

**HISTORICAL OUTBREAK OF COVID-19 IN INDIA: A MECHANISM BASED
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ABSTRACT

Corona virus is enveloped positive sense RNA virus belong to the Coronaviridae family and cause respiratory infection sneezing, coughing and cold including pneumonia. In Dec-2019, Wuhan, China, is a centre of a 2019-nCoV outbreak of unknown cause, in India first confirm case of novel corona virus reported 30Jan-2020. COVID-19 transmitted human to human or human to animal via close contact and airborne droplet infection. Prevention & managements of COVID-19, WHO give guidelines to avoid public place, maintain social distancing and close contacts to infected persons & pet animals. The International Federation Pharmaceutical emphasizing the crucial responsibility of community pharmacists can play major role in preventing the spreading of COVID-19.

KEYWORDS: 2019-nCoV, COVID-19, ACE-2, MERS-CoV, SARS-CoV.**INTRODUCTION**

Corona virus is positive sense enveloped RNA virus belong to the Coronaviridae family and largely distributed in humans & other mammals, mostly human corona virus infections are mild, epidemics of two beta-corona viruses are SARS-CoV (Severe Acute Respiratory Syndrome Corona Virus) and MERS-CoV (Middle East Respiratory Syndrome Corona Virus), it infected more than 10,000 cases in past two decades, with rates of mortality SARS-CoV 10% & other is 37% for MERS-CoV^[1, 2]. In SARS was identified as novel clinical entity in year 2003. SARS caused by unknown infectious agent & that transmitted from one human to another human. The SARS epidemic was started in Asian countries and most of cases found in China and other Asian Pacific region^[3]. In Dec- 2019, an unknown cause of pneumonia cases emerged in Wuhan ,China with clinical features greatly similar to viral pneumonia, the diagnosis of lower respiratory tract indicated a corona virus & it was named in 2019 novel corona virus (2019-nCoV) and 11-March 2020 reported that the pandemic by WHO^[1, 4, 5]. COVID-19 cases 199,309 or more have been reported in 18 March 2020 all over 167 countries with major outbreaks in China, mainland, Iran, and South Korea Europe , 7,994 peoples or more than have died and have recovered over 82,795 peoples^[6,7]. The main objective of this article is the history of the pandemic COVID-19 which has spread in today's time and what is the cause of them and what is the importance of pharmacists in our society in its treatment and how it helps us in protecting from this disease.

Epidemiology

In Dec-2019, Wuhan, China, is a centre of a pneumonia outbreak of unknown cause, which raises attention in not only China but internationally. Chinese scientists Jan-2020 had isolated a novel coronavirus (CoV) from patients in Wuhan. The Chaolin Huang & colleagues clinically reported to first patients admitted to reputed hospital in wuhan city were confirmed to infected patients of 2019-nCoV by Jan 2, 2020^[8]. On 22nd, Jan-2020, to be originated from wild bats and belong to Group-II of β -coronavirus that contains Severe Acute Respiratory Syndrome associated Coronavirus (SARS-CoV), although COVID-19 & SARS-CoV belong to the β -coronavirus sub-group, similarity at genome level is only 70%, and the novel group found to show genetic differences from SARS-CoV^[9,10]. According to the World Health Organization (WHO) situation report dashboard of 4Jun 2020, data on the COVID-19 outbreaks in India, from Jan 30 to 10:41am CEST, to 4June 2020, there have been 216,919 confirmed cases of COVID-19 with 6,075 deaths^[11].

Mode of Spreading

Community peoples get the novel corona virus COVID-19 infection through a close contact, airborne droplets & zoonotic transmission, a person who having symptoms of the virus includes sneezing, coughing, tiredness and fever etc. novel corona virus cell were replicated in ciliated epithelium that caused cellular damage at infection site. According to research carried out in 2019, Angiotensin converting enzyme-II (ACE-II), a membrane exopeptidase receptor used entry to human cells COVID-19. Corona virus transmission routes were represented in figure 1.^[12,13]

