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UNSTOPPABLE COVID 19: A COMPARATIVE STUDY ON TOP 13 AFFECTED COUNTRIES

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ABSTRACT

Aim of the present study to analysis comparative study of top 13 Covid-19 affected countries. The major parameters such as confirmed cases, deaths, and death rates per 1000 confirmed case were used. In the present time, United States has highest number of Covid-19 cases and deaths. Death rate in United States is 5.7% and the pattern of disease confirmed that rate may be increased. The death rate per 1000 confirmed cases are in Spain (102), Italy (136), France (143), Germany (39), United Kingdom (135), Turkey (26), Iran (64), China (56), Russia (10), Brazil (69), Belgium (157), Canada (57), India (32), and South Korea (23). In China, the death rate climbed up from 4.1 to 5.6% in the last two weeks but it is constant which showed the condition is in control. At present, no effective treatment of Covid-19 disease is available, and as a result death rate will increase in all the above listed Countries. More rapidly enhancement of disease cases will be observed in Germany, United Kingdom, Turkey, Iran and Russia as compared to other listed countries.

KEYWORDS: Covid-19, SARS, SARS-CoV-2, Coronavirus, hydroxycholoroquine.

INTRODUCTION

The COVID-19 disease is the most challenging disease in the world in present scenario. Many scientists are searching for an effective treatment for the control of Covid-19 disease. These Coronaviruses (CoVs) are named for the crown-like spikes on their surface and have enveloped positive-sense RNA viruses, which are characterized by club-like spikes that project from their surface.[1] The Coronaviruses (CoVs) belong to family Coronaviridae which is subdivided into four groups namely alpha, beta, gamma, and delta coronaviruses.[2] Human coronaviruses were first identified in the mid-1960s and the seven coronaviruses that

can infect people are: 229E (alpha coronavirus), NL63 (alpha coronavirus), OC43 (beta coronavirus), HKU1 (beta coronavirus), MERS-CoV (the beta coronavirus that causes Middle East Respiratory Syndrome, or MERS), SARS-CoV (the beta coronavirus that causes a severe acute respiratory syndrome, or SARS) and SARS-COV-2 (beta coronavirus related with COVID-19).[3]

WHO documented Covid-19 disease transmission into three types. Symptomatic transmission "a case who has developed signs and symptoms compatible with COVID-19 virus infection", Pre-symptomatic transmission "the incubation period for COVID-19, which is the time between exposure to the virus (becoming infected) and symptom onset is on average 5-6 days, however, can be up to 14 days" and Asymptomatic transmission "transmission of the virus from a person, who does not develop symptoms".[4]

On 6th march, WHO stated the role and need of masks during COVID-19 outbreak in which they mentioned that "If you are healthy, you do not need to wear a mask, unless you are taking care of a person with suspected COVID-19 infection".[5] Such a statement create doubt in mind "not to wear a mask if you are not infected" but symptoms of the disease may appear 2-14 days after exposure to the virus with symptoms such as Fever, Cough, Shortness of breath or difficulty breathing, Chills, Repeated shaking with chills, Muscle pain, Headache, Sore throat, New loss of taste or smell.[6]

Scientists are searching the proper treatment of dangerous Covid-19 disease but till date, no effective medicine has been developed for curing of disease. Countries are using hydroxychloroquine for the management of ill patients with COVID-19 disease.[7] French scientists had done trial of drugs on few Covid-19 patients and reported that hydroxychloroquine treatment is significantly associated with viral load reduction/disappearance in COVID-19 patients and its effect is reinforced by azithromycin.[8] Antiviral drugs for managing infections with human coronaviruses are not yet approved, posing a serious challenge to current global efforts aimed at containing the outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Remdesivir (RDV) is an investigational compound with a broad spectrum of antiviral activities against RNA viruses, including SARS-CoV and the Middle East respiratory syndrome (MERSCoV) and RDV is a nucleotide analog inhibitor of RNA-dependent RNA polymerases (RdRps).[9]

Australian scientist reported Ivermectin, an FDA-approved anti-parasitic previously shown to have broad-spectrum antiviral activity in vitro, is an inhibitor of the causative virus (SARS-CoV-2), with a single addition to Vero-hSLAM cells 2 h post-infection with SARS-CoV-2 able to effect ~5000-fold reduction in viral RNA at 48h.[10] Chinese health department recommended chloroquine phosphate tablet, 500mg twice per day for 10 days for patients diagnosed as mild, moderate and severe cases of novel coronavirus pneumonia and without contraindications to chloroquine.[11]

MATERIAL AND METHODS

Collection of data: COVID-19 confirmed cases and number of deaths are collected.[12] Top most 13 Covid-19 affected countries, India and South Korea selected for present study.

