COMPARATIVE ANALYSIS - STATE

COVID 19 – Observations and speculations – A trend analysis

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Abstract

The pandemic of COVID 19 having spread to more than 200 countries across the globe it is time to rethink strategies to contain the spread of the disease. The virus being novel and the natural history still incompletely understood the world seems to be in hit with the panic button. Seeing no race, gender, social class the virus has affected both developed and developing countries alike. However, to understand if existing measures followed are going in the right direction, we need an understanding of the existing situation in countries across as well as our own. The study attempts to analyse the trend patterns around the world especially focusing on China, US, the neighbouring countries of India and then looks into the patterns of COVID 19 in India.

Keywords

COVID-19; Elderly; Death rate; Karnataka

Since the outbreak of COVID 19 in December 2019, the infection has spread across quite rampantly evolving into a pandemic and impacting communities across the globe. The disease was declared Public Health Emergency of International Concern (PHEIC) on 30 January 2020 and on 11th March 2020 as a pandemic by the WHO.(1,2)

The disease has spread across more than 200 countries and local transmission has been seen many of these countries.(3) As of April 8, 2020 cases reported around the globe are 13,17,130 and deaths reported being 74,304.(4) India has been ranked 17th among the countries with highest risk of importing COVID-19 via air travel. In India, as on 8th April, 2020 there are 4714 cases and 149 deaths reported.(5)

Though information on Corona is gathering up, it still remains limited to its symptomatology. Information with respect to its incubation period, Ro etc are restricted to calculated numbers based on data of cases taken till now. Based on evidences gathered by the WHO the disease transmission is restricted to droplet spread and may also spread through fomites around the infected person.(6)Although it has been noticed that COVID 19 is a highly transmissible disease the case fatality rate however appears to be lower than SARS and MERS i.e 9.5% and 34.4% respectively. (7,8)Research is under way to develop a vaccine against Covid-19.(9)Age distribution of the

disease from various reports shows a leaning towards older age group.(10)

It has been learnt through previous outbreaks of SARS and MERS that containment strategies also play an important role in getting the transmission to a level that will not overload the existing health care system.

Aims & Objectives

To analyse the trends of the disease around the world, in India and in Karnataka based on data available from government and websites of international organizations to understand the pattern of occurrence.

Material & Methods

Data has been gathered from various sources ranging from country statistics to world data. For the world statistics data from WHO reports has been collected for information since January, 2020.(10,11,) Data on the first 25 countries affected along with data on Pakistan, Afghanistan and Bangladesh was taken considering the countries to be India's neighbouring countries. For Country statistics, data has been taken from MOHFW website and Individual state websites have been searched since January 2020.(12-24) Data regarding number of new cases, cumulative cases, deaths, cumulative deaths for the world and data on Samples tested, positive samples at country level was taken based on availability of information from State websites. With respect to Karnataka state a detailed data regarding State profile of new cases, cumulative cases, deaths, district wise details, details on quarantine etc has been collected.(16)

Results

(Figure 1) shows distribution of the select countries in ascending order based on the total confirmed cases (as on April 7, 2020). The maximum number of cases have been reported in USA with 307318 cases followed by Spain (130753 cases), Italy (128948 cases), Germany (95391 cases) and China (83005 cases). These countries thus are the top 5 countries in terms of confirmed cases to date.

Trend of COVID 19 in selected countries:

China, being the first country to report COVID 19 cases. With a first case being reported in December 2019, there has been an increase in cases reaching up till 83,005 cases. Since the beginning of April 2020, the number of new cases being reported has gone down below 100. US with the highest number of cases has been seeing an addition of >25,000 cases per day into the pool of total cases since April 1st 2020 (Figure 2). It is also amongst the worst affected in terms of deaths due to the virus, highest deaths recorded in Itlay (15,899) followed by Spain (12,418), USA (8358), France (8,064), UK (4,934), Iran (3,603) and China (3,340).