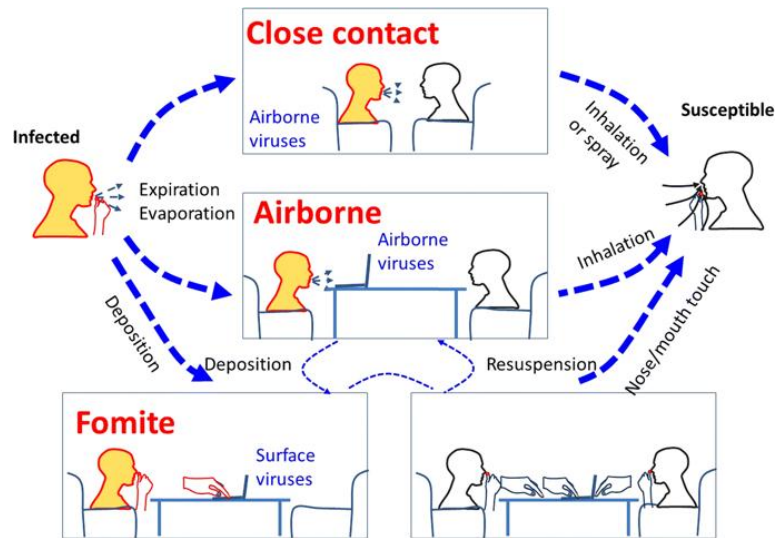
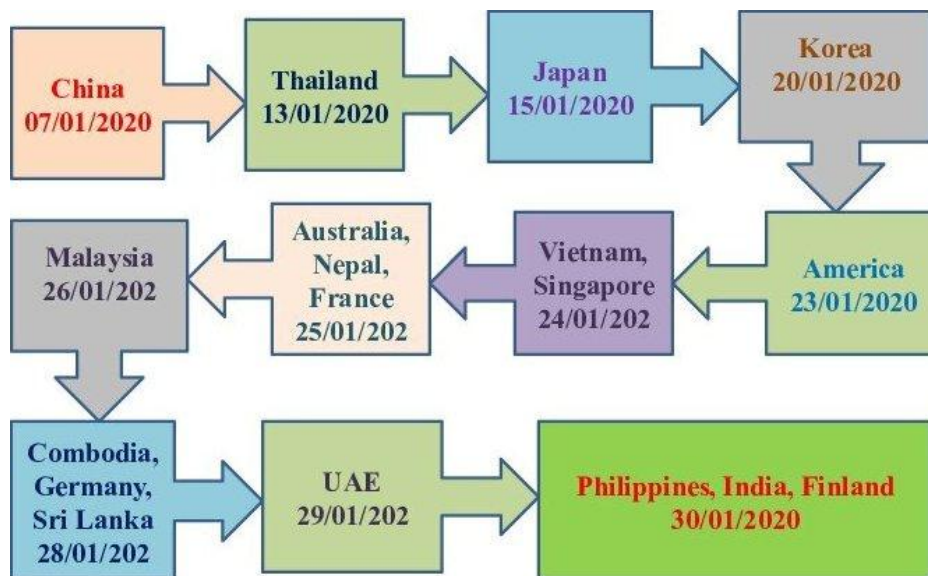


Fig. 1: Transmission of corona virus via airborne droplets, close contacts and fomites transfer.

Spreading History of 2019-nCoV in India

31 Dec. 2019, China, world most populated country was informed to headquarter of World Health Organization on the subject of unknown etiology pneumonia cases, 3Jan-2020 till detected 44 patients. On 7Jan-2020, Chinese research authorities were announced that they were isolated new virus from Wuhan city sea food market and named as 2019nCoV (Fig.2). On 13 Jan-2020 ministry of public health Thailand were reported 01 patient imported from Wuhan city, China. On 15Jan-2020, the ministry of health and welfare Japan were reported first case imported from Wuhan city China. On 20Jan-2020, national IHR focal point from the Korea was reported first case 2019-nCoV in Korea. On 23Jan-2020, United States of America were confirmed first case

of 2019-nCoV in America. On 24Jan-2020, Vietnam has reported first case of 2019-nCov without travel history from china, while his family member was traveler of china and it is the first incidence of corona virus transmission human to human. On 24Jan-2020, the government of Singapore was confirmed First case of 2019-nCoV. On 25Jan-2020, the government of Australia, federal democratic republic of Nepal and French republic were confirmed first of 2019-nCoV. Other countries also were detected and reported the cases of 2019- nCoV as on 26Jan.2020 (Malaysia), 27 Jan-2020 (Canada), 28Jan-2020 (Cambodia, Germany and Sri Lanka), 29Jan-2020 (United Arab Emirates), 30 Jan-2020 (Philippines, Finland and India).^[13]



“Fig. 2:” spreading history of novel corona virus (2019-nCoV) India.

