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The effect of COVID-19 on global population and its fatality rate: Retrospective study by online database

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ABSTRACT

Objective: Coronavirus disease 2019 (COVID-19) is a current new virulent disease rising its transmission and fatality with each passing day in the worldwide population. COVID-19 is emerged as a respiratory infection and a suspicious origin of animals and transmission to human in Wuhan, China on December 2019. Later this, the virus was transmitted from person to person through droplets and contacts. The World Health Organization, Centers for Disease Control and Prevention, and the National Health Commission of the People's Republic of China have taken immediate action to reduce transmission and fatality associated with COVID-19 as minimum as possible. However, action has failed to stop transmission of COVID-19 from China to other countries. Since there was no chain break of the virus, the chances are more to increase the case number and fatality. Hence, the study has been designed to perceive the current effect of COVID-19 on the global population and its fatality. The study also focused on review related to treatment for COVID-19.

Material and Methods: Online database of epidemic disease COVID-19 cases number was collected from www.channelnewsasia.com on 7th April 2020. This data was used to observe the past and present circumstances in the global population and its fatality. The effect of treatment on COVID-19 was reviewed from the few databases of clinical trials (antiviral and antibacterial drugs).

Results: The online data are used to observe a significant increase ratio of COVID-19 cases and its fatality rate in worldwide as well as country wise. The COVID-19 cases are high in the United States (27.5%), whereas the fatality rate is high in Italy (12.47%). The prevalence of COVID-19 is expected to be reaching 4 million by the end of April 2020 and the fatality rate also might be reached high.

Conclusion: We have come to the conclusion that the effect of COVID-19 on the global population is significantly increased and the fatality rate also elevated (2.48% to 5.52%). The hydroxychloroquine-azithromycin combination treatment has shown significant improvement in patients with COVID-19 compared to treat with other drugs.

Keywords: COVID-19, Respiratory syndrome, Fatality

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a current new virulent disease rising its transmission and fatality with each passing day in worldwide population. COVID-19 is emerged as a respiratory infection and a suspicious origin of animals and transmission to human in Wuhan, China on December 2019. Later this, the virus was transmitted from person to person through droplets and contacts. The World Health Organization (WHO), Centers for Disease Control and Prevention, and the National Health Commission of the People's Republic of China have taken immediate action to reduce transmission and fatality associated with COVID-19 as minimum

as possible. However, action has failed to stop transmission of COVID-19 from China to other countries.[1-3] This COVID-19 majorly affects lungs, which cause pneumonia and further damages kidney, heart, liver, etc., due to failure in the defensive mechanism (less immunity). COVID-19 is a family of coronaviruses (CoVs) that are phenotypically and genotypically diverse. CoVs are enveloped viruses containing single standard positive-sense RNA that belongs to Coronaviridae family of the ortho Coronaviridae subfamily which can cause illness in birds, mammals, and humans.[4]

COVID-19 is a seventh one in the family of coronavirus. In earlier, six coronaviruses are there, of six, two has considered as an infectious disease in human, which majorly attack the respiratory system, they are severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS).[5] The current new novel coronavirus COVID-19 also has the same effect, but this epidemic disease spreads faster than SARS and MERS.[5] Hence, the study has been designed to perceive the current effect of COVID-19 on the global population and its fatality with online database of COVID-19. The study also focused on effect of other disease drugs effect on COVID-19.

MATERIALS AND METHODS

The data of patients with COVID-19 were executed from online www.channelnewsasia.com on April 6, 2020.[6] The cases are suspected with the following symptoms include cold, sneezing, dry cough, sore throat, severe fever, fatigue, and breathing issue. Sometimes this epidemic disease is asymptomatic and symptoms can be appearing within 14 days of contact with diseased person. Throat or Nasal swab samples are used to diagnose COVID-19 by reverse transcription-polymerase chain reaction method in recognized diagnostic centers by different bodies of countries in worldwide. We also performed a search at the clinical trial database at clinicaltrial.gov.[4]

RESULTS AND DISCUSSION

The epidemic disease COVID-19 is a family of coronavirus, the two viruses are more pathogenic and raised its impact on population include SARS in 2003 had 8098 with a fatality rate 10% (774), while MERS killed 34% of people (858 of 2494 cases).[7] However, current new coronavirus COVID-19 widen very province of China as well as 27 other countries and regions with more than 70,000 cases with 2–3% mortality as of February 18, 2020.[1,8] However, the fatality rate increasing by passing every day, on 6th April, the fatality rate is 5.52% of 1.3 million COVID-19 cases in worldwide.

