
17. How India Tackles with an Epidemic: Covid-19

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Abstract:

Around 100 years ago in the year 1918, world faced the first pandemic situation caused by virus named Influenza, which was not even destroying the public health but also put a strong effect on the economy as well. Now in 20th century human antiquity is observing a very astonishing time by fighting with an invisible enemy known as novel COVID-19 coronavirus epidemic condition caused by a novel SARS-CoV-2 virus, identified in the year 2019 in China. Initially, it was observed in the local food market of Wuhan city, China and soon spreading across the World. COVID-19 virus having more than 80 % similarity to previously identified virus in 2002 named SARS (Severe Acute Respiratory Syndrome). COVID-19 having a very high transmission rate, which make it more deadly as compared to SARS and MERS, due to which it spreads very soon in every continent on earth, forcing us to live with this virus for perhaps a long time. As per the International Health Regulations (IHR) 2005, WHO declared a Public Health Emergency of International Concern (PHEIC) in order to alert all countries regarding COVID-19. However, now we are more equipped, but as on 27 April 2020, around 2.97 M confirmed cases with 206 K deaths and 863 K recovered cases have been reported which affects the social and economic values globally. This article aims to review the potential preventive measures taken by large populated Asian countries (India) that could reduce the viral transmission among the community in the present context of time.

Key words: SARS, COVID 19, Worldwide Scenario, Asian countries, Preventive measures, MERS

17.1 Introduction:

Around four centuries ago, humanity firstly encountered with a novel strain of virus named Influenza, caused widespread illness, deaths, and disruption globally. Word Influenza derived from latin words “Influentia”, and it belongs to family Orthomyxoviridae, having eight genomic segments together make around ten proteins and based on their strains it is classified into types A, B, and C [1,2]. Strain A, is the only pandemic and zoonotic in nature, having aquatic birds and swine are the reservoirs and responsible for the majority of morbidity and

mortality globally [3]. According to the Lancet report in year 2008, around 28,000 cases and 111,500 deaths of children of age less than five occurred globally caused due to Influenza infection [4]. As per the report of the United States Centre for Disease Control and Prevention, Influenza virus divided into its subtypes based on the surface antigenic and identified 18 H subtypes (hemagglutinin) and 11 N (neuraminidase) subtypes. Although, out of these only three sub types named H1, H2, and H3 are responsible for human to human transmission [5, 6]. The first pandemic was observed in 1729 (spring) in Russia [7], spreading across Europe within six months and globally in next three years. The second pandemic appeared in China [8] in 1781, spread through Russia and Europe affected mostly young adults [9]. Despite the high illness, and low mortality rate, pandemic outbreak in Russia killed about one million people globally in 1889 [10].

Around more than 50 % of the world population live in Asian countries, China is the world largest populous country followed by India having population around more than 130 crores, and faced so many pandemic situations since 1871 (Cholera), in 1896 (Bombay Plague), 1918 (Influenza), 1970 (Polio), 1974 (Small Pox), 2003 (Dengue and SARS), 2006 (Chikungunya), 2009 (H1N1 Flu), 2015 (Indian Swine Flu), 2020 (COVID-19) and several others have been recorded throughout history, in some case we succeed eradicate and some are still present [11]. Now a day's human race is facing a life threatening new pandemic disease caused by novel corona viruses named SARS-CoV-2, causing disease called COVID-19. On December 31, 2019 first case was reported to World Health Organization (WHO) office in China, with unexplained low respiratory tract infections.

After the intensive outbreak investigation program, Chinese Centre for Disease Control and Prevention (CDC), reported a novel virus belonging to the coronavirus (CoV) having *Coronaviridae* family and order *Nidovirales* [12]. In the beginning, the virus was named by the scientists as 2019-nCoV and later on the International Committee on Taxonomy of Viruses (ICTV) coined it as a SARS-CoV-2 virus because its symptoms being very similar to SARS. On 26 Feb 2020, first case of COVID-19 was reported in the United States, and informed that this infection was highly contagious and spreads quickly via human-to-human transmission [13]. The cases due to COVID-19 soon became prevalent wherein involving around more than 200 countries with 3.97 M cases and approximately 276 K deaths globally (table 17.1).