Parameters used in study: Three parameters such as COVID-19 confirmed cases, number of deaths, deaths rate per 1000 confirmed cases are used in present study.

Model study: Comparison of above said data from 20 March 2020 to 29 April 2020 is used for analysing the progress of disease and South Korea is used as control.

RESULTS AND DISCUSSION

In United States, the number of confirmed cases as well as deaths due to Covid-19 disease is gradually increased from Ist week of April 2020. After 5th April 2020, the death rate per 1000 confirmed case was jumped from 27 to 57 i.e. more than double and number of cases in the USA raised more than 300%. on 3rd week of March 2020, in Spain, the death rate per 1000 confirmed cases was nearly 51 but number of cases and deaths increased by 10.60 and 22.31 times respectively as compared data on 20th March 2020. Further, more than 7000 cases of Covid-19 between 27-04-2020 to 29-04-2020 which is an alarming condition. At present, Italy has 3rd highest Covid-19 confirmed cases in world and death rate per 1000 confirmed case was moving near to 134, and the number of deaths amplified 200% as compared to the starting of April, 2020. Number of deaths due to Covid -19 disease in France was speed up by 62 times as compared to 20 March 2020 and death rate per 1000 confirmed case was 143 (Table 1). Number of cases in Germany has crossed 160,000 confirmed cases and death rate per confirmed cases is 39 but pattern showed that upcoming days the number of deaths will increased rapidly. The third week of March 2020, few thousands of Covid-19 cases were observed in the United Kingdom and sharply increased by 48 times till 29-04-2020. In Turkey, Confirmed case and deaths were increased by 318 and 747 respectively as compared to third-week data. Death rate per 1000 confirmed cases in Turkey is 26 which may be

increased between the first and second week of May month. In Iran, a confirmed case of Covid-19 was increased 4 times as compared to the third week of March 2020 (Table 2).

Table 1: COVID-19 confirm cases, deaths and death rate in 1000 confirmed case in United States, Spain, Italy, France.

Date	United States			Spain			Italy			France		
	Cases	Deaths	R	Cases	Deaths	R	Cases	Deaths	R	Cases	Deaths	R
20/03/2020	16,067	219	14	20,412	1,041	51	41,035	3,405	83	10,995	372	34
25/03/2020	54,968	784	14	47,610	3,434	72	69,176	6,820	99	22,304	1,100	49
28/03/2020	116,057	1,937	17	72,248	5,812	80	92,472	10,023	108	32,964	1,995	61
31/03/2020	175,733	3,425	19	94,417	8,269	88	105,792	12,428	117	44,550	3,024	68
05/04/2020	311,637	8,454	27	130,759	12,418	95	124,632	15,362	123	89,953	7,560	84
10/04/2020	502,876	18,747	37	158,273	16,081	102	147,577	18,849	128	124,869	13,197	106
12/04/2020	533,115	20,580	39	166,019	16,972	102	152,271	19,468	128	129,654	13,832	107
14/04/2020	587,173	23,644	40	172,541	18,056	105	159,516	20,465	128	136,779	14,967	109
16/04/2020	645,922	28,640	44	182,816	19,130	105	165,155	21,645	131	147,863	17,167	116
19/04/2020	738,923	39,015	53	195,944	20,453	104	175,925	23,227	132	151,793	19,323	127
21/04/2020	792,938	42,518	54	204,178	21,282	104	181,228	24,114	133	155,383	20,265	130
23/04/2020	849,094	47,684	56	213,024	22,157	104	187,327	25,085	134	159,877	21,340	133
25/04/2020	925,758	52,217	56	219,764	22,524	102	192,994	25,969	135	159,828	22,245	139
27/04/2020	987,322	55,415	56	229,422	23,521	103	197,675	26,644	135	162,100	22,856	141
29/04/2020	1,036,417	59,284	57	236,899	24,275	102	201,505	27,359	136	165,911	23,660	143

R= death rate per 1000 confirmed cases

Table 2: COVID-19 confirm cases, deaths and death rate in 1000 confirmed case in Germany, United Kingdom, Turkey and Iran.