The primary cause for increasing fatality rate in COVID-19 cases is associated with co-morbidity and old age. The most common complications reported with COVID-19 are acute respiratory distress syndrome (61.1%), arrhythmia (44.4%), and shock (30.6%). The other complications associated with COVID-19 include acute cardiac injury, acute renal injury, pneumothorax, and secondary bacterial infections. The majority of populations affected with COVID-19 are older aged group population 51–66 years (30.6–72.2%), hypertension (31%), cardiovascular disease (14.5), and diabetes (10%) with symptoms of cough, fever, and fatigue.[1] The similar reports of various studies underlying co-morbidities and mortality rates may helpful to a health professional to triage and risk stratify the patient population who might require a high level of care.[9-13]

Prevalence and fatality of COVID-19

As per the most recent available data, the total number of deaths related to COVID-19 is higher than other coronavirus family (SARS, MERS) outbreaks of 21st century. The prevalence of COVID-19 is increasing rapidly in all over the world. In earlier, the WHO reported that COVID-19 was transmitted to 25 countries in worldwide, but present it has spread to 200 countries. Anyhow the available online data www.channelnewsasia.com had shown significant elevation of COVID-19 cases and its fatality in worldwide. Table 1 shows the significant increase in cases of COVID-19 from February 18, 2020, to April 6, 2020 (major affected country details have been discussed).[1]

As of February 18, 2020, 71,447 peoples are affected with COVID-19 and it has reached 1.3 million by April 6, 2020, in worldwide and fatality rate increased from 2.48% to 5.52%. Within 47 days the COVID-19 cases reached 18.7 times and it is expected to reach 4 million by the end of April 2020. China where this coronavirus was origin, the effected peoples reached to 81,740 and fatality rate achieved to 4.07% by April 6, 2020. In Global population, 1.3 million peoples are affected with COVID-19 by April 6, 2020, among these badly affected countries include the United States (25.5%), Italy (9.89%), Spain (10.08%), Germany (7.12%), France (7.39%), and Iran (4.52%) and few other countries data have been displayed in Table 1.

The fatality rate of COVID-19 on February 18, 2020, was 2.48% and it reaches to 5.52% by 6th April, and it may reach 10% by the end of April 2020 in the worldwide population. The fatality rates are higher in other countries when compared to origin country (China) include Italy (0–12.47%), United Kingdom (0–10.41%), Spain (0–9.67%), France (8.3–9.02%), Belgium (0–7.84%), and Iran (0–6.18%) and remaining countries data have been displayed in Table 1. Since there is no precise treatment to cure this disease, we need to take more protective precautions to avoid transmission of COVID-19 from person to person by maintaining social distance and often once washing our hands with sanitizers or soap.

Table 1: Impact of COVID-19 on the global population and fatality.

COVID-19 data as of 18th February 2020				COVID-19 data as of April 6, 2020		
Area	**Confirmed**	**Recovered**	**Death (%)**	**Confirmed**	**Recovered**	**Death (%)**
Worldwide	71447	11025	1775 (2.48)	1,338,918	276171	73,918 (5.52)*
China	70,646	10,937	1772 (2.51)	81,740	77,310	3331 (4.07)
Japan	519	1	1 (0.19)	4100	575	97 (2.36)
Singapore	75	19	0 (0)	1375	344	6 (0.44)
South Korea	30	10	0 (0)	10,331	6598	192 (1.86)
Germany	16	1	0 (0)	95,391	28,700	1434 (1.50)
United States	15	3	0 (0)	368,196	19,581	10,986 (2.98)
France	12	4	1 (8.3)	98,984	17,428	8926 (9.02)*
United Kingdom	9	8	0 (0)	51,608	287	5373 (10.41)#
Canada	8	1	0 (0)	16,667	3256	323 (1.94)
Italy	3	0	0	132,547	22,837	16,523 (12.47)#
India	3	0	0	4281	375	111 (2.59)
Spain	2	0	0	135,032	40,437	13,055 (9.67)*
Russia	2	0	0	6343	406	47 (0.74)
Belgium	1	0	0	20,814	3986	1632 (7.84)*
Iran	0	0	0	60,500	24,236	3739 (6.18)*
Switzerland	0	0	0	21,652	8056	584 (2.69)

