of the symptoms seems to be infrequent, but it cannot be excluded. However, there are data which suggest that asymptomatic individuals can also transmit the virus. Hence the use of isolation is the best way to contain the virus.^[1]

Similar to the other respiratory pathogens, transmission of SARS-CoV-2 is believed to occur through respiratory droplets from coughing and sneezing. Aerosol transmission can also be possible in closed spaces.^[1]

PATHOPHYSIOLOGY

The virus initially causes mild flu like illness which is self-limiting but in complicated cases it can lead to severe pneumonia and can be fatal. The pathogenic mechanism that produces pneumonia is complex. Various clinical researches done on the virus show that the viral infection produces an excessive immune reaction in the host, which is known as 'cytokine storm'. The cytokine storm results in extensive tissue damage. Interleukin 6 (IL-6) is the main cytokine produced in this storm. IL-6 is produced by leukocytes and it acts on various cells and tissues. It promotes the differentiation of B lymphocytes and also stimulates the production of acute phase proteins and plays an important role in thermoregulation. IL-6 play an important role as a pro-inflammatory cytokine in the pathogenesis of COVID 19 disease. This promote the production of inflammatory exudate in the lungs and leads to the occurrence of pneumonia.^[1]

CLINICAL PRESENTATIONS

- Mild Illness - Patients usually present with symptoms of an upper respiratory tract infection, including mild fever, cough (dry), sore throat, nasal congestion, malaise, or headache. Diarrhoea is also seen in some cases.
- Pneumonia - Fever is associated with severe dyspnoea, respiratory distress, tachypnoea (> 30 breaths/min), and hypoxia. However, the fever can be moderate or even absent in some patients. Cyanosis can also occur in children.
- Acute Respiratory Distress Syndrome (ARDS)- This is suggestive of respiratory failure or worsening of respiratory illness. In some cases, the clinical scenario is suggestive of pulmonary edema of respiratory origin.
- Sepsis- Sepsis or multiorgan failure is also reported in COVID-19 disease.

DIAGNOSIS

Routine confirmation of cases of COVID-19 is based on the Nucleic Acid Amplification Technique (NAAT) such as real-time reverse-transcription polymerase chain reaction (rRT-PCR) with confirmation by nucleic acid sequencing when necessary. The viral genes targeted include the N, E, S and RdRP genes. Recently Rapid Diagnostic Test kits and ELISA have also been developed which is based on the detection of antibodies in the patient blood^[6] and are meant for studying the prevalence of COVID19 and diagnosis after first week of infection.

PSYCHOLOGICAL EFFECTS

Covid 19 pandemic is a stressful situation and this stress has different psychological effects on every individual. Pandemic situation creates fear and anxiety in the general population. For the containment of COVID 19 disease, government of several countries proposed lockdown and social distancing, which can adversely affect the mental health of the people. This can lead to

depression, change in sleep and eating pattern and difficulty in concentration. COVID 19 also affects the mental health of affected, suspected or quarantined people and their family members. The psychological effects are not directly related to virus per say but are indirect effects of containment measures and the evolving viral pathogenesis leading to fear of unknown (since till date there is no proven treatment or prophylaxis).

Fear

Fear is an important emotion which is seen in most of the people especially in children and elderly population, during this COVID 19 pandemic. The elderly population are at more risk of fear because they have been identified as more vulnerable to COVID-19, and the mortality figures are also quite high for this age group worldwide. It can be extremely frightening and very fear-inducing in elderly people. Children are also at a risk of fear because of the schools getting closed and now they have less opportunity to meet their friends and get the social support which is essential for their good mental health. Not all children and teens respond to stress in the same way.

Some common manifestations of fear in children

- Excessive crying or irritation in younger children
- Returning to behaviors they have outgrown (for example, toileting accidents or bedwetting)
- Excessive worry or sadness
- Unhealthy eating or sleeping habits
- Irritability and “acting out” behaviors in teens
- Poor school performance or avoiding school
- Difficulty with attention and concentration
- Avoidance of activities enjoyed in the past
- Unexplained headaches or body pain
- Use of alcohol, tobacco, or other drugs

Fear manifestations in people who have been released from quarantine

Being separated from ones near and dears can be stressful, even if you do feel sick. Every person feels and reacts differently after coming out of quarantine.

Some feelings include:

- Mixed emotions, including relief after quarantine
- Fear and worry about own health and the health of the loved ones
- Stress from the experience of monitoring yourself or being monitored by others for signs and symptoms of COVID-19
- Sadness, anger, or frustration because friends or loved ones have unfounded fears of contracting the disease from contact with yourself, even though you have been determined not to be contagious
- Guilt about not being able to perform normal work or parenting duties during quarantine
- Other emotional or mental health changes

Anxiety

The American Psychological Association (APA) defines the anxiety disorder as “having recurring intrusive thoughts or concerns.” It is an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure.

Anxiety can lead to distress but it is not always a medical issue. Anxiety can occur normally but sometimes the duration or severity of anxiety increases out of proportion to the original trigger that leads to the physical symptoms, like increased blood pressure and nausea. This response is considered as an anxiety disorder that requires medical attention.

It can occur along with the fear due to the constant sense of insecurity for oneself and loved ones. Anxiety is also seen in some people for their financial condition due to the loss in the lockdown situation. Anxiety disorder can interfere with daily function and it is normal in this COVID 19 pandemic situation^[7,8] Doctors or other Health care workers are anxious of getting the infection and transmitting it to their loved ones. They also get anxious over the social security of their parents and children. Society at times tries to outcaste them and make them vacate their rented accommodations. This gives rise to anxiety disorders.