Date	Germany			United Kingdom			Turkey			Iran		
	Cases	Deaths	R	Cases	Deaths	R	Cases	Deaths	R	Cases	Deaths	R
20/03/2020	18,588	52	**3**	3,269	184	**56**	359	4	**11**	19,644	1,433	**73**
25/03/2020	34,009	172	**5**	8,077	422	**52**	1,872	44	**24**	27,017	2,077	**77**
28/03/2020	56,202	403	**7**	17,089	1,019	**60**	7,402	108	**15**	35,408	2,517	**71**
31/03/2020	68,180	682	**10**	25,150	1,789	**71**	10,827	168	**16**	44,605	2,898	**65**
05/04/2020	96,108	1,446	**15**	41,903	4,313	**103**	23,934	501	**21**	58,226	3,603	**62**
10/04/2020	122,171	2,736	**22**	73,758	8,958	**121**	47,029	1,006	**21**	68,192	4,232	**62**
12/04/2020	125,452	2,871	**23**	78,991	9,875	**125**	52,167	1,101	**21**	71,686	4,474	**62**
14/04/2020	130,214	3,203	**25**	88,621	11,329	**128**	61,049	1,296	**21**	74,877	4,683	**63**
16/04/2020	135,549	3,850	**28**	103,093	13,729	**133**	69,392	1,518	**22**	77,995	4,869	**62**
19/04/2020	143,779	4,543	**32**	114,217	15,464	**135**	82,329	1,890	**23**	82,211	5,118	**62**
21/04/2020	147,103	4,862	**33**	124,743	16,509	**132**	90,980	2,140	**24**	84,802	5,297	**62**
23/04/2020	151,022	5,334	**35**	133,495	18,100	**136**	98,674	2,376	**24**	87,026	5,481	**63**
25/04/2020	155,054	5,788	**37**	143,464	19,506	**136**	104,912	2,600	**25**	89,328	5,650	**63**
27/04/2020	157,946	5,984	**38**	152,840	20,732	**136**	110,130	2,805	**25**	91,472	5,806	**63**
29/04/2020	160,059	6,314	**39**	161,145	21,678	**135**	114,653	2,992	**26**	93,657	5,957	**64**

R= death rate per 1000 confirmed cases

Table 3: COVID-19 confirm cases, deaths and death rate in 1000 confirmed case in China, Russia, Brazil, Belgium.

	China			Russia			Brazil			Belgium		
Date	Cases	Deaths	R	Cases	Deaths	R	Cases	Deaths	R	Cases	Deaths	R
20/03/2020	80,967	3,248	**40**	253	1	**4**	651	7	**11**	2,257	37	**16**
25/03/2020	81,218	3,281	**40**	658	1	**2**	2,271	47	**21**	4,937	178	**36**
28/03/2020	81,394	3,295	**40**	1,264	4	**3**	3,477	93	**27**	9,134	353	**39**
31/03/2020	81,518	3,305	**41**	2,337	17	**7**	4,715	168	**36**	12,775	705	**55**
05/04/2020	81,669	3,329	**41**	5,389	45	**8**	10,360	445	**43**	19,691	1,447	**73**
10/04/2020	81,953	3,339	**41**	11,917	94	**8**	19,943	1,074	**54**	26,667	3,019	**113**
12/04/2020	82,052	3,339	**41**	15,770	130	**8**	20,964	1,141	**54**	29,647	3,600	**121**
14/04/2020	82,249	3,341	**41**	21,102	170	**8**	23,723	1,355	**57**	31,119	4,157	**134**
16/04/2020	82,341	3,342	**41**	27,938	232	**8**	29,015	1,760	**61**	34,809	4,857	**140**
19/04/2020	82,735	4,632	**56**	42,853	361	**8**	36,925	2,372	**64**	38,496	5,683	**148**
21/04/2020	82,758	4,632	**56**	52,763	456	**9**	40,814	2,588	**63**	40,956	5,998	**146**
23/04/2020	82,798	4,632	**56**	62,773	555	**9**	46,348	2,934	**63**	42,797	6,490	**152**
25/04/2020	82,816	4,632	**56**	74,588	681	**9**	54,043	3,704	**69**	45,325	6,917	**153**
27/04/2020	82,830	4,633	**56**	87,147	794	**9**	63,100	4,286	**68**	46,687	7,207	**154**
29/04/2020	82,858	4,633	**56**	99,399	972	**10**	73,235	5,083	**69**	47,859	7,501	**157**

R= death rate per 1000 confirmed cases

Table 4: COVID-19 confirm cases, deaths and death rate in 1000 confirmed case in Canada, India, South Korea.

