

Worldwide Novel Corona Virus Outbreak (COVID-19)

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Abstract: Novel Coronavirus Disease (COVID-19) is a highly infectious disease. The outbreak was first detected in Wuhan City, Hubei Province of China and become a pandemic due to its very high transmission rate. The current paper highlights the global scenario of coronavirus outbreak and the strategic objectives given by WHO for minimising its transmission. The objective of the study is to explore and extract the information originated from various studies on the infection outbreak, criteria of diagnosis, patients, clinical outcomes and fatality risk. The study leads to the conclusion that the various modes of transmission should be restricted to check the outbreak of the disease. Quarantization and isolation of the suspected and infected person is needed. Conclusions can be used as a component of the study on the preventive measures for prevention and cure from 2019-nCov infection.

Key Words: Coronavirus (COVID-19), Pandemic, Global Scenario.

1. INTRODUCTION:

Corona viruses (CoVs) are the largest group of viruses belonging to the *Nidovirales* order, which includes *Coronaviridae*, *Arteriviridae*, and *Roniviridae* families. The *Coronavirinae* comprise one of two subfamilies in the *Coronaviridae* family, with the other being the *Torovirinae*. The *Coronavirinae* are further subdivided into four groups, the alpha, beta, gamma and delta coronaviruses. The viruses were initially sorted into these groups based on serology but are now divided by phylogenetic clustering.

Genomic Organization: Coronaviruses contain a non-segmented, positive-sense RNA genome of ~30 kb. The genome contains a 5' cap structure along with a 3' poly (A) tail, allowing it to act as a mRNA for translation of the replicase polyproteins. The replicase gene encoding the nonstructural proteins (Nsps) occupies two-thirds of the genome, about 20 kb, as opposed to the structural and accessory proteins, which make up only about 10 kb of the viral genome. The 5' end of the genome contains a leader sequence and untranslated region (UTR) that contains multiple stem loop structures required for RNA replication and transcription. Additionally, at the beginning of each structural or accessory gene are transcriptional regulatory sequences (TRSs) that are required for expression of each of these genes (see section on RNA replication). The 3'UTR also contains RNA structures required for replication and synthesis of viral RNA. The organization of the coronavirus genome is 5'-leader-UTR-replicase-S (Spike)-E (Envelope)-M (Membrane)-N (Nucleocapsid)-3'UTR-poly (A) tail with accessory genes interspersed within the structural genes at the 3' end of the genome. The accessory proteins are almost exclusively non-essential for replication in tissue culture; however some have been shown to have important roles in viral pathogenesis [1].

2. OBSERVATIONS:

2.1 Event highlights from 31 December 2019 to 20 January 2020:

- On 31 December 2019, the WHO China Country Office was informed of cases of pneumonia unknown etiology (unknown cause) detected in Wuhan City, Hubei Province of China. From 31 December 2019 through 3 January 2020, a total of 44 case-patients with pneumonia of unknown etiology were reported to WHO by the national authorities in China. During this reported period, the causal agent was not identified.
- On 11 and 12 January 2020, 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 January 2020.
- On 12 January 2020, China shared the genetic sequence of the novel coronavirus for countries to use in developing specific diagnostic kits.
- On 13 January 2020, the Ministry of Public Health, Thailand reported the first imported case of lab-confirmed novel coronavirus (2019-nCoV) from Wuhan, Hubei Province, China.

- On 15 January 2020, the Ministry of Health, Labour and Welfare, Japan (MHLW) reported an imported case of laboratory-confirmed 2019-novel coronavirus (2019-nCoV) from Wuhan, Hubei Province, China.
- On 20 January 2020, National IHR Focal Point (NFP) for Republic of Korea reported the first case of novel coronavirus in the Republic of Korea.