Table 17.1: Worldwide COVID-19 Cases Reported

Continents	Major victim counties	No of Cases	Deaths
Africa	Egypt, South Africa, Morocco, Algeria, Ghana	23,267	1,155
Asia	Turkey, china, Iran, India, Israel	391,644	15012
America	United states, Brazil, Canada, Peru, Chile	934,355	49605
Europe	Spain, Italy, Germany, United Kingdom, France	1,073,947	103,989
Oceania	Australia, New Zealand, Guam, French Polynesia, Fiji	7,981	91
Other	Japan	696	7

17.2 Novel Corona Virus, SARS-CoV-2:

After the investigation of around 137 genomes belongs to coronavirus strains, scientist reported that the current epidemic outbreak caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and extensively phylogenetic analysis of glycoprotein alignment and comparison sequences (spike) with different animals, researchers concluded that novel SARS-CoV-2 was more similar to the yak and bats beta coronavirus and suggested that yak could act as an intermediate host which brings this infection to humans. However, the genome of SARS-CoV-2 contains open reading frames (ORFs 1 & 2). These Open Reading Frames encodes the two polyproteins (S and N), responsible for virus genome maintenance after cleavage and interacts with ACE-2 receptors and gain entry in to the cell. Apart from this it also has set of spike glycoprotein, an envelope protein, membrane protein and nucleocapsid [14].

Literature reports stated that the novel corona virus has single strand RNA, crown-like appearance, having N S proteins, and has 80 % similar to SARS-CoV and 50 % identical to MERS-CoV, 90 % to bat-SL-CoVZC45 and 88 % of bat-SL-CoVZXC21. The most common symptoms of COVID-19 are fever, cough, myalgia or fatigue, pneumonia, loss of taste and complicated dyspnea, whereas less common are headache, diarrhea, hemoptysis, runny nose, and phlegm-producing cough. Although, mild symptoms were reported after 1 week and recovered soon, while severe symptoms like, respiratory failure (alveolar damage) which may lead to death especially in elderly and pre-existing disease patients [13]. After the reported of first case of Corona virus on 31 December 2019 in WHO Country Office China, it diffused across boundary and became a pandemic. As per WHO, till 07 May 2020, around with 3.97 M cases and approximately 276 K deaths worldwide were identified and reported. Currently, we are enough prominent equipped to curb the new pandemics as compared with previous encountered epidemics. However, it is well known facts that china is the host of the new pandemic situation and it also have the huge number of cases of COVID 19 than the rest of the world and the number of cases rising rapidly around the world and to overcome this World Health Organization (WHO) issued guidelines contains several preventive measures against COVID-19 through which countries have contained the outbreak with some success like South Korea and Taiwan.

17.3 How India Tackled Covid-19?

India has oldest civilizations, spanning a period of more than 4000 years, witnessing of the fusion of several customs and traditions and have the rich culture and heritage in the world. Apart from this, India has encountered many epidemics and pandemic situation such as Influenza, cholera, polio, dengue, smallpox etc.

There were 189,955 cholera deaths were reported in India and between 1905 and 1908, there was an average of about 526,000 deaths each year were recorded; nearly 150,000 deaths in the 1906 were reported in Kumbh Mela, Allahabad [15], India. In year 1918 a new pandemic situation was faced by Indiana named, around 20-50 million deaths were recorded worldwide, caused by the H1N1 strain of Influenza. In year 1970, a new health emergency occurred in India, named polio, which soon get spared all the cities; however, Uttar Pradesh was the most infected state. In 1964 and 1965, Bombay and Vellore received the vaccine against respectively [16] and in January 2011 India was declared polio-free country.