Date	Canada			India			South Korea		
	Cases	Deaths	R	Cases	Deaths	R	Cases	Deaths	R
20/03/2020	924	12	**13**	223	5	**22**	8,652	94	**11**
25/03/2020	2,792	26	**9**	562	10	**18**	9,137	126	**14**
28/03/2020	5,434	55	**10**	933	20	**21**	9,478	144	**15**
31/03/2020	7,474	92	**12**	1,251	32	**26**	9,786	162	**17**
05/04/2020	14,018	233	**17**	3,588	99	**28**	10,237	183	**18**
10/04/2020	22,148	569	**26**	7,600	249	**33**	10,450	208	**20**
12/04/2020	23,318	653	**28**	8,504	289	**34**	10,512	214	**20**
14/04/2020	25,680	780	**30**	10,541	358	**34**	10,564	222	**21**
16/04/2020	28,379	1,010	**36**	12,759	423	**33**	10,613	229	**22**
19/04/2020	33,383	1,470	**44**	16,365	521	**32**	10,661	234	**22**
21/04/2020	36,831	1,690	**46**	18,985	603	**32**	10,683	237	**22**
23/04/2020	40,190	1,974	**49**	21,797	686	**31**	10,702	240	**22**
25/04/2020	43,888	2,302	**52**	24,942	780	**31**	10,718	240	**22**
27/04/2020	46,895	2,560	**55**	27,977	884	**32**	10,738	243	**23**
29/04/2020	50,026	2,859	**57**	31,332	1,008	**32**	10,761	246	**23**

R= death rate per 1000 confirmed cases

In China, the death rate is constant which was near 40 from the middle of March and April 2020 but suddenly, there is a steep rise in the number of deaths and death rates. Now, the death rate per 1000 in China was 56 which were 15 counts more. After 10-04-2020, Covid-19 cases and number of death number were boosted in Russia by 7.3 and 9.34 times. But Brazil's COVID-19 cases were enhanced from the second week of April 2020 and death

rate per 1000 confirmed case was 69 which will increase as the number of confirmed cases will increase in the future. Belgium, death rate per 1000 confirmed cases were 157 which were highest in the world (Table 3). The death rate per 1000 confirmed cases in Canada, India and South Korea was 57, 32 and 23 respectively. In Canada, confirmed cases crossed 50,000. The death rate per 1000 confirmed cases in India and South Korea were 32 and 23 respectively (Table 4).

Similarly, previous reports suggested that the source of transmission of COVID-19 disease was a crowded areas, hospitals, spread from person to person.[13-14] Countries in Asian, European, and American continents are most infected by SARS-CoV-2[13] and the worst condition is in the United States of America.[14]

CONCLUSION

In the present scenario, the number of COVID-19 infected cases is increased due to asymptomatic transmission and not the availability of any effective treatment. Scientists reported promising results of Ivermectin in laboratory condition which gives hope. Literature suggested that several treatments with Chloroquine, Hydroxychloroquine, a combination of hydroxychloroquine and azithromycin, Remdesivir (RDV) gave good results but did not affect all patients.

Our data suggested that in the United States, after 5th April 2020, the death rate per 1000 confirmed cases was jumped from 27 to 57 i.e. more than double as well as number of cases in the USA raised more than 300% which is not a good sign. A similar condition has been observed in Spain, Italy, France, Germany, United Kingdom, Turkey, Iran, Russia, Brazil, Belgium, Canada, and number of cases may be increased. The death rate per 1000 confirmed cases in Turkey is 26 which may be increased between the first and second week of May month 2020. In South Korea, the number of COVID-19 cases is very low and the death rate is slightly increased. In India, the number of cases, death rates are increased but the condition is under control and the reason behind it may be lockdown. Further author urge to search effective treatment for controlling of disease.

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