Trend of COVID 19 in India

As seen in the figure 3, it is evident that next to China, India has the highest number of cases in comparison to Pakistan, Afghanistan, Sri Lanka, Bangladesh and Nepal in descending order. India had its first case reported on January 1st 2020 from Kerala. A rise in number of cases has been seen from the month of March, post which lockdowns were initiated across the entire country (Figure 3). Deaths due to COVID are seen to be slowly rising with a sudden increase seen since April.

Cases are being reported from almost all states of the nation. It has been noticed that Maharashtra has the highest number of cases, followed by Delhi, Tamil Nadu, Kerala and Andra Pradesh (figure 4) (as of April 7th 2020). The total cases reported in the country as per MOHFW (9th April) is 5865

Of the total cases as on 7th April 2020, in Karnataka, males accounted for 137 patients and females accounted for 47 patients. Age distribution as shown in (Figure 4) show that more than 60 years accounted for 18.02% of the affected. 60.9% belonged to 20-60 years of age and 2.15% belonged to less than 10 years of age. This finding shows that younger population were affected more while it is also necessary to understand that the age demographics in India consists more of reproductive age group than elderly individuals as compared to other countries.

From available data at specific states, the sample positivity calculated ranges between 2 % to 13% averaging around 4.7% (Table 1).

Speculation

Lot of speculation has been revolving around the doubling of cases once it reaches its 100th mark. Based on country reported cases from the WHO reports, China the first country to be affected with the virus, from its reported cases of 200 doubled its cases every 2 days to reach its 8000th mark in a span of just 1 month in January it currently stands at 83157 cases. In Japan however, interestingly though the 1st case was reported in January, the rise in cases has seen a different pattern and reached its current total cases of 4257 after a period of 3 months. They

put in place a strict containment and testing strategies. The trend of case rise in India is doubling over a period of 2 to 4 days average. South Korea though had its first case in January 21st, over the span of 2.5 months reached its current 10384 cases. South Korea is in the news for its strong public health strategy in place with extensive collaboration from governments, public health authorities for testing, tracing as well as precise documentation. The trend in South Korea points out that with such elaborate measures in place the spread of the disease can be contained without burdening the facilities for treating severe cases. No doubt that India too is following stringent measures for containment. As seen from trends, doubling of cases in India is in lines with South Korean statistics up until now. If we increase our testing rates and robust surveillance we may be able to see a sustained case load in the days to come.

Conclusion

The trend analysis shows that cases all over the world are increasing with the worst hit countries being US, Spain, Italy other than China. In China, according to reported cases there is a decrease seen in new cases occurring. In India, the case trend is showing an upward slope. However, the new cases detected are lower. This finding needs to be taken with caution as it also shows that testing for COVID 19 is happening at a slower pace. The tested individuals are those who have been symptomatic mostly. In order to get the actual numbers infected a thorough surveillance is the need of the hour, both active and passive. Finding the affected individuals in the community by testing and robust contact surveillance is the need of the hour as containment strategies work effectively if the surveillance works well hand in hand. It is also necessary to have a data system that incorporates all necessary information along with uniformity in data collected and reported across the nation as this remains crucial for future projections. It is also noticed that majority of the cases based on data from Karnataka point that the younger age group is affected more than the elders as is the case with other countries. This might also act as a positive factor in terms of development of herd immunity against the virus, thus also necessitating that elders and young children need to be protected on priority basis.

Limitation of the study

1. Major set-back for the study was non availability of uniform data across the country.
2. It is also important to note that the trends have been changing and the findings for the country have been analyzed during the stringent lockdown period. Hence it needs to be interpreted with caution.

Authors Contribution

All authors have contributed equally.

