

The Pandemic of 21st Century: COVID – 19

Shruti Mishra¹, Sourya Acharya², Samarth Shukla³, Neema Acharya⁴

ABSTRACT

The novel coronavirus or COVID – 19 as it has been named has transformed into a pandemic ravaging the world. As the days pass, the number of cases seem to be increasing at an alarming rate and few regions have managed to escape the clutches of this deadly virus. With no visible cure being available at the moment, the healthcare sector of nations is working against the clock in the hunt of a solution to this puzzling problem. Belonging to family *Coronaviridae*, it is genetically most similar to the Severe Acute Respiratory Syndrome (SARS) virus but manifestation of symptoms in both the diseases is somewhat different. This portion of the article aims to elaborate the different methods employed for detection and testing of COVID.

This review deals with various statistics pertaining to the pandemic which have been reported and for whom, studies and research has been carried out with a string of predefined variables included. It involves an account of the number of cases reported, both in India and the World.

While the fight against the pandemic is far from over, with each day comes the hope, that our healthcare workers shall be able to find a resolution to this seemingly relentless problem.

Keywords: COVID-19, Corona Virus, SARS

INTRODUCTION

Three vague symptoms specifically dry cough, fever and fatigue can easily be mistaken for a common flu. However, as time progresses, the inclusion of shortness of breath, a fourth symptom, one, more severe and fatal than the remaining three is what serves as the distinguishing point between flu and its more deadly cousin, the novel coronavirus or COVID – 19. However, can the above listed signs and symptoms serve as a hallmark in identification? No. The reason being that those suffering from this disease have been known to showcase a broad spectrum of symptoms including, though not limited to runny nose, nasal congestion, diarrhoea and sore throat. In fact, certain patients whose only presenting complaint is diarrhoea have also been found to be positive for COVID. With each new case comes the possibility of emergence of newer symptoms like loss of taste or smell as well as skin rash accompanied by discolouration of fingers and toes. A fraction of the cases, despite no symptoms being observed, patients have tested as COVID positive.¹

Believed to have originated in the Huanan Seafood Wholesale Market, in the city of Wuhan, China COVID – 19 first started appearing in increasing numbers towards the end of December, 2019. However, studies have shown that the first known case might have been hospitalized as early as 12th December with symptoms appearing around the 1st of that month.² Furthermore, the person did not have any

particular connection to the wet market concerned. The World Health Organization was notified about the same on the 31st December and Chinese authorities claimed to have identified the virus in the 8th of January, 2020. On the 12th of January 2020, China released to the public, the genetic sequence of the virus. The seemingly exponential increase led to the city of Wuhan being completely isolated from the remaining mainland China for about as long as six weeks. The first case reported outside mainland China was in Thailand on 13th January. In India, the first case was reported on 30th January in the state of Kerala.

Coronaviruses are a category of viruses belonging to the family *Coronaviridae*. They are spherical in shape, and enveloped RNA viruses with the presence of club shaped peplomers (a type of glycoprotein) on the surface.³

The virus is further sub classified into four genera – Alphacoronavirus, Betacoronavirus, Gammacoronavirus and Deltacoronavirus. The alpha and beta genera are said to have descended for the genetic pool of bats. The virus which is responsible for causing COVID is the SARS – CoV – 2 which is a single stranded RNA virus and said to be a part of the B lineage of Betacoronavirus.

When it comes to the procedure carried out for the obtainment of samples which can then be sent for testing, nasopharyngeal and oropharyngeal swabs are taken. The swab stick is placed at an angle parallel to the palate and after withdrawing, should be placed in a container having transport medium.

Testing for COVID involves the standard technique of RT – PCR (Reverse Transcription Polymerase Chain Reaction) which is used for screening. The test helps in detection of the RNA present in the virus. The results of these tests can be obtained anytime between a couple of hours to a maximum of two days. Alternatively, serological tests can also be undertaken, with the aim of detecting the antibodies, IgG and IgM.

¹Student, Department of Medicine, ²Professor, Department of Medicine, ³Professor, Department of Pathology, ⁴Professor & Head, Department of OBGY, Datta Meghe Institute of Medical Sciences (Deemed to be University), Jawaharlal Nehru Medical College, Sawangi (Meghe), Wardha, Maharashtra, India

Corresponding author: Sourya Acharya, Professor, Dept. of Medicine, Datta Meghe Institute of Medical Sciences (Deemed to be University), Jawaharlal Nehru Medical College, Sawangi (Meghe), Wardha, Maharashtra, India

How to cite this article: Shruti Mishra, Sourya Acharya, Samarth Shukla, Neema Acharya. The pandemic of 21st century: COVID – 19. International Journal of Contemporary Medical Research 2020;7(6):F1-F3.

