Ekta R Raut¹ and Archana R Raut²*  

¹Department of Chemistry, G H Raisoni College of Engineering, Nagpur, India; ²Department of Computer Science and Engineering, G.H. Raisoni College of Engineering, Nagpur, India

Abstract: Today, the entire world is facing a big medical calamity called COVID-19. It is caused by a member of the β group of coronaviruses named SARS-CoV-2. This virus spreads from person to person through droplets generated during coughing and sneezing from the human body. This outbreak was initially observed in Wuhan, China, and now it has spread from country to country. As per the data collected from Worldometer, about 210 countries and territories were affected by this disease. Globally, as of 25th August 2020, there have been 23,518,343 confirmed cases of COVID-19, including 810,492 deaths. The most affected countries include USA, Brazil, India, Russia and South Africa, having more than 6, 00,000 infected people as of 25th August 2020. This outbreak of coronavirus is increasing worldwide, and this situation not only prepares mankind for fighting today's challenge but is also preparing for such type of future outbreaks. This paper highlights the symptoms, preventive measures and future challenges of COVID-19 based on the data referred from the World Health Organization (WHO).

Keywords: Coronavirus, COVID, disease outbreaks, situation reports, syndrome, WHO.

1. INTRODUCTION

Coronaviruses are a huge family of viruses that can infect animals or humans. In the case of human beings, this virus directly attacks the lungs causing breathing difficulties, which can be a common cold at minor stages, and at severe stages, it causes diseases like Severe Acute Respiratory Syndrome, i.e., SARS, as well as Middle East Respiratory Syndrome, i.e., MERS. Recently observed coronavirus causes coronavirus disease called COVID-19. This virus was unfamiliar to all around the world till its occurrence detected in Wuhan city located in China, in late December 2019. In Wuhan, it originated from seafood wet market and the government announced shutdown on 31st December 2019 [1-3]. This invisible virus is spreading rapidly in the world [4]. According to WHO, as of 25th August 2020, globally, there have been 23,518,343 confirmed cases of COVID-19, including 810,492 deaths. Below is the comparative status of confirmed cases of COVID-19 in mainly affected regions in the world: Americas: 12,519,981, Europe: 4,016,133, South-East Asia: 3,666,425, Eastern Mediterranean: 1,840,077, Africa: 1,013,995 and Western Pacific: 460,991.

1.1. Impact of Various Diseases in India

India has faced various disease outbreaks earlier, but COVID-19 is found to be most disastrous. Coronavirus spread does not match with any of the earlier diseases and calamities. Initially, in India, in the 5th century BC, isolated cases of cholera-like illnesses were described by Sushruta Samhita.

Tuberculosis is exposed in India for thousands of years. As mentioned in Indian fiction since 1500 BCE, a few paragraphs are found stating about tuberculosis.

In the early 1900s, western India was hit by bubonic plague. In Bombay, in 1896, infected persons were recognized. From 1896 to 1914, about 8 million people were killed due to the bubonic plague in the west India zone. In the year 1918-19, “Spanish” infection was found to be the highly terrible epidemic in current history, with probably 50 million deaths.

In 1997-2006, 68 outbreaks of cholera had been observed across India. In which out of 2 lakh affected patients, about 823 deaths were recorded. Likewise, in the twentieth century, severe smallpox waves have been seen. In the year 1974, in the span of January to May, above 15,000 persons infected from smallpox were died. By this time, in India, about 60,000 smallpox cases were conveyed to WHO. On 23rd September 1994, about 1,061 cases and deaths of pneumonic plague were reported in Western India. Since 1998, the existence of Nipah Virus, known as NiV encephalitis, was described regularly in the region of Southeast Asia. In the span of 1998-2015, about 600 NiV infected human contagions were described [5].

1.2. Indian History of Disease Outbreaks

India has encountered several epidemics and pandemics throughout history. As reported in the WHO and other researches, Table 1 shows the disease outbreak in India.
Table 1. Indian history of disease outbreaks [18-20].