References

1. Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV) [Internet]. [cited 2020 Apr 5]. Available from https://www.who.int/news-room
2. WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020 [Internet]. [cited 2020 Apr 5]. Available from https://www.who.int/dg/speeches/detail
3. Event Horizon - COVID-19. Coronavirus COVID=19 Global Risk Assessment [Internet]. [cited 2020 Apr 5]. Available from: http://rocs.hu-berlin.de/ corona/#relative-import-risk,
4. Rolling updates on corona virus disease (COVID 19) [Internet]. [cited 2020 Apr 8]. Available from https://www.who.int/emergencies/diseases/novel-coronavirus-2019 COVID 19 India; latest updates [Internet]. [cited 2020 Apr 8]. Available from https://www.mohfw.gov.in/
5. Modes of transmission of virus causing COVID-19: Implications for IPC precaution recommendations; Scientific brief [Internet]. [cited 2020 Apr 7]. Available from https://www.who.int/news-room/
6. de Wit E, van Doremalen N, Falzarano D, Munster VJ. SARS and MERS: recent insights into emerging coronaviruses. Nat Rev Microbiol. 2016;14(8):523–534. doi:10.1038/nrmicro.2016.81
7. Fauci AS Lane HC Redfield RR. Covid-19—navigating the uncharted. N Engl J Med. 2020 N Engl J Med 2020; 382:1268-1269.DOI:10.1056/NEJMe2002387
8. DRAFT landscape of COVID-19 candidate vaccines — 18 February 2020. Geneva: World Health Organization[Internet]. [cited 2020 Apr 8] .Available from https://www.who.int/blueprint/priority-

diseases/key-action/list-of-candidate-vaccines-developed-against-ncov.pdf accessed on April 8, 2020
9. Kaiyuan Sun, Jenny Chen, Cecili Viboud. Early epidemiological analysis of the coronavirus disease 2019 outbreak based on crowdsourced data: a population-level observational study. THE LANCET Digital 2020; 2(4), PE201-E208
10. Novel Coronavirus (2019-nCoV) situation reports [Internet]. [cited 2020 Apr 8]. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports
11. 20200407-sitrep-78-covid-19.pdf [Internet]. [cited 2020 Apr 8]. Available from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200407-sitrep-78-covid-19.pdf?sfvrsn=bc43e1b_2
12. Media bulletin Novel Corona virus (covid 19).pdf [Internet]. [cited 2020 Apr 7] Available from https://karunadu.karnataka.gov.in/hfw/kannada/nCovDocs/Media-Bulletin-COVID19(english).pdf
13. Government of Maharashtra Public Health Department [Internet]. Arogya.maharashtra.gov.in. 2020 [cited 10 April 2020]. Available from: https://arogya.maharashtra.gov.in/1035/
14. COVID-19 Tracker | Gujarat [Internet]. Gujcovid19.gujarat.gov.in. 2020 [cited 9 April 2020]. Available from: https://gujcovid19.gujarat.gov.in/
15. Health Department [Internet]. Health.odisha.gov.in. 2020 [cited 9 April 2020]. Available from: https://health.odisha.gov.in/
16. covid-19 [Internet]. Karunadu.karnataka.gov.in. 2020 [cited 9 April 2020]. Available from: https://karunadu.karnataka.gov.in/hfw/kannada/Pages/covid-19.aspx
17. Department of Health, Medical and family welfare [Internet]. Covid 19 Andhra Pradesh. 2020 [cited 9 April 2020]. Available from: http://hmfw.ap.gov.in/covid_dashboard.aspx
18. Government of Madhya Pradesh (M.P.) [Internet]. Mp.gov.in. 2020 [cited 9 April 2020]. Available from: https://mp.gov.in/covid-dashboard
19. COVID-19 Dashboard [Internet]. Gis-prsc.punjab.gov.in. 2020 [cited 10 April 2020]. Available from: http://gis-prsc.punjab.gov.in/covid/
20. COVID 19 Kerala – dhs [Internet]. Dhs.kerala.gov.in. 2020 [cited 10 April 2020]. Available from: http://dhs.kerala.gov.in/public-health-2019-n-corona-virus/
21. Medical, Health & Family Welfare Department, Government of Rajasthan [Internet]. Rajswasthya.nic.in. 2020 [cited 10 April 2020]. Available from: http://www.rajswasthya.nic.in/
22. Indian Institute of health and family welfare [Internet]. Coronavirus (COVID19)-IIHFW. 2020 [cited 10 April 2020]. Available from: https://covid19.telangana.gov.in/
23. Home: Health Department, Haryana [Internet]. Haryanahealth.nic.in. 2020 [cited 10 April 2020]. Available from: http://haryanahealth.nic.in/
24. COVID 19 India [Internet]. Available from https://www.mohfw.gov.in/dashboard/index.php