DOI: <http://dx.doi.org/10.21276/ijcmr.2020.7.6.26>



COMPARISON BETWEEN COVID -19, SARS AND MERS

COVID – 19 however, is different from its' previous counterparts–Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). While fatigue and shortness of breath prove to be two of the major symptoms of COVID, headache is considered to be one of the major symptoms of SARS. COVID is more easily transmitted as compared to the former diseases. Also noteworthy is the fact that despite having a greater number of cases than both SARS and MERS, COVID has a lower mortality rate. Despite this, when expounded the number of fatalities can be difficult to control.

TRANSMISSION

Initially believed to be zoonotic, with transmission of the virus being from animals to humans. This is not the first epidemic to have originated from a zoonotic source, being preceded by SARS and MERS.⁴ The animal in question was bats,⁵ with further studies suggesting Pangolin, a scaly anteater that is smuggled into China for its scales as well as meat. Reports also suggest that the virus may spread from humans to animals, with the case of a four year old tigress in the Bronx Zoo, New York.

The virus is now said to be transmitted from human to human, with respiratory droplets being the source of transmission and capable of being spread up to 6 feet. Transmission can also be further classified as sporadic, clusters and community transmission. According to the Indian Council of Medical Research (ICMR), the rate of transmission can be divided into 4 sub categories which are listed as follows –

1. Imported cases.
2. Local transmission
3. Community transmission
4. Epidemic

India is currently in the stage 2 of transmission with clusters being found in Delhi's Nizamuddin, Chennai's Koyambedu and Rajasthan's Bhilwara as notable examples.

TREATMENT

Another crucial point related to COVID-19 is the absence of any vaccine for the same. With regards to treatment, there are no particular medicines for treatment and prevention. Various countries are scrambling to produce a vaccine but none have proven to be completely sufficient in eradicating the virus. In the United States of America, vaccine trials on human volunteers in the age group of 18–55 years have been proposed to be conducted in two phases. Other countries like Germany have also begun conducting clinical trials for the same. In China, positive results have been noted upon testing of the vaccine on animal subjects and permission for phase 3 of the trials is yet to be granted. Countries like India and UK have multiple case studies and vaccine development trials underway. Patients who are currently battling the disease are provided with symptomatic treatment and those with shortness of breath are given oxygen therapy and put on ventilators, depending on the severity.

REVIEW FINDINGS

As the time of writing, a total of about 4.1 million cases have been confirmed ; with a total of over 282,000 deaths and 187 countries / regions have been reportedly affected. Currently leading with the most number of cases is the United States Of America with followed by Spain, Italy, United Kingdom, and Russia. These 5 countries account for a large proportion of the total number of cases. In India, over 61,000 cases have been discovered. These statistics however are subject to change as and when updated on a daily basis. Additionally, studies conducted have shown that the mean age of patients affected is between the 4th and 5th decade, with increasing number of patients and fatalities as the age increases.⁶ Alternative research has also shown most number of fatalities occurring in the sixth decade and above, as well as males being more severely affected than their female counterparts.⁷

The staggering statistics, as listed above coupled with its extensive geographical distribution has resulted in the WHO deeming the outbreak a Pandemic on the 11th of March 2020 ; as opposed to the previous PHEIC (Public Health Emergency of International Concern) stated on the 30th of January, 2020.

Country	Percentage of total cases reported
US	32.41%
Spain	5.46%
UK	5.37%
Italy	5.33%
Russia	5.11%

Table-1: List of countries with maximum number of COVID cases along with their percentage at the time when this review was made

COVID - 19 VS OTHER PANDEMICS AND THE 'ICEBERG PHENOMENON'

Despite not being the first pandemic to be witnessed by the world, with notable predecessors including the Black Death (1347 – 1353), Spanish Flu (1918 – 1920), HIV/AIDS Pandemic (increased throughout the 1990's and peaked at 2005 – 2006) and the most recent H1N1 Pandemic (2009 - 2010) ; what sets the COVID – 19 apart is the fact that a large number of people who may be carrying the pathogen may not even experience any symptoms. These asymptomatic carriers who greatly outweigh those exhibiting the symptoms is a classic example of the ' Iceberg Phenomenon'

The Iceberg Phenomenon uses an iceberg as an analogy to describe patterns followed by a disease with regards to spread. Just how the tip of the iceberg is the only part visible from afar, while the unseen portion of the iceberg is the real threat, those cases pertaining to a disease which are easily identifiable by virtue of manifestation of symptoms or the clinically apparent cases are seemingly negligible when compared to the vast number of cases waiting to be discovered or the latent, inapparent cases. The waterline between the two portions of iceberg represent the demarcation between the known as well as unknown cases.⁸

MEASURES UNDERTAKEN FOR PREVENTION

Dealing with a problem of such massive proportions requires prompt and efficient measures and one such measure greatly favoured by countries all over is Lockdown, either complete or partial. The pandemic has resulted in nearly a third of the entire world population living under lockdown.