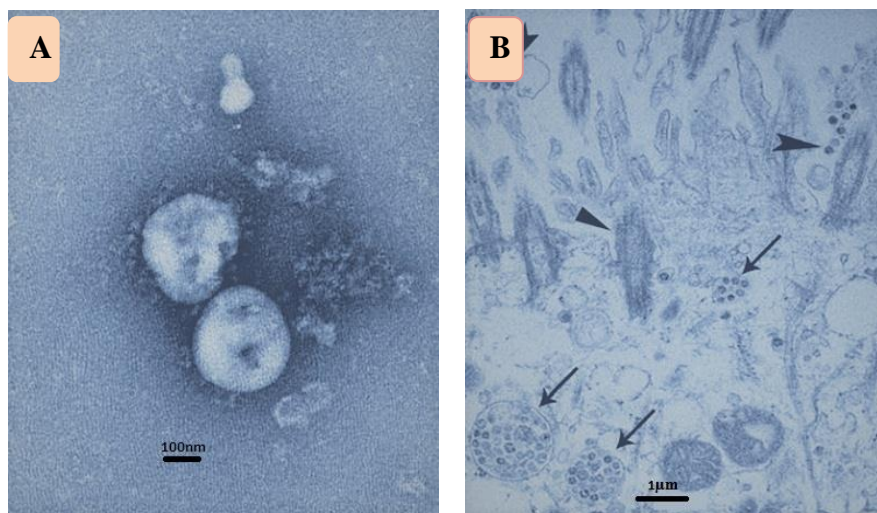
Detection and Visualization of a Novel Corona virus

Samples bronchoalveolar-lavage was collected from Wuhan city, China, Jinyintan Hospital on 30December-2019. No other specific pathogens (i.e. HCoV-NL63,

HCoV-229E, HCoV-HKU1 and HCoV-OC43) were identified in specimens from these Jinyintan Hospital patients by using the Respi-Finder-Smart-22kit. Novel corona virus was isolation was performed by using

infected patient airway epithelial cells & Huh-7 & Vero E6 cell-lines. Isolation of corona virus from bronchoalveolar-lavage Samples was named as 2019-nCoV. Novel corona virus 2019-nCoV–infected patient airway epithelial cells were examined by Transmission

Electron Microscopy. The micrographs of 2019-nCoV particles negative-stained were spherical in shape with a little pleomorphism (Fig. 3), and diameter about 60-140 nm. 2019-nCoV particles had spikes 9-12 nm & virions gave appearance of solar corona.^[14]



“Fig. 3:” Shown transmission electron microscopy of 2019-nCoV. A: Shown 2019-nCoV particles negative-stained. B: Shown infected patient airway epithelial cell ultra-thin sections 2019-nCoV particles. Arrow heads indicated that extracellular virus particle, arrows indicates virus components formed inclusion bodies and triangles indicates virus cilia.

Diagnosis of novel corona virus in plasma

Blood plasma sample each 80 μ L from the infected and suspected patients was collected & added into 240 μ L, Trizol LS (10296028; Thermo Fisher Scientific, Carlsbad, CA, USA) in the Bio-safety Level-III laboratory. The RNA extraction was performed by Direct-Zol RNA Mini-prep kit (R-2050, Zymo-research, CA, USA) as per the instructions of manufacturer’s and 50 μ L elution was obtained for each collected samples. The RT-PCR extracted 5 μ L RNA sample was used, which were targeting the NP gene by using Ag-PathID, RT-PCR Reagent (AM-1005, Thermo Fisher Scientific). The final reaction was mix 500 nM concentration of the primers & 200 nM was probe. Were performed RT-PCR by using the mention below conditions: 95°C To 3 min, 50°C To 15 min and 50 cycles of amplification at 60°C to 45 s & 95°C to 10 s. detection the infectious virus pathogen in the blood we are didn’t perform tests, we used the term RNAemia & avoid the term vira-emia. In RT-PCR of plasma sample RNA-aemia was a positive result.^[15]