Tables

TABLE 1 SAMPLES COLLECTED AND SAMPLES POSITIVE FROM VARIOUS STATES IN THE COUNTRY

State	Samples Collected	Samples Positive	% positive
Karnataka	7613	197	2.58%
Gujarat	6199	262	4.23%
Odisha	3249	48	1.47%
Andra Pradesh	6374	262	4.11%
Tamil Nadu	5305	690	13%
Delhi	6567	639	9.73%
Punjab	2384	79	3.31%
Rajastathan	19107	430	2.25%
Kerala	12710	259	2.03%
Haryana	2964	156	5.26%

Figures

FIGURE 1 SELECTED COUNTRIES WITH TOTAL COVID 19 CASES

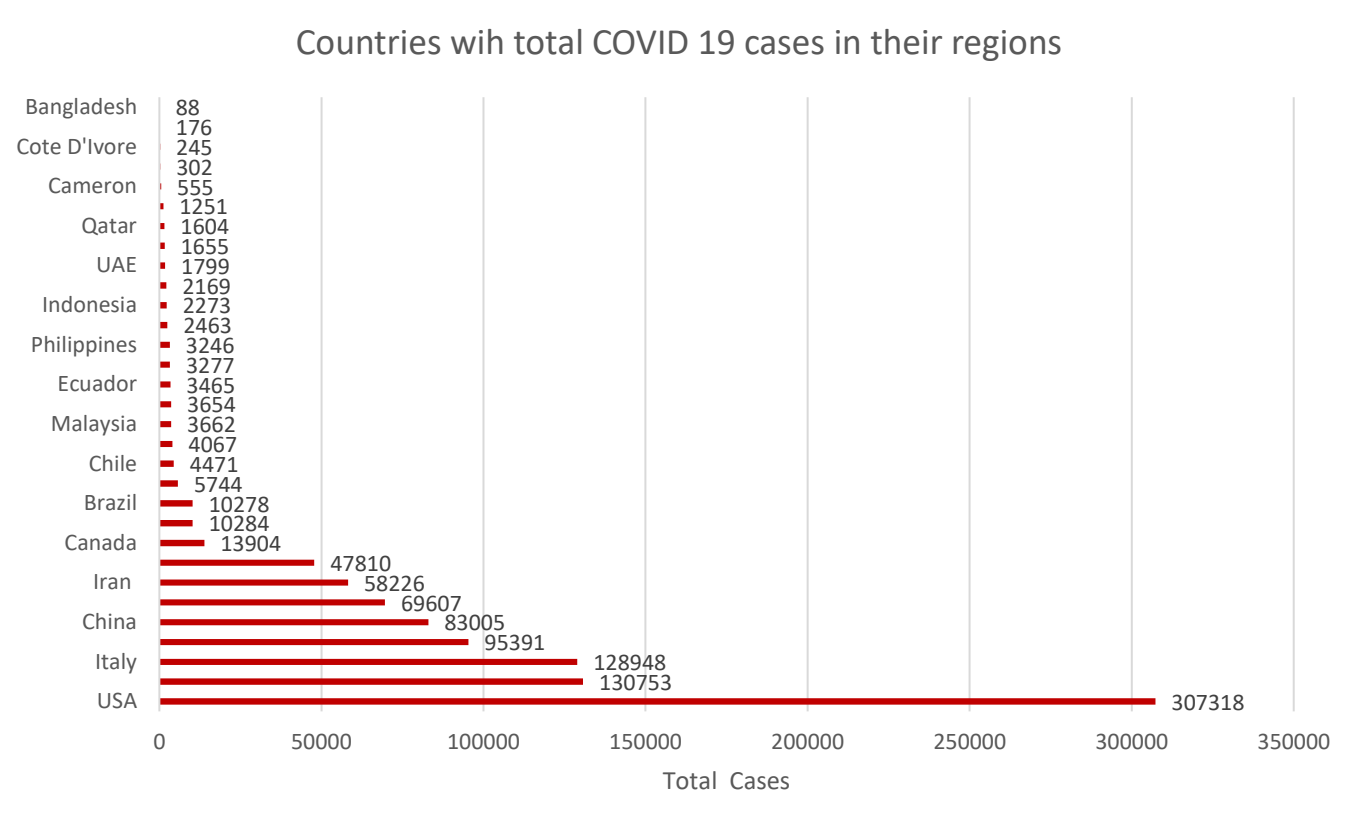

FIGURE 2 TREND OF CASES AND DEATHS DUE TO COVID 19 IN CHINA AND US