Depression

Depression is a common mental condition which is defined as presence of depressed mood, loss of interest or pleasure in the activities previously joyful, decreased energy, feelings of guilt, disturbed sleep or appetite, and poor concentration. Moreover, depression often comes with symptoms of anxiety. These feelings can be chronic or recurrent and lead to the impairment of the individual's ability to take care of his daily responsibilities. In severe or worst condition, it can lead to suicide.^[9]

We can find this feeling of depression during COVID 19 pandemic specially in COVID19 affected or quarantined people. They are afraid of death and show lack of interest in the basic routine things. They are depressed and also have a feeling of guilt of transmitting the infection. It is seen that a few patients are trying to commit suicide also, which is really disturbing and worrisome.^[7]

Others

Psychological stress develops due to the growing panic, which is created by all forms of media. There is a phobia seen in the general population for going out of home. A social stigma is also seen in the society for the patient of COVID 19 and their family member.

Due to the lockdown people stay at their home and lack of physical exertion is seen amongst them which leads to the change in the sleep pattern or difficulty in sleeping which further enhances the stress. Due to the staying at the home, eating habits of the people also changed and

overeating is seen in most of the people which led to the worsening of their chronic health condition like Diabetes. It is seen that children are become more demanding and frustrated due to the closure of school, staying all the time at the home and lack of interaction with the friends.

The new psychological challenges are going to arise due to clinical factors i.e. exacerbation of existing illnesses (due to lack of follow up, discontinuation of medication, stresses, isolation, quarantine, precipitation of medical comorbidity etc.), caregivers' morbidity and burden and other psychosocial factors like loss of job, financial burden, career related issues and stigma. The health workers may face chronic stress, depression and burnout.

IMPORTANCE OF COUNSELLING

Every pandemic has an impact on the mental health of the health care worker or the general population so the early sensitisation of health experts to the psychological effects of a pandemic and the mental health needs of the quarantined people is necessary.^[10] In China, online counselling sessions are provided to the healthcare staff as well as to the isolated people during the initial COVID-19 outbreak and it has a good impact on the mental health of these people.^[11,12]

The steps which are needed for the better mental health of isolated or quarantined people are – daily digital communication with their closed ones, group counselling, fulfilling the individual's dietary needs, comfort and hygiene, continuation of job-related activities and updates on the outbreak condition. Weekly supportive psychotherapy sessions were ensured for the healthy living. All these things preserve the dignity of the isolated and quarantined people and it is found that the compliance to restrictive protocols is good among these people. We often see people deny isolation or abscond from the isolation in the absence of such care giving. Hence counselling is a good solution for all the mental health illness growing due to the COVID 19 pandemic.^[12]

People with pre-existing mental health conditions should continue with their treatment and be aware of new or worsening symptoms.

General Remedial Measures

- Taking breaks from watching, reading, or listening to news stories, including social media.
- Taking care of one's own body by taking deep breaths, stretching, yoga or meditation are good options to relax and calm one's mind.
- Doing some activities which are enjoyable.
- Connecting with others. Talking with people you feel comfortable like friends and relatives.
- Eating healthy, well-balanced meals, exercising regularly, taking plenty of sleep, and avoiding alcohol.
- Do not trust rumours

Sharing the facts about COVID-19 and understanding the actual risk to yourself and people you care about can make an outbreak less stressful.

When you share accurate information about COVID-19 you can help make people feel less stressed and allow you to connect with them.

Remedies for children^[13]

Children and teens react, in part, on what they see from the adults around them. When parents and caregivers deal with the COVID-19 calmly and confidently, they can provide the best support for their children. Parents can be more reassuring to others around them, especially children, if they are better prepared.

- Take time to talk with your child or teen about the COVID-19 outbreak. Answer questions and share facts about COVID-19 in a way that your child or teen can understand.
- Reassure your child or teen that they are safe. Let them know it is ok if they feel upset. Share with them how you deal with your own stress so that they can learn how to cope from you.
- Limit your family's exposure to news coverage of the event, including social media. Children may misinterpret what they hear and can be frightened about something they do not understand.
- Try to keep up with regular routines. If schools are closed, create a schedule for learning activities and relaxing or fun activities.
- Be a role model. Take breaks, get plenty of sleep, exercise, and eat well. Connect with your friends and family members.

For responders

Responding to COVID19 can take an emotional toll on responders. There are things one can do to reduce stress reactions:

- Accept that Stress can impact anyone helping families after a traumatic event.
- Learn the symptoms including physical (fatigue, illness) and mental (fear, withdrawal, guilt).
- Allow time for you and your family to recover from responding to the pandemic.
- Prepare a menu of personal self-care activities that you enjoy, such as spending time with friends and family, exercising, or reading a book.
- Keep taking breaks from media coverage of COVID-19.
- Ask for help if you feel that COVID-19 is affecting your ability to care for your family and patients as you did before the outbreak.

Overcoming stigma^[14]

- Encourage the team and the administrative agencies to use the appropriate terminology
- Emphasize the effectiveness of prevention and treatment measures as well as early
- screening, testing and treatment.

- Correct misconceptions through clarifying common myths based on local culture.
- Spread the facts properly using social media and audio-visual aids.
- Prevent stigma towards health staff by family, community or society

CONCLUSION

SARS CoV2 is the novel corona virus which most probably originated from wild bats in Wuhan, China and transmitted to humans. The disease, COVID 19 is transmitted by droplet infections and direct contact with infected patient. There is no treatment for this infection till date and hence lockdown and quarantine are measures to prevent its spread. These measures do lead to mental illnesses like fear, depression, anxiety and other psychiatric manifestations and hence need to be handled carefully and counselling during and after the course of isolation/quarantine should be an important component of treatment/management of affected persons.

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