<table>
<thead>
<tr>
<th>Disease</th>
<th>Year</th>
<th>Virus Name</th>
<th>Affected State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholera</td>
<td>2001</td>
<td><em>Vibrio cholerae</em></td>
<td>Orissa &amp; Bangladesh</td>
</tr>
<tr>
<td>Plague</td>
<td>2002</td>
<td><em>Yersinia pestis</em></td>
<td>Himachal Pradesh</td>
</tr>
<tr>
<td>SARS-Severe Acute Respiratory syndrome</td>
<td>2003</td>
<td>SARS</td>
<td>Multi-country outbreak</td>
</tr>
<tr>
<td>Dengue Fever</td>
<td>2003</td>
<td>serotypes DEN-3 and 2</td>
<td>Delhi</td>
</tr>
<tr>
<td>Meningococcal disease</td>
<td>2005</td>
<td><em>Neisseria meningitidis</em> serogroup A</td>
<td>Delhi</td>
</tr>
<tr>
<td>Japanese Encephalitis (JE)</td>
<td>2005</td>
<td><em>Culex tritaeniorhynchus</em> and <em>Culex vishnui</em> group</td>
<td>Uttar Pradesh</td>
</tr>
<tr>
<td>Avian influenza</td>
<td>2006</td>
<td>H5N1 <em>avian influenza</em></td>
<td>Gujarat</td>
</tr>
<tr>
<td>Chikungunya</td>
<td>2006</td>
<td><em>Aedes aegypti</em></td>
<td>8-States Andhra Pradesh, Maharashtra, Delhi, Kerala, Tamil Nadu, Karnataka, MP, Andaman &amp; Nicobar</td>
</tr>
<tr>
<td>Zika Virus infection</td>
<td>2017</td>
<td>Zika Virus</td>
<td>Gujarat</td>
</tr>
<tr>
<td>Nipah Virus</td>
<td>2018</td>
<td>NiV</td>
<td>Kerala</td>
</tr>
<tr>
<td>COVID-19</td>
<td>2019</td>
<td><em>Corona Virus</em></td>
<td>Delhi, Mahara-shtra, Kerala and others</td>
</tr>
</tbody>
</table>

In earlier history, the worst forms of waves were tackled by India in the ancient days, but we endured many lethal waves. Spreading of coronavirus is improbable and is different as compared to those disasters that we have faced earlier. So, we have to keep all these things in mind to fight this outbreak of present calamity by following all the precautions to stop the spreading of coronavirus. We all must cooperate in building a healthy and prosperous nation.

In Table 1 the history of some prominent outbreaks in India is explained.

1.3. Symptoms of Coronavirus Disease

High fever, nasal congestion, throat infection, diarrhea, fatigue, cough, and difficulty in breathing [1].

1.4. How Does It Spread?

It spreads from person to person through the aerosol droplets generated from an infected person during sneezing and coughing. These released aerosols were spread on surfaces, metals, and objects. A person touching these surfaces definitely gets infected by COVID-19. It transmits through the air, as it can jump up to 13 meters. Hence, now the social distancing rules will change from 1 meter to 4 meters. Any person can be infected through breathing, if he comes in contact with a COVID-19 infected person within a 1-meter distance. It can also be spread if a person touches a surface which is contaminated, and without washing his hands properly, he touches his eyes, nose, or mouth. WHO is continuing the research and will update the new findings [1].

1.5. Protection

- Avoid social gathering.
- Maintain the social distance up to 4 meters.
- Wash your hands regularly with any soap for 20 sec.
- Use alcohol based hand sanitizer.
- Do not touch your eyes, mouth, and nose.
- If you are ill, then do not meet anyone.
- Share your travel history, if any, honestly with doctors or other officers.
- If you have a fever, breathing difficulties, then please seek medical advice or consult your doctor.
- Stay at home.
- If you have foreign travel history, then keep yourself home quarantine or self-surveillance for 14 days, though you do not have any symptoms of COVID-19.
- If you know anyone nearby your home travelled from any country, please inform on official helpline number +91-11-23978046 of Ministry of Health & Family Welfare which is available 24*7.
- Wear a mask while going outside [2].

1.6. Indian Situation Reports Data Given By WHO

1.6.1. Situation Report-1

1.6.1.1. Global Situation Update

Director General of WHO declared a Public Health Emergency of International Concern (PHEIC) on 30th Jan 2020. As of 31st Jan 2020, in China, 9720 cases were found confirmed and the deaths reported were 213. Nineteen countries, including India, reported the case of COVID-19.

1.6.1.2. Indian Situation Update

Ministry of Health and Family Welfare announced entry screening for fever and cough at 21 airports for those travelled from China. On 31st Jan 2020, new labs were functionalized, which include (1) NIV Bengaluru, (2) Victoria Hospital Campus, Bengaluru (3), AIIMS, New Delhi (4), NCDC, New Delhi (5) Kasturba Hospital for Infectious Diseases, Mumbai (6) NIV Kerala,(7) ICMR – NICED, Kolkata (8) GMC, Secunderabad (9) KGEMU, Lucknow (10) SMS, Jaipur (11) IGMC, Nagpur (12) KIPMER, Chennai [6].
1.6.2. Situation Report-2

1.6.2.1. Global Situation Update
As of 6th Feb 2020, total 28267 cases were confirmed with this disease and 565 deaths were reported.