India is currently underway a 21 day total lockdown which started from March 25th and will last till April 14th. All transport services have been suspended during the stipulated time period but essential services like hospitals, pharmacies, grocery stores and banks are open. On the 14th of April, the lockdown was further extended by 19 days and shall now be lifted on the 3rd of May. It has been further extended by two weeks and around 15 pairs of passenger trains shall begin operation starting May 12th.

Various other countries have also adopted a similar approach –

China locked down the city of Wuhan (epicentre of COVID – 19) for six weeks before progressing to 15 other cities including Shanghai.

Singapore is under a month long lockdown starting April 3rd till May 4th. It has now been further extended to 1st June.

United Kingdom was put under lockdown on March 24th, with the suggested time period of three weeks and first review regarding the same to be done on April 16th. On 16th April it was announced that lockdown would continue at least for 3 more weeks, and subsequent easing of restrictions on the lockdown, culminating with reopening of schools and shops on June 1st.

Belgium went under lockdown on March 17th. On March 22nd, the lockdown was extended till at least till April 19th. After several weeks of lockdown, an exit plan with three phases has been initiated, with the tentative date for phase 3 being 8th June.

New Zealand entered full lockdown for a month starting March 25th. Certain restrictions were eased as of April 27th, and an even greater relaxation of rules may be implemented post the cabinet meeting on 11th May.

CONCLUSION

With healthcare providers round the globe, working tirelessly day and night in an attempt to control the relentless attack of this pandemic, the least we can do, as responsible citizens is to observe the lockdown and practise social distancing along with practising good personal hygiene habits. In an age where social media reigns supreme and our lives revolve around knowing every aspect of each other, let us pledge to not fall prey to senseless rumours that take only seconds to circulate and cause pandemonium and support the true heroes, our healthcare workers. The least we can do for them is to stay indoors and not cause a further spike in the number of cases. It is time for us to unite as one, putting behind our previous differences and disagreements and working together to ensure that we overcome this pandemic before it threatens to endanger our very

existence.

REFERENCES

1. Gandhi M, Yokoe DS, Havlir DV. Asymptomatic transmission, the Achilles' heel of current strategies to control COVID-19. *N Engl J Med.* 2020;382:2158-2160.
2. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, Zhang L, Fan G, Xu J, Gu X, Cheng Z. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet.* 2020;395:497-506.
3. Baveja CP. *Textbook Of Microbiology*, 5th ed. Sirmour (Himachal Pradesh): Arya Publications; 2002.
4. Paules CI, Marston HD, Fauci AS. Coronavirus infections—more than just the common cold. *JAMA.* 2020 Feb 25;323:707-8.
5. Zhou P, Yang XL, Wang XG, Hu B, Zhang L, Zhang W, Si HR, Zhu Y, Li B, Huang CL, Chen HD. Discovery of a novel coronavirus associated with the recent pneumonia outbreak in humans and its potential bat origin. *BioRxiv preprint.* 2020 Jan 1.
6. Rodriguez-Morales AJ, Cardona-Ospina JA, Gutiérrez-Ocampo E, Villamizar-Peña R, Holguin-Rivera Y, Escalera-Antezana JP, Alvarado-Arnez LE, Bonilla-Aldana DK, Franco-Paredes C, Henao-Martinez AF, Paniz-Mondolfi A. Clinical, laboratory and imaging features of COVID-19: A systematic review and meta-analysis. *Travel Medicine and Infectious Disease.* 2020:101623.
7. do Nascimento B, Júnior I, Cacic N, Abdulazeem HM, von Groote TC, Jayarajah U, Weerasekara I, Esfahani MA, Civile VT, Marusic A, Jeronic A. Novel Coronavirus Infection (COVID-19) in Humans: A Scoping Review and Meta-Analysis. *Journal of Clinical Medicine.* 2020;9:941.
8. Park K. *Park's Textbook of Preventive and Social Medicine*, 21st ed. Jabalpur (Madhya Pradesh): Banarsidas Bhanot Publications ; 2005

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 12-05-2020; **Accepted:** 29-05-2020; **Published:** 25-06-2020