However, we have eradicated most of them and others are disappear with time. Currently India facing sudden and rapid outbreaks named COVID-19, which was originated from China, on November 2019. According to data obtained from Ministry Health Affair, govt of India and WHO database dashboard, the total number of confirmed [17] cases in India are 59662 (77 foreign nationals) in 32 states/union territories) and 1981 deaths from reported till 07 May 2020 from all over India. However, in Delhi around 6318 people and in Mumbai approximately 19063, although in India it infects younger people unlike others countries. First case of COVID-19 was reported by Indian Government on 30 January 2020 to a university students came from Wuhan, China in Kerala [17]. After words in consideration of consequences faced by the other countries prime minister of India firstly ordered public curfew on 22 March 2020 and declared 21 days lockdown on 24 March 2020 followed by a series of regulations against COVID-19 [18]. During the lockdown people were restricted to their home, all kinds of transport (water, air and road) were stopped with the exception of essential goods, fire, police and emergency services. All public gathering places, including temples, Market, schools, universities, industries, banks, etc. were closed except daily routine item shop like food shops, banks ATMs, petrol pumps etc. after observing the condition the prime minister of India discussed with state governments and other advisory committees, announced the extension of the national lockdown in India till 3rd May 2020. Apart from this Indian government also implemented, others preventive measures like staying at home, obey social distancing, avoid going outside unnecessary, wash hands with soaps or alcohol based sanitizers for at least 20 seconds after touching any thin unhygienic, avoid unnecessary touch and wearing protective masks when move in public etc.

17.4 Challenges in COVID-19 Scenario:

The major challenges of addressing the COVID-19 are briefly described as follows.

A limited number of test and treatment facilities: Diagnosis and treatment facilities of COVID-19 in developing countries are very limited and currently there is no effective treatment against COVID-19 available; hence testing is the only weapon by which we can tackle this highly contagious disease; ensured by isolation and quarantine of the person(s). However, lack of a sufficient number of ICU beds, ventilator machines, hospitals are also limited to us against COVID-19 outbreak.

Lack of safety equipment: COVID-19 infected large amount of population globally, for this equal number of health care professionals will required and their protection is another challenge which can be ensure by adequate supply of safety equipment but unfortunately, inadequate supply of PPE, masks, hand gloves to the health service providers, leading to major constraints in providing treatment facilities. A significant lack of safety equipment is fuelling the concern for frontline health service providers like doctors and nurses.

Lack of skilled human resources and health service provider: The use of real-time RT-PCR assay used for the diagnosis COVID-19 infection requires skilled persons to handle such sophisticated equipment and avoid contamination, false-negative results and risks of biological hazards etc.

Large number of vulnerable and disadvantaged people: It is another major challenges face by each country because special attention has to be paid to protect the vulnerable groups or individuals such as the elder people, day-laborers, patients with comorbidities etc.

The elder people are more susceptible because of their low immunity to fight against the disease and therefore, they need more intensive care-based treatment which would require an increased number of ventilators.

17.5 Conclusion:

Currently, humanities is under the grip of novel viral SARS-CoV-2 that causes coronavirus disease COVID-19 and worldwide researchers are working tirelessly for coming up with the prevention and therapeutic strategies against COVID-19 in order to protect the human race. Healthcare leaders around the world learned various lessons from past pandemic situations and make several strategies including early interventions, tracing of infected people, makes quarantines centers, and implement social distancing etc. together contributed significantly to control the spread the COVID-19 infection. Another common preventive measure taking by all countries and cities is clinical laboratory tests for SARS-CoV-2, which providing support to thousands of people to detect the earliest stages of the outbreaks in their communities. However, till date information has been gathered from the two-way communication network named Information Network for Epidemics (EPI-WIN) developed by WHO regarding transmission mechanisms and clinical spectrum, that is emphasizing the fact that social distancing and isolation are the best weapons in reducing the viral transmission among the community. Apart from this, unfortunately no clinical treatment available for this, and we only hope for the best, that at earliest we will recover from this deadly situation and rise again.

17.6 References:

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