Symptoms and Managements of COVID-19

COVID-19 Symptoms are cough, sneezing, sore throat, headache, fever & feeling of being unwell, which may appear in a few days to long as 14 days, after the virus exposure to human. The ailments of lower respiratory tract, such as bronchitis or pneumonia, may be sometimes caused by novel corona viruses. COVID-19 symptoms are often mild, with 20% of infections progressing to severe diseases, such as respiratory failure, pneumonia & in few cases death.^[16] According to the US, disease control & prevention centers, there is no

specific recommended treatments antiviral therapy for COVID-19 managements. Individuals who infected COVID-19 require special care to help overcome symptoms & those with infected severe disease may require medical care to support and maintain vital organ body functions.^[17] WHO have developed special recommendations for the reduction of virus exposure and transmission novel corona virus infections? The WHO recommended that, regular cleaning of hands, wear mask covering the mouth & nose with tissue paper while sneezing and coughing then immediately throwing the tissue paper away and regular washing hands 20sec., peoples need to avoid close direct contact with infected or suspected persons, seeking emergence medical care in case of dry cough & fever, travel history of past sharing with healthcare workers or providers, avoiding direct close unprotected contact with suspected animals & surface areas with current reported novel corona cases, avoid the consumption of undercooked or raw animal or its products and handling raw meat, animal organs or milk require special care to prevent cross-contamination of novel corona virus.^[16,18,19]

Who can play Key role in Prevention & Managements of COVID-19?

The Federation of International Pharmaceutical is emphasize the crucial role of Clinical pharmacists can play major role in preventing the spreading of COVID-19. Hospital pharmacists are voluntarily available at hospital pharmacies & accessible to the general population. Critical responsibilities of pharmacists it’s having appropriate medicinal life saving products in stock, controlling infection in hospitals, promoting

proper hand washing to prevent disease and providing patient care & supports. Hospital pharmacists are participated in the early prevention & early detection of certain types of new cases and suspected cases to the relevant healthcare authorities. General recommendations for managements of COVID-19 are revising frequently after findings clinical trials results & on the basis of research data. Clinical pharmacists should be well-known with the existing standards of viral infections treatments. Hospital pharmacists should be well-known with COVID-19 prevention, management's & treatment protocols for novel corona virus infections.^[16,20]

CONCLUSION

Peoples can get COVID-19 infection through via direct contacts a suspected that has symptoms of novel corona virus i.e. fever, coughing & sneezing. Novel corona virus was generally spreading through airborne zoonotic droplets. Symptoms of novel corona virus COVID-19 include sneezing, cough, fever, sore throat, headache and feeling of being unwell, which may appear in a few days to 14 days to the exposure of novel corona virus and diagnosis of novel corona virus real-time RT-PCR in blood plasma samples. According to the US, Centers of Disease Control & Prevention (CDC) and WHO, there is no specific recommended antiviral therapy for COVID-19. The WHO recommended that, regular cleaning of hands, wear mask covering the mouth & nose with tissue paper while sneezing and coughing then immediately throwing the tissue paper away and regular washing hands 20sec., peoples need to avoid close direct contact with infected or suspected persons, seeking emergence medical care in case of dry cough & fever, travel history of past sharing with healthcare workers or providers. Hospital pharmacists Critical responsibilities for COCID-19 spreading, it's having appropriate medicinal life saving products in stock, controlling infection in hospitals, promoting proper hand washing to prevent disease and providing patient care & supports. There is no proper treatments therapy available for COVID-19 only supportive therapy used. COVID-19 has emerged as a terrible epidemic in today's time. If mankind has to maintain its existence in this world, then it is very important to find effective medicines for prevention and control of COVID-19.

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