1.6.2.2. Indian Situation Update
As of 6th Feb 2020, the Govt. of India asked travel advisories that if anybody is travelling from any foreign country should be home quarantined for 14 days. Furthermore, all e-visa facility was suspended and the existing visa was expired [7].

1.6.3. Situation Report-3

1.6.3.1. Global Situation Update
As of 13th Feb 2020, total 45177 cases were confirmed with this disease and 1369 deaths were reported.

1.6.3.2. Indian Situation Update
As of 13th Feb 2020, from Wuhan, 645 people were evacuated and quarantined for 14 days [8].

1.6.4. Situation Report 4

1.6.4.1. Global Situation Update
As of 21st Feb 2020, total 75748 cases were confirmed with the disease and 2121 deaths were reported.

1.6.4.2. Indian Situation Update
As of 21st Feb 2020, screening of passengers at airports, seaports and border crossing was performed. 397148 passengers were screened for COVID-19 from 3835 flights [9].

1.6.5. Situation Report 5

1.6.5.1. Global Situation Update
As of 28th Feb 2020, total 82294 cases were confirmed with the disease and 2747 deaths were reported.

1.6.5.2. Indian Situation Update
As of 28th Feb 2020, the Govt. of India evacuated 124 people from five countries, and 112 people from Wuhan were kept quarantined on Diamond Princes cruise at Yokohama [10].

1.6.6. Situation Report 6

1.6.6.1. Global Situation Update
As of 9th Mar 2020, total 109577 cases were confirmed with the disease and 3123 deaths were reported.

1.6.6.2. Indian Situation Update
As of 9th Mar 2020, the Council of Medical Research has identified 52 labs for testing COVID-19 [11].

1.6.7. Situation Report 7

1.6.7.1. Global Situation Update
On 14th Mar 2020, COVID was declared as a ‘Pandemic’ by WHO. Total 132758 cases were confirmed with the disease and 4955 deaths were reported.

1.6.7.2. Indian Situation Update
On 14th Mar 2020, COVID was declared as a ‘notified disaster’ by the GoI. All international passengers were asked to fill self-declaration form with screening [12].

1.6.8. Situation Report 8

1.6.8.1. Global Situation Update
As of 22nd Mar 2020, total 266073 cases were confirmed with the disease and 11184 deaths were reported.

1.6.8.2. Indian Situation Update
On 22nd Mar 2020, the Ministry of Pharma and consumer affairs notified the advisory to regulate the price of the mask, hand-sanitizers, and their availability [13].

1.6.9. Situation Report 9

1.6.9.1. Global Situation Update
As of 28th Mar 2020, total 462684 cases were confirmed with the disease and 20834 deaths were reported.

1.6.9.2. Indian Situation Update
As of 28th Mar 2020, under the Disaster Management act, Prime Minister declared 21 days lockdown from 25th March 2020. All incoming International flights were suspended till 14th April. Indian Railway issued “Force Majeure” from 22nd March to 14th April [14].

1.6.10. Situation Report 10

1.6.10.1. Global Situation Update
As of 5th April 2020, total 1051635 cases were confirmed with the disease and 56985 deaths were reported.

1.6.10.2. Indian Situation Update
On 2nd April 2020, the Indian Government launched ArogyaSetu App. MoHFW announced insurance of 90 days for health workers through ‘Pradhan Mantri Garib Kalyan Package’ [15].

1.6.11. Situation Report 11

1.6.11.1. Global Situation Update
As of 12th April 2020, total 1610909 cases were confirmed with the disease and 99690 deaths were reported.
1.6.11.2. Indian Situation Update

On 14th April 2020, Prime Minister announced the extended lockdown up to 3rd May 2020. Then it was again extended till 18th May 2020, looking towards the increasing COVID-19 cases [16].

At the end of April, Globally 3,090,445 confirmed cases were recorded with 71839 new confirmed cases and total 217,769 deaths were recorded, including 9797 new deaths. In the South-East Asia region, the highest confirmed cases were recorded in India. By WHO, as of 30th April 2020, in India, 33050 confirmed cases were recorded with 1718 new confirmed cases, and total 1074 deaths were recorded, including 67 new deaths [17-19].