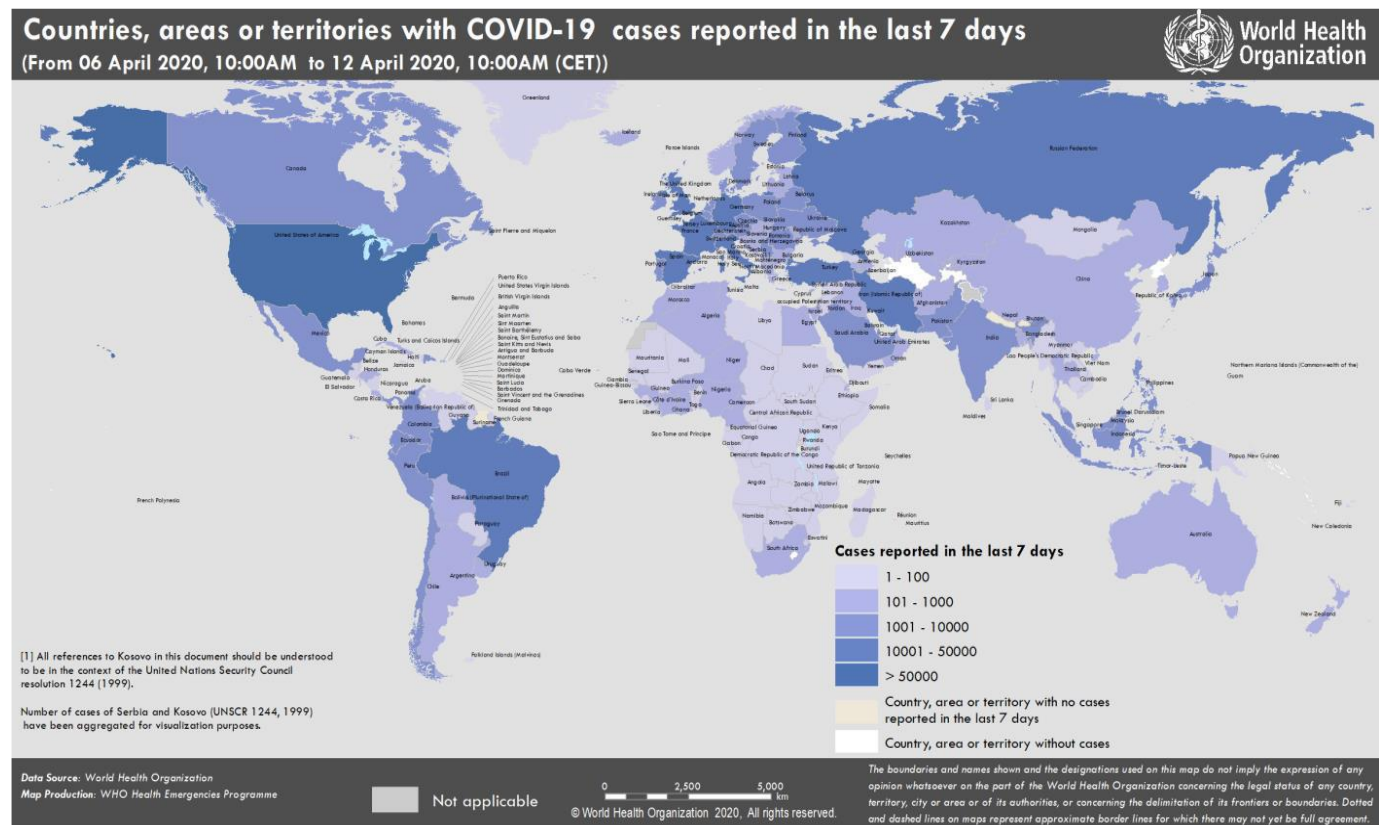
On 11 March 2020, WHO declared Novel Coronavirus Disease (COVID-19) outbreak as a pandemic and reiterated the call for countries to take immediate actions and scale up response to treat, detect and reduce transmission to save people’s lives.