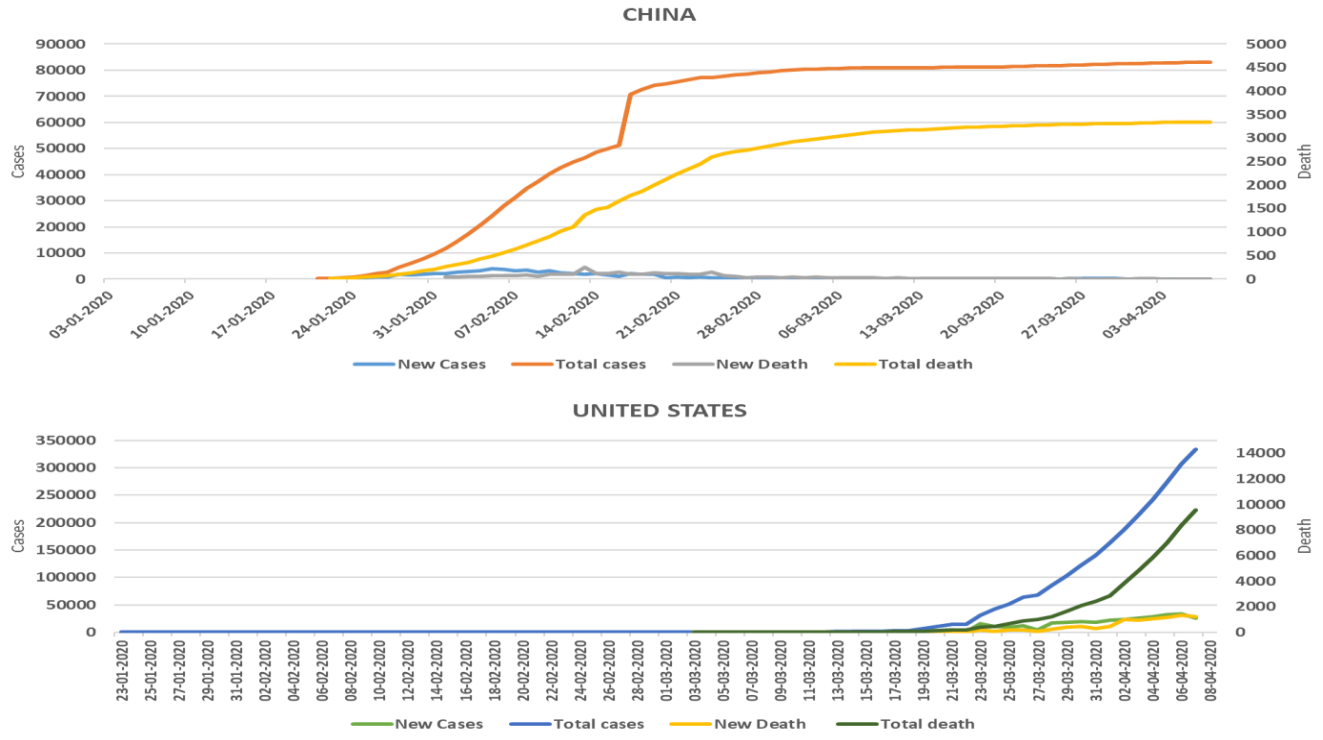

FIGURE 3 TREND OF COVID 19 IN NEIGHBORING COUNTRIES

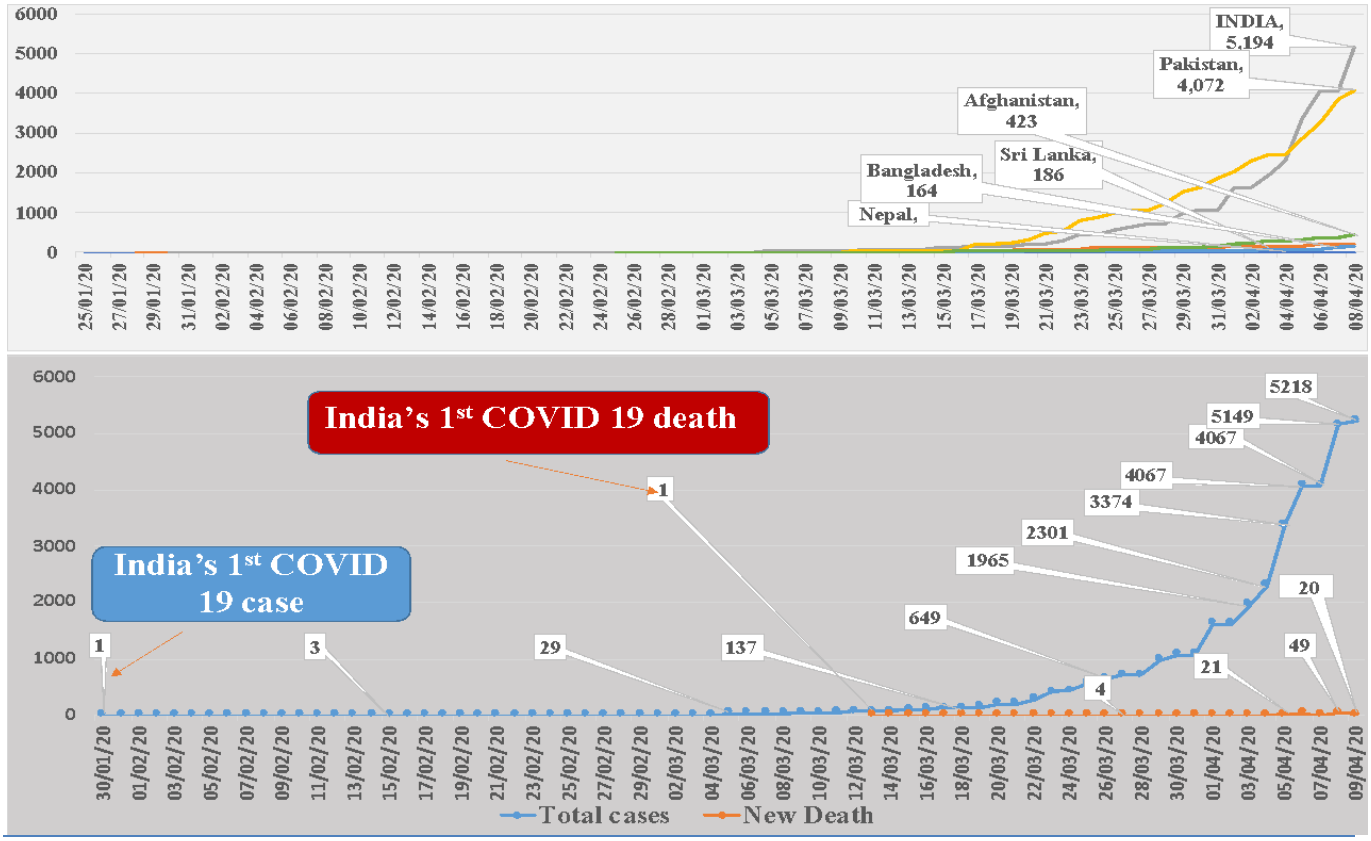

FIGURE 4 TRENDS OF COVID 19 ACROSS SPECIFIC STATES IN INDIA AND AGE DISTRIBUTION OF CASES IN KARNATAKA