In continuation with this, there were many reports released whose summary is given in Tables 2 and 3.

Table 2. COVID-19 Confirmed Cases and Deaths Globally.

<table>
<thead>
<tr>
<th>Date</th>
<th>Situation Report No</th>
<th>Globally Confirmed Cases</th>
<th>Globally Total Deaths</th>
<th>Reference No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>31-Jan-20</td>
<td>11</td>
<td>9826</td>
<td>0</td>
<td>[21]</td>
</tr>
<tr>
<td>29-Feb-20</td>
<td>40</td>
<td>85403</td>
<td>0</td>
<td>[22]</td>
</tr>
<tr>
<td>31-Mar-20</td>
<td>71</td>
<td>750890</td>
<td>36405</td>
<td></td>
</tr>
<tr>
<td>30-Apr-20</td>
<td>101</td>
<td>3090445</td>
<td>217769</td>
<td></td>
</tr>
<tr>
<td>31-May-20</td>
<td>132</td>
<td>5934936</td>
<td>367166</td>
<td>[25]</td>
</tr>
<tr>
<td>30-Jun-20</td>
<td>162</td>
<td>10185374</td>
<td>503862</td>
<td>[26]</td>
</tr>
<tr>
<td>31-Jul-20</td>
<td>193</td>
<td>17106007</td>
<td>668910</td>
<td>[27]</td>
</tr>
<tr>
<td>16-Aug-20</td>
<td>209</td>
<td>21294845</td>
<td>761779</td>
<td>[28]</td>
</tr>
</tbody>
</table>

Table 3. COVID-19 Confirmed Cases and Deaths in India.

<table>
<thead>
<tr>
<th>Date</th>
<th>Situation Report No</th>
<th>Indian Confirmed Cases</th>
<th>Indian Total Deaths</th>
<th>Reference No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>31-Jan-20</td>
<td>11</td>
<td>1</td>
<td>0</td>
<td>[21]</td>
</tr>
<tr>
<td>29-Feb-20</td>
<td>40</td>
<td>3</td>
<td>0</td>
<td>[22]</td>
</tr>
<tr>
<td>31-Mar-20</td>
<td>71</td>
<td>1071</td>
<td>29</td>
<td>[23]</td>
</tr>
<tr>
<td>30-Apr-20</td>
<td>101</td>
<td>33050</td>
<td>1074</td>
<td>[24]</td>
</tr>
<tr>
<td>31-May-20</td>
<td>132</td>
<td>182143</td>
<td>5164</td>
<td>[25]</td>
</tr>
<tr>
<td>30-Jun-20</td>
<td>162</td>
<td>566840</td>
<td>16893</td>
<td>[26]</td>
</tr>
<tr>
<td>31-Jul-20</td>
<td>193</td>
<td>1638870</td>
<td>35747</td>
<td>[27]</td>
</tr>
<tr>
<td>16-Aug-20</td>
<td>209</td>
<td>2589682</td>
<td>49980</td>
<td>[28]</td>
</tr>
</tbody>
</table>

Health Emergencies Programme by WHO connects the proficient and assets at three levels of offices, i.e., country level offices, regional level offices and headquarters. It helps State Members to construct the essential capabilities for prevention and recovery from all the risks that generate health disasters. In case if national capacities are speechless, then WHO works along with health ministries and partners in order to initiate and manage the responsibility of international health. In Fig. (1), COVID-19 cases and deaths till 31st July 2020 are shown.

Fig. (1). COVID-19 Cases and Deaths Analysis (Source: Worldometer-www.worldometers.info) [29]. (A higher resolution / colour version of this figure is available in the electronic copy of the article).

CONCLUSION

COVID-19 is the future challenge for all of us to prepare ourselves for such types of outbreaks. Keeping in mind all the earlier outbreaks in Indian history, we must fight this outbreak of present calamity by following all the precautions to stop the spreading of coronavirus. We all must cooperate in building a healthy and prosperous nation. In the future, if it happens, we must be ready to accept the challenge. We should appreciate ourselves for following the rules set by our government regarding stay home, stay safe. Furthermore, R & D is required for investigating the vaccine or medicine for COVID-19.

CONSENT FOR PUBLICATION

Not applicable.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

ACKNOWLEDGEMENTS

Declared none.

REFERENCES

A Review on Coronavirus Disease

Available from: https://www.who.int/news-room/q-a-detail/q-a--coronaviruses.