According to World Health organization (WHO); globally around 1696588 individuals are affected by corona virus while death rate is 105952 individuals till 13 April 2020. Out of total six regions of glob (Western Pacific Region, European Region, South-East Asia Region, Eastern Mediterranean Region, Region of the Americas and African Region) European Region shows maximum affected individuals i.e., 880106 followed by Western Pacific Region (573940) (table 1). As per WHO report approximately 190 countries are affected by corona virus out of which USA rank 1st followed by Italy and Belgium placed at 10th position. In India total 7987 corona confirmed cases and 308 deaths were reported (<https://www.mohfw.gov.in/>) (Table 2).

Corona attack is very much lethal due to its rapid transmission. WHO classified transmission in three categories i.e., local transmission (58.60% of total global infection), Imported transmission (38.22% of total global infection) and third is under investigation category (3.18% of total global infection) Fig 1. As per its transmission this virus spread rapidly and number of infected individuals increases from 282 individuals (on 27 January 2020) to 1696588 individuals (on 13 April 2020) (Fig 2).

Table 1: Situation in Numbers of Individuals (WHO reports)

Situation	Globally	Western Pacific Region	European Region	South-East Asia Region	Eastern Mediterranean Region	Region of the Americas	African Region
Confirmed	1696588	880106	573940	120116	95945	16041	9728
Death	105952	74237	21531	4058	4943	728	444



Source Map: Coronavirus disease 2019 (COVID-19) Situation Report – 83 (WHO)

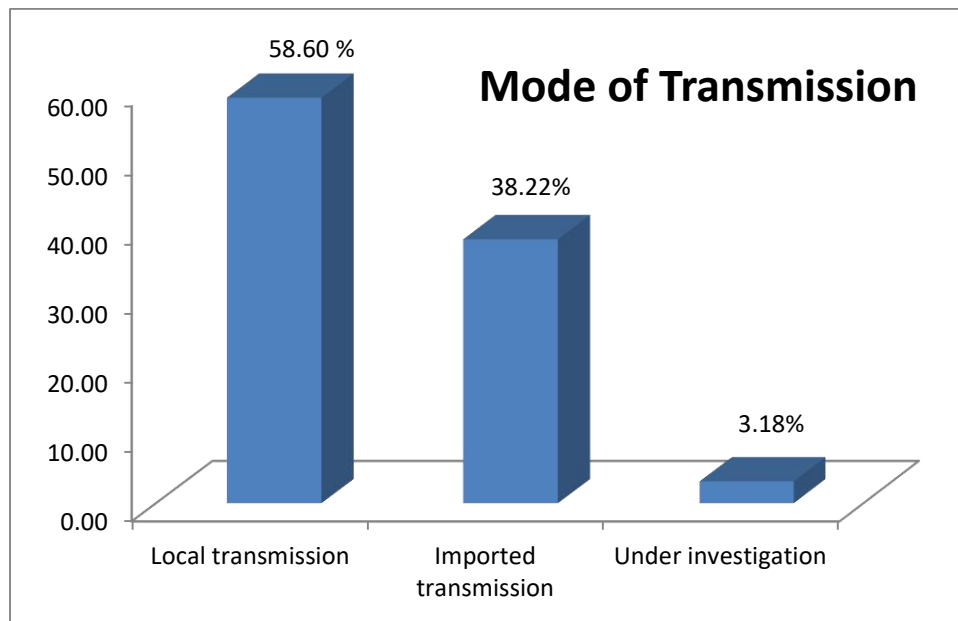


Fig 1: Mode of transmission of corona virus worldwide (Source WHO situation report)