#Very high, *High

Treatment

The novel coronavirus (COVID-19) origin in December 2019, so far, no effective vaccine or antiviral drugs are available to treat this new epidemic disease but present only symptomatic treatment is going on. The pharmaceutical intrusions found for COVID-19 treatment include human immunoglobulin, interferons, chloroquine, hydroxychloroquine, arbidol, remdesivir, oseltamivir, favipiravir, carrimycin, methylprednisolone, bevacizumab, thalidomide, Vitamin C, pirfenidone, bromhexine, fingolimod, danoprevir, ritonavir, darunavir, cobicistat, lopinavir, xiyanping, and traditional Chinese medicines.[5] A few ongoing clinical trials reported the beneficial effect of anti-malaria drugs and anti-viral drugs in patients with COVID-19, as follows.

The effect of antiviral drugs such as chloroquine and hydroxychloroquine (HIV drugs) inhibits the entry of the virus into host cells. Another mechanism of antiviral drugs is related to the post-translational modifications of newly synthesized proteins through glycosylation inhibition.[14] Recently, clinical trial has been done on patients with COVID-19 treatment. About 100% of COVID-19 patients are recovered with hydroxychloroquine treatment in combination with the macrolide antibiotic azithromycin compared to 57.1% with hydroxychloroquine treatment alone and 12.5% patients in control (only symptomatic treatment).[2,15,16] However, at present, chloroquine and hydroxychloroquine are tested in patients with pneumonia caused by COVID-19. Besides this, chloroquine was considered as preventive medicine for COVID-19.[5]

Remdesivir is a nucleotide analog inhibitor of EBOV RNA-polymerase RNA-dependent. In the earlier report of remdesivir treatment, on Ebola virus had shown a 33% fatality rate in early infected stages.[17] However, remdesivir is effective against the COVID-19 in Vero E6 cells, the recommended mechanism for remdesivir involves the host cells post-entry stage.[18]

The lopinavir-ritonavir is a combination drug for HIV treatment. Both drugs are HIV protease inhibitors, but ritonavir is also a cytochrome P450 and GP inhibitor. However, lopinavir-ritonavir combination treatment was not associated with the improvement of the patient with COVID-19 compared to standard care procedure.[19]

According to the WHO, more than 20 medicines are used to treat COVID-19 patients with 24 clinical trials. However, treatment with hydroxychloroquine-azithromycin had shown excellent improvement in patients with COVID-19. To confirm the results, we required more comprehensive studies with a large number of patients.[5]

Using the present online database, we have observed that how fast this epidemic disease spreads and kills the global population. Many countries are majorly affected due to this viral infection and where it is going to end is a question for us. However, we are unable to control the spreading of epidemic disease due to lack of full awareness and knowledge. Hence, we require more research activities to acquire knowledge on COVID-19 to break this chain transmission.

CONCLUSION

The present retrospective study observed drastically increased mortality of COVID-19 cases and its fatality in

worldwide population. It is also expected to reach 4 million populations with COVID-19 and also it may reach 10% fatality. Hydroxychloroquine treatment with a combination of azithromycin has shown significant improvement in COVID-19 patients. However, still, it is unclear that the treatment is effective in COVID patients with co-morbidity.

Research involving human participants

Online coronavirus cases collective data were used from www.channelnewsasia.com for this study.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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