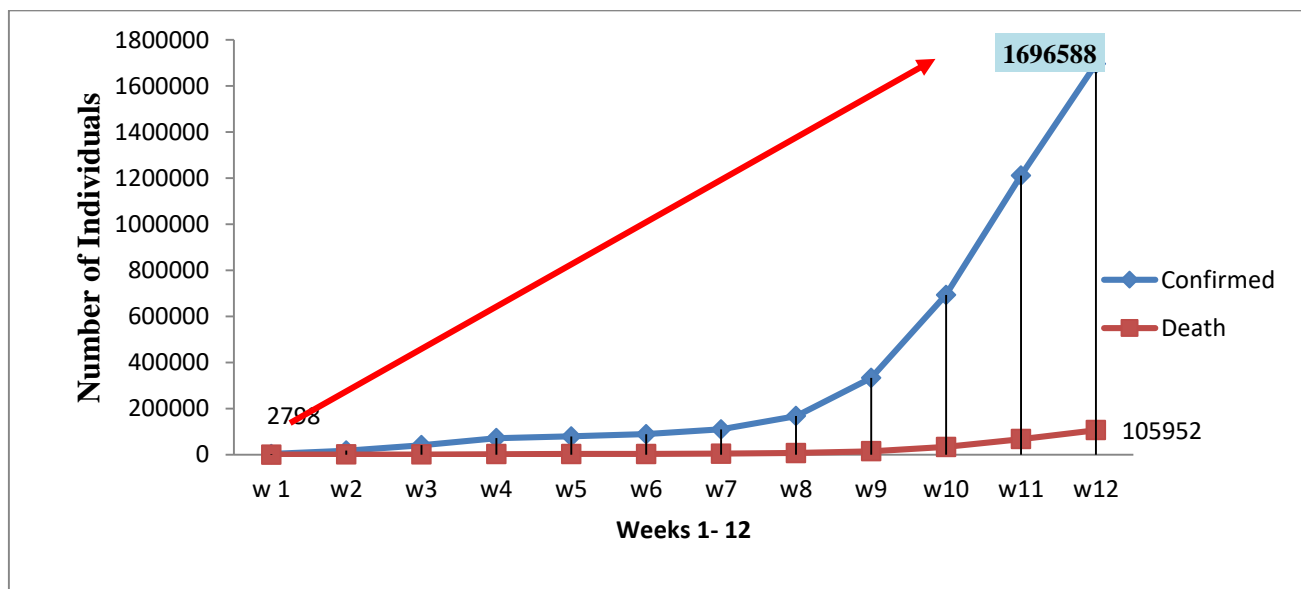


Fig 2: Corona virus cases recorded till 5 April 2020 by WHO (W = Week)
 Week 1 (27 January 2020) to 12 Week (13 April 2020)

Table 2: Top ten affected countries Till 12 week 2020

Rank	Country	Confirmed cases	Deaths
1	USA	492881	18516
2	Spain	161852	16253
3	Italy	152271	19470
4	Germany	120479	2673
5	France	92787	13814
6	China	83482	3349
7	United Kingdom	78995	9875
8	Iran	70029	4357
9	Turkey	52167	1101
10	Belgium	28018	3346

WHO Risk Assessment: "VERY HIGH" since 2020-02-29

3. CONCLUSION:

WHO's strategic objectives for this response are to:

- Interrupt human-to-human transmission including reducing secondary infections among close contacts and health care workers, preventing transmission amplification events, and preventing further international spread;
- Identify, isolate and care for patients early, including providing optimized care for infected patients;
- Identify and reduce transmission from the animal source;
- Address crucial unknowns regarding clinical severity, extent of transmission and infection, treatment options, and accelerate the development of diagnostics, therapeutics and vaccines;
- Communicate critical risk and event information to all communities and counter misinformation;
- Minimize social and economic impact through multi-sectoral partnerships.

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8. Coronavirus disease 24 February, 2020(COVID-19) Situation Report – 35 (WHO)
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10. Coronavirus disease 9 March, 2020 (COVID-19) Situation Report – 49(WHO)
11. Coronavirus disease 16 March, 2020 (COVID-19) Situation Report – 56 (WHO)
12. Coronavirus disease 23 March, 2020 (COVID-19) Situation Report – 63 (WHO)
13. Coronavirus disease 30 March, 2020 (COVID-19) Situation Report – 70 (WHO)
14. Coronavirus disease 6 April, 2020 (COVID-19) Situation Report – 77 (WHO)
15. Coronavirus disease 13 April, 2020 (COVID-19) Situation Report – 